

TO
Christine Matlock, EGLE

DATE
August 23, 2023

FROM
Patrick Curry, Arcadis

SUBJECT
2023 Proposed Additional MW-14-58R Area Investigation
RACER Trust Plant 2, Lansing

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PROJECT NUMBER
30171056

On behalf of Revitalizing Auto Communities Environmental Response (RACER) Trust, Arcadis is proposing additional characterization along the western property boundary of Plant 2 (Site) located in Lansing, Michigan. Based on the results of the 1,4-dioxane investigation completed in September and October of 2022 and subsequent groundwater sampling in first and second quarter 2023, additional investigation is proposed to further characterize the 1,4-dioxane and volatile organic compound (VOC) impacts in groundwater at MW-14-58R, MW-22-153, MW-22-156 and other surrounding borings and monitoring wells. The western property boundary in this area is located southeast of the former Adams Plating Company (APC) Facility.

Nearby Areas of Interest

Monitoring well MW-14-58R and the wells installed in September and October 2022 are in the vicinity of Area 4 (AOI 2-8), which is a former outdoor storage area. Area 4 was comprised of a 10 ft X10 ft concrete paved area with no secondary containment located northwest of Building 241 and operated sometime before 1980 until 1982. Per the Current Conditions Report (CCR; Arcadis 2008), the wastes managed in this area are unknown, but are likely to have included drummed waste paint, spent solvents, and used oils generated from rear axle production.

Located approximately 150 to 200 feet south of these wells is AOI 2-14. This was a former scrap metal storage area that contained nonhazardous scrap metal produced from Plant 2 rear axle manufacturing operations and were stored at-grade on two paved (concrete/asphalt) areas. A release at this AOI is known to have occurred in the past (Arcadis 2008). During the AOI 2-14 removal, all oil-stained soil was excavated and disposed of off-site. Verification soil sampling was completed, but the results of the sampling are not available. There is still potential for presence of volatile organic compounds (VOCs) in soil related to the use of solvents during the metal fabrication process.

The former Adams Plating Company (APC) Superfund site is located to the west/northwest along South Rosemary Avenue and is currently managed and regulated under the United States Environmental Protection Agency (USEPA) Region 5 Superfund Program. Electroplating operations (primarily chrome, nickel, and copper) were performed at the APC Site from 1964 until it was destroyed by fire in 2010. Remedial action at the APC Site included excavation of former tanks and shallow soil impacted by VOCs, including chlorinated solvents (trichloroethene, tetrachloroethene, dichloroethane, and vinyl chloride) and metals. Subsequent investigations have shown impacts to shallow groundwater, including metals; VOCs; 1,4-dioxane; and per- and polyfluoroalkyl substances (PFAS). Groundwater has not been sampled at the APC site since 2016. In 2016, concentrations of 1,4-dioxane ranged from less than 10 micrograms per liter ($\mu\text{g/L}$) up to 1,700 $\mu\text{g/L}$ at monitoring well MW-09D (screened 15-20 ft bgs) located near the former APC building. The lateral extent of the perched 1,4-dioxane at the APC Site has not been delineated to EGLE Part 201 Criteria, and 1,4-dioxane impacts to the perched zone extend east toward RACER property (Arcadis 2021).

Degreasing operations of pieces to be electroplated was performed in conjunction with the electroplating process. Degreasing was commonly performed using VOCs including 1,1,1-trichloroethane (1,1,1-TCA); acetone; methylene chloride; and dichloroethane (DCA). Per the APC Final Remedial Investigation Report (CH2M 2019), VOCs detected in water included 1,1,1-TCA; 1,1-dichloroethane (1,1-DCA); and dichloroethene (DCE). VOC exceedances in groundwater samples (predominantly 1,1-DCA) appear to be concentrated directly in the middle and immediately to the north of the former APC building footprint.

Monitoring well MW-14-58 was installed in 2014 at Area 4 following the initial investigation activities in 2014. Monitoring well MW-14-58R was installed in October 2021 as a replacement well following damage to MW-14-58 that occurred in 2021. Monitoring well MW-14-58 was last sampled for 1,4-dioxane in June 2020 and had a 1,4-dioxane concentration was 38 micrograms per liter ($\mu\text{g/L}$). Following installation of the replacement well MW-14-58R, a sample collected in December 2021 indicated a 1,4-dioxane concentration of 430 $\mu\text{g/L}$, followed by 520 $\mu\text{g/L}$ in February 2022. The 1,4-dioxane concentration at MW-14-58R has decreased to 410 $\mu\text{g/L}$ in April 2022 to 187 $\mu\text{g/L}$ in September 2022, and 173 $\mu\text{g/L}$ in October 2022. Both monitoring wells MW-14-58 and MW-14-58R were/are installed within the perched zone and screened at a depth of 22 to 27 ft bgs within a zone of saturated medium sand. The boring logs for both wells are included as part of **Attachment 1**.

Site Geology and Hydrogeology

The geology of the Site is complex, consisting of an interbedded series of glacially-derived sediments. The geology of the Site is divided into six general hydrostratigraphic units. From shallow to deep, these units include the shallow fill, interbedded zone, glacial till (confining unit), deep overburden, weathered bedrock, and bedrock units. The shallow fill and interbedded zones collectively make up the perched aquifer and are underlain by the glacial till confining unit. The shallow fill is typically 1 to 10 feet thick, consisting of sand and gravel mixtures brought to the Site as part of previous construction activities. The shallow fill can be saturated when present below 5 feet below ground surface (ft bgs) and include localized areas of unconfined perched groundwater. The interbedded zone is generally encountered between 5 and 30 ft bgs and typically composed of interbedded soft clay, glacial tills with isolated lenses of silt and sand. Sand and silt lenses are typically saturated, forming thin discontinuous zones of perched groundwater. Near Area 4, a relatively consistent sand zone is present at depths of approximately 25 to 30 ft bgs and appears to be the primary conduit for 1,4-dioxane migration in this area. Based on the surrounding boring logs, the general extent of this sand seam is illustrated on **Figure 1**. The underlying glacial till depth and thickness is variable but typically encountered between 25 and 45 ft bgs. It is composed of a compact, dense silt/sand/gravel/clay mix that creates a confining unit and barrier to most vertical migration. The glacial till separates the perched water from the saturated deep overburden, weathered bedrock, and bedrock aquifer zones.

A southwest to northeast transect, cross-section B-B' (**Figure 2**) is included to illustrate the local geologic conditions of the perched zone along the western Plant 2 property boundary. For additional context, cross-section A-A' illustrates the geology on a west to east transect extending from off-site to on-site through Area 4 and is included in the MW-14-58R Area Data Summary (Arcadis 2023). Cross-section B-B' shows the interbedded sand and clays of the perched zone and a generally consistent sand seam at depths between 25 and 30 ft bgs, coincident with the screened interval of MW-14-58R. There is a large 60-inch sanitary main that runs north-south along the east side of Rosemary Avenue. The sanitary main is installed above the sand zone at a depth of approximately 10-20 ft below grade and sanitary wastewater flows by gravity within the main to the north. The depth to local perched groundwater on-site is approximately 10 to 13 ft bgs. The groundwater gradient parallels the sanitary main with the apparent groundwater flow to the north. The perched groundwater elevation and

apparent flow direction may be influenced by the sanitary main if the fill material placed around the main creates a preferential pathway for groundwater migration.

Site Investigations and Recent Analytical Results

Additional investigation work was completed between 2021 and 2023 to characterize soil and groundwater in the vicinity of MW-14-58R. Four vertical aquifer profile (VAP) borings were completed adjacent to MW-14-58R, and four new monitoring wells were installed near the Plant 2 property boundary. All soil boring logs are included in **Attachment 1**. All groundwater samples were compared to the Michigan Part 201 Drinking Water (DW) Criteria for 1,4-dioxane (7.2 µg/L) as a frame of reference. The location of the 2022 soil borings and new and existing monitoring wells are presented on **Figure 1**. Groundwater and soil analytical results are summarized in **Tables 2 and 3**.

The sequence of site activities was as follows:

- June 9, 2020: The last groundwater sample analyzed for 1,4-dioxane was collected from MW-14-58 and contained a concentration of 38 µg/L.
- October 27, 2021: MW-14-58R was installed as a replacement well to MW-14-58, which had been damaged during on-site activities. Both wells were screened 22-27 feet bgs and the geology encountered at both locations were similar. Boring logs for both wells are provided in **Attachment 1**.
- December 1, 2021: The first groundwater sample was collected from MW-14-58R and analyzed for 1,4-dioxane and contained a concentration of 430 µg/L.
- February 10, 2022: MW-14-58R was resampled and analyzed for 1,4-dioxane and contained a concentration of 520 µg/L.
- March 22 – 23, 2022: Four step-out VAP borings were completed near MW-14-58R. VAP sampling details are summarized in the MW-14-58R Area Data Summary (Arcadis 2023).
- April 6, 2022: Groundwater from MW-14-58R was sampled and contained a 1,4-dioxane concentration of 410 µg/L. Perimeter well MW-22-153 (located at previous step-out VAP location SB-A4-MY55) was installed and sampled and contained a 1,4-dioxane at a concentration of 92 µg/L.
- September 7 – 8, 2022: Installation of MW-22-155, MW-22-156, and MW-22-157 and step-out boring SB-A4-MX60. Soil sampling details are summarized in the MW-14-58R Area Data Summary (Arcadis 2023).
- September 12, 2022: Groundwater gauging and sampling event. Groundwater sample collected from MW-14-58R and analyzed for 1,4-dioxane and contained a concentration of 187 µg/L.
- October 14, 2022: Groundwater gauging event. Groundwater sample collected from MW-14-58R and analyzed for 1,4-dioxane and contained a concentration of 173 µg/L.
- February 15, 2023: Groundwater sample collected from MW-14-58R and analyzed for 1,4-dioxane and contained a concentration of 178 µg/L.
- May 16, 2023: Groundwater gauging and sampling event. Groundwater sample collected from MW-14-58R and analyzed for 1,4-dioxane and contained a concentration of 173 µg/L.

Perched 1,4-dioxane concentrations were higher than the first quarter 2023 results across the area during the second quarter 2023 sampling event. The concentration in the sample from MW-22-157 increased from the previous detection range of 3 micrograms per liter (µg/L) to 5 µg/L to 44 µg/L. This well will be resampled in third quarter 2023 to verify the 1,4-dioxane results.

VOC results from the second quarter 2023 sampling event show that MW-22-156 exceeds EGLE Part 201 residential Drinking Water criteria for 1,1-dichloroethene (detection of 38 µg/L, exceeds criterion value 7.0 µg/L). This well will be resampled in third quarter 2023 to verify the 1,1-dichloroethene results. This monitoring well also had detections, but not exceedances, for 1,1-dichloroethane and chloroethane. MW-14-58R, MW-22-153, and MW-22-155 were also sampled for VOCs and there were no other exceedances.

Discussion

The additional characterization completed in the vicinity of MW-14-58R confirmed that the extent of elevated 1,4-dioxane in groundwater in this area is not limited to the immediate vicinity of MW-14-58R. The new monitoring wells have been sampled four times, in September and October 2022 and in February and May 2023. To the south (MW-22-156) and west (MW-22-153), 1,4-dioxane exceeded the residential DW criteria but were generally lower than the concentrations observed at MW-14-58R. To the west of Rosemary Avenue, at off-site monitoring well MW-22-157, the concentration of 1,4-dioxane has increased to 44 µg/L and exceeds the DW Criteria (7.2 µg/L). The northern, and apparent downgradient well, MW-22-155 had 1,4-dioxane concentrations ranging from 410 µg/L in September 2022, to 36 µg/L in February 2023, and back up to 270 µg/L in May 2023.

As noted above, the groundwater elevation measured using the new monitoring wells was about 10 to 13 ft bgs on-site and suggests a northerly gradient parallel to the sanitary main installed along Rosemary Avenue (Arcadis 2023). This result suggest 1,4-dioxane is migrating south to north and may be influenced by the sanitary main alignment. If the sanitary main is surrounded by relatively more permeable fill material, it may act as a groundwater sink and create a shallow hydraulic boundary between the RACER site and locations further west.

The source of the 1,4-dioxane is unknown. Based on the data collected to date, there does not appear to be a source of 1,4-dioxane associated with Area 4. The depth of groundwater impact and the northerly groundwater gradient suggest 1,4-dioxane is migrating into the MW-14-58R area from an unknown source located to the south. However, based on the currently available data, the 1,4-dioxane concentration increases from south to the north, which is not consistent with the source being south of MW-14-58R.

Recommendations

Based on these results, additional 1,4-dioxane delineation is proposed to the north and south. The objectives of the work will be to characterize 1,4-dioxane and VOCs near the former AOI 2-14 area and define the northern extent of 1,4-dioxane north of Area 4 (AOI 2-8). The proposed scope of work is illustrated on the attached **Figure 3** and would include:

- Three direct push soil borings will be completed to max depth of 35 feet below grade north of MW-14-58R to target the sand seam for groundwater sampling.
 - Soils will be continuously logged at each proposed monitoring well location and monitoring wells will be installed using hollow stem augers screened consistent with the sand interval observed at MW-14-58R and surrounding borings (approximately 25-35 feet below grade), if encountered.
 - Monitoring wells will be constructed with 2-inch diameter SCH-40 PVC well casing, 5-foot long 2-inch diameter 0.010-slot stainless steel screens and completed with locking flush mount covers.
 - Once installed, the monitoring wells will be developed using a purge and surge technique until relatively free of fine-grained material.

Ms. Christine Matlock
EGLE
August 22, 2023

- Completion of three VAP borings to max depth of 25-35 feet below grade upgradient of MW-14-58R, located in the former scrap metal storage area (AOI 2-14).
 - Up to four soil samples will be collected per boring. Soil samples will be collected at nominal 2-foot intervals from the concrete slab to the water table.
 - Soil samples will be submitted for laboratory analysis of 1,4-dioxane by USEPA Method 8260 SIM and VOCs by USEPA Method 8260.
 - Up to 2 VAP samples will be collected per boring; first encountered groundwater and the sand interval at 25-35 feet below grade, if encountered.
 - Groundwater samples will be submitted for laboratory analysis of 1,4-dioxane by USEPA Method 8260 SIM and VOCs by USEPA Method 8260.

Following installation, the three new monitoring wells will be surveyed. These wells, in addition to the five existing monitoring wells of interest in the vicinity of MW-14-58R, will be sampled with analysis for VOCs and 1,4-dioxane and used to estimate local groundwater flow direction seasonally.

The results of the additional monitoring well sampling and VAP results will be used to determine if additional characterization is warranted on-site, or west of Rosemary Avenue. This investigation will be summarized in a memorandum that will include figures showing sample locations, analytical results, estimated groundwater flow direction, as well as laboratory analytical reports.

If you should have any questions regarding the enclosed data, please do not hesitate to contact David Favero at dfavero@racertrust.com or at (734) 879-9525 or Patrick Curry at patrick.curry@arcadis.com or at (810) 225-1926.

Sincerely,
Arcadis of Michigan, LLC



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CC:

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Enclosures:

Tables:

- Table 1 – Summary of Groundwater Elevations
- Table 2 – Summary of Groundwater Analytical Results
- Table 3 – Summary of Soil Analytical Results

Figures:

- Figure 1 – Area of Interest Map
- Figure 2 – Cross-Section B-B'
- Figure 3 – Proposed Investigation Locations

Attachments:

- Attachment 1 – Soil Boring Logs
- Attachment 2 – Analytical Reports
- Attachment 3 – Groundwater Sampling Logs

References:

- Arcadis. 2008. Current Conditions Report (CCR) for GM Lansing Plants 2, 3 and 6. Lansing, Michigan. August 1.
- Arcadis. 2021. Lower 1,4-Dioxane Conceptual Site Model. Lansing Industrial Land, Lansing, Michigan. January 6.
- Arcadis. 2023. MW-14-58R Area Data Summary and Proposed Additional Work, RACER Trust Plant 2, Lansing, Michigan. February 3.
- CH2M. 2019. Final Remedial Investigation Report. Adams Plating Superfund Site. Lansing, Ingham County, Michigan. December.

Tables

**Table 1 - Summary of Groundwater Elevations
2023 MW-14-58R Investigation Work Plan
RACER Trust Plant 2 - Lansing, Michigan**



Well ID	Date Collected	Screened Interval Top (feet bgs)	Screened Interval Bottom (feet bgs)	Reference Elevation (TOC)	Ground Surface Elevation (feet msl)	Total Well Depth (feet below TOC)	Depth to Water (feet below TOC)	Groundwater Elevation (feet msl)
MW-14-58R	5/31/2022	22.0	27.0	862.93	860.09	29.63	9.75	853.18
MW-14-58R	9/12/2022	22.0	27.0	862.93	860.09	29.60	13.30	849.63
MW-14-58R	10/14/2022	22.0	27.0	862.93	860.09	29.61	13.63	849.30
MW-14-58R	5/15/2023	22.0	27.0	862.93	860.09	29.35	12.93	850.00
MW-22-153	5/31/2022	25.0	30.0	860.43	859.44	31.15	10.25	850.18
MW-22-153	9/12/2022	25.0	30.0	860.43	859.44	31.17	10.80	849.63
MW-22-153	10/14/2022	25.0	30.0	860.43	859.44	31.18	11.12	849.31
MW-22-153	5/15/2023	25.0	30.0	860.43	859.44	31.18	10.41	850.02
MW-22-155	9/12/2022	25.5	30.5	861.58	858.99	31.50	12.08	849.50
MW-22-155	10/14/2022	25.5	30.5	861.58	858.99	31.43	12.41	849.17
MW-22-155	5/15/2023	25.5	30.5	861.58	858.99	31.50	11.69	849.89
MW-22-156	9/12/2022	23.0	28.0	863.07	860.13	31.06	13.29	849.78
MW-22-156	10/14/2022	23.0	28.0	863.07	860.13	31.06	13.57	849.50
MW-22-156	5/15/2023	23.0	28.0	863.07	860.13	31.60	12.90	850.17
MW-22-157	9/12/2022	24.0	29.0	852.38	853.06	27.55	2.75	849.63
MW-22-157	10/14/2022	24.0	29.0	852.38	853.06	27.61	3.08	849.30
MW-22-157	5/15/2023	24.0	29.0	852.38	853.06	27.63	2.38	850.00

Notes:

bgs = below ground surface

msl = mean sea level

NM = not measured

NS = not surveyed

RACER = Revitalizing Auto Communities Environmental Response

TOC = top of casing

Table 2
Summary of Groundwater Analytical Results
2019 Annual Groundwater Report
RACER Trust Plants 2, 3, and 6 - Lansing, Michigan

Data Flagging:

Bold font represents data where detections were noted above the laboratory method detection limit.

Gray shading represents result exceeding either or both the EGLE Part 201 Generic Cleanup Criteria and Screening Levels (dated January 10, 2018) or the EGLE GSI Criteria (Updated June 25, 2018)

Notes:

Deg C = degrees Celsius

EGLE = Michigan Department of Environment, Great Lakes, and Energy

mg/L = milligrams per liter

NA = Not Analyzed

NR = Not Recorded

NTU = Nephelometric Turbidity Unit

s.u. = standard unit

ug/L = micrograms per liter

μS/cm = microSiemens per centimeter

Lab and Validation Data Qualifiers:

F1 = Matrix spike and/or matrix spike duplicate recovery is outside acceptance limits.

J = The compound was positively identified, however, the associated numerical value is an estimated concentration only.

Y = Elevated reporting limit due to high target concentration.

Table 3
Summary of Soil Analytical Results
2023 MW-14-58R Investigation Work Plan
RACER Trust Plant 2 - Lansing, Michigan

Location ID: Date Collected: Sample Name: Sample Depth (ft. bgs):	Residential Drinking Water Protection (DWP) Criteria	Groundwater Surface Water Interface Protection (GSIP) Criteria	Units	SB-A4-MX60 09/07/22 SB-A4-MX60_1-3	SB-A4-MX60 09/07/22 SB-A4-MX60_4-6	SB-A4-MX60 09/07/22 SB-A4-MX60_6-8	SB-A4-MX60 09/07/22 SB-A4-MX60_8.5-10	SB-A4-MX60 09/07/22 SB-A4-MX60_10-12
Volatile Organics (via EPA Method SW8260B - SIM)								
1,4-Dioxane	1,700	5,600	µg/kg	< 60	< 60	< 60	< 60	< 80
Volatile Organics (via EPA Method SW5035A/8260C)								
1,1,1,2-Tetrachloroethane	1,500	--	µg/kg	< 100	< 100	< 100	< 100	< 200
1,1,1-Trichloroethane	4,000	1,800	µg/kg	< 60	< 60	< 60	< 60	< 80
1,1,2,2-Tetrachloroethane	170	1,600	µg/kg	< 60	< 60	< 60	< 60	< 80
1,1,2-Trichloroethane	100	6,600	µg/kg	< 60	< 60	< 60	< 60	< 80
1,1-Dichloroethane	18,000	15,000	µg/kg	< 60	< 60	< 60	< 60	< 80
1,1-Dichloroethene	140	2,600	µg/kg	< 60	< 60	< 60	< 60	< 80
1,2,3-Trichlorobenzene	--	--	µg/kg	< 370	< 420	< 390	< 410	< 520
1,2,3-Trichloropropane	840	--	µg/kg	< 100	< 100	< 100	< 100	< 200
1,2,3-Trimethylbenzene	--	--	µg/kg	< 60	< 60	< 60	< 60	< 80
1,2,4-Trichlorobenzene	4,200	5,900	µg/kg	< 370	< 420	< 390	< 410	< 520
1,2,4-Trimethylbenzene	2,100	570	µg/kg	< 60	< 60	< 60	< 60	< 80
1,2-Dibromo-3-chloropropane (DBCP)	10	--	µg/kg	< 300	< 300	< 300	< 300	< 400
1,2-Dibromoethane (Ethylene dibromide)	20	110	µg/kg	< 20	< 30	< 20	< 20	< 30
1,2-Dichlorobenzene	14,000	280	µg/kg	< 100	< 100	< 100	< 100	< 200
1,2-Dichloroethane	100	7,200	µg/kg	< 60	< 60	< 60	< 60	< 80
1,2-Dichloropropane	100	4,600	µg/kg	< 60	< 60	< 60	< 60	< 80
1,3,5-Trimethylbenzene	1,800	1,100	µg/kg	< 60	< 60	< 60	< 60	< 80
1,3-Dichlorobenzene	170	680	µg/kg	< 100	< 100	< 100	< 100	< 200
1,4-Dichlorobenzene	1,700	360	µg/kg	< 100	< 100	< 100	< 100	< 200
2-Butanone (Methyl ethyl ketone) (MEK)	260,000	44,000	µg/kg	< 830	< 960	< 880	< 930	< 1,200
2-Hexanone	20,000	--	µg/kg	< 3,000	< 3,000	< 3,000	< 3,000	< 4,000
2-Methylnaphthalene	57,000	4,200	µg/kg	< 100	< 100	< 100	< 100	< 200
2-Phenylbutane (sec-Butylbenzene)	1,600	--	µg/kg	< 60	< 60	< 60	< 60	< 80
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	36,000	--	µg/kg	< 3,000	< 3,000	< 3,000	< 3,000	< 4,000
Acetone	15,000	34,000	µg/kg	< 1,000	< 1,000	< 1,000	< 1,000	< 2,000
Acrylonitrile	100	100	µg/kg	< 100	< 100	< 100	< 100	< 200
Benzene	100	4,000	µg/kg	< 60	< 60	< 60	< 60	< 80
Bromobenzene	550	--	µg/kg	< 100	< 100	< 100	< 100	< 200
Bromochloromethane	--	--	µg/kg	< 100	< 100	< 100	< 100	< 200
Bromodichloromethane	1,600	--	µg/kg	< 100	< 100	< 100	< 100	< 200
Bromoform	1,600	--	µg/kg	< 100	< 100	< 100	< 100	< 200
Bromomethane (Methyl bromide)	200	100	µg/kg	< 200	< 300	< 200	< 200	< 300
Carbon disulfide	16,000	--	µg/kg	< 300	< 300	< 300	< 300	< 400
Carbon tetrachloride	100	760	µg/kg	< 60	< 60	< 60	< 60	< 80
Chlorobenzene	2,000	500	µg/kg	< 60	< 60	< 60	< 60	< 80
Chloroethane	8,600	22,000	µg/kg	< 300	< 300	< 300	< 300	< 400
Chloroform (Trichloromethane)	1,600	7,000	µg/kg	< 60	< 60	< 60	< 60	< 80
Chloromethane (Methyl chloride)	5,200	--	µg/kg	< 300	< 300	< 300	< 300	< 400
cis-1,2-Dichloroethene	1,400	12,000	µg/kg	< 60	< 60	< 60	< 60	< 80
cis-1,3-Dichloropropene	--	--	µg/kg	< 60	< 60	< 60	< 60	< 80
Cymene (p-Isopropyltoluene)	--	--	µg/kg	< 100	< 100	< 100	< 100	< 200
Dibromochloromethane	1,600	--	µg/kg	< 100	< 100	< 100	< 100	< 200
Dibromomethane	1,600	--	µg/kg	< 300	< 300	< 300	< 300	< 400
Dichlorodifluoromethane (CFC-12)	95,000	--	µg/kg	< 300	< 300	< 300	< 300	< 400
Diethyl ether	200	--	µg/kg	< 200	< 300	< 200	< 200	< 300
Ethylbenzene	1,500	360	µg/kg	< 60	< 60	< 60	< 60	< 80
Hexachloroethane	430	1,800	µg/kg	< 300	< 400	< 400	< 400	< 500
Isopropyl benzene	91,000	3,200	µg/kg	< 300	< 300	< 300	< 300	< 400
Methyl iodide	--	--	µg/kg	< 100	< 100	< 100	< 100	< 200
Methyl tert butyl ether (MTBE)	800	140,000	µg/kg	< 200	< 300	< 200	< 200	< 300
Methylene chloride	100	30,000	µg/kg	< 100	< 100	< 100	< 100	< 200
Naphthalene	35,000	730	µg/kg	< 300	< 300	< 300	< 300	< 400
N-Butylbenzene	1,600	--	µg/kg	< 60	< 60	< 60	< 60	< 80
N-Propylbenzene	1,600	--	µg/kg	< 60	< 60	< 60	< 60	< 80
Styrene	2,700	2,100	µg/kg	< 60	< 60	< 60	< 60	< 80
tert-Butylbenzene	1,600	--	µg/kg	< 60	< 60	< 60	< 60	< 80
Tetrachloroethene	100	1,200	µg/kg	< 60	< 60	< 60	< 60	< 80
Tetrahydrofuran	1,900	220,000	µg/kg	< 1,000	< 1,000	< 1,000	< 1,000	< 2,000
Toluene	16,000	5,400	µg/kg	< 60	< 60	< 60	< 60	< 80
trans-1,2-Dichloroethene	2,000	30,000	µg/kg	< 60	< 60	< 60	< 60	< 80
trans-1,3-Dichloropropene	--	--	µg/kg	< 60	< 60	< 60	< 60	< 80
trans-1,4-Dichloro-2-butene	--	--	µg/kg	< 60	< 60	< 60	< 60	< 80
Trichloroethene	100	4,000	µg/kg	< 60	< 60	< 60	< 60	< 80
Trichlorofluoromethane (CFC-11)	52,000	--	µg/kg	< 100	< 100	< 100	< 100	< 200
Vinyl chloride	40	260	µg/kg	< 60	< 60	< 60	< 60	< 80
m&p-Xylene	--	--	µg/kg	< 100	< 100	< 100	< 100	< 200
o-Xylene	--	--	µg/kg	< 60	< 60	< 60	< 60	< 80
Xylene (total)	5,600	980	µg/kg	< 100	< 100	< 100	< 100	< 200

See notes on last page.

Data Flagging:

Bold font represents data where detections were noted above the laboratory method detection limit.

Gray shading represents result exceeding either or both the EGLE Part 201 Generic Cleanup Criteria and Screening Levels (dated January 10, 2018) or the EGLE GSI Criteria (Updated June 25, 2018)

Notes:

- Deg. C. = degrees Celsius
- EGLE = Michigan Department of Environment, Great Lakes, and Energy
- mg/L = milligrams per liter
- NA = Not Analyzed
- NR = Not Recorded
- NTU = Nephelometric Turbidity Unit
- s.u. = standard unit
- ug/L = micrograms per liter
- µS/cm = microSiemens per centimeter

Lab and Validation Data Qualifiers:

- F1 = Matrix spike and/or matrix spike duplicate recovery is outside acceptance limits.
- J = The compound was positively identified, however, the associated numerical value is an estimated concentration only.
- Y = Elevated reporting limit due to high target concentration.

Figures



CITY: Novi DIV: ENV PIC: J. BARRETT PM: T. LINDER TR: PROJECT NUMBER: 30112892 COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
T:\ENV\RACER\Burl\01\0222 MW-14-58R Evaluation\3.mxd PLOTTED: 8/16/2023 9:06:17 AM BY: JNHolt

- Legend**
- VAP BORING
 - △ LNAPL MONITORING WELL
 - ▲ PERCHED ZONE MONITORING WELL
 - ▲ DEEP OVERBURDEN MONITORING WELL
 - ▲ WEATHERED BEDROCK MONITORING WELL
 - ▲ BEDROCK MONITORING WELL
 - ▲ APC MW
 - ABANDONED WELL
 - AREA OF INTEREST
 - WORKPLAN
 - ESTIMATED EXTENT OF DEEPER SAND UNIT (~825 - 835 FEET AMSL) (LINE DASHED WHERE INFERRED)
 - INDICATES LITHOLOGIC DATA NOT AVAILABLE
 - PLANT 2
 - PLANT 3
 - PLANT 6

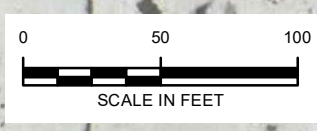
NOTES:

ALL 1,4-DIOXANE RESULTS SHOWN FOR PERCHED GROUNDWATER SAMPLES ARE LISTED IN MICROGRAMS PER LITER (µg/L).

DUPLICATE RESULTS ARE LISTED IN BRACKETS FOLLOWING THE PARENT SAMPLE RESULTS.

SAMPLES ANALYZED VIA EPA METHOD SW-846 8260B SIM.

APC: ADAMS PLATING COMPANY
 FT BGS: FEET BELOW GROUND SURFACE
 LNAPL: LIGHT NON-AQUEOUS PHASE LIQUID
 MW: MONITORING WELL
 VAP: VERTICAL AQUIFER PROFILE



RACER TRUST
PLANT 2
LANSING, MICHIGAN

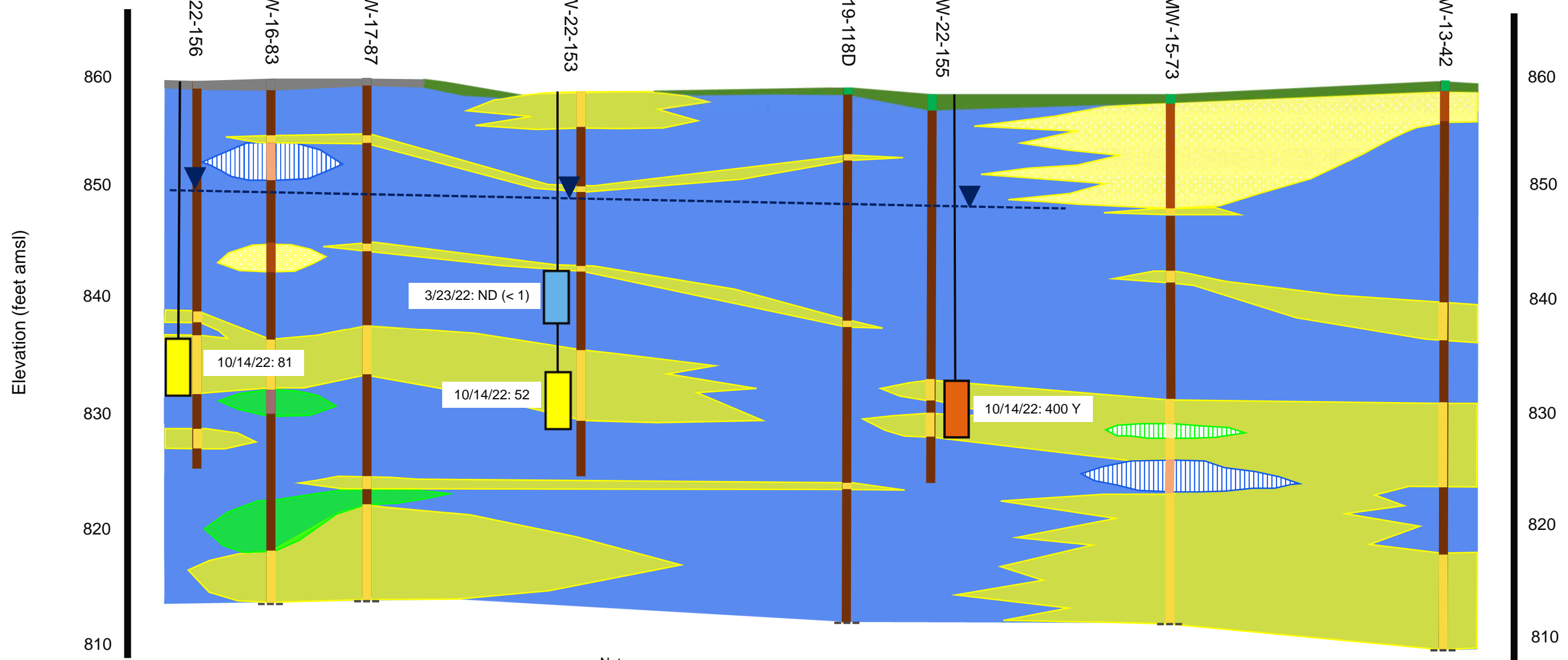
AREA OF INTEREST MAP

← **Southwest**

Northeast →

B'

B



CITY, NOV/DIV: ENV PIC: J. BARRETT PM: T. LINDER TM: A. VILLHAUER TR: PROJECT NUMBER: 30112892



LEGEND

Geology	Vinyl Chloride Concentration (µg/L)
Grass/Topsoil	ND – 7.2
Concrete	7.2 – 280
Sand	280 – 1,000
Clay	Boring log continues, full vertical extent not shown on cross-section
Silt	Approximate Water Table
Sandy Clay	
Silty Sand	
Silty Clay	

Notes:

1. The Michigan Department of Environment, Great Lakes, and Energy (EGLE) Residential Drinking Water (DW) screening level for 1,4-dioxane is 7.2 µg/L.
2. The EGLE Groundwater Surface Water Interface (GSI) screening level for 1,4-dioxane is 280 µg/L.
3. The highest concentration from each monitoring well (MW) and soil boring (SB) location is shown. Refer to Tables 2 and 3 for analytical results.
4. Samples were analyzed under USEPA Method SW8260B SIM.
5. Sanitary sewer line locations are approximate and not drawn to scale.
6. All groundwater analytical results are listed in micrograms per liter (µg/L).
7. J = estimated value
8. Y = elevated reporting limit due to high target concentration
9. Deep wells (e.g., MW-19-118S/D, MW-16-83, etc.) are screened within the weathered bedrock zone or deeper. Perched groundwater data is not available at these locations.

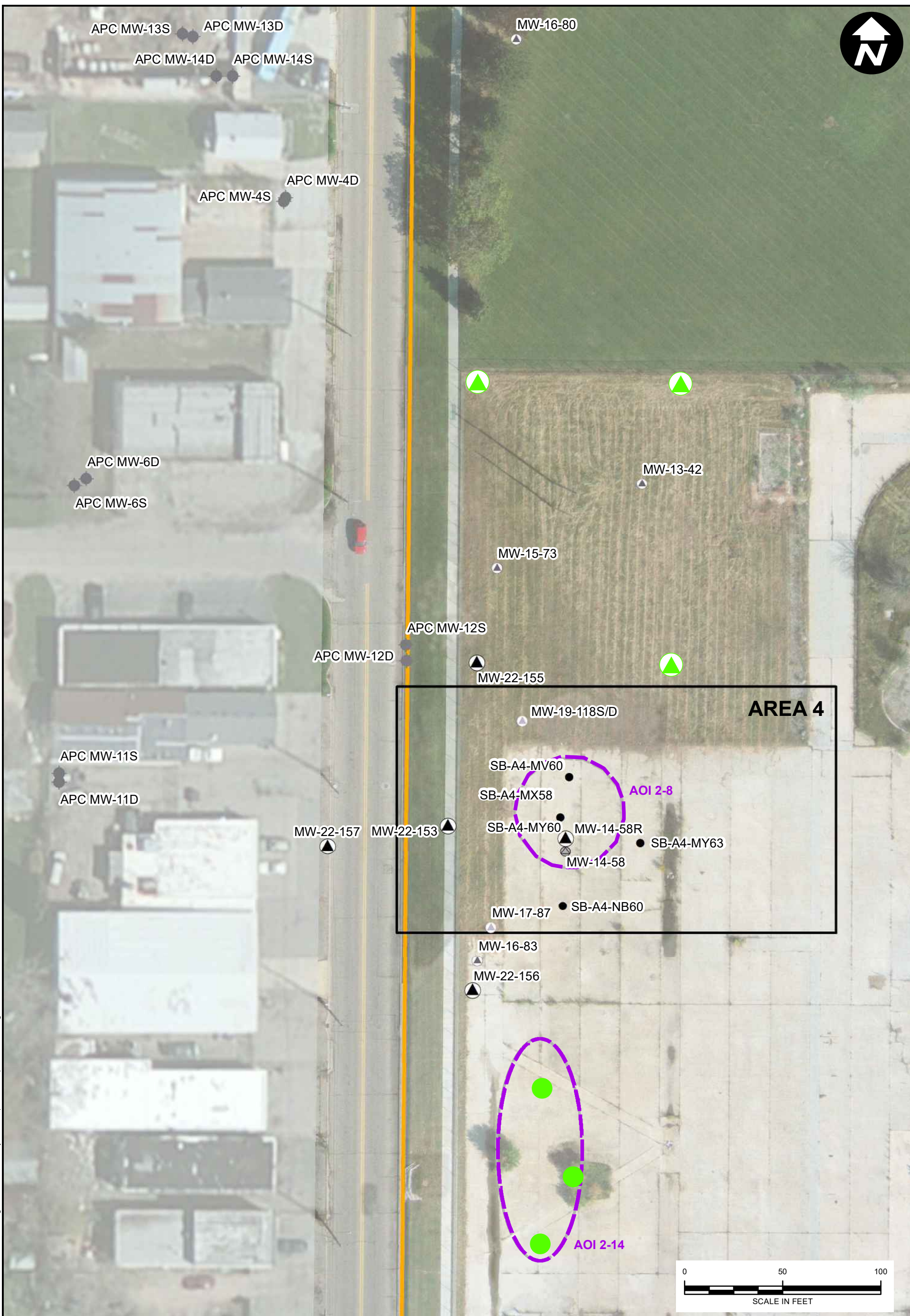
RACER TRUST
PLANT 2
LANSING, MICHIGAN

CROSS-SECTION B-B'

FIGURE

2

CITY: Novi DIV: ENV PIC: J. BARRETT PM: T. LINDER TM: A. VILLHAUER TR: PROJECT NUMBER: 30112892 COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
 T:_ENV\RACER\Buffalo\2022 MW-14-58R Evaluation\Figure 3 - GW Analytical Map and Proposed Investigation Locs.mxd PLOTTED: 8/16/2023 10:36:26 AM BY: JNHolt



Legend

- Proposed VAP Boring Location
- ▲ Proposed MW Location

NOTES:
 ALL DRILLING ACTIVITIES (INCLUDING SOIL SAMPLING AND WELL DEVELOPMENT) WERE COMPLETED BETWEEN SEPTEMBER 6 THROUGH 8, 2022. GROUNDWATER SAMPLING WAS COMPLETED ON SEPTEMBER 12, 2022.

APC: ADAMS PLATING COMPANY
 ft bgs: FEET BELOW GROUND SURFACE
 LNAPL: LIGHT NON-AQUEOUS PHASE LIQUID
 MW: MONITORING WELL
 VAP: VERTICAL AQUIFER PROFILE

RACER TRUST
 PLANT 2
 LANSING, MICHIGAN

PROPOSED INVESTIGATION LOCATIONS

ARCADIS

Attachment 1

Soil Boring Logs

Date Start: 8/13/2014 Date Finish: 8/13/2014 Drilling Company: Cascade Driller's Name: S.Parks/T.Michael/R.Adkison Drilling Method: Continuous Sampling Method: 10', 5" core barrel Rig Type: Sonic Water Level Start (ft. bgs.): 24.0 Water Level Finish (ft. btoc.): 14.63	Northing: Easting: Casing Elevation: NA Borehole Depth (ft. bgs.): 28.0 Surface Elevation: Descriptions By: A.Richmond	Well/Boring ID: MW-14-58 Client: RACER Location: RACER Lansing Plant 2 Weather Conditions: Sunny 75 F
---	---	--

DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
0	0									
								(0.0'-1.0') CONCRETE.		
		1	0.0-7.0	5.0				(1.0'-6.0') SAND, medium; little granules, subround to subangular; little silt; well sorted; moist; dark yellowish brown (10YR 4/4).		
5	-5							(6.0'-7.0') CLAY, little silt, low plasticity, rapid dilatancy; little sand; little small pebbles, subround to subangular; dry; mediums tiff; very dark gray (10YR 3/1).		
								(7.0'-10.0') SAND, medium; little small pebbles, subangular; little silt; poorly sorted; moist; dark yellowish brown (10YR 4/4).		
10	-10	2	7.0-17.0	9.4				(10.0'-14.0') CLAY, some silt, low plasticity, slow dilatancy; little small pebbles, subangular to subround; dry; medium stiff; very dark gray (10YR 3/1).		0.0-18.0' bgs. (Bentonite Grout)
								(14.0'-20.0') CLAY, high plasticity, no dilatancy; trace sand; little small pebbles, subangular to subround; moist; very soft; dark gray (10YR 4/1).		3.0' ags.-22.0' bgs. (2.0" PVC Well Casing)
15	-15									


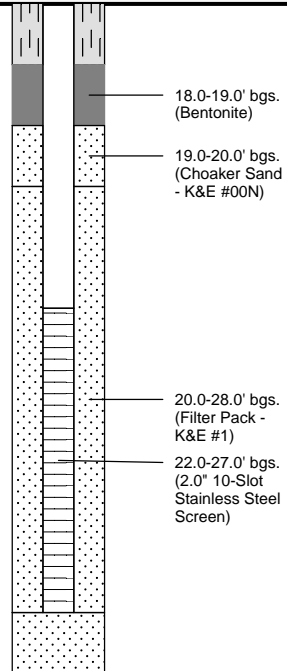
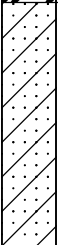
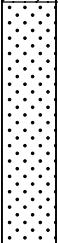
Remarks: bgs = below ground surface
Groundwater encountered from 20.0'-28.0' bgs.
No odor or staining observed.



Date Start: 8/13/2014
Date Finish: 8/13/2014
Drilling Company: Cascade
Driller's Name: S.Parks/T.Michael/R.Adkison
Drilling Method: Continuous
Sampling Method: 10', 5" core barrel
Rig Type: Sonic
Water Level Start (ft. bgs.): 24.0
Water Level Finish (ft. btoc.): 14.63

Northing:
Easting:
Casing Elevation: NA
Borehole Depth (ft. bgs.): 28.0
Surface Elevation:
Descriptions By: A.Richmond

Well/Boring ID: MW-14-58
Client: RACER
Location: RACER Lansing Plant 2
Weather Conditions: Sunny 75 F

DEPTH (feet bgs.)	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Water Level (ft. bgs.)	Well/Boring Construction
20	-20	3	17.0-25.0	8.0	0.0					
					0.0			(20.0'-24.0') CLAY, medium plasticity; and SAND, medium; trace granules, subangular; wet; dark gray (10YR 4/1).		
					0.0			(24.0'-28.0') SAND, medium; trace granules, subangular; trace silt; well sorted; wet; dark grayish brown (10YR 4/2).		
25	-25	4	25.0-28.0	3.0	0.0					
30	-30							End of boring at 28.0' bgs.		
35	-35									

Remarks: bgs = below ground surface
 Groundwater encountered from 20.0'-28.0' bgs.
 No odor or staining observed.



Soil Boring Log

Project Name: RACER Lansing Date Started: 10/27/2021 Logger: A. Westhuis
 Project Number: 30042872 Date Completed: 10/27/2021 Editor: C. Cisco
 Project Location: Lansing, MI Weather Conditions: 50° F, Cloudy

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1					0.3	(0.0-1.0') CONCRETE.		(0.0-0.5') Concrete Well Pad	
2			84		0.2	(1.0-6.0') SAND, medium, subrounded; little silt; trace granules, subrounded; well sorted; moist; dark yellowish brown (10YR 4/4).		(0.0-27.0') 6.0" dia. drilled hole	
3					0.0				
4					0.0				
5					0.0				
6					0.0				
7					0.0	(6.0-7.0') CLAY, medium plasticity, slow dilatancy; little silt; trace to little sand, fine to medium, subrounded; moist to wet; stiff; very dark gray (10YR 3/1).			
8					0.0	(7.0-9.0') SAND, medium, subrounded; little silt; trace granules, subrounded; trace pebbles, small, subrounded; poorly sorted; moist; dark yellowish brown (10YR 4/4).		(0.5-18.0') Filter Pack Sand	
9					0.0				
10					0.0	(9.0-14.0') CLAY, low plasticity, slow to no dilatancy; some silt; trace sand, very fine to fine, subrounded; trace granules, subrounded; trace pebbles, small to large, subrounded; dry to moist; medium stiff to stiff; very dark gray (10YR 3/1).			
11					0.0				
12			120		0.0			(0.0-22.0') 2.0" dia. PVC casing	
13					0.0				
14					0.0				
15					0.0	(14.0-20.0') CLAY, medium to high plasticity, no dilatancy; trace sand, very fine; trace granules, subrounded; trace pebbles, small to medium, subrounded; moist; soft; dark gray (10YR 4/1).			
16					0.0				
17					0.0				
18					0.0				
19					0.0			(18.0-19.0') Bentonite Pellets	
20					0.0			(19.0-20.0') Choker Sand	

Drilling Co.: Cascade Sampling Method: 10.0' Core Barrel
 Driller: Chris Barden Sampling Interval: Continuous
 Drilling Method: Sonic Drilling Water Level Start (ft. bgs.): NA
 Drilling Fluid: None Water Level Finish (ft. bto.): NA
 Remarks: ' / ft = feet. bgs = below ground surface. Converted to Well: Yes No
 Surface Elev.: _____
 North Coor.: _____
 East Coor.: _____

SOIL BORING LOG - 2013 \ARCADIS\US\COM\OFFICE\DATA\ANALYSIS\BORING LOGS\RACER LANSING MASTER.DAT\BASE_121021_NEW ONLY.GPJ ARCADIS_2013.GDT 12/20/21

Soil Boring Log

Project Name: RACER Lansing Date Started: 10/27/2021 Logger: A. Westhuis
 Project Number: 30042872 Date Completed: 10/27/2021 Editor: C. Cisco
 Project Location: Lansing, MI Weather Conditions: 50° F, Cloudy

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
21	X		120		0.0		(20.0-24.0') CLAY, medium to low plasticity, no dilatancy; some sand, fine, subrounded; trace granules, subrounded; trace pebbles, small to large, subrounded; moist; stiff; dark gray (10YR 4/1).	(20.0-27.0') Filter Pack Sand	
22					0.0				
23					0.0				
24					0.0				
25					0.0		(24.0-27.0') SAND, fine to medium, subrounded; trace to little silt; well sorted; wet; dark grayish brown (10YR 4/2).	(22.0-27.0') 2.0" dia. Stainless-Steel 0.010-Slot Screen	
26					0.0				
27					0.0				
28					0.0				
29						End of boring at 27.0' bgs.			
30									
31									
32									
33									
34									
35									
36									
37									
38									
39									
40									
41									

Remarks:

SOIL BORING LOG: 2013 \ARCADIS-US-COM\OFFICE\DATA\NOV\COMMON\1\RACER\LANSING\WORKING DATA\ANALYSIS\BORING LOGS\RACER\LANSING MASTER.DAT\DATABASE_121021_NEW ONLY.GPJ ARCADIS_2013.GDT 12/20/21

Soil Boring Log

Project Name: RACER Lansing Date Started: 03/23/2022 Logger: A. Westhuis
 Project Number: 30042872 Date Completed: 03/23/2022 Editor: C. Cisco
 Project Location: Lansing, MI Weather Conditions: 25° F, Cloudy

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1					0.4	SP	(0.0-3.0') SAND, very fine to fine, subrounded; little silt, nonplastic, no dilatancy; little clay; trace granules, subrounded; trace pebbles, small, subrounded; well sorted; dry to moist; loose; yellowish brown (10YR 5/4).	Pad with Stick-Up Casing (0.5-1.5') Filter Pack Sand	
2				0.3					
3			60	0.2					
4					0.1	CH	(3.0-8.5') CLAY, high plasticity, no dilatancy; little silt; little sand, very fine to fine, subrounded; trace granules, subrounded; trace pebbles, small to medium, subrounded; dry to moist; medium stiff; brown (10YR 4/3) to dark gray (10YR 4/1).	(0.5-25.0') 2.0" dia. SCH-40 PVC casing	
5				0.2					
6					0.0	SC	(8.5-9.0') SAND, very fine to coarse, subangular to subrounded; little silt; trace granules, subangular to subrounded; trace pebbles, small to medium, subangular to subrounded; poorly sorted; moist; loose; grayish brown (10YR 5/2).	(1.5-22.0') Bentonite Slurry (0.0-30.0') 8.0" dia. drilled hole	
7				0.0					
8			43	0.0					
9					0.0	ML	(9.0-11.5') CLAY, low plasticity, no dilatancy; little silt; little sand, very fine to medium, subrounded; trace pebbles, small, subrounded; dry to moist; stiff; dark gray (10YR 4/1). Note: Organic-rich layer present from 9.5-10.5' bgs.		
10				0.0					
11					0.0	CH	(11.5-15.0') CLAY, high plasticity, no dilatancy; little silt; trace sand, very fine; moist; soft; gray (10YR 5/1).		
12				0.0					
13			55	0.0					
14					0.0	ML	(15.0-22.5') CLAY, medium plasticity, no dilatancy; little silt; trace sand, very fine to fine, subrounded; trace pebbles, small to medium, subrounded; trace granules, subrounded; dry to moist; stiff; grayish brown (10YR 5/2). Note: Sand seam, small, very fine, wet present at 16.0' bgs.		
15				0.0					
16				0.0					
17			35	0.0					
18					0.0				
19					0.0				
20					0.0				

Drilling Co.: Fibertec Environmental Services Sampling Method: 5.0' Macro Core
 Driller: Nick Wiseman Sampling Interval: Continuous
 Drilling Method: Direct Push Water Level Start (ft. bgs.): NA
 Drilling Fluid: None Water Level Finish (ft. btoc.): NA
 Remarks: ' / ft = feet. bgs = below ground surface. Step-out location west of MW-14-58R. Converted to Well: Yes No
 Surface Elev.: NA
 North Coord.: _____
 East Coord.: _____

SOIL BORING LOG: 2013 \ARCADIS\US\COMMON\WORKING DATA\ANALYSIS\BORING LOGS\RACER LANSING MASTER.DAT\BASE_042722_NEW ONLY.GPJ ARCADIS_2013.GDT 5/17/22

Soil Boring Log

Project Name: RACER Lansing Date Started: 03/23/2022 Logger: A. Westhuis
 Project Number: 30042872 Date Completed: 03/23/2022 Editor: C. Cisco
 Project Location: Lansing, MI Weather Conditions: 25° F, Cloudy

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
21	X		34		0.0		(15.0-22.5') CLAY, medium plasticity, no dilatancy; little silt; trace sand, very fine to fine, subrounded; trace pebbles, small to medium, subrounded; trace granules, subrounded; dry to moist; stiff; grayish brown (10YR 5/2).	(1.5-22.0') Bentonite Slurry	
22					0.0				
23					0.0		(22.5-29.5') SAND, very fine to coarse, subangular to subrounded; little silt; trace granules, subangular to subrounded; trace pebbles, small to medium, subangular to subrounded; poorly sorted; wet; loose; pale brown (10YR 6/3).	(22.0-23.0') Bentonite Pellets	
24					0.0				
25					0.0				
26					X			SB-A4-MY55_25.5-29.5_03232022 35 @ 13:15	
27	0.0								
28	0.0								
29	0.0								
30	0.0								
31									
32									
33									
34									
35									
36									
37									
38									
39									
40									
41									

Remarks:

SOIL BORING LOG: 2013 \ARCADIS\US\COM\OFFICE\DATA\NOV\MI\COMMON\BACER\LANSING\WORKING DATA\ANALYSIS\BORING LOGS\RACER\LANSING MASTER.DAT\BASE_042722_NEW ONLY.GPJ ARCADIS_2013.GDT 5/17/22

Soil Boring Log

Project Name: RACER Lansing Date Started: 09/07/2022 Logger: A. Westhuis
 Project Number: 30112892 Date Completed: 09/07/2022 Editor: C. Cisco
 Project Location: Lansing, MI Weather Conditions: 78° F, Cloudy

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1					0.0		(0.0-1.5') GRASS/TOPSOIL.	(0.0-0.5') Concrete Well Pad with Stick-Up Casing (0.5-1.5') Filter Pack Sand	
2			60		0.0		(1.5-11.0') CLAY, low plasticity, no dilatancy; little silt; trace sand, fine to medium, subrounded; trace pebbles, small to medium, subrounded; trace granules, subrounded; dry; very stiff; dark yellowish brown (10YR 3/4).		
3				0.0					
4				0.0					
5				0.0					
6					0.0		(11.0-21.0') CLAY, high plasticity, no dilatancy; little silt; trace sand, fine to medium, subrounded; trace pebbles, small to medium, subrounded; trace granules, subrounded; dry to moist; medium stiff; gray (10YR 5/1).	(0.5-25.5') 2.0" dia. SCH-40 PVC casing (1.5-23.5') Bentonite Slurry	
7			60		0.0				
8				0.0					
9				0.0					
10				0.0					
11					0.0		(11.0-21.0') CLAY, high plasticity, no dilatancy; little silt; trace sand, fine to medium, subrounded; trace pebbles, small to medium, subrounded; trace granules, subrounded; dry to moist; medium stiff; gray (10YR 5/1).		
12			40		0.0				
13				0.0					
14				0.0					
15				0.0					
16				0.0					
17				0.0					
18			30		0.0				
19				0.0					
20				0.0					

Drilling Co.: Fibertec Environmental Services Sampling Method: 5.0' Macro Core
 Driller: Nick Wiseman Sampling Interval: Continuous
 Drilling Method: Direct Push Water Level Start (ft. bgs.): NA
 Drilling Fluid: None Water Level Finish (ft. btoc.): NA
 Remarks: ' / ft = feet. bgs = below ground surface. Stick-up well casing approx. 3' tall. Converted to Well: Yes No
 Surface Elev.: NA
 North Coor.: _____
 East Coor.: _____

SOIL BORING LOG - 2013 VARCADIS-US-COM-OFFICE-DATA-ANALYSIS-BORING-LOGS-RACER-LANSING-MASTER-DATABASE_082522-NEW LOGS ONLY.GPJ - ARCADIS - 2013.GDT - 10/10/22

Soil Boring Log

Project Name: RACER Lansing Date Started: 09/07/2022 Logger: A. Westhuis
 Project Number: 30112892 Date Completed: 09/07/2022 Editor: C. Cisco
 Project Location: Lansing, MI Weather Conditions: 78° F, Cloudy

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
21					0.0			(1.5-23.5') Bentonite Slurry	
22			32	0.0		(21.0-25.0') CLAY, medium plasticity, no dilatancy; little silt; trace sand, fine to medium, subrounded; trace pebbles, small to medium, subrounded; trace granules, subrounded; dry to moist; stiff; grayish brown (10YR 5/2).			
23				0.0					
24				0.0					
25				0.0					
26					0.0		(25.0-27.0') SAND, very fine to fine, subrounded; little silt; well sorted; wet; grayish brown (10YR 5/2).	(23.5-30.5') Filter Pack Sand	
27				0.0					
28			30	0.0		(27.0-28.0') CLAY, low plasticity, no dilatancy; little silt; little sand, fine to medium, subrounded; trace pebbles, small to medium, subrounded; trace granules, subrounded; moist to wet; stiff; grayish brown (10YR 5/2).			
29				0.0		(28.0-30.5') SAND, very fine to medium, subrounded; little silt; poorly sorted; wet; loose; grayish brown (10YR 5/2).			
30					0.0			(25.5-30.5') 2.0" dia. Stainless-Steel 0.010-Slot Screen	
31				0.0		(30.5-35.0') CLAY, high plasticity, no dilatancy; little silt; trace sand, fine to medium, subrounded; trace pebbles, small to medium, subrounded; trace granules, subrounded; dry to moist; medium stiff; gray (10YR 5/1).			
32				0.0					
33			30	0.0					
34				0.0					
35					0.0			(30.5-35.0') Backfilled with bentonite	
36						End of boring at 35.0' bgs.			
37									
38									
39									
40									
41									

Remarks:

SOIL BORING LOG: 2013 \\ARCADIS-US-COM\OFFICE\DATA\NOV\MI\COMMON\BACER\LANSING\WORKING DATA\ANALYSIS\BORING LOGS\RACER\LANSING MASTER.DAT\BASE_082522_NEW LOGS ONLY.GPJ - ARCADIS - 2013.GDT - 10/10/22

Soil Boring Log

Project Name: RACER Lansing Date Started: 09/07/2022 Logger: A. Westhuis
 Project Number: 30112892 Date Completed: 09/07/2022 Editor: C. Cisco
 Project Location: Lansing, MI Weather Conditions: 78° F, Cloudy

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1					0.0	(0.0-0.7') CONCRETE.		(0.0-0.5') Concrete Well Pad with Stick-Up Casing (0.5-1.0') Filter Pack Sand	
2			60		0.0	(0.7-13.0') CLAY, low plasticity, no dilatancy; little silt; trace sand, fine to medium, subrounded; trace pebbles, small to medium, subrounded; trace granules, subrounded; dry; very stiff; dark yellowish brown (10YR 3/4).			
3					0.0				
4					0.0				
5					0.0				
6					0.0				
7			48		0.0				
8					0.0				
9					0.0				
10					0.0			(0.5-23.0') 2.0" dia. SCH-40 PVC casing (1.5-21.0') Bentonite Slurry	
11					0.0				
12					0.0				
13			48		0.0				
14					0.0	(13.0-20.5') CLAY, medium to high plasticity, no dilatancy; little silt; trace sand, fine to medium, subrounded; trace pebbles, small to medium, subrounded; trace granules, subrounded; dry to moist; medium stiff; gray (10YR 5/1). Note: Small, wet, very fine sand lens present at 14.0' bgs and 14.5' bgs.			
15					0.0				
16					0.0				
17					0.0				
18			42		0.0				
19					0.0				
20					0.0				

Drilling Co.: Fibertec Environmental Services Sampling Method: 5.0' Macro Core
 Driller: Nick Wiseman Sampling Interval: Continuous
 Drilling Method: Direct Push Water Level Start (ft. bgs.): NA
 Drilling Fluid: None Water Level Finish (ft. btoc.): NA
 Remarks: ' / ft = feet. bgs = below ground surface. Stick-up well casing approx. 3' tall. Converted to Well: Yes No
 Surface Elev.: NA
 North Coord.: _____
 East Coord.: _____

SOIL BORING LOG - 2013 VARCADIS-US-COM-OFFICE-DATA-ANALYSIS-BORING-LOGS-RACER-LANSING-MASTER-DATABASE_101022.GPJ ARCADIS 2013 GDT 12/2/22

Soil Boring Log

Project Name: RACER Lansing Date Started: 09/07/2022 Logger: A. Westhuis
 Project Number: 30112892 Date Completed: 09/07/2022 Editor: C. Cisco
 Project Location: Lansing, MI Weather Conditions: 78° F, Cloudy

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
21					0.0		(20.5-21.5') SAND, very fine to fine, subrounded; little silt; well sorted; wet; grayish brown (10YR 5/2).	(1.5-21.0') Bentonite Slurry	
22			42		0.0		(21.5-22.5') CLAY, low plasticity, no dilatancy; little silt; little sand, fine to medium, subrounded; trace pebbles, small to medium, subrounded; trace granules, subrounded; moist to wet; stiff; grayish brown (10YR 5/2).	(21.0-29.0') Filter Pack Sand	
23					0.0		(22.5-28.0') SAND, very fine to fine, subrounded; little silt; well sorted; wet; grayish brown (10YR 5/2).		
24					0.0				
25					0.0			(23.0-28.0') 2.0" dia. Stainless-Steel 0.010-Slot Screen	
26					0.0				
27			40		0.0				
28					0.0		(28.0-31.0') CLAY, high plasticity, no dilatancy; little silt; trace sand, fine to medium, subrounded; trace pebbles, small to medium, subrounded; trace granules, subrounded; dry to moist; medium stiff; gray (10YR 5/1).		
29					0.0				
30					0.0				
31					0.0				
32			40		0.0		(31.0-33.0') SAND, very fine to fine, subrounded; little silt; well sorted; wet; dry; light (10YR 7/2).	(29.0-35.0') Backfilled with bentonite	
33					0.0				
34					0.0		(33.0-35.0') CLAY, nnplastic to low plasticity, no dilatancy; little silt; trace sand, fine to medium, subrounded; trace pebbles, small to medium, subrounded; trace granules, subrounded; dry; very stiff; gray (10YR 5/1).		
35					0.0		End of boring at 35.0' bgs.		
36									
37									
38									
39									
40									
41									

Remarks:

SOIL BORING LOG: 2013 \\ARCADIS\US\COM\OFFICE\DATA\NOV\MI\COMMON\BORING\LOGS\RACER LANSING\MW-22-156\LOG\MW-22-156-01.DAT

Soil Boring Log

Project Name: RACER Lansing Date Started: 09/08/2022 Logger: A. Westhuis
 Project Number: 30112892 Date Completed: 09/08/2022 Editor: C. Cisco
 Project Location: Lansing, MI Weather Conditions: 78° F, Cloudy

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1					0.0	(0.0-0.4') ASPHALT.		(0.0-0.5') Concrete Well Pad with Flushmount Casing (0.5-2.0') Filter Pack Sand	
2			60		0.0	(0.4-2.0') SAND, very fine to coarse, subrounded; little silt; trace pebbles, small to medium, subrounded; trace granules, subrounded; poorly sorted; dry; dark yellowish brown (10YR 3/4). Note: Fill material.			
3			60		0.0	(2.0-7.5') CLAY, low to medium plasticity, no dilatancy; little silt; trace sand, fine to medium, subrounded; trace pebbles, small to medium, subrounded; trace granules, subrounded; dry to moist; medium stiff; dark grayish brown (10YR 4/2).		(0.5-24.0') 2.0" dia. SCH-40 PVC casing	
4					0.0				
5					0.0				
6			60		0.0	(7.5-16.0') CLAY, high plasticity, no dilatancy; little silt; trace sand, fine to medium, subrounded; moist; medium stiff; gray (10YR 5/1).		(2.0-22.0') Bentonite Slurry	
7					0.0				
8					0.0				
9					0.0				
10					0.0				
11			30		0.0	(16.0-16.8') SAND, very fine to fine, subrounded; little silt; well sorted; wet; grayish brown (10YR 5/2).			
12					0.0	(16.8-17.5') CLAY, high plasticity, no dilatancy; little silt; trace sand, fine to medium, subrounded; trace pebbles, small to medium, subrounded; trace granules, subrounded; dry to moist; medium stiff; gray (10YR 5/1).			
13					0.0	(17.5-18.3') SAND, very fine to fine, subrounded; little silt; well sorted; wet; light gray (10YR 7/2).			
14					0.0	(18.3-18.5') CLAY, low plasticity, no dilatancy; little silt; trace sand, fine to medium, subrounded; trace pebbles, small to medium, subrounded; trace granules, subrounded; moist; stiff; gray (10YR 5/1).			
15					0.0				
16					0.0				
17			36		0.0				
18					0.0				
19					0.0				
20					0.0				

Drilling Co.: Fibertec Environmental Services Sampling Method: 5.0' Macro Core
 Driller: Nick Wiseman Sampling Interval: Continuous
 Drilling Method: Direct Push Water Level Start (ft. bgs.): NA
 Drilling Fluid: None Water Level Finish (ft. btoc.): NA
 Remarks: ' / ft = feet. bgs = below ground surface. Flushmount well. Converted to Well: Yes No
 Surface Elev.: NA
 North Coord.: _____
 East Coord.: _____

SOIL BORING LOG - 2013 VARCADIS-US-COM-OFFICE-DATA\WORKING DATA\ANALYSIS\BORING LOGS\RACER LANSING MASTER.DAT\BASE_082522_NEW LOGS ONLY.GPJ - ARCADIS - 2013.GDT - 10/10/22

Soil Boring Log

Project Name: RACER Lansing Date Started: 09/08/2022 Logger: A. Westhuis
 Project Number: 30112892 Date Completed: 09/08/2022 Editor: C. Cisco
 Project Location: Lansing, MI Weather Conditions: 78° F, Cloudy

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
21					0.0		(18.5-19.0') SAND, very fine to fine, subrounded; little silt; well sorted; wet; light gray (10YR 7/2).	(2.0-22.0') Bentonite Slurry	
22				0.0		(19.0-22.0') CLAY, nonplastic to low plasticity, no dilatancy; little silt; little sand, fine to medium, subrounded; trace pebbles, small to medium, subrounded; trace granules, subrounded; moist; stiff; gray (10YR 5/1).			
23			36		0.0		(22.0-24.0') SAND, very fine to medium, subrounded; little silt; trace granules, subrounded; trace pebbles, small, subrounded; poorly sorted; wet; grayish brown (10YR 5/2).	(22.0-30.0') Filter Pack Sand	
24				0.0					
25					0.0		(24.0-27.0') CLAY, nonplastic to low plasticity, no dilatancy; little silt; little sand, fine to medium, subrounded; trace pebbles, small to medium, subrounded; trace granules, subrounded; moist; stiff; gray (10YR 5/1).	(24.0-29.0') 2.0" dia. Stainless-Steel 0.010-Slot Screen	
26				0.0					
27			36		0.0				
28					0.0		(27.0-29.0') SAND, fine to medium, subrounded; little silt; trace granules, subrounded; well sorted; wet; brown (10YR 5/3).	(30.0-35.0') Backfilled with bentonite	
29				0.0					
30				0.0		(29.0-33.0') CLAY, medium plasticity, no dilatancy; little silt; little sand, fine to medium, subrounded; trace pebbles, small to medium, subrounded; trace granules, subrounded; moist; stiff; grayish brown (10YR 5/2).			
31					0.0			(30.0-35.0') Backfilled with bentonite	
32				0.0					
33			36		0.0				
34					0.0		(33.0-35.0') SAND, very fine to fine, subrounded; little silt; well sorted; dry; light gray (10YR 7/1).	End of boring at 35.0' bgs.	
35				0.0					
36									
37									
38									
39									
40									
41									

Remarks:

SOIL BORING LOG: 2013 \ARCADIS\US\COM\OFFICE\DATA\NOV\11\MICOMMON\RACER\LANSING\WORKING DATA\ANALYSIS\BORING LOGS\RACER\LANSING MASTER.DAT\BASE_082522_NEW LOGS ONLY.GPJ | ARCADIS: 2013.GDT | 10/10/2022

Soil Boring Log

Project Name: RACER Lansing Date Started: 03/23/2022 Logger: A. Westhuis
 Project Number: 30042872 Date Completed: 03/23/2022 Editor: C. Cisco
 Project Location: Lansing, MI Weather Conditions: 25° F, Cloudy

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1					0.0		(0.0-1.0') CONCRETE.		
2			60		0.0		(1.0-6.5') SAND, very fine to fine, subrounded; trace silt, nonplastic, no dilatancy; well sorted; moist to wet; loose; yellowish brown (10YR 5/4).		
3					0.0				
4					0.0				
5					0.1				
6					0.0				
7			47		0.0		(6.5-12.5') CLAY, low plasticity, no dilatancy; some sand, very fine to fine, subrounded; little silt, nonplastic, no dilatancy; trace pebbles, small, subrounded; trace granules, subrounded; dry to moist; stiff; dark grayish brown (10YR 4/2).		
8					0.0				
9					0.0				
10					0.0			(0.0-35.0') Backfilled with bentonite	
11					0.0				
12					0.0				
13			44		0.0		(12.5-19.0') CLAY, high plasticity, no dilatancy; little silt; little sand, very fine; trace pebbles, small, subrounded; trace granules, subrounded; moist; medium stiff; gray (10YR 5/1).		
14					0.0				
15					0.0				
16					0.0				
17					0.0				
18			39		0.0				
19					0.0				
20					0.0				

Drilling Co.: Fibertec Environmental Services Sampling Method: 5.0' Macro Core
 Driller: Nick Wiseman Sampling Interval: Continuous
 Drilling Method: Direct Push Water Level Start (ft. bgs.): NA
 Drilling Fluid: None Water Level Finish (ft. btoc.): NA
 Remarks: ' / ft = feet. bgs = below ground surface. Step-out location north of MW-14-58R. VAP samples collected from 21-25' bgs and 29.5-33.5' bgs. Converted to Well: Yes No
 Surface Elev.: NA
 North Coor.: _____
 East Coor.: _____

SOIL BORING LOG - 2013 \ARCADIS\US\COM\OFFICE\DATA\ANALYSIS\BORING LOGS\RACER LANSING MASTER.DAT\BASE_042722_NEW ONLY.GPJ ARCADIS_2013.GDT 5/17/22

Soil Boring Log

Project Name: RACER Lansing Date Started: 03/23/2022 Logger: A. Westhuis
 Project Number: 30042872 Date Completed: 03/23/2022 Editor: C. Cisco
 Project Location: Lansing, MI Weather Conditions: 25° F, Cloudy

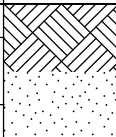


Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
21	X		35	SB-A4-MV60_21-25 _03232022 @ 11:00	0.0		(19.0-30.0') SILT, nonplastic, slow dilatancy; some sand, very fine to fine, subrounded; little clay, nonplastic, slow dilatancy; trace pebbles, small to medium, subrounded; trace granules, subrounded; poorly sorted; wet; medium stiff; grayish brown (10YR 5/2).		
22					0.0				
23					0.0				
24					0.0				
25					0.0				
26	X		37		0.0			(0.0-35.0') Backfilled with bentonite	
27					0.0				
28					0.0				
29					0.0				
30					0.0				
31	X		33	SB-A4-MV60_29.5-33.5_03232022 @ 10:20	0.0		(30.0-33.5') SAND, fine to medium, subrounded; little silt, nonplastic, rapid dilatancy; well sorted; wet; loose; brown (10YR 5/3).		
32					0.0				
33					0.0				
34					0.0				
35					0.0				
36	X				0.0		(33.5-35.0') CLAY, medium plasticity, no dilatancy; little silt, low plasticity, no dilatancy; little sand, very fine to fine, subrounded; trace pebbles, small to medium, subrounded; trace granules, subrounded; dry to moist; stiff; grayish brown (10YR 5/2).		
37					0.0				
38					0.0				
39					0.0				
40					0.0				
41					0.0				
End of boring at 35.0' bgs.									

Remarks:

SOIL BORING LOG: 2013 \ARCADIS\US\COM\OFFICE\DATA\NOV\MI\COMMON\1\RACER\LANSING\WORKING\DATA\ANALYSIS\BORING LOGS\RACER\LANSING MASTER.DAT\BASE_042722_NEW ONLY.GPJ ARCADIS_2013.GDT 5/17/22

Soil Boring Log

Project Name: RACER Lansing Date Started: 09/07/2022 Logger: A. Westhuis
 Project Number: 30112892 Date Completed: 09/07/2022 Editor: C. Cisco
 Project Location: Lansing, MI Weather Conditions: 78° F, Cloudy

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1				SB-A4-MX60_1-3 _090722 @ 10:00	0.0	(0.0-0.7') CONCRETE.	(0.0-1.0') Concrete (1.0-2.0') Filter Pack Sand		
2			0.0		(0.7-6.0') SAND, medium, subrounded; little silt; trace granules, subrounded; well sorted; moist; dark yellowish brown (10YR 4/4).				
3			0.0						
4			0.0						
5			0.0						
6			48	SB-A4-MX60_4-6 _090722 @ 10:05	0.0	(6.0-8.5') CLAY, medium plasticity, no dilatancy; little silt; trace sand, fine to medium, subrounded; trace pebbles, small to medium, subrounded; trace granules, subrounded; moist; stiff; very dark gray (10YR 3/1).	(2.0-15.0') Bentonite Pellets		
7				0.0	SB-A4-MX60_6-8 _090722 @ 10:09				
8				0.0					
9				0.0	SB-A4-MX60_8.5-10 _090722 @ 10:14				
10			44	SB-A4-MX60_10-12 _090722 @ 10:19	0.0	(10.0-15.0') CLAY, medium plasticity, no dilatancy; little silt; trace sand, fine to medium, subrounded; trace pebbles, small to medium, subrounded; trace granules, subrounded; moist; stiff; very dark gray (10YR 3/1).			
11				0.0					
12				0.0					
13				0.0					
14				0.0					
15					0.0	End of boring at 15.0' bgs.			
16									
17									
18									
19									
20									

Drilling Co.: Fibertec Environmental Services Sampling Method: 5.0' Macro Core
 Driller: Nick Wiseman Sampling Interval: Continuous
 Drilling Method: Direct Push Water Level Start (ft. bgs.): NA
 Drilling Fluid: None Water Level Finish (ft. btoc.): NA
 Remarks: ' / ft = feet. bgs = below ground surface. Converted to Well: Yes No
 Surface Elev.: NA
 North Coord.: _____
 East Coord.: _____

SOIL BORING LOG - 2013 \ARCADIS\US\COM\OFFICE\DATA\ANALYSIS\BORING LOGS\RACER LANSING MASTER.DAT\BASE_082522_NEW LOGS ONLY.GPJ | ARCADIS - 2013.GDT - 10/10/2022

Soil Boring Log

Project Name: RACER Lansing Date Started: 03/22/2022 Logger: A. Westhuis
 Project Number: 30042872 Date Completed: 03/22/2022 Editor: C. Cisco
 Project Location: Lansing, MI Weather Conditions: 25° F, Cloudy

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1					0.0		(0.0-1.0') CONCRETE.		
2			60		0.1		(1.0-5.0') SAND, very fine to fine, subrounded; trace silt, nonplastic, no dilatancy; well sorted; moist to wet; loose; yellowish brown (10YR 5/4).		
3				0.1					
4				0.1					
5				0.2					
6			46		0.0		(5.0-15.0') CLAY, low plasticity, no dilatancy; some sand, very fine to fine, subrounded; little silt, nonplastic, no dilatancy; trace pebbles, small, subrounded; trace granules, subrounded; dry to moist; stiff; dark grayish brown (10YR 4/2).	(0.0-35.0') Backfilled with bentonite	
7				0.0					
8				0.0					
9				0.0					
10				0.0					
11			9		0.0				
12					0.0				
13					0.0				
14					0.0				
15					0.0				
16			34		0.0		(15.0-21.0') CLAY, high plasticity, no dilatancy; little silt; little sand, very fine; trace pebbles, small, subrounded; trace granules, subrounded; moist; medium stiff; gray (10YR 5/1).		
17					0.0				
18					0.0				
19					0.0				
20					0.0				

Drilling Co.: Fibertec Environmental Services Sampling Method: 5.0' Macro Core
 Driller: Nick Wiseman Sampling Interval: Continuous
 Drilling Method: Direct Push Water Level Start (ft. bgs.): 4.0
 Drilling Fluid: None Water Level Finish (ft. btoc.): NA
 Remarks: ' / ft = feet. bgs = below ground surface. Step-out location east of MW-14-58R. VAP samples collected from 18-22' bgs and 26-30' bgs. Converted to Well: Yes No
 Surface Elev.: NA
 North Coor.: _____
 East Coor.: _____

SOIL BORING LOG: 2013 \ARCADIS\US\COMMON\PROJECTS\LANSING\WORKING DATA\ANALYSIS\BORING LOGS\RACER LANSING MASTER.DAT\BASE_042722_NEW ONLY.GPJ ARCADIS_2013.GDT 5/17/22

Soil Boring Log

Project Name: RACER Lansing Date Started: 03/22/2022 Logger: A. Westhuis
 Project Number: 30042872 Date Completed: 03/22/2022 Editor: C. Cisco
 Project Location: Lansing, MI Weather Conditions: 25° F, Cloudy

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
21				SB-A4-MY63_18-22_03222022 @ 13:25	0.0			(0.0-35.0') Backfilled with bentonite	
22			47		0.0		(21.0-22.0') SILT, nonplastic, slow dilatancy; some sand, very fine to fine, subrounded; little clay, nonplastic, slow dilatancy; well sorted; moist to wet; medium stiff; grayish brown (10YR 5/2).		
23					0.0		(22.0-26.0') CLAY, low plasticity to nonplastic, no dilatancy; little silt; little sand, very fine to fine, subrounded; trace pebbles, small to large, subrounded; trace granules, subrounded; moist; stiff; gray (10YR 5/1).		
24					0.0				
25				0.0					
26				SB-A4-MY63_26-30_03222022 @ 12:55	0.0				
27			42		0.0		(26.0-29.5') SAND, very fine to medium, subrounded; some silt, nonplastic, slow dilatancy; little clay; trace pebbles, small to large, subrounded; trace granules, subrounded; poorly sorted; moist to wet; dense; gray (10YR 5/1).		
28					0.0				
29					0.0				
30					0.0		(29.5-30.0') SAND, very fine to coarse, subangular to subrounded; trace granules, subrounded; trace silt, nonplastic, rapid dilatancy; poorly sorted; wet; loose; grayish brown (10YR 5/2).		
31					0.0		(30.0-35.0') CLAY, high plasticity, no dilatancy; little silt; little sand, very fine; trace pebbles, small, subrounded; trace granules, subrounded; moist; medium stiff; gray (10YR 5/1).		
32					0.0				
33					0.0				
34					0.0				
35					0.0		End of boring at 35.0' bgs.		
36									
37									
38									
39									
40									
41									

Remarks:

SOIL BORING LOG: 2013 \ARCADIS\US\COM\OFFICE\DATA\NOV\MI\COMMON\1\RACER\LANSING\WORKING DATA\ANALYSIS\BORING LOGS\RACER\LANSING MASTER.DAT\BASE_042722_NEW ONLY.GPJ ARCADIS_2013.GDT 5/17/22

Soil Boring Log

Project Name: RACER Lansing Date Started: 03/22/2022 Logger: A. Westhuis
 Project Number: 30042872 Date Completed: 03/22/2022 Editor: C. Cisco
 Project Location: Lansing, MI Weather Conditions: 25° F, Cloudy

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
1					0.0		(0.0-1.0') CONCRETE.		
2			60		0.1		(1.0-6.0') SAND, very fine to fine, subrounded; trace silt, nonplastic, no dilatancy; well sorted; moist to wet; loose; yellowish brown (10YR 5/4).		
3				0.1					
4				0.1					
5				0.1					
6					0.0		(6.0-12.0') CLAY, low plasticity, no dilatancy; some sand, very fine to fine, subrounded; little silt, nonplastic, no dilatancy; trace pebbles, small, subrounded; trace granules, subrounded; dry to moist; stiff; dark grayish brown (10YR 4/2).	(0.0-35.0') Backfilled with bentonite	
7			52	0.8					
8				0.0					
9				0.0					
10					0.0		(12.0-20.0') CLAY, high plasticity, no dilatancy; little silt; little sand, very fine; trace pebbles, small, subrounded; trace granules, subrounded; moist; medium stiff; gray (10YR 5/1).		
11				0.0					
12			36	0.0					
13				0.0					
14					0.0				
15				0.0					
16				0.0					
17				0.0					
18			22	0.0					
19				0.0					
20				0.0					

Drilling Co.: Fibertec Environmental Services Sampling Method: 5.0' Macro Core
 Driller: Nick Wiseman Sampling Interval: Continuous
 Drilling Method: Direct Push Water Level Start (ft. bgs.): NA
 Drilling Fluid: None Water Level Finish (ft. btoc.): NA
 Remarks: ' / ft = feet. bgs = below ground surface. Step-out location south of MW-14-58R. VAP samples collected from 22-26' bgs and 30-34' bgs. Converted to Well: Yes No
 Surface Elev.: NA
 North Coor.: _____
 East Coor.: _____

SOIL BORING LOG: 2013 \ARCADIS\US\COMMON\MONITORING\LOGS\RACER LANSING\MASTER.DAT\BASE_042722_NEW ONLY.GPJ ARCADIS_2013.GDT 5/17/22

Soil Boring Log

Project Name: RACER Lansing

Date Started: 03/22/2022

Logger: A. Westhuis

Project Number: 30042872

Date Completed: 03/22/2022

Editor: C. Cisco

Project Location: Lansing, MI

Weather Conditions: 25° F, Cloudy

Depth (feet)	Sample Interval	Blow Counts	Recovery (in.)	Sample ID	PID (ppm)	USCS Class	Description	Construction Details	Well
21					0.0		(20.0-29.0') SILT, nonplastic, slow dilatancy; some sand, very fine to fine, subrounded; little clay, nonplastic, slow dilatancy; trace pebbles, small to medium, subrounded; trace granules, subrounded; poorly sorted; wet; medium stiff; grayish brown (10YR 5/2).		
22				0.0					
23			30		0.0				
24				SB-A4-NB60_22-26_03222022 @ 16:00	0.0				
25					0.0				
26					0.0		(0.0-35.0') Backfilled with bentonite		
27					0.0				
28			35		0.0				
29					0.0				
30					0.0	(29.0-30.0') CLAY, low plasticity, no dilatancy; little silt, nonplastic, no dilatancy; little sand, very fine to fine, subrounded; trace pebbles, small to large, subrounded; trace granules, subrounded; moist; stiff; gray (10YR 5/1).			
31					0.0		(30.0-34.0') SAND, fine to medium, subrounded; little silt, nonplastic, rapid dilatancy; well sorted; wet; loose; brown (10YR 5/3).		
32					0.0				
33			34	SB-A4-NB60_30-34_03222022 @ 15:15	0.0				
34					0.0				
35					0.0	(34.0-35.0') CLAY, medium plasticity, no dilatancy; little silt, low plasticity, no dilatancy; little sand, very fine to fine, subrounded; trace pebbles, small to medium, subrounded; trace granules, subrounded; dry to moist; stiff; grayish brown (10YR 5/2).			
36							End of boring at 35.0' bgs.		
37									
38									
39									
40									
41									

Remarks:

SOIL BORING LOG: 2013 \ARCADIS\US\COM\OFFICE\DATA\NOV\H\MICOM\MONI\RACER\LANSING\WORKING DATA\ANALYSIS\BORING LOGS\RACER\LANSING MASTER.DAT\BASE_042722_NEW ONLY.GPJ ARCADIS_2013.GDT 5/17/22

Attachment 2

Analytical Reports



Analytical Laboratory Report

Report ID: S32761.01(01)+QC01
Generated on 02/14/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Additional Contacts: Alex Villhauer, Marina Samp, Tiffany Linder, Patrick Curry

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): S32761.01
Project: 30112892.47A / RACER Lansing
Collected Date(s): 02/10/2022
Submitted Date/Time: 02/10/2022 12:00
Sampled by: Unknown
P.O. #: 30112892.47A

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- Report Narrative (Page 2)
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- Glossary of Abbreviations (Page 3)
- Method Summary (Page 4)
- Sample Summary (Page 5)
- QC Report (Pages 7-13)

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



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
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs



Analytical Laboratory Report

Sample Summary (1 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S32761.01	MW-14-58R_021022	Groundwater	02/10/22 11:20



Analytical Laboratory Report

Lab Sample ID: S32761.01

Sample Tag: MW-14-58R_021022

Collected Date/Time: 02/10/2022 11:20

Matrix: Groundwater

COC Reference: 141667

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	6.0	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	02/11/22 15:30	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 02/11/22 14:18, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	520	10		ug/L	10	123-91-1	Y

Y-Elevated reporting limit due to high target concentration



Quality Control Report

Report ID: S32761.01(01)+QC01

Generated on 02/14/2022

Report to

Attention: Kaitlyn Hunt

Arcadis

28550 Cabot Drive

Suite 500

Novi, MI 48377

Report Produced by

Merit Laboratories

2680 East Lansing Drive

East Lansing, MI 48823

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

Phone: O:248-809-4013 C:947-777-5215 FAX:

Report Summary

Lab Sample ID(s): S32761.01

Project: 30112892.47A / RACER Lansing

Submitted Date/Time: 02/10/2022 12:00

Sampled by: Unknown

P.O. #: 30112892.47A

QC Report Sections

Cover Page (Page 7)

Analysis Summary (Page 8)

Prep Batch Summary (Page 9)

Surrogates per QC Sample (Page 10)

Internal Standards per Lab Sample (Page 11)

Internal Standards per QC Sample (Page 12)

Batch QC Results (Page 13)

Report Flag Descriptions

*: QC result is outside of indicated control limits

W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball

Quality Assurance Manager

QC Report - Analysis Summary

Lab Sample ID: S32761.01

Sample Tag: MW-14-58R_021022

Collected Date/Time: 02/10/2022 11:20

Matrix: Groundwater

COC Reference: 141667

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	02/11/22 14:18	220211A9	VS220211W1	Yes	BLK/LCS/LCSD

QC Report - Prep Batch Summary

Organics - Volatiles, Prep Batch ID: VS220211W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S32761.01	1,4-Dioxane	SW8260B - SIM	02/11/22 14:18	220211A9

QC Report - Surrogates per QC Sample

Organics - Volatiles, Prep Batch ID: VS220211W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220211A9.BLKW11A

Run in Batch: 220211A9, Run Date: 02/11/2022 13:37, Prep Date: 02/11/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
No Surrogates				

Laboratory Control Sample (LCS)

Lab Sample ID: 220211A9.LCSW11A

Run in Batch: 220211A9, Run Date: 02/11/2022 11:56, Prep Date: 02/11/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
No Surrogates				

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220211A9.LCSDW11A, Parent Sample ID: 220211A9.LCSW11A

Run in Batch: 220211A9, Run Date: 02/11/2022 12:16, Prep Date: 02/11/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
No Surrogates				

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S32761.01

Sample Tag: MW-14-58R_021022

Collected Date/Time: 02/10/2022 11:20

Matrix: Groundwater

COC Reference: 141667

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220211A9, Run Date: 02/11/2022 14:18, Matrix: WW, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		88.4	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: VS220211W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220211A9.BLKW11A

Run in Batch: 220211A9, Run Date: 02/11/2022 13:37, Prep Date: 02/11/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		88.0	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220211A9.LCSW11A

Run in Batch: 220211A9, Run Date: 02/11/2022 11:56, Prep Date: 02/11/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		102.6	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220211A9.LCSDW11A, Parent Sample ID: 220211A9.LCSW11A

Run in Batch: 220211A9, Run Date: 02/11/2022 12:16, Prep Date: 02/11/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		99.0	50.0	200.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VS220211W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220211A9.BLKW11A

Run in Batch: 220211A9, Run Date: 02/11/2022 13:37, Prep Date: 02/11/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane	*	0.88	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220211A9.LCSW11A

Run in Batch: 220211A9, Run Date: 02/11/2022 11:56, Prep Date: 02/11/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		91.8	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220211A9.LCSDW11A, Parent Sample ID: 220211A9.LCSW11A

Run in Batch: 220211A9, Run Date: 02/11/2022 12:16, Prep Date: 02/11/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		94.7	70.0	130.0	3.1	30.0

Merit Laboratories Login Checklist

Lab Set ID:S32761

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

Project: 30112892.47A / RACER Lansing

Submitted:02/10/2022 12:00 Login User: MMC

Attention: Kaitlyn Hunt

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

Phone: O:248-809-4013 FAX:

Email: Kaitlyn.Hunt@arcadis.com

Selection	Description	Note
Sample Receiving		
01.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Samples are received at 4C +/- 2C Thermometer # IR 6.0
02.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Received on ice/ cooling process begun
03.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples shipped
04.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples left in 24 hr. drop box
05.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Are there custody seals/tape or is the drop box locked
Chain of Custody		
06.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	COC adequately filled out
07.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	COC signed and relinquished to the lab
08.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Sample tag on bottles match COC
09.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Subcontracting needed? Subcontracted to:
Preservation		
10.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Do sample have correct chemical preservation
11.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Completed pH checks on preserved samples? (no VOAs)
12.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Did any samples need to be preserved in the lab?
Bottle Conditions		
13.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	All bottles intact
14.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Appropriate analytical bottles are used
15.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Merit bottles used
16.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Sufficient sample volume received
17.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples require laboratory filtration
18.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Samples submitted within holding time
19.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> 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

Plant 2

INVOICE TO

CONTACT NAME Tiffany Linder
 COMPANY Arcadis
 ADDRESS 28550 Cabot Drive, Suite 500
 CITY Novi STATE MI ZIP CODE 48377
 PHONE NO. 810-225-1928 FAX NO. _____ P.O. NO. _____
 E-MAIL ADDRESS Tiffany.Linder@arcadis.com QUOTE NO. _____

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

PROJECT NO./NAME 30112892.47A / RACER Lansing SAMPLER(S) - PLEASE PRINT/SIGN NAME _____
 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

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

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

MERIT LAB NO. <small>FOR LAB USE ONLY</small>	YEAR		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives								OTHER	Special Instructions
	DATE	TIME				NONE	HI	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER			
32761.01	2/10/22	1120	MW-14-58R_021022	GW	3	3									X

*14-Dioxane
3260 SIMS*

RELINQUISHED BY: Alex Villhauer / Arcadis Sampler DATE 2/10/22 TIME 1200
 RECEIVED BY: Merit Drop Box DATE 2/10/22 TIME 1200
 RELINQUISHED BY: _____ DATE _____ TIME _____
 RECEIVED BY: _____ DATE _____ TIME _____

RELINQUISHED BY: Merit Drop Box DATE 2/10/22 TIME 1200
 RECEIVED BY: M. Ciliberto DATE 2/10/22 TIME 1200
 SEAL NO. SEAL INTACT INITIALS NOTES: TEMP. ON ARRIVAL 6.0
 YES NO
 SEAL NO. SEAL INTACT INITIALS
 YES NO



Analytical Laboratory Report

Report ID: S34187.01(01)
Generated on 03/31/2022

Report to

Attention: Tiffany Linder
Arcadis US, Inc.
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 248-994-2272 FAX:
Email: tiffany.linder@arcadis.com

Additional Contacts: Alex Villhauer, Caitlin Cisco

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): S34187.01-S34187.11
Project: 30075941.04100 / RACER Lansing
Collected Date(s): 03/22/2022 - 03/23/2022
Submitted Date/Time: 03/23/2022 15:45
Sampled by: Austin Westhuis
P.O. #: 30075941.04100

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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 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.

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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
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs



Analytical Laboratory Report

Sample Summary (11 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S34187.01	SB-A4-MY63_26-30	Groundwater	03/22/22 12:55
S34187.02	SB-A4-MY63_18-22	Groundwater	03/22/22 13:25
S34187.03	SB-A4-NB60_30-34	Groundwater	03/22/22 15:15
S34187.04	SB-A4-NB60_22-26	Groundwater	03/22/22 16:00
S34187.05	SB-A4-MV60_29.5-33.5	Groundwater	03/23/22 10:20
S34187.06	SB-A4-MV60_21-25	Groundwater	03/23/22 11:00
S34187.07	SB-A4-MY55_25.5-29.5	Groundwater	03/23/22 13:15
S34187.08	SB-A4-MY55_25.5-29.5 MS	Groundwater	03/23/22 13:15
S34187.09	SB-A4-MY55_25.5-29.5 MSD	Groundwater	03/23/22 13:15
S34187.10	SB-A4-MY55_15-19	Groundwater	03/23/22 14:40
S34187.11	Dup-01	Groundwater	03/23/22 00:01



Analytical Laboratory Report

Lab Sample ID: S34187.01

Sample Tag: SB-A4-MY63_26-30

Collected Date/Time: 03/22/2022 12:55

Matrix: Groundwater

COC Reference: 140688

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.6	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

Method: SW8260B - SIM, Run Date: 03/30/22 18:15, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	100	1		ug/L	1	123-91-1	



Analytical Laboratory Report

Lab Sample ID: S34187.02

Sample Tag: SB-A4-MY63_18-22

Collected Date/Time: 03/22/2022 13:25

Matrix: Groundwater

COC Reference: 140688

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.6	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

Method: SW8260B - SIM, Run Date: 03/30/22 19:57, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	51	1		ug/L	1	123-91-1	



Analytical Laboratory Report

Lab Sample ID: S34187.03

Sample Tag: SB-A4-NB60_30-34

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

Matrix: Groundwater

COC Reference: 140688

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.6	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

Method: SW8260B - SIM, Run Date: 03/30/22 19:36, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	191	1		ug/L	1	123-91-1	



Analytical Laboratory Report

Lab Sample ID: S34187.04

Sample Tag: SB-A4-NB60_22-26

Collected Date/Time: 03/22/2022 16:00

Matrix: Groundwater

COC Reference: 140688

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.6	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

Method: SW8260B - SIM, Run Date: 03/30/22 20:19, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	18	1		ug/L	1	123-91-1	



Analytical Laboratory Report

Lab Sample ID: S34187.05

Sample Tag: SB-A4-MV60_29.5-33.5

Collected Date/Time: 03/23/2022 10:20

Matrix: Groundwater

COC Reference: 140688

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.6	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

Method: SW8260B - SIM, Run Date: 03/31/22 11:32, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	32	1		ug/L	1	123-91-1	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S34187.06

Sample Tag: SB-A4-MV60_21-25

Collected Date/Time: 03/23/2022 11:00

Matrix: Groundwater

COC Reference: 140688

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.6	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

Method: SW8260B - SIM, Run Date: 03/30/22 21:03, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	13	1		ug/L	1	123-91-1	



Analytical Laboratory Report

Lab Sample ID: S34187.07

Sample Tag: SB-A4-MY55_25.5-29.5

Collected Date/Time: 03/23/2022 13:15

Matrix: Groundwater

COC Reference: 140688

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.6	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

Method: SW8260B - SIM, Run Date: 03/30/22 13:32, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	128	1		ug/L	1	123-91-1	



Analytical Laboratory Report

Lab Sample ID: S34187.08

Sample Tag: SB-A4-MY55_25.5-29.5 MS

Collected Date/Time: 03/23/2022 13:15

Matrix: Groundwater

COC Reference: 140688

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.6	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

Method: SW8260B - SIM, Run Date: 03/30/22 12:09, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	192	1		ug/L	1	123-91-1	1

1-Spiked at 50ug/L



Analytical Laboratory Report

Lab Sample ID: S34187.09

Sample Tag: SB-A4-MY55_25.5-29.5 MSD

Collected Date/Time: 03/23/2022 13:15

Matrix: Groundwater

COC Reference: 140688

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.6	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

Method: SW8260B - SIM, Run Date: 03/30/22 12:30, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	172	1		ug/L	1	123-91-1	1

1-Spiked at 50ug/L



Analytical Laboratory Report

Lab Sample ID: S34187.10

Sample Tag: SB-A4-MY55_15-19

Collected Date/Time: 03/23/2022 14:40

Matrix: Groundwater

COC Reference: 140688

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.6	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

Method: SW8260B - SIM, Run Date: 03/30/22 21:25, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	



Analytical Laboratory Report

Lab Sample ID: S34187.11

Sample Tag: Dup-01

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

Matrix: Groundwater

COC Reference: 140688

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	2.6	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

Method: SW8260B - SIM, Run Date: 03/31/22 11:53, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	31	1		ug/L	1	123-91-1	Y

Y-Elevated reporting limit due to high target concentration

Merit Laboratories Login Checklist

Lab Set ID:S34187

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

Project: 30075941.04100 / RACER Lansing

Submitted:03/23/2022 15:45 Login User: PFD

Attention: Tiffany Linder

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

Phone: 248-994-2272 FAX:

Email: tiffany.linder@arcadis.com

Selection	Description	Note
Sample Receiving		
01.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Samples are received at 4C +/- 2C Thermometer # IR 2.6
02.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Received on ice/ cooling process begun
03.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples shipped
04.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples left in 24 hr. drop box
05.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Are there custody seals/tape or is the drop box locked
Chain of Custody		
06.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	COC adequately filled out
07.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	COC signed and relinquished to the lab
08.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Sample tag on bottles match COC
09.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Subcontracting needed? Subcontracted to:
Preservation		
10.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Do sample have correct chemical preservation
11.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Completed pH checks on preserved samples? (no VOAs)
12.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Did any samples need to be preserved in the lab?
Bottle Conditions		
13.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	All bottles intact
14.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Appropriate analytical bottles are used
15.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Merit bottles used
16.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Sufficient sample volume received
17.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples require laboratory filtration
18.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Samples submitted within holding time
19.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> 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 140688

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME Tiffany Linder
 COMPANY Arcadis
 ADDRESS 28550 Cabot Drive, Suite 500
 CITY Novi STATE MI ZIP CODE 48377
 PHONE NO. 810-225-1928 FAX NO. _____ P.O. NO. _____
 E-MAIL ADDRESS Tiffany.Linder@arcadis.com QUOTE NO. _____

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

PROJECT NO./NAME 30075941.04100 / RACER Lansing SAMPLER(S) - PLEASE PRINT/SIGN NAME Austin Westhuis / An W-L
 TURNAROUND TIME REQUIRED 1 DAY 2 DAYS 3 DAYS STANDARD OTHER _____
 DELIVERABLES REQUIRED STD LEVEL II LEVEL III LEVEL IV EDD OTHER _____

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

Certifications	<input type="checkbox"/> OHIO VAP <input type="checkbox"/> Drinking Water
	<input type="checkbox"/> DoD <input type="checkbox"/> NPDES
Project Locations	<input type="checkbox"/> Detroit <input type="checkbox"/> New York
	<input checked="" type="checkbox"/> Other <u>MI</u>
Special Instructions	

1,4-Dioxane 8260-8771

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

MERIT LAB NO. FOR LAB USE ONLY	YEAR		SAMPLE TAG, IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives												
	DATE	TIME				NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER						
3418701	3/22/22	1255	SB-A4-MX63-26-30	GW	3	3												X
.02	3/22/22	1325	SB-A4-MY63-18-22	GW	3	3												X
.03	3/22/22	1515	SB-A4-NB60-30-34	GW	3	3												X
.04	3/22/22	1600	SB-A4-NB60-22-26	GW	3	3												X
.05	3/23/22	1020	SB-A4-MV60-29.5-33.5	GW	3	3												X
.06	3/23/22	1100	SB-A4-MY60-21-25	GW	3	3												X
.07, .08, .09	3/23/22	1315	SB-A4-MY55-25.5-29.5	GW	9	9												X
.10, .08	3/23/22	1440	SB-A4-MY55-15-19	GW	3	3												X
.11	3/23/22		Dup-01	GW	3	3												X

RELINQUISHED BY: An W-L / Arcadis Sampler DATE 3/23/22 TIME 1545
 RECEIVED BY: Merit Drop Box DATE 3/23/22 TIME 1545
 RELINQUISHED BY: _____ DATE _____ TIME _____
 RECEIVED BY: _____ DATE _____ TIME _____

RELINQUISHED BY: Merit Drop Box DATE 3/23/22 TIME 1545
 RECEIVED BY: M. Calcatro DATE 3/23/22 TIME 1545
 SEAL NO. _____ SEAL INTACT YES NO INITIALS _____ NOTES: TEMP. ON ARRIVAL _____
 SEAL NO. _____ SEAL INTACT YES NO INITIALS _____

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



Quality Control Report

Report ID: QC-S34187-01
Generated on 04/04/2022

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

Report Produced by
Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

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

Phone: 248-994-2272 FAX:

Report Summary

Lab Sample ID(s): S34187.01-S34187.11
Project: 30075941.04100 / RACER Lansing
Submitted Date/Time: 03/23/2022 15:45
Sampled by: Austin Westhuis
P.O. #: 30075941.04100

QC Report Sections

Cover Page (Page 1)
Analysis Summary (Pages 2-12)
Prep Batch Summary (Page 13)
Surrogates per QC Sample (Pages 14-15)
Batch QC Results (Pages 16-17)

Report Flag Descriptions

*: QC result is outside of indicated control limits
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

QC Report - Analysis Summary

Lab Sample ID: S34187.01

Sample Tag: SB-A4-MY63_26-30

Collected Date/Time: 03/22/2022 12:55

Matrix: Groundwater

COC Reference: 140688

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	03/30/22 18:15	220330A9	VS220330S2	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S34187.02

Sample Tag: SB-A4-MY63_18-22

Collected Date/Time: 03/22/2022 13:25

Matrix: Groundwater

COC Reference: 140688

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	03/30/22 19:57	220330A9	VS220330S2	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S34187.03

Sample Tag: SB-A4-NB60_30-34

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

Matrix: Groundwater

COC Reference: 140688

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	03/30/22 19:36	220330A9	VS220330S2	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S34187.04

Sample Tag: SB-A4-NB60_22-26

Collected Date/Time: 03/22/2022 16:00

Matrix: Groundwater

COC Reference: 140688

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	03/30/22 20:19	220330A9	VS220330S2	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S34187.05

Sample Tag: SB-A4-MV60_29.5-33.5

Collected Date/Time: 03/23/2022 10:20

Matrix: Groundwater

COC Reference: 140688

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	03/31/22 11:32	220331A9	VS220331S2	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S34187.06

Sample Tag: SB-A4-MV60_21-25

Collected Date/Time: 03/23/2022 11:00

Matrix: Groundwater

COC Reference: 140688

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	03/30/22 21:03	220330A9	VS220330S2	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S34187.07

Sample Tag: SB-A4-MY55_25.5-29.5

Collected Date/Time: 03/23/2022 13:15

Matrix: Groundwater

COC Reference: 140688

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	03/30/22 13:32	220330A9	VS220330S2	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S34187.08

Sample Tag: SB-A4-MY55_25.5-29.5 MS

Collected Date/Time: 03/23/2022 13:15

Matrix: Groundwater

COC Reference: 140688

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	03/30/22 12:09	220330A9	VS220330S2	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S34187.09

Sample Tag: SB-A4-MY55_25.5-29.5 MSD

Collected Date/Time: 03/23/2022 13:15

Matrix: Groundwater

COC Reference: 140688

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	03/30/22 12:30	220330A9	VS220330S2	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S34187.10

Sample Tag: SB-A4-MY55_15-19

Collected Date/Time: 03/23/2022 14:40

Matrix: Groundwater

COC Reference: 140688

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	03/30/22 21:25	220330A9	VS220330S2	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S34187.11

Sample Tag: Dup-01

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

Matrix: Groundwater

COC Reference: 140688

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	03/31/22 11:53	220331A9	VS220331S2	Yes	BLK/LCS/LCSD

QC Report - Prep Batch Summary

Organics - Volatiles, Prep Batch ID: VS220330S2

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S34187.01	1,4-Dioxane	SW8260B - SIM	03/30/22 18:15	220330A9
S34187.02	1,4-Dioxane	SW8260B - SIM	03/30/22 19:57	220330A9
S34187.03	1,4-Dioxane	SW8260B - SIM	03/30/22 19:36	220330A9
S34187.04	1,4-Dioxane	SW8260B - SIM	03/30/22 20:19	220330A9
S34187.06	1,4-Dioxane	SW8260B - SIM	03/30/22 21:03	220330A9
S34187.07	1,4-Dioxane	SW8260B - SIM	03/30/22 13:32	220330A9
S34187.08	1,4-Dioxane	SW8260B - SIM	03/30/22 12:09	220330A9
S34187.09	1,4-Dioxane	SW8260B - SIM	03/30/22 12:30	220330A9
S34187.10	1,4-Dioxane	SW8260B - SIM	03/30/22 21:25	220330A9

Organics - Volatiles, Prep Batch ID: VS220331S2

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S34187.05	1,4-Dioxane	SW8260B - SIM	03/31/22 11:32	220331A9
S34187.11	1,4-Dioxane	SW8260B - SIM	03/31/22 11:53	220331A9

QC Report - Surrogates per QC Sample

Organics - Volatiles, Prep Batch ID: VS220330S2

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220330A9.BLKS30A

Run in Batch: 220330A9, Run Date: 03/30/2022 13:11, Prep Date: 03/30/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
No Surrogates				

Laboratory Control Sample (LCS)

Lab Sample ID: 220330A9.LCSS30A

Run in Batch: 220330A9, Run Date: 03/30/2022 11:28, Prep Date: 03/30/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
No Surrogates				

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220330A9.LCSDS30A, Parent Sample ID: 220330A9.LCSS30A

Run in Batch: 220330A9, Run Date: 03/30/2022 11:49, Prep Date: 03/30/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
No Surrogates				

Matrix Spike (MS)

Lab Sample ID: 220330A9.3418708M, Parent Sample ID: S34187.07

Run in Batch: 220330A9, Run Date: 03/30/2022 12:09, Prep Date: 03/30/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
No Surrogates				

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220330A9.3418709N, Parent Sample ID: 220330A9.3418708M

Run in Batch: 220330A9, Run Date: 03/30/2022 12:30, Prep Date: 03/30/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
No Surrogates				

QC Report - Surrogates per QC Sample

Organics - Volatiles, Prep Batch ID: VS220331S2

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220331A9.BLKS31A

Run in Batch: 220331A9, Run Date: 03/31/2022 11:12, Prep Date: 03/31/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
-----------	-------	------	-----	-----

No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: 220331A9.LCSS31A

Run in Batch: 220331A9, Run Date: 03/31/2022 10:10, Prep Date: 03/31/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
-----------	-------	------	-----	-----

No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220331A9.LCSDS31A, Parent Sample ID: 220331A9.LCSS31A

Run in Batch: 220331A9, Run Date: 03/31/2022 10:31, Prep Date: 03/31/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
-----------	-------	------	-----	-----

No Surrogates

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VS220330S2

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220330A9.BLKS30A

Run in Batch: 220330A9, Run Date: 03/30/2022 13:11, Prep Date: 03/30/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane	*	0.51	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220330A9.LCSS30A

Run in Batch: 220330A9, Run Date: 03/30/2022 11:28, Prep Date: 03/30/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		95.0	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220330A9.LCSDS30A, Parent Sample ID: 220330A9.LCSS30A

Run in Batch: 220330A9, Run Date: 03/30/2022 11:49, Prep Date: 03/30/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		97.8	70.0	130.0	2.9	30.0

Matrix Spike (MS)

Lab Sample ID: 220330A9.3418708M, Parent Sample ID: S34187.07

Run in Batch: 220330A9, Run Date: 03/30/2022 12:09, Prep Date: 03/30/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		127.9	70.0	130.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220330A9.3418709N, Parent Sample ID: 220330A9.3418708M

Run in Batch: 220330A9, Run Date: 03/30/2022 12:30, Prep Date: 03/30/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		89.4	70.0	130.0	10.6	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VS220331S2

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220331A9.BLKS31A

Run in Batch: 220331A9, Run Date: 03/31/2022 11:12, Prep Date: 03/31/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane	*	0.57	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220331A9.LCSS31A

Run in Batch: 220331A9, Run Date: 03/31/2022 10:10, Prep Date: 03/31/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		85.3	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220331A9.LCSDS31A, Parent Sample ID: 220331A9.LCSS31A

Run in Batch: 220331A9, Run Date: 03/31/2022 10:31, Prep Date: 03/31/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		86.3	70.0	130.0	1.1	30.0



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C.O.C. PAGE # 1 OF 1 140688

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME Tiffany Linder
 COMPANY Arcadis
 ADDRESS 28550 Cabot Drive, Suite 500
 CITY Novi STATE MI ZIP CODE 48377
 PHONE NO. 810-225-1928 FAX NO. _____ P.O. NO. _____
 E-MAIL ADDRESS Tiffany.Linder@arcadis.com QUOTE NO. _____

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

PROJECT NO./NAME 30075941.04100 / RACER Lansing SAMPLER(S) - PLEASE PRINT/SIGN NAME Austin Westhuis / An W-L
 TURNAROUND TIME REQUIRED 1 DAY 2 DAYS 3 DAYS STANDARD OTHER _____
 DELIVERABLES REQUIRED STD LEVEL II LEVEL III LEVEL IV EDD OTHER _____

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

- Certifications**
 OHIO VAP Drinking Water
 DoD NPDES
- Project Locations**
 Detroit New York
 Other MI
- Special Instructions**

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. <small>FOR LAB USE ONLY</small>	YEAR		SAMPLE TAG, IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives								Other	Special Instructions
	DATE	TIME				NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER			
<u>34187.01</u>	<u>3/22/22</u>	<u>1255</u>	<u>SB-A4-mx63-26-30</u>	<u>GW</u>	<u>3</u>	<u>3</u>							<u>X</u>		
<u>.02</u>	<u>3/22/22</u>	<u>1325</u>	<u>SB-A4-mY63-18-22</u>	<u>GW</u>	<u>3</u>	<u>3</u>							<u>X</u>		
<u>.03</u>	<u>3/22/22</u>	<u>1515</u>	<u>SB-A4-NB60-30-34</u>	<u>GW</u>	<u>3</u>	<u>3</u>							<u>X</u>		
<u>.04</u>	<u>3/22/22</u>	<u>1600</u>	<u>SB-A4-NB60-22-26</u>	<u>GW</u>	<u>3</u>	<u>3</u>							<u>X</u>		
<u>.05</u>	<u>3/23/22</u>	<u>1020</u>	<u>SB-A4-mV60-29.5-33.5</u>	<u>GW</u>	<u>3</u>	<u>3</u>							<u>X</u>		
<u>.06</u>	<u>3/23/22</u>	<u>1100</u>	<u>SB-A4-mY60-21-25</u>	<u>GW</u>	<u>3</u>	<u>3</u>							<u>X</u>		
<u>.07, .08, .09</u>	<u>3/23/22</u>	<u>1315</u>	<u>SB-A4-mY55-25.5-29.5</u>	<u>GW</u>	<u>9</u>	<u>9</u>							<u>X</u>	<u>ms/msd</u>	
<u>.10</u>	<u>3/23/22</u>	<u>1440</u>	<u>SB-A4-mY55-15-19</u>	<u>GW</u>	<u>3</u>	<u>3</u>							<u>X</u>		
<u>.11</u>	<u>3/23/22</u>	---	<u>Dup-01</u>	<u>GW</u>	<u>3</u>	<u>3</u>							<u>X</u>		

RELINQUISHED BY: An W-L / Arcadis Sampler DATE 3/23/22 TIME 1545
 RECEIVED BY: Merit Drop Box DATE 3/23/22 TIME 1545
 RELINQUISHED BY: _____ DATE _____ TIME _____
 RECEIVED BY: _____ DATE _____ TIME _____

RELINQUISHED BY: Merit Drop Box DATE 3/23/22 TIME 1545
 RECEIVED BY: M. Calcatro DATE 3/23/22 TIME 1545
 SEAL NO. SEAL INTACT YES NO INITIALS _____ NOTES: _____ TEMP. ON ARRIVAL _____
 SEAL NO. SEAL INTACT YES NO INITIALS _____



Analytical Laboratory Report

Report ID: S34620.01(01)
Generated on 04/19/2022

Report to

Attention: Tiffany Linder
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28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: 248-994-2272 FAX:
Email: tiffany.linder@arcadis.com

Additional Contacts: Alex Villhauer, Caitlin Cisco, Patrick Curry

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

Report Summary

Lab Sample ID(s): S34620.01-S34620.02
Project: 30075941.04100 / RACER Lansing
Collected Date(s): 04/06/2022
Submitted Date/Time: 04/06/2022 13:45
Sampled by: Austin Westhuis
P.O. #: 30075941.04100

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.

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

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

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

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

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

Report Narrative

There is no additional narrative for this analytical report



Analytical Laboratory Report

Laboratory Certifications

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

Qualifier Descriptions

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

Glossary of Abbreviations

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



Analytical Laboratory Report

Method Summary

Method	Version
N/A	Not Applicable
SW5030C/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5030C Revision 3 May 2003
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs



Analytical Laboratory Report

Sample Summary (2 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S34620.01	MW-22-153_040622	Groundwater	04/06/22 11:45
S34620.02	MW-14-58R_040622	Groundwater	04/06/22 12:20



Analytical Laboratory Report

Lab Sample ID: S34620.01

Sample Tag: MW-22-153_040622

Collected Date/Time: 04/06/2022 11:45

Matrix: Groundwater

COC Reference: 139926

Sample Containers

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

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	04/08/22 09:30	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 04/18/22 12:49, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	92	1		ug/L	1	123-91-1	

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 04/07/22 13:20, Analyst: KAG

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



Analytical Laboratory Report

Lab Sample ID: S34620.01 (continued)

Sample Tag: MW-22-153_040622

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 04/07/22 13:20, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S34620.02

Sample Tag: MW-14-58R_040622

Collected Date/Time: 04/06/2022 12:20

Matrix: Groundwater

COC Reference: 139926

Sample Containers

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

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	04/08/22 09:30	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 04/18/22 16:37, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	410	10		ug/L	10	123-91-1	Y

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 04/07/22 13:40, Analyst: KAG

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

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S34620.02 (continued)

Sample Tag: MW-14-58R_040622

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 04/07/22 13:40, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Merit Laboratories Login Checklist

Lab Set ID:S34620

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

Project: 30075941.04100 / RACER Lansing

Submitted:04/06/2022 13:45 Login User: MMC

Attention: Tiffany Linder

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

Phone: 248-994-2272 FAX:

Email: tiffany.linder@arcadis.com

Selection	Description	Note
Sample Receiving		
01.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Samples are received at 4C +/- 2C Thermometer # IR 2.4
02.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Received on ice/ cooling process begun
03.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples shipped
04.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples left in 24 hr. drop box
05.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Are there custody seals/tape or is the drop box locked
Chain of Custody		
06.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	COC adequately filled out
07.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	COC signed and relinquished to the lab
08.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Sample tag on bottles match COC
09.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Subcontracting needed? Subcontracted to:
Preservation		
10.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Do sample have correct chemical preservation
11.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Completed pH checks on preserved samples? (no VOAs)
12.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Did any samples need to be preserved in the lab?
Bottle Conditions		
13.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	All bottles intact
14.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Appropriate analytical bottles are used
15.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Merit bottles used
16.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Sufficient sample volume received
17.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples require laboratory filtration
18.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Samples submitted within holding time
19.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> 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 139926

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME
Tiffany Linder

COMPANY
Arcadis

ADDRESS
28550 Cabot Drive, Suite 500

CITY
Novi STATE *MI* ZIP CODE *48377*

PHONE NO. *810-225-1928* FAX NO. _____ P.O. NO. _____

E-MAIL ADDRESS
Tiffany.Linder@arcadis.com QUOTE NO. _____

CONTACT NAME SAME

COMPANY _____

ADDRESS _____

CITY _____ STATE _____ ZIP CODE _____

PHONE NO. _____ E-MAIL ADDRESS _____

PROJECT NO./NAME
30112892.04100/RACER Lansing

SAMPLER(S) - PLEASE PRINT/SIGN NAME
Austin Westhuis / amlw

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 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

VOCs 8260 (Full Scan)
1,4-Dioxane 8260 STMS

Certifications
 OHIO VAP Drinking Water
 DoD NPDES

Project Locations
 Detroit New York
 Other *MI*

Special Instructions

MERIT LAB NO. <small>FOR LAB USE ONLY</small>	YEAR		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives													
	DATE	TIME				NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER							
<i>34620.01</i>	<i>4/6/22</i>	<i>1145</i>	<i>mw-22-153_040622</i>	<i>6W</i>	<i>3</i>		<i>3</i>									<i>X</i>	<i>X</i>		
<i>.02</i>	<i>4/6/22</i>	<i>1220</i>	<i>mw-14-58R_040622</i>	<i>6W</i>	<i>3</i>		<i>3</i>									<i>X</i>	<i>X</i>		

RELINQUISHED BY: *amlw/Arcadis* Sampler DATE *4/6/22* TIME *1345*

RECEIVED BY: *Merit Drop Box* DATE *4/6/22* TIME *1345*

RELINQUISHED BY: _____ DATE _____ TIME _____

RECEIVED BY: _____ DATE _____ TIME _____

RELINQUISHED BY: *Merit Drop Box* DATE *4/6/22* TIME *1345*

RECEIVED BY: *M. Clark* DATE *4/6/22* TIME *1345*

SEAL NO. SEAL INTACT YES NO INITIALS _____

SEAL NO. SEAL INTACT YES NO INITIALS _____

NOTES: TEMP. ON ARRIVAL *2.4*

* Please also email results to: Patrick.Cunry@arcadis.com, Alex.Villhauer@arcadis.com, and Caitlin.Cisco@arcadis.com



Quality Control Report

Report ID: QC-S34620-01
Generated on 04/19/2022

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

Report Produced by
Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

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

Phone: 248-994-2272 FAX:

Report Summary

Lab Sample ID(s): S34620.01-S34620.02
Project: 30075941.04100 / RACER Lansing
Submitted Date/Time: 04/06/2022 13:45
Sampled by: Austin Westhuis
P.O. #: 30075941.04100

QC Report Sections

Cover Page (Page 1)
Analysis Summary (Pages 2-3)
Prep Batch Summary (Page 4)
Surrogates per Lab Sample (Pages 5-6)
Surrogates per QC Sample (Pages 7-8)
Batch QC Results (Pages 9-14)

Report Flag Descriptions

*: QC result is outside of indicated control limits
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

QC Report - Analysis Summary

Lab Sample ID: S34620.01

Sample Tag: MW-22-153_040622

Collected Date/Time: 04/06/2022 11:45

Matrix: Groundwater

COC Reference: 139926

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr QC Types
Organics - Volatiles					
1,4-Dioxane	SW8260B - SIM	04/18/22 12:49	220418A9	VS220418W2	Yes BLK/LCS/LCSD
Volatile Organics - DEQ List	SW5030C/8260C	04/07/22 13:20	220407A9	VF220407W2	Yes BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S34620.02

Sample Tag: MW-14-58R_040622

Collected Date/Time: 04/06/2022 12:20

Matrix: Groundwater

COC Reference: 139926

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	04/18/22 16:37	220418A9	VS220418W2	Yes	BLK/LCS/LCSD
Volatile Organics - DEQ List	SW5030C/8260C	04/07/22 13:40	220407A9	VF220407W2	Yes	BLK/LCS/LCSD

QC Report - Prep Batch Summary

Organics - Volatiles, Prep Batch ID: VF220407W2

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S34620.01	Volatile Organics - DEQ List	SW5030C/8260C	04/07/22 13:20	220407A9
S34620.02	Volatile Organics - DEQ List	SW5030C/8260C	04/07/22 13:40	220407A9

Organics - Volatiles, Prep Batch ID: VS220418W2

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S34620.01	1,4-Dioxane	SW8260B - SIM	04/18/22 12:49	220418A9
S34620.02	1,4-Dioxane	SW8260B - SIM	04/18/22 16:37	220418A9

QC Report - Surrogates per Lab Sample

Lab Sample ID: S34620.01

Sample Tag: MW-22-153_040622

Collected Date/Time: 04/06/2022 11:45

Matrix: Groundwater

COC Reference: 139926

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220407A9, Run Date: 04/07/2022 13:20, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		96.5	80.0	124.0
1,2-Dichloroethane-D4		112.5	72.0	125.0
Toluene-D8		106.6	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S34620.02

Sample Tag: MW-14-58R_040622

Collected Date/Time: 04/06/2022 12:20

Matrix: Groundwater

COC Reference: 139926

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 220407A9, Run Date: 04/07/2022 13:40, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		95.8	80.0	124.0
1,2-Dichloroethane-D4		115.3	72.0	125.0
Toluene-D8		106.2	89.0	112.0

QC Report - Surrogates per QC Sample

Organics - Volatiles, Prep Batch ID: VF220407W2

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220407A9.BLKW07A

Run in Batch: 220407A9, Run Date: 04/07/2022 12:26, Prep Date: 04/07/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		95.3	80.0	124.0
1,2-Dichloroethane-D4		111.5	72.0	125.0
Toluene-D8		106.3	89.0	112.0

Blank (BLK)

Lab Sample ID: 220407B9.BLKW07A

Run in Batch: 220407B9, Run Date: 04/07/2022 12:26, Prep Date: 04/07/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
Toluene-D8		98.6	86.0	118.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220407A9.LCSW07A

Run in Batch: 220407A9, Run Date: 04/07/2022 10:49, Prep Date: 04/07/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		113.3	80.0	124.0
1,2-Dichloroethane-D4		100.4	72.0	125.0
Toluene-D8		99.6	89.0	112.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220407B9.LCSG07A

Run in Batch: 220407B9, Run Date: 04/07/2022 11:47, Prep Date: 04/07/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
Toluene-D8		98.6	86.0	118.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220407A9.LCSDW07A, Parent Sample ID: 220407A9.LCSW07A

Run in Batch: 220407A9, Run Date: 04/07/2022 11:09, Prep Date: 04/07/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		114.8	80.0	124.0
1,2-Dichloroethane-D4		99.5	72.0	125.0
Toluene-D8		97.2	89.0	112.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220407B9.LCSDG07A, Parent Sample ID: 220407B9.LCSG07A

Run in Batch: 220407B9, Run Date: 04/07/2022 12:06, Prep Date: 04/07/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
Toluene-D8		100.0	86.0	118.0

QC Report - Surrogates per QC Sample

Organics - Volatiles, Prep Batch ID: VS220418W2

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220418A9.BLKW18A

Run in Batch: 220418A9, Run Date: 04/18/2022 12:28, Prep Date: 04/18/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
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No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: 220418A9.LCSW18A

Run in Batch: 220418A9, Run Date: 04/18/2022 11:25, Prep Date: 04/18/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
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No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220418A9.LCSDW18A, Parent Sample ID: 220418A9.LCSW18A

Run in Batch: 220418A9, Run Date: 04/18/2022 11:46, Prep Date: 04/18/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
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No Surrogates

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF220407W2

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220407A9.BLKW07A

Run in Batch: 220407A9, Run Date: 04/07/2022 12:26, Prep Date: 04/07/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Diethyl ether		ND	1.00	ug/l
Acetone		ND	10.00	ug/l
Methyl iodide		ND	1.00	ug/l
Carbon disulfide		ND	1.00	ug/l
tert-Methyl butyl ether (MTBE)		ND	1.00	ug/l
Acrylonitrile		ND	1.00	ug/l
2-Butanone (MEK)		ND	10.00	ug/l
Dichlorodifluoromethane		ND	1.00	ug/l
Chloromethane		ND	1.00	ug/l
Vinyl chloride		ND	1.00	ug/l
Bromomethane		ND	1.00	ug/l
Chloroethane		ND	1.00	ug/l
Trichlorofluoromethane		ND	1.00	ug/l
1,1-Dichloroethene		ND	1.00	ug/l
Methylene chloride		ND	1.00	ug/l
trans-1,2-Dichloroethene		ND	1.00	ug/l
1,1-Dichloroethane		ND	1.00	ug/l
cis-1,2-Dichloroethene		ND	1.00	ug/l
Tetrahydrofuran		ND	10.00	ug/l
Chloroform		ND	1.00	ug/l
Bromochloromethane		ND	1.00	ug/l
1,1,1-Trichloroethane		ND	1.00	ug/l
4-Methyl-2-pentanone (MIBK)		ND	10.00	ug/l
2-Hexanone		ND	10.00	ug/l
Carbon tetrachloride		ND	1.00	ug/l
Benzene		ND	1.00	ug/l
1,2-Dichloroethane		ND	1.00	ug/l
Trichloroethene		ND	1.00	ug/l
1,2-Dichloropropane		ND	1.00	ug/l
Bromodichloromethane		ND	1.00	ug/l
Dibromomethane		ND	1.00	ug/l
cis-1,3-Dichloropropene		ND	1.00	ug/l
Toluene		ND	1.00	ug/l
trans-1,3-Dichloropropene		ND	1.00	ug/l
1,1,2-Trichloroethane		ND	1.00	ug/l
Tetrachloroethene		ND	1.00	ug/l
trans-1,4-Dichloro-2-butene		ND	1.00	ug/l
Dibromochloromethane		ND	1.00	ug/l
1,2-Dibromoethane		ND	1.00	ug/l
Chlorobenzene		ND	1.00	ug/l
1,1,1,2-Tetrachloroethane		ND	1.00	ug/l
Ethylbenzene		ND	1.00	ug/l
p,m-Xylene		ND	1.00	ug/l
o-Xylene		ND	1.00	ug/l
Styrene		ND	1.00	ug/l
Isopropylbenzene		ND	1.00	ug/l

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF220407W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK) (continued)

Lab Sample ID: 220407A9.BLKW07A

Run in Batch: 220407A9, Run Date: 04/07/2022 12:26, Prep Date: 04/07/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Bromoform		ND	1.00	ug/l
1,1,2,2-Tetrachloroethane		ND	1.00	ug/l
1,2,3-Trichloropropane		ND	1.00	ug/l
n-Propylbenzene		ND	1.00	ug/l
Bromobenzene		ND	1.00	ug/l
1,3,5-Trimethylbenzene		ND	1.00	ug/l
tert-Butylbenzene		ND	1.00	ug/l
1,2,4-Trimethylbenzene		ND	1.00	ug/l
sec-Butylbenzene		ND	1.00	ug/l
p-Isopropyltoluene		ND	1.00	ug/l
1,3-Dichlorobenzene		ND	1.00	ug/l
1,4-Dichlorobenzene		ND	1.00	ug/l
1,2-Dichlorobenzene		ND	1.00	ug/l
1,2,3-Trimethylbenzene		ND	1.00	ug/l
n-Butylbenzene		ND	1.00	ug/l
Hexachloroethane		ND	1.00	ug/l
1,2-Dibromo-3-chloropropane		ND	1.00	ug/l
1,2,4-Trichlorobenzene		ND	1.00	ug/l
1,2,3-Trichlorobenzene		ND	1.00	ug/l
Naphthalene		ND	1.00	ug/l
2-Methylnaphthalene		ND	1.00	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220407A9.LCSW07A

Run in Batch: 220407A9, Run Date: 04/07/2022 10:49, Prep Date: 04/07/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Diethyl ether		87.2	67.4	121.2
Acetone		82.6	29.9	161.5
Methyl iodide		95.1	68.8	116.4
Carbon disulfide		104.6	63.8	137.4
tert-Methyl butyl ether (MTBE)		94.7	73.2	122.4
Acrylonitrile		97.8	69.9	128.9
2-Butanone (MEK)		100.4	44.0	134.4
Dichlorodifluoromethane		80.0	10.0	222.8
Chloromethane		77.1	23.8	166.5
Vinyl chloride		83.7	43.5	149.1
Bromomethane		73.0	56.8	151.3
Chloroethane		76.7	53.4	149.4
Trichlorofluoromethane		78.7	59.7	151.8
1,1-Dichloroethene		92.4	69.6	139.4
Methylene chloride		95.1	73.3	121.1
trans-1,2-Dichloroethene		100.1	73.6	129.3
1,1-Dichloroethane		97.3	71.5	126.2
cis-1,2-Dichloroethene		101.2	76.6	122.1
Tetrahydrofuran		93.9	59.0	117.9
Chloroform		99.3	78.4	124.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF220407W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 220407A9.LCSW07A

Run in Batch: 220407A9, Run Date: 04/07/2022 10:49, Prep Date: 04/07/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Bromochloromethane		101.2	78.2	120.8
1,1,1-Trichloroethane		98.7	79.4	130.9
4-Methyl-2-pentanone (MIBK)		99.2	71.6	125.2
2-Hexanone		95.7	55.4	136.9
Carbon tetrachloride		99.9	72.6	133.0
Benzene		98.9	79.9	124.9
1,2-Dichloroethane		93.3	76.0	126.3
Trichloroethene		103.6	79.7	124.2
1,2-Dichloropropane		94.8	78.6	126.4
Bromodichloromethane		101.8	80.4	128.2
Dibromomethane		103.7	76.9	122.1
cis-1,3-Dichloropropene		105.2	79.8	129.9
Toluene		96.9	79.8	124.5
trans-1,3-Dichloropropene		108.6	74.0	131.3
1,1,2-Trichloroethane		97.1	78.7	123.1
Tetrachloroethene		102.5	74.5	124.5
trans-1,4-Dichloro-2-butene	*	188.3	68.6	135.4
Dibromochloromethane	*	130.4	74.6	127.2
1,2-Dibromoethane		118.9	70.3	133.7
Chlorobenzene		114.2	79.2	122.7
1,1,1,2-Tetrachloroethane		117.2	80.3	128.2
Ethylbenzene		112.7	79.5	129.1
p,m-Xylene		113.5	79.4	132.2
o-Xylene		107.3	80.2	131.0
Styrene		112.9	69.5	126.7
Isopropylbenzene		113.3	74.4	121.5
Bromoform	*	136.9	69.4	128.0
1,1,2,2-Tetrachloroethane		113.4	79.8	126.3
1,2,3-Trichloropropane		119.4	78.3	138.8
n-Propylbenzene		114.2	82.0	130.7
Bromobenzene		121.6	78.7	124.6
1,3,5-Trimethylbenzene		114.9	81.3	128.9
tert-Butylbenzene		107.8	80.7	128.9
1,2,4-Trimethylbenzene		113.7	81.4	130.8
sec-Butylbenzene		112.9	77.4	129.8
p-Isopropyltoluene		113.7	79.8	137.5
1,3-Dichlorobenzene		116.1	77.0	131.3
1,4-Dichlorobenzene		115.0	20.7	137.7
1,2-Dichlorobenzene		116.6	10.0	166.2
1,2,3-Trimethylbenzene		108.0	76.3	124.2
n-Butylbenzene		111.0	80.0	133.3
Hexachloroethane		125.9	23.8	138.1
1,2-Dibromo-3-chloropropane		133.3	21.2	189.4
1,2,4-Trichlorobenzene		122.7	27.4	143.4
1,2,3-Trichlorobenzene		118.2	75.4	131.4
Naphthalene		118.6	32.9	135.8

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF220407W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 220407A9.LCSW07A

Run in Batch: 220407A9, Run Date: 04/07/2022 10:49, Prep Date: 04/07/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
2-Methylnaphthalene		112.6	25.5	165.5

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220407A9.LCSDW07A, Parent Sample ID: 220407A9.LCSW07A

Run in Batch: 220407A9, Run Date: 04/07/2022 11:09, Prep Date: 04/07/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Diethyl ether		83.8	67.4	121.2	4.0	30.0
Acetone		73.6	29.9	161.5	11.5	30.0
Methyl iodide		95.2	68.8	116.4	0.0	30.0
Carbon disulfide		97.9	63.8	137.4	6.7	30.0
tert-Methyl butyl ether (MTBE)		91.2	73.2	122.4	3.8	30.0
Acrylonitrile		90.9	69.9	128.9	7.3	30.0
2-Butanone (MEK)		91.7	44.0	134.4	9.0	30.0
Dichlorodifluoromethane		73.6	10.0	222.8	8.3	30.0
Chloromethane		75.3	23.8	166.5	2.3	30.0
Vinyl chloride		79.2	43.5	149.1	5.6	30.0
Bromomethane		69.5	56.8	151.3	4.9	30.0
Chloroethane		73.0	53.4	149.4	4.9	30.0
Trichlorofluoromethane		73.7	59.7	151.8	6.6	30.0
1,1-Dichloroethene		88.2	69.6	139.4	4.6	30.0
Methylene chloride		94.4	73.3	121.1	0.8	30.0
trans-1,2-Dichloroethene		94.0	73.6	129.3	6.3	30.0
1,1-Dichloroethane		93.1	71.5	126.2	4.4	30.0
cis-1,2-Dichloroethene		97.7	76.6	122.1	3.5	30.0
Tetrahydrofuran		80.8	59.0	117.9	14.9	30.0
Chloroform		94.6	78.4	124.0	4.8	30.0
Bromochloromethane		99.5	78.2	120.8	1.7	30.0
1,1,1-Trichloroethane		92.9	79.4	130.9	6.0	30.0
4-Methyl-2-pentanone (MIBK)		86.8	71.6	125.2	13.3	30.0
2-Hexanone		87.3	55.4	136.9	9.1	30.0
Carbon tetrachloride		94.2	72.6	133.0	5.9	30.0
Benzene		93.7	79.9	124.9	5.4	30.0
1,2-Dichloroethane		86.9	76.0	126.3	7.2	30.0
Trichloroethene		96.6	79.7	124.2	7.0	30.0
1,2-Dichloropropane		89.3	78.6	126.4	6.0	30.0
Bromodichloromethane		96.0	80.4	128.2	5.8	30.0
Dibromomethane		102.5	76.9	122.1	1.1	30.0
cis-1,3-Dichloropropene		98.8	79.8	129.9	6.3	30.0
Toluene		88.7	79.8	124.5	8.8	30.0
trans-1,3-Dichloropropene		100.9	74.0	131.3	7.3	30.0
1,1,2-Trichloroethane		89.7	78.7	123.1	8.0	30.0
Tetrachloroethene		95.8	74.5	124.5	6.8	30.0
trans-1,4-Dichloro-2-butene	*	169.2	68.6	135.4	10.7	30.0
Dibromochloromethane	*	127.4	74.6	127.2	2.3	30.0
1,2-Dibromoethane		114.8	70.3	133.7	3.5	30.0
Chlorobenzene		109.0	79.2	122.7	4.6	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF220407W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: 220407A9.LCSDW07A, Parent Sample ID: 220407A9.LCSW07A

Run in Batch: 220407A9, Run Date: 04/07/2022 11:09, Prep Date: 04/07/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,1,1,2-Tetrachloroethane		116.1	80.3	128.2	0.9	30.0
Ethylbenzene		106.8	79.5	129.1	5.3	30.0
p,m-Xylene		106.7	79.4	132.2	6.1	30.0
o-Xylene		101.1	80.2	131.0	5.9	30.0
Styrene		107.5	69.5	126.7	4.9	30.0
Isopropylbenzene		105.8	74.4	121.5	6.8	30.0
Bromoform	*	131.5	69.4	128.0	4.1	30.0
1,1,2,2-Tetrachloroethane		105.8	79.8	126.3	7.0	30.0
1,2,3-Trichloropropane		110.5	78.3	138.8	7.7	30.0
n-Propylbenzene		105.8	82.0	130.7	7.7	30.0
Bromobenzene		117.0	78.7	124.6	3.9	30.0
1,3,5-Trimethylbenzene		107.2	81.3	128.9	6.9	30.0
tert-Butylbenzene		100.1	80.7	128.9	7.4	30.0
1,2,4-Trimethylbenzene		108.4	81.4	130.8	4.8	30.0
sec-Butylbenzene		105.4	77.4	129.8	6.8	30.0
p-Isopropyltoluene		106.7	79.8	137.5	6.3	30.0
1,3-Dichlorobenzene		109.9	77.0	131.3	5.5	30.0
1,4-Dichlorobenzene		109.4	20.7	137.7	5.0	30.0
1,2-Dichlorobenzene		111.1	10.0	166.2	4.9	30.0
1,2,3-Trimethylbenzene		103.4	76.3	124.2	4.3	30.0
n-Butylbenzene		101.8	80.0	133.3	8.6	30.0
Hexachloroethane		119.9	23.8	138.1	4.9	30.0
1,2-Dibromo-3-chloropropane		121.8	21.2	189.4	9.0	30.0
1,2,4-Trichlorobenzene		120.6	27.4	143.4	1.7	30.0
1,2,3-Trichlorobenzene		117.6	75.4	131.4	0.5	30.0
Naphthalene		114.3	32.9	135.8	3.6	30.0
2-Methylnaphthalene		112.6	25.5	165.5	0.0	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VS220418W2

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220418A9.BLKW18A

Run in Batch: 220418A9, Run Date: 04/18/2022 12:28, Prep Date: 04/18/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane	*	0.30	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220418A9.LCSW18A

Run in Batch: 220418A9, Run Date: 04/18/2022 11:25, Prep Date: 04/18/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		78.3	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220418A9.LCSDW18A, Parent Sample ID: 220418A9.LCSW18A

Run in Batch: 220418A9, Run Date: 04/18/2022 11:46, Prep Date: 04/18/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		79.1	70.0	130.0	1.1	30.0



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

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME
Tiffany Linder

COMPANY
Arcadis

ADDRESS
28550 Cabot Drive, Suite 500

CITY
Novi STATE *MI* ZIP CODE *48377*

PHONE NO. *810-225-1928* FAX NO. _____ P.O. NO. _____

E-MAIL ADDRESS
Tiffany.Linder@arcadis.com QUOTE NO. _____

CONTACT NAME SAME

COMPANY

ADDRESS

CITY STATE ZIP CODE

PHONE NO. E-MAIL ADDRESS

PROJECT NO./NAME
30112892.04100/RACER Lansing

SAMPLER(S) - PLEASE PRINT/SIGN NAME
Austin Westhuis / amlw

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 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

Certifications
 OHIO VAP Drinking Water
 DoD NPDES

Project Locations
 Detroit New York
 Other *MI*

Special Instructions

MERIT LAB NO. <small>FOR LAB USE ONLY</small>	YEAR		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives																									
	DATE	TIME				NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER																			
<i>34620.01</i>	<i>4/6/22</i>	<i>1145</i>	<i>mw-22-153_040622</i>	<i>6W</i>	<i>3</i>		<i>3</i>																	<i>X</i>	<i>X</i>						
<i>.02</i>	<i>4/6/22</i>	<i>1220</i>	<i>mw-14-58R_040622</i>	<i>6W</i>	<i>3</i>		<i>3</i>																	<i>X</i>	<i>X</i>						

VOCs 8260 (Full Scan)
1,4-Dioxane 8260 STMS

RELINQUISHED BY: *amlw / Arcadis* Sampler DATE *4/6/22* TIME *1345*

SIGNATURE/ORGANIZATION

RECEIVED BY: *Merit Drop Box* DATE *4/6/22* TIME *1345*

SIGNATURE/ORGANIZATION

RELINQUISHED BY: *Merit Drop Box* DATE *4/6/22* TIME *1345*

SIGNATURE/ORGANIZATION

RECEIVED BY: *M Clark* DATE *4/6/22* TIME *1345*

SIGNATURE/ORGANIZATION

SEAL NO. SEAL INTACT YES NO INITIALS

SEAL NO. SEAL INTACT YES NO INITIALS

NOTES: TEMP. ON ARRIVAL *2.4*

* Please also email results to: *Patrick.Cunry@arcadis.com, Alex.Villhauer@arcadis.com, and Caitlin.Cisco@arcadis.com*

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

Rev 51812



Analytical Laboratory Report

Report ID: S40011.01(01)+QC01
Generated on 09/14/2022

Report to

Attention: Kaitlyn Hunt
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John Lavery (johnlavery@meritlabs.com)
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Report Summary

Lab Sample ID(s): S40011.01-S40011.06
Project: 30112892.04100 / RACER Lansing
Collected Date(s): 09/07/2022
Submitted Date/Time: 09/07/2022 12:50
Sampled by: Austin Westhuis
P.O. #: 30112892.04100

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



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
SM2540B	Standard Method 2540 B 2015
SW5035A	SW 846 Method 5035A Revision 1 July 2002
SW5035A/8260C	SW 846 Method 8260C Revision 3 August 2006 / 5035A Revision 1 July 2002
SW8260B - SIM	SW 846 Method 8260B Revision 2 December 1996 SIMs



Analytical Laboratory Report

Sample Summary (6 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S40011.01	SB-A4-MX60_1-3_090722	Soil	09/07/22 10:00
S40011.02	SB-A4-MX60_4-6_090722	Soil	09/07/22 10:05
S40011.03	SB-A4-MX60_6-8_090722	Soil	09/07/22 10:09
S40011.04	SB-A4-MX60_8.5-10_090722	Soil	09/07/22 10:14
S40011.05	SB-A4-MX60_10-12_090722	Soil	09/07/22 10:19
S40011.06	Trip Blank	Methanol	09/07/22 00:01



Analytical Laboratory Report

Lab Sample ID: S40011.01

Sample Tag: SB-A4-MX60_1-3_090722

Collected Date/Time: 09/07/2022 10:00

Matrix: Soil

COC Reference: 157330

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	MeOH	Yes	5.5	IR
1	4oz Glass	None	Yes	5.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Sample wt. (g) / Methanol (ml)*	9.974/10	SW5035A	09/07/22 16:25	BDO	

Inorganics

Method: SM2540B, Run Date: 09/07/22 16:53, Analyst: MAM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	95	1		%	1		

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 09/13/22 13:52, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	60		ug/kg	55.4	123-91-1	

Volatile Organics 5035, Method: SW5035A/8260C, Run Date: 09/09/22 15:40, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	200		ug/kg	55.4	60-29-7	
Acetone	Not detected	1,000		ug/kg	55.4	67-64-1	
Methyl iodide	Not detected	100		ug/kg	55.4	74-88-4	
Carbon disulfide	Not detected	300		ug/kg	55.4	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	200		ug/kg	55.4	1634-04-4	
Acrylonitrile	Not detected	100		ug/kg	55.4	107-13-1	
2-Butanone (MEK)	Not detected	830		ug/kg	55.4	78-93-3	
Dichlorodifluoromethane	Not detected	300		ug/kg	55.4	75-71-8	
Chloromethane	Not detected	300		ug/kg	55.4	74-87-3	
Vinyl chloride	Not detected	60		ug/kg	55.4	75-01-4	
Bromomethane	Not detected	200		ug/kg	55.4	74-83-9	
Chloroethane	Not detected	300		ug/kg	55.4	75-00-3	
Trichlorofluoromethane	Not detected	100		ug/kg	55.4	75-69-4	
1,1-Dichloroethene	Not detected	60		ug/kg	55.4	75-35-4	
Methylene chloride	Not detected	100		ug/kg	55.4	75-09-2	
trans-1,2-Dichloroethene	Not detected	60		ug/kg	55.4	156-60-5	
1,1-Dichloroethane	Not detected	60		ug/kg	55.4	75-34-3	
cis-1,2-Dichloroethene	Not detected	60		ug/kg	55.4	156-59-2	
Tetrahydrofuran*	Not detected	1,000		ug/kg	55.4	109-99-9	
Chloroform	Not detected	60		ug/kg	55.4	67-66-3	
Bromochloromethane	Not detected	100		ug/kg	55.4	74-97-5	
1,1,1-Trichloroethane	Not detected	60		ug/kg	55.4	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	3,000		ug/kg	55.4	108-10-1	
2-Hexanone	Not detected	3,000		ug/kg	55.4	591-78-6	
Carbon tetrachloride	Not detected	60		ug/kg	55.4	56-23-5	
Benzene	Not detected	60		ug/kg	55.4	71-43-2	
1,2-Dichloroethane	Not detected	60		ug/kg	55.4	107-06-2	



Analytical Laboratory Report

Lab Sample ID: S40011.01 (continued)

Sample Tag: SB-A4-MX60_1-3_090722

Volatile Organics 5035, Method: SW5035A/8260C, Run Date: 09/09/22 15:40, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Trichloroethene	Not detected	60		ug/kg	55.4	79-01-6	
1,2-Dichloropropane	Not detected	60		ug/kg	55.4	78-87-5	
Bromodichloromethane	Not detected	100		ug/kg	55.4	75-27-4	
Dibromomethane	Not detected	300		ug/kg	55.4	74-95-3	
cis-1,3-Dichloropropene	Not detected	60		ug/kg	55.4	10061-01-5	
Toluene	Not detected	60		ug/kg	55.4	108-88-3	
trans-1,3-Dichloropropene	Not detected	60		ug/kg	55.4	10061-02-6	
1,1,2-Trichloroethane	Not detected	60		ug/kg	55.4	79-00-5	
Tetrachloroethene	Not detected	60		ug/kg	55.4	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	60		ug/kg	55.4	110-57-6	
Dibromochloromethane	Not detected	100		ug/kg	55.4	124-48-1	
1,2-Dibromoethane	Not detected	20		ug/kg	55.4	106-93-4	M
Chlorobenzene	Not detected	60		ug/kg	55.4	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	100		ug/kg	55.4	630-20-6	
Ethylbenzene	Not detected	60		ug/kg	55.4	100-41-4	
p,m-Xylene	Not detected	100		ug/kg	55.4		
o-Xylene	Not detected	60		ug/kg	55.4	95-47-6	
Styrene	Not detected	60		ug/kg	55.4	100-42-5	
Isopropylbenzene	Not detected	300		ug/kg	55.4	98-82-8	
Bromoform	Not detected	100		ug/kg	55.4	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	60		ug/kg	55.4	79-34-5	
1,2,3-Trichloropropane	Not detected	100		ug/kg	55.4	96-18-4	
n-Propylbenzene	Not detected	60		ug/kg	55.4	103-65-1	
Bromobenzene	Not detected	100		ug/kg	55.4	108-86-1	
1,3,5-Trimethylbenzene	Not detected	60		ug/kg	55.4	108-67-8	
tert-Butylbenzene	Not detected	60		ug/kg	55.4	98-06-6	
1,2,4-Trimethylbenzene	Not detected	60		ug/kg	55.4	95-63-6	
sec-Butylbenzene	Not detected	60		ug/kg	55.4	135-98-8	
p-Isopropyltoluene	Not detected	100		ug/kg	55.4	99-87-6	
1,3-Dichlorobenzene	Not detected	100		ug/kg	55.4	541-73-1	
1,4-Dichlorobenzene	Not detected	100		ug/kg	55.4	106-46-7	
1,2-Dichlorobenzene	Not detected	100		ug/kg	55.4	95-50-1	
1,2,3-Trimethylbenzene	Not detected	60		ug/kg	55.4	526-73-8	
n-Butylbenzene	Not detected	60		ug/kg	55.4	104-51-8	
Hexachloroethane	Not detected	300		ug/kg	55.4	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	300		ug/kg	55.4	96-12-8	
1,2,4-Trichlorobenzene	Not detected	370		ug/kg	55.4	120-82-1	
1,2,3-Trichlorobenzene	Not detected	370		ug/kg	55.4	87-61-6	
Naphthalene	Not detected	300		ug/kg	55.4	91-20-3	
2-Methylnaphthalene	Not detected	100		ug/kg	55.4	91-57-6	

M-Result reported to MDL not RDL



Analytical Laboratory Report

Lab Sample ID: S40011.02

Sample Tag: SB-A4-MX60_4-6_090722

Collected Date/Time: 09/07/2022 10:05

Matrix: Soil

COC Reference: 157330

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	MeOH	Yes	5.5	IR
1	4oz Glass	None	Yes	5.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Sample wt. (g) / Methanol (ml)*	10.146/10	SW5035A	09/07/22 16:25	BDO	

Inorganics

Method: SM2540B, Run Date: 09/07/22 16:53, Analyst: MAM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	87	1		%	1		

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 09/13/22 14:16, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	60		ug/kg	64.1	123-91-1	

Volatile Organics 5035, Method: SW5035A/8260C, Run Date: 09/09/22 16:04, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	300		ug/kg	64.1	60-29-7	
Acetone	Not detected	1,000		ug/kg	64.1	67-64-1	
Methyl iodide	Not detected	100		ug/kg	64.1	74-88-4	
Carbon disulfide	Not detected	300		ug/kg	64.1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	300		ug/kg	64.1	1634-04-4	
Acrylonitrile	Not detected	100		ug/kg	64.1	107-13-1	
2-Butanone (MEK)	Not detected	960		ug/kg	64.1	78-93-3	
Dichlorodifluoromethane	Not detected	300		ug/kg	64.1	75-71-8	
Chloromethane	Not detected	300		ug/kg	64.1	74-87-3	
Vinyl chloride	Not detected	60		ug/kg	64.1	75-01-4	
Bromomethane	Not detected	300		ug/kg	64.1	74-83-9	
Chloroethane	Not detected	300		ug/kg	64.1	75-00-3	
Trichlorofluoromethane	Not detected	100		ug/kg	64.1	75-69-4	
1,1-Dichloroethene	Not detected	60		ug/kg	64.1	75-35-4	
Methylene chloride	Not detected	100		ug/kg	64.1	75-09-2	
trans-1,2-Dichloroethene	Not detected	60		ug/kg	64.1	156-60-5	
1,1-Dichloroethane	Not detected	60		ug/kg	64.1	75-34-3	
cis-1,2-Dichloroethene	Not detected	60		ug/kg	64.1	156-59-2	
Tetrahydrofuran*	Not detected	1,000		ug/kg	64.1	109-99-9	
Chloroform	Not detected	60		ug/kg	64.1	67-66-3	
Bromochloromethane	Not detected	100		ug/kg	64.1	74-97-5	
1,1,1-Trichloroethane	Not detected	60		ug/kg	64.1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	3,000		ug/kg	64.1	108-10-1	
2-Hexanone	Not detected	3,000		ug/kg	64.1	591-78-6	
Carbon tetrachloride	Not detected	60		ug/kg	64.1	56-23-5	
Benzene	Not detected	60		ug/kg	64.1	71-43-2	
1,2-Dichloroethane	Not detected	60		ug/kg	64.1	107-06-2	



Analytical Laboratory Report

Lab Sample ID: S40011.02 (continued)

Sample Tag: SB-A4-MX60_4-6_090722

Volatile Organics 5035, Method: SW5035A/8260C, Run Date: 09/09/22 16:04, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Trichloroethene	Not detected	60		ug/kg	64.1	79-01-6	
1,2-Dichloropropane	Not detected	60		ug/kg	64.1	78-87-5	
Bromodichloromethane	Not detected	100		ug/kg	64.1	75-27-4	
Dibromomethane	Not detected	300		ug/kg	64.1	74-95-3	
cis-1,3-Dichloropropene	Not detected	60		ug/kg	64.1	10061-01-5	
Toluene	Not detected	60		ug/kg	64.1	108-88-3	
trans-1,3-Dichloropropene	Not detected	60		ug/kg	64.1	10061-02-6	
1,1,2-Trichloroethane	Not detected	60		ug/kg	64.1	79-00-5	
Tetrachloroethene	Not detected	60		ug/kg	64.1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	60		ug/kg	64.1	110-57-6	
Dibromochloromethane	Not detected	100		ug/kg	64.1	124-48-1	
1,2-Dibromoethane	Not detected	30		ug/kg	64.1	106-93-4	M
Chlorobenzene	Not detected	60		ug/kg	64.1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	100		ug/kg	64.1	630-20-6	
Ethylbenzene	Not detected	60		ug/kg	64.1	100-41-4	
p,m-Xylene	Not detected	100		ug/kg	64.1		
o-Xylene	Not detected	60		ug/kg	64.1	95-47-6	
Styrene	Not detected	60		ug/kg	64.1	100-42-5	
Isopropylbenzene	Not detected	300		ug/kg	64.1	98-82-8	
Bromoform	Not detected	100		ug/kg	64.1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	60		ug/kg	64.1	79-34-5	
1,2,3-Trichloropropane	Not detected	100		ug/kg	64.1	96-18-4	
n-Propylbenzene	Not detected	60		ug/kg	64.1	103-65-1	
Bromobenzene	Not detected	100		ug/kg	64.1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	60		ug/kg	64.1	108-67-8	
tert-Butylbenzene	Not detected	60		ug/kg	64.1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	60		ug/kg	64.1	95-63-6	
sec-Butylbenzene	Not detected	60		ug/kg	64.1	135-98-8	
p-Isopropyltoluene	Not detected	100		ug/kg	64.1	99-87-6	
1,3-Dichlorobenzene	Not detected	100		ug/kg	64.1	541-73-1	
1,4-Dichlorobenzene	Not detected	100		ug/kg	64.1	106-46-7	
1,2-Dichlorobenzene	Not detected	100		ug/kg	64.1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	60		ug/kg	64.1	526-73-8	
n-Butylbenzene	Not detected	60		ug/kg	64.1	104-51-8	
Hexachloroethane	Not detected	400		ug/kg	64.1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	300		ug/kg	64.1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	420		ug/kg	64.1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	420		ug/kg	64.1	87-61-6	
Naphthalene	Not detected	300		ug/kg	64.1	91-20-3	
2-Methylnaphthalene	Not detected	100		ug/kg	64.1	91-57-6	

M-Result reported to MDL not RDL



Analytical Laboratory Report

Lab Sample ID: S40011.03

Sample Tag: SB-A4-MX60_6-8_090722

Collected Date/Time: 09/07/2022 10:09

Matrix: Soil

COC Reference: 157330

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	MeOH	Yes	5.5	IR
1	4oz Glass	None	Yes	5.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Sample wt. (g) / Methanol (ml)*	10.242/10	SW5035A	09/07/22 16:25	BDO	

Inorganics

Method: SM2540B, Run Date: 09/07/22 16:53, Analyst: MAM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	91	1		%	1		

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 09/13/22 15:01, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	60		ug/kg	58.6	123-91-1	

Volatile Organics 5035, Method: SW5035A/8260C, Run Date: 09/09/22 16:27, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	200		ug/kg	58.6	60-29-7	
Acetone	Not detected	1,000		ug/kg	58.6	67-64-1	
Methyl iodide	Not detected	100		ug/kg	58.6	74-88-4	
Carbon disulfide	Not detected	300		ug/kg	58.6	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	200		ug/kg	58.6	1634-04-4	
Acrylonitrile	Not detected	100		ug/kg	58.6	107-13-1	
2-Butanone (MEK)	Not detected	880		ug/kg	58.6	78-93-3	
Dichlorodifluoromethane	Not detected	300		ug/kg	58.6	75-71-8	
Chloromethane	Not detected	300		ug/kg	58.6	74-87-3	
Vinyl chloride	Not detected	60		ug/kg	58.6	75-01-4	
Bromomethane	Not detected	200		ug/kg	58.6	74-83-9	
Chloroethane	Not detected	300		ug/kg	58.6	75-00-3	
Trichlorofluoromethane	Not detected	100		ug/kg	58.6	75-69-4	
1,1-Dichloroethene	Not detected	60		ug/kg	58.6	75-35-4	
Methylene chloride	Not detected	100		ug/kg	58.6	75-09-2	
trans-1,2-Dichloroethene	Not detected	60		ug/kg	58.6	156-60-5	
1,1-Dichloroethane	Not detected	60		ug/kg	58.6	75-34-3	
cis-1,2-Dichloroethene	Not detected	60		ug/kg	58.6	156-59-2	
Tetrahydrofuran*	Not detected	1,000		ug/kg	58.6	109-99-9	
Chloroform	Not detected	60		ug/kg	58.6	67-66-3	
Bromochloromethane	Not detected	100		ug/kg	58.6	74-97-5	
1,1,1-Trichloroethane	Not detected	60		ug/kg	58.6	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	3,000		ug/kg	58.6	108-10-1	
2-Hexanone	Not detected	3,000		ug/kg	58.6	591-78-6	
Carbon tetrachloride	Not detected	60		ug/kg	58.6	56-23-5	
Benzene	Not detected	60		ug/kg	58.6	71-43-2	
1,2-Dichloroethane	Not detected	60		ug/kg	58.6	107-06-2	



Analytical Laboratory Report

Lab Sample ID: S40011.03 (continued)

Sample Tag: SB-A4-MX60_6-8_090722

Volatile Organics 5035, Method: SW5035A/8260C, Run Date: 09/09/22 16:27, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Trichloroethene	Not detected	60		ug/kg	58.6	79-01-6	
1,2-Dichloropropane	Not detected	60		ug/kg	58.6	78-87-5	
Bromodichloromethane	Not detected	100		ug/kg	58.6	75-27-4	
Dibromomethane	Not detected	300		ug/kg	58.6	74-95-3	
cis-1,3-Dichloropropene	Not detected	60		ug/kg	58.6	10061-01-5	
Toluene	Not detected	60		ug/kg	58.6	108-88-3	
trans-1,3-Dichloropropene	Not detected	60		ug/kg	58.6	10061-02-6	
1,1,2-Trichloroethane	Not detected	60		ug/kg	58.6	79-00-5	
Tetrachloroethene	Not detected	60		ug/kg	58.6	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	60		ug/kg	58.6	110-57-6	
Dibromochloromethane	Not detected	100		ug/kg	58.6	124-48-1	
1,2-Dibromoethane	Not detected	20		ug/kg	58.6	106-93-4	M
Chlorobenzene	Not detected	60		ug/kg	58.6	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	100		ug/kg	58.6	630-20-6	
Ethylbenzene	Not detected	60		ug/kg	58.6	100-41-4	
p,m-Xylene	Not detected	100		ug/kg	58.6		
o-Xylene	Not detected	60		ug/kg	58.6	95-47-6	
Styrene	Not detected	60		ug/kg	58.6	100-42-5	
Isopropylbenzene	Not detected	300		ug/kg	58.6	98-82-8	
Bromoform	Not detected	100		ug/kg	58.6	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	60		ug/kg	58.6	79-34-5	
1,2,3-Trichloropropane	Not detected	100		ug/kg	58.6	96-18-4	
n-Propylbenzene	Not detected	60		ug/kg	58.6	103-65-1	
Bromobenzene	Not detected	100		ug/kg	58.6	108-86-1	
1,3,5-Trimethylbenzene	Not detected	60		ug/kg	58.6	108-67-8	
tert-Butylbenzene	Not detected	60		ug/kg	58.6	98-06-6	
1,2,4-Trimethylbenzene	Not detected	60		ug/kg	58.6	95-63-6	
sec-Butylbenzene	Not detected	60		ug/kg	58.6	135-98-8	
p-Isopropyltoluene	Not detected	100		ug/kg	58.6	99-87-6	
1,3-Dichlorobenzene	Not detected	100		ug/kg	58.6	541-73-1	
1,4-Dichlorobenzene	Not detected	100		ug/kg	58.6	106-46-7	
1,2-Dichlorobenzene	Not detected	100		ug/kg	58.6	95-50-1	
1,2,3-Trimethylbenzene	Not detected	60		ug/kg	58.6	526-73-8	
n-Butylbenzene	Not detected	60		ug/kg	58.6	104-51-8	
Hexachloroethane	Not detected	400		ug/kg	58.6	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	300		ug/kg	58.6	96-12-8	
1,2,4-Trichlorobenzene	Not detected	390		ug/kg	58.6	120-82-1	
1,2,3-Trichlorobenzene	Not detected	390		ug/kg	58.6	87-61-6	
Naphthalene	Not detected	300		ug/kg	58.6	91-20-3	
2-Methylnaphthalene	Not detected	100		ug/kg	58.6	91-57-6	

M-Result reported to MDL not RDL



Analytical Laboratory Report

Lab Sample ID: S40011.04

Sample Tag: SB-A4-MX60_8.5-10_090722

Collected Date/Time: 09/07/2022 10:14

Matrix: Soil

COC Reference: 157330

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	MeOH	Yes	5.5	IR
1	4oz Glass	None	Yes	5.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Sample wt. (g) / Methanol (ml)*	10.071/10	SW5035A	09/07/22 16:25	BDO	

Inorganics

Method: SM2540B, Run Date: 09/07/22 16:53, Analyst: MAM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	89	1		%	1		

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 09/13/22 15:21, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	60		ug/kg	62	123-91-1	

Volatile Organics 5035, Method: SW5035A/8260C, Run Date: 09/09/22 16:50, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	200		ug/kg	62	60-29-7	
Acetone	Not detected	1,000		ug/kg	62	67-64-1	
Methyl iodide	Not detected	100		ug/kg	62	74-88-4	
Carbon disulfide	Not detected	300		ug/kg	62	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	200		ug/kg	62	1634-04-4	
Acrylonitrile	Not detected	100		ug/kg	62	107-13-1	
2-Butanone (MEK)	Not detected	930		ug/kg	62	78-93-3	
Dichlorodifluoromethane	Not detected	300		ug/kg	62	75-71-8	
Chloromethane	Not detected	300		ug/kg	62	74-87-3	
Vinyl chloride	Not detected	60		ug/kg	62	75-01-4	
Bromomethane	Not detected	200		ug/kg	62	74-83-9	
Chloroethane	Not detected	300		ug/kg	62	75-00-3	
Trichlorofluoromethane	Not detected	100		ug/kg	62	75-69-4	
1,1-Dichloroethene	Not detected	60		ug/kg	62	75-35-4	
Methylene chloride	Not detected	100		ug/kg	62	75-09-2	
trans-1,2-Dichloroethene	Not detected	60		ug/kg	62	156-60-5	
1,1-Dichloroethane	Not detected	60		ug/kg	62	75-34-3	
cis-1,2-Dichloroethene	Not detected	60		ug/kg	62	156-59-2	
Tetrahydrofuran*	Not detected	1,000		ug/kg	62	109-99-9	
Chloroform	Not detected	60		ug/kg	62	67-66-3	
Bromochloromethane	Not detected	100		ug/kg	62	74-97-5	
1,1,1-Trichloroethane	Not detected	60		ug/kg	62	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	3,000		ug/kg	62	108-10-1	
2-Hexanone	Not detected	3,000		ug/kg	62	591-78-6	
Carbon tetrachloride	Not detected	60		ug/kg	62	56-23-5	
Benzene	Not detected	60		ug/kg	62	71-43-2	
1,2-Dichloroethane	Not detected	60		ug/kg	62	107-06-2	



Analytical Laboratory Report

Lab Sample ID: S40011.04 (continued)
Sample Tag: SB-A4-MX60_8.5-10_090722

Volatile Organics 5035, Method: SW5035A/8260C, Run Date: 09/09/22 16:50, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Trichloroethene	Not detected	60		ug/kg	62	79-01-6	
1,2-Dichloropropane	Not detected	60		ug/kg	62	78-87-5	
Bromodichloromethane	Not detected	100		ug/kg	62	75-27-4	
Dibromomethane	Not detected	300		ug/kg	62	74-95-3	
cis-1,3-Dichloropropene	Not detected	60		ug/kg	62	10061-01-5	
Toluene	Not detected	60		ug/kg	62	108-88-3	
trans-1,3-Dichloropropene	Not detected	60		ug/kg	62	10061-02-6	
1,1,2-Trichloroethane	Not detected	60		ug/kg	62	79-00-5	
Tetrachloroethene	Not detected	60		ug/kg	62	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	60		ug/kg	62	110-57-6	
Dibromochloromethane	Not detected	100		ug/kg	62	124-48-1	
1,2-Dibromoethane	Not detected	20		ug/kg	62	106-93-4	M
Chlorobenzene	Not detected	60		ug/kg	62	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	100		ug/kg	62	630-20-6	
Ethylbenzene	Not detected	60		ug/kg	62	100-41-4	
p,m-Xylene	Not detected	100		ug/kg	62		
o-Xylene	Not detected	60		ug/kg	62	95-47-6	
Styrene	Not detected	60		ug/kg	62	100-42-5	
Isopropylbenzene	Not detected	300		ug/kg	62	98-82-8	
Bromoform	Not detected	100		ug/kg	62	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	60		ug/kg	62	79-34-5	
1,2,3-Trichloropropane	Not detected	100		ug/kg	62	96-18-4	
n-Propylbenzene	Not detected	60		ug/kg	62	103-65-1	
Bromobenzene	Not detected	100		ug/kg	62	108-86-1	
1,3,5-Trimethylbenzene	Not detected	60		ug/kg	62	108-67-8	
tert-Butylbenzene	Not detected	60		ug/kg	62	98-06-6	
1,2,4-Trimethylbenzene	Not detected	60		ug/kg	62	95-63-6	
sec-Butylbenzene	Not detected	60		ug/kg	62	135-98-8	
p-Isopropyltoluene	Not detected	100		ug/kg	62	99-87-6	
1,3-Dichlorobenzene	Not detected	100		ug/kg	62	541-73-1	
1,4-Dichlorobenzene	Not detected	100		ug/kg	62	106-46-7	
1,2-Dichlorobenzene	Not detected	100		ug/kg	62	95-50-1	
1,2,3-Trimethylbenzene	Not detected	60		ug/kg	62	526-73-8	
n-Butylbenzene	Not detected	60		ug/kg	62	104-51-8	
Hexachloroethane	Not detected	400		ug/kg	62	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	300		ug/kg	62	96-12-8	
1,2,4-Trichlorobenzene	Not detected	410		ug/kg	62	120-82-1	
1,2,3-Trichlorobenzene	Not detected	410		ug/kg	62	87-61-6	
Naphthalene	Not detected	300		ug/kg	62	91-20-3	
2-Methylnaphthalene	Not detected	100		ug/kg	62	91-57-6	

M-Result reported to MDL not RDL



Analytical Laboratory Report

Lab Sample ID: S40011.05

Sample Tag: SB-A4-MX60_10-12_090722

Collected Date/Time: 09/07/2022 10:19

Matrix: Soil

COC Reference: 157330

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	MeOH	Yes	5.5	IR
1	4oz Glass	None	Yes	5.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Sample wt. (g) / Methanol (ml)*	10.344/10	SW5035A	09/07/22 16:25	BDO	

Inorganics

Method: SM2540B, Run Date: 09/07/22 16:53, Analyst: MAM

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Total Solids*	76	1		%	1		

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 09/13/22 15:42, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	80		ug/kg	79.4	123-91-1	

Volatile Organics 5035, Method: SW5035A/8260C, Run Date: 09/09/22 17:14, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	300		ug/kg	79.4	60-29-7	
Acetone	Not detected	2,000		ug/kg	79.4	67-64-1	
Methyl iodide	Not detected	200		ug/kg	79.4	74-88-4	
Carbon disulfide	Not detected	400		ug/kg	79.4	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	300		ug/kg	79.4	1634-04-4	
Acrylonitrile	Not detected	200		ug/kg	79.4	107-13-1	
2-Butanone (MEK)	Not detected	1,200		ug/kg	79.4	78-93-3	
Dichlorodifluoromethane	Not detected	400		ug/kg	79.4	75-71-8	
Chloromethane	Not detected	400		ug/kg	79.4	74-87-3	
Vinyl chloride	Not detected	80		ug/kg	79.4	75-01-4	
Bromomethane	Not detected	300		ug/kg	79.4	74-83-9	
Chloroethane	Not detected	400		ug/kg	79.4	75-00-3	
Trichlorofluoromethane	Not detected	200		ug/kg	79.4	75-69-4	
1,1-Dichloroethene	Not detected	80		ug/kg	79.4	75-35-4	
Methylene chloride	Not detected	200		ug/kg	79.4	75-09-2	
trans-1,2-Dichloroethene	Not detected	80		ug/kg	79.4	156-60-5	
1,1-Dichloroethane	Not detected	80		ug/kg	79.4	75-34-3	
cis-1,2-Dichloroethene	Not detected	80		ug/kg	79.4	156-59-2	
Tetrahydrofuran*	Not detected	2,000		ug/kg	79.4	109-99-9	
Chloroform	Not detected	80		ug/kg	79.4	67-66-3	
Bromochloromethane	Not detected	200		ug/kg	79.4	74-97-5	
1,1,1-Trichloroethane	Not detected	80		ug/kg	79.4	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	4,000		ug/kg	79.4	108-10-1	
2-Hexanone	Not detected	4,000		ug/kg	79.4	591-78-6	
Carbon tetrachloride	Not detected	80		ug/kg	79.4	56-23-5	
Benzene	Not detected	80		ug/kg	79.4	71-43-2	
1,2-Dichloroethane	Not detected	80		ug/kg	79.4	107-06-2	



Analytical Laboratory Report

Lab Sample ID: S40011.05 (continued)

Sample Tag: SB-A4-MX60_10-12_090722

Volatile Organics 5035, Method: SW5035A/8260C, Run Date: 09/09/22 17:14, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Trichloroethene	Not detected	80		ug/kg	79.4	79-01-6	
1,2-Dichloropropane	Not detected	80		ug/kg	79.4	78-87-5	
Bromodichloromethane	Not detected	200		ug/kg	79.4	75-27-4	
Dibromomethane	Not detected	400		ug/kg	79.4	74-95-3	
cis-1,3-Dichloropropene	Not detected	80		ug/kg	79.4	10061-01-5	
Toluene	Not detected	80		ug/kg	79.4	108-88-3	
trans-1,3-Dichloropropene	Not detected	80		ug/kg	79.4	10061-02-6	
1,1,2-Trichloroethane	Not detected	80		ug/kg	79.4	79-00-5	
Tetrachloroethene	Not detected	80		ug/kg	79.4	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	80		ug/kg	79.4	110-57-6	
Dibromochloromethane	Not detected	200		ug/kg	79.4	124-48-1	
1,2-Dibromoethane	Not detected	30		ug/kg	79.4	106-93-4	M
Chlorobenzene	Not detected	80		ug/kg	79.4	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	200		ug/kg	79.4	630-20-6	
Ethylbenzene	Not detected	80		ug/kg	79.4	100-41-4	
p,m-Xylene	Not detected	200		ug/kg	79.4		
o-Xylene	Not detected	80		ug/kg	79.4	95-47-6	
Styrene	Not detected	80		ug/kg	79.4	100-42-5	
Isopropylbenzene	Not detected	400		ug/kg	79.4	98-82-8	
Bromoform	Not detected	200		ug/kg	79.4	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	80		ug/kg	79.4	79-34-5	
1,2,3-Trichloropropane	Not detected	200		ug/kg	79.4	96-18-4	
n-Propylbenzene	Not detected	80		ug/kg	79.4	103-65-1	
Bromobenzene	Not detected	200		ug/kg	79.4	108-86-1	
1,3,5-Trimethylbenzene	Not detected	80		ug/kg	79.4	108-67-8	
tert-Butylbenzene	Not detected	80		ug/kg	79.4	98-06-6	
1,2,4-Trimethylbenzene	Not detected	80		ug/kg	79.4	95-63-6	
sec-Butylbenzene	Not detected	80		ug/kg	79.4	135-98-8	
p-Isopropyltoluene	Not detected	200		ug/kg	79.4	99-87-6	
1,3-Dichlorobenzene	Not detected	200		ug/kg	79.4	541-73-1	
1,4-Dichlorobenzene	Not detected	200		ug/kg	79.4	106-46-7	
1,2-Dichlorobenzene	Not detected	200		ug/kg	79.4	95-50-1	
1,2,3-Trimethylbenzene	Not detected	80		ug/kg	79.4	526-73-8	
n-Butylbenzene	Not detected	80		ug/kg	79.4	104-51-8	
Hexachloroethane	Not detected	500		ug/kg	79.4	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	400		ug/kg	79.4	96-12-8	
1,2,4-Trichlorobenzene	Not detected	520		ug/kg	79.4	120-82-1	
1,2,3-Trichlorobenzene	Not detected	520		ug/kg	79.4	87-61-6	
Naphthalene	Not detected	400		ug/kg	79.4	91-20-3	
2-Methylnaphthalene	Not detected	200		ug/kg	79.4	91-57-6	

M-Result reported to MDL not RDL



Analytical Laboratory Report

Lab Sample ID: S40011.06

Sample Tag: Trip Blank

Collected Date/Time: 09/07/2022 00:01

Matrix: Methanol

COC Reference: 157330

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	MeOH	Yes	5.5	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
Sample wt. (g) / Methanol (ml)*	10/10	SW5035A	09/07/22 16:25	BDO	

Organics - Volatiles

Volatile Organics 5035, Method: SW5035A/8260C, Run Date: 09/09/22 15:17, Analyst: BML

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	200		ug/kg	50	60-29-7	
Acetone	Not detected	1,000		ug/kg	50	67-64-1	
Methyl iodide	Not detected	100		ug/kg	50	74-88-4	
Carbon disulfide	Not detected	300		ug/kg	50	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	200		ug/kg	50	1634-04-4	
Acrylonitrile	Not detected	100		ug/kg	50	107-13-1	
2-Butanone (MEK)	Not detected	750		ug/kg	50	78-93-3	
Dichlorodifluoromethane	Not detected	300		ug/kg	50	75-71-8	
Chloromethane	Not detected	300		ug/kg	50	74-87-3	
Vinyl chloride	Not detected	50		ug/kg	50	75-01-4	
Bromomethane	Not detected	200		ug/kg	50	74-83-9	
Chloroethane	Not detected	300		ug/kg	50	75-00-3	
Trichlorofluoromethane	Not detected	100		ug/kg	50	75-69-4	
1,1-Dichloroethene	Not detected	50		ug/kg	50	75-35-4	
Methylene chloride	Not detected	100		ug/kg	50	75-09-2	
trans-1,2-Dichloroethene	Not detected	50		ug/kg	50	156-60-5	
1,1-Dichloroethane	Not detected	50		ug/kg	50	75-34-3	
cis-1,2-Dichloroethene	Not detected	50		ug/kg	50	156-59-2	
Tetrahydrofuran*	Not detected	1,000		ug/kg	50	109-99-9	
Chloroform	Not detected	50		ug/kg	50	67-66-3	
Bromochloromethane	Not detected	100		ug/kg	50	74-97-5	
1,1,1-Trichloroethane	Not detected	50		ug/kg	50	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	3,000		ug/kg	50	108-10-1	
2-Hexanone	Not detected	3,000		ug/kg	50	591-78-6	
Carbon tetrachloride	Not detected	50		ug/kg	50	56-23-5	
Benzene	Not detected	50		ug/kg	50	71-43-2	
1,2-Dichloroethane	Not detected	50		ug/kg	50	107-06-2	
Trichloroethene	Not detected	50		ug/kg	50	79-01-6	
1,2-Dichloropropane	Not detected	50		ug/kg	50	78-87-5	
Bromodichloromethane	Not detected	100		ug/kg	50	75-27-4	
Dibromomethane	Not detected	300		ug/kg	50	74-95-3	
cis-1,3-Dichloropropene	Not detected	50		ug/kg	50	10061-01-5	
Toluene	Not detected	50		ug/kg	50	108-88-3	
trans-1,3-Dichloropropene	Not detected	50		ug/kg	50	10061-02-6	
1,1,2-Trichloroethane	Not detected	50		ug/kg	50	79-00-5	
Tetrachloroethene	Not detected	50		ug/kg	50	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	50		ug/kg	50	110-57-6	



Analytical Laboratory Report

Lab Sample ID: S40011.06 (continued)

Sample Tag: Trip Blank

Volatile Organics 5035, Method: SW5035A/8260C, Run Date: 09/09/22 15:17, Analyst: BML (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Dibromochloromethane	Not detected	100		ug/kg	50	124-48-1	
1,2-Dibromoethane	Not detected	20		ug/kg	50	106-93-4	M
Chlorobenzene	Not detected	50		ug/kg	50	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	100		ug/kg	50	630-20-6	
Ethylbenzene	Not detected	50		ug/kg	50	100-41-4	
p,m-Xylene	Not detected	100		ug/kg	50		
o-Xylene	Not detected	50		ug/kg	50	95-47-6	
Styrene	Not detected	50		ug/kg	50	100-42-5	
Isopropylbenzene	Not detected	300		ug/kg	50	98-82-8	
Bromoform	Not detected	100		ug/kg	50	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	50		ug/kg	50	79-34-5	
1,2,3-Trichloropropane	Not detected	100		ug/kg	50	96-18-4	
n-Propylbenzene	Not detected	50		ug/kg	50	103-65-1	
Bromobenzene	Not detected	100		ug/kg	50	108-86-1	
1,3,5-Trimethylbenzene	Not detected	50		ug/kg	50	108-67-8	
tert-Butylbenzene	Not detected	50		ug/kg	50	98-06-6	
1,2,4-Trimethylbenzene	Not detected	50		ug/kg	50	95-63-6	
sec-Butylbenzene	Not detected	50		ug/kg	50	135-98-8	
p-Isopropyltoluene	Not detected	100		ug/kg	50	99-87-6	
1,3-Dichlorobenzene	Not detected	100		ug/kg	50	541-73-1	
1,4-Dichlorobenzene	Not detected	100		ug/kg	50	106-46-7	
1,2-Dichlorobenzene	Not detected	100		ug/kg	50	95-50-1	
1,2,3-Trimethylbenzene	Not detected	50		ug/kg	50	526-73-8	
n-Butylbenzene	Not detected	50		ug/kg	50	104-51-8	
Hexachloroethane	Not detected	300		ug/kg	50	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	300		ug/kg	50	96-12-8	
1,2,4-Trichlorobenzene	Not detected	330		ug/kg	50	120-82-1	
1,2,3-Trichlorobenzene	Not detected	330		ug/kg	50	87-61-6	
Naphthalene	Not detected	300		ug/kg	50	91-20-3	
2-Methylnaphthalene	Not detected	100		ug/kg	50	91-57-6	

M-Result reported to MDL not RDL



Quality Control Report

Report ID: S40011.01(01)+QC01
Generated on 09/14/2022

Report to
Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Report Produced by
Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

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

Phone: O:248-809-4013 C:947-777-5215 FAX:

Report Summary

Lab Sample ID(s): S40011.01-S40011.06
Project: 30112892.04100 / RACER Lansing
Submitted Date/Time: 09/07/2022 12:50
Sampled by: Austin Westhuis
P.O. #: 30112892.04100

QC Report Sections

Cover Page (Page 18)
Analysis Summary (Pages 19-24)
Prep Batch Summary (Page 25)
Surrogates per Lab Sample (Pages 26-31)
Surrogates per QC Sample (Pages 32-33)
Internal Standards per Lab Sample (Pages 34-39)
Internal Standards per QC Sample (Pages 40-41)
Batch QC Results (Pages 42-51)

Report Flag Descriptions

*: QC result is outside of indicated control limits
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

QC Report - Analysis Summary

Lab Sample ID: S40011.01

Sample Tag: SB-A4-MX60_1-3_090722

Collected Date/Time: 09/07/2022 10:00

Matrix: Soil

COC Reference: 157330

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Total Solids	SM2540B	09/07/22 16:53	TS220907A	TS220907A	No	BLK/LCS/DUP
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	09/13/22 13:52	220913A9	VS220913S2	Yes	BLK/LCS/LCSD
Volatile Organics 5035	SW5035A/8260C	09/09/22 15:40	220909A5	VF220909S1	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S40011.02

Sample Tag: SB-A4-MX60_4-6_090722

Collected Date/Time: 09/07/2022 10:05

Matrix: Soil

COC Reference: 157330

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Total Solids	SM2540B	09/07/22 16:53	TS220907A	TS220907A	No	BLK/LCS/DUP
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	09/13/22 14:16	220913A9	VS220913S2	Yes	BLK/LCS/LCSD
Volatile Organics 5035	SW5035A/8260C	09/09/22 16:04	220909A5	VF220909S1	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S40011.03

Sample Tag: SB-A4-MX60_6-8_090722

Collected Date/Time: 09/07/2022 10:09

Matrix: Soil

COC Reference: 157330

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Total Solids	SM2540B	09/07/22 16:53	TS220907A	TS220907A	No	BLK/LCS/DUP
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	09/13/22 15:01	220913A9	VS220913S2	Yes	BLK/LCS/LCSD
Volatile Organics 5035	SW5035A/8260C	09/09/22 16:27	220909A5	VF220909S1	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S40011.04

Sample Tag: SB-A4-MX60_8.5-10_090722

Collected Date/Time: 09/07/2022 10:14

Matrix: Soil

COC Reference: 157330

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Total Solids	SM2540B	09/07/22 16:53	TS220907A	TS220907A	No	BLK/LCS/DUP
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	09/13/22 15:21	220913A9	VS220913S2	Yes	BLK/LCS/LCSD
Volatile Organics 5035	SW5035A/8260C	09/09/22 16:50	220909A5	VF220909S1	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S40011.05

Sample Tag: SB-A4-MX60_10-12_090722

Collected Date/Time: 09/07/2022 10:19

Matrix: Soil

COC Reference: 157330

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Inorganics						
Total Solids	SM2540B	09/07/22 16:53	TS220907A	TS220907A	No	BLK/LCS/DUP
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	09/13/22 15:42	220913A9	VS220913S2	Yes	BLK/LCS/LCSD
Volatile Organics 5035	SW5035A/8260C	09/09/22 17:14	220909A5	VF220909S1	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S40011.06

Sample Tag: Trip Blank

Collected Date/Time: 09/07/2022 00:01

Matrix: Methanol

COC Reference: 157330

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
Volatile Organics 5035	SW5035A/8260C	09/09/22 15:17	220909A5	VF220909S1	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Prep Batch Summary

Inorganics, Prep Batch ID: TS220907A

Surrogates: No, QC Types: BLK/LCS/DUP

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S40011.01	Total Solids	SM2540B	09/07/22 16:53	TS220907A
S40011.02	Total Solids	SM2540B	09/07/22 16:53	TS220907A
S40011.03	Total Solids	SM2540B	09/07/22 16:53	TS220907A
S40011.04	Total Solids	SM2540B	09/07/22 16:53	TS220907A
S40011.05	Total Solids	SM2540B	09/07/22 16:53	TS220907A

Organics - Volatiles, Prep Batch ID: VF220909S1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S40011.01	Volatile Organics 5035	SW5035A/8260C	09/09/22 15:40	220909A5
S40011.02	Volatile Organics 5035	SW5035A/8260C	09/09/22 16:04	220909A5
S40011.03	Volatile Organics 5035	SW5035A/8260C	09/09/22 16:27	220909A5
S40011.04	Volatile Organics 5035	SW5035A/8260C	09/09/22 16:50	220909A5
S40011.05	Volatile Organics 5035	SW5035A/8260C	09/09/22 17:14	220909A5
S40011.06	Volatile Organics 5035	SW5035A/8260C	09/09/22 15:17	220909A5

Organics - Volatiles, Prep Batch ID: VS220913S2

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S40011.01	1,4-Dioxane	SW8260B - SIM	09/13/22 13:52	220913A9
S40011.02	1,4-Dioxane	SW8260B - SIM	09/13/22 14:16	220913A9
S40011.03	1,4-Dioxane	SW8260B - SIM	09/13/22 15:01	220913A9
S40011.04	1,4-Dioxane	SW8260B - SIM	09/13/22 15:21	220913A9
S40011.05	1,4-Dioxane	SW8260B - SIM	09/13/22 15:42	220913A9

QC Report - Surrogates per Lab Sample

Lab Sample ID: S40011.01

Sample Tag: SB-A4-MX60_1-3_090722

Collected Date/Time: 09/07/2022 10:00

Matrix: Soil

COC Reference: 157330

Organics - Volatiles, Analysis: Volatile Organics 5035

Run in Batch: 220909A5, Run Date: 09/09/2022 15:40, Matrix: SO, Dilution: 55.4

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		105.0	81.0	124.0
1,2-Dichloroethane-D4		99.6	71.0	124.0
Toluene-D8		106.8	83.0	120.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S40011.02

Sample Tag: SB-A4-MX60_4-6_090722

Collected Date/Time: 09/07/2022 10:05

Matrix: Soil

COC Reference: 157330

Organics - Volatiles, Analysis: Volatile Organics 5035

Run in Batch: 220909A5, Run Date: 09/09/2022 16:04, Matrix: SO, Dilution: 64.1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		105.6	81.0	124.0
1,2-Dichloroethane-D4		107.6	71.0	124.0
Toluene-D8		108.2	83.0	120.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S40011.03

Sample Tag: SB-A4-MX60_6-8_090722

Collected Date/Time: 09/07/2022 10:09

Matrix: Soil

COC Reference: 157330

Organics - Volatiles, Analysis: Volatile Organics 5035

Run in Batch: 220909A5, Run Date: 09/09/2022 16:27, Matrix: SO, Dilution: 58.6

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		106.4	81.0	124.0
1,2-Dichloroethane-D4		107.8	71.0	124.0
Toluene-D8		109.7	83.0	120.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S40011.04

Sample Tag: SB-A4-MX60_8.5-10_090722

Collected Date/Time: 09/07/2022 10:14

Matrix: Soil

COC Reference: 157330

Organics - Volatiles, Analysis: Volatile Organics 5035

Run in Batch: 220909A5, Run Date: 09/09/2022 16:50, Matrix: SO, Dilution: 62

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		106.1	81.0	124.0
1,2-Dichloroethane-D4		103.2	71.0	124.0
Toluene-D8		108.0	83.0	120.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S40011.05

Sample Tag: SB-A4-MX60_10-12_090722

Collected Date/Time: 09/07/2022 10:19

Matrix: Soil

COC Reference: 157330

Organics - Volatiles, Analysis: Volatile Organics 5035

Run in Batch: 220909A5, Run Date: 09/09/2022 17:14, Matrix: SO, Dilution: 79.4

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		106.6	81.0	124.0
1,2-Dichloroethane-D4		105.8	71.0	124.0
Toluene-D8		108.3	83.0	120.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S40011.06

Sample Tag: Trip Blank

Collected Date/Time: 09/07/2022 00:01

Matrix: Methanol

COC Reference: 157330

Organics - Volatiles, Analysis: Volatile Organics 5035

Run in Batch: 220909A5, Run Date: 09/09/2022 15:17, Matrix: SO, Dilution: 50

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		104.9	81.0	124.0
1,2-Dichloroethane-D4		103.1	71.0	124.0
Toluene-D8		107.9	83.0	120.0

QC Report - Surrogates per QC Sample

Organics - Volatiles, Prep Batch ID: VF220909S1

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220909A5.BLKS09A

Run in Batch: 220909A5, Run Date: 09/09/2022 14:02, Prep Date: 09/09/2022, Matrix: SO, Dilution: 50

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		107.1	81.0	124.0
1,2-Dichloroethane-D4		101.9	71.0	124.0
Toluene-D8		108.9	83.0	120.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220909A5.LCSS09A

Run in Batch: 220909A5, Run Date: 09/09/2022 12:07, Prep Date: 09/09/2022, Matrix: SO, Dilution: 50

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		109.2	81.0	124.0
1,2-Dichloroethane-D4		113.2	71.0	124.0
Toluene-D8		108.3	83.0	120.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220909A5.LCSDS09A, Parent Sample ID: 220909A5.LCSS09A

Run in Batch: 220909A5, Run Date: 09/09/2022 12:30, Prep Date: 09/09/2022, Matrix: SO, Dilution: 50

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		108.4	81.0	124.0
1,2-Dichloroethane-D4		112.7	71.0	124.0
Toluene-D8		108.4	83.0	120.0

Matrix Spike (MS)

Lab Sample ID: 220909A5.3987908M, Parent Sample ID: S39879.07

Run in Batch: 220909A5, Run Date: 09/09/2022 12:53, Prep Date: 09/09/2022, Matrix: SO, Dilution: 62.9

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		104.9	81.0	124.0
1,2-Dichloroethane-D4		105.5	71.0	124.0
Toluene-D8		107.6	83.0	120.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220909A5.3987909N, Parent Sample ID: 220909A5.3987908M

Run in Batch: 220909A5, Run Date: 09/09/2022 13:16, Prep Date: 09/09/2022, Matrix: SO, Dilution: 62

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		105.5	81.0	124.0
1,2-Dichloroethane-D4		108.0	71.0	124.0
Toluene-D8		108.1	83.0	120.0

QC Report - Surrogates per QC Sample

Organics - Volatiles, Prep Batch ID: VS220913S2

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220913A9.BLKS13A

Run in Batch: 220913A9, Run Date: 09/13/2022 13:17, Prep Date: 09/13/2022, Matrix: SO, Dilution: 50

Surrogate	Flags	%Rec	LCL	UCL
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No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: 220913A9.LCSS13A

Run in Batch: 220913A9, Run Date: 09/13/2022 12:15, Prep Date: 09/13/2022, Matrix: SO, Dilution: 50

Surrogate	Flags	%Rec	LCL	UCL
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No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220913A9.LCSDS13A, Parent Sample ID: 220913A9.LCSS13A

Run in Batch: 220913A9, Run Date: 09/13/2022 12:35, Prep Date: 09/13/2022, Matrix: SO, Dilution: 50

Surrogate	Flags	%Rec	LCL	UCL
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No Surrogates

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S40011.01

Sample Tag: SB-A4-MX60_1-3_090722

Collected Date/Time: 09/07/2022 10:00

Matrix: Soil

COC Reference: 157330

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220913A9, Run Date: 09/13/2022 13:52, Matrix: SO, Dilution: 55.4

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		124.4	50.0	200.0

Organics - Volatiles, Analysis: Volatile Organics 5035

Run in Batch: 220909A5, Run Date: 09/09/2022 15:40, Matrix: SO, Dilution: 55.4

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		90.5	50.0	200.0
1,4-Difluorobenzene		88.1	50.0	200.0
Chlorobenzene-D5		84.1	50.0	200.0
1,4-Dichlorobenzene-D4		81.8	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S40011.02

Sample Tag: SB-A4-MX60_4-6_090722

Collected Date/Time: 09/07/2022 10:05

Matrix: Soil

COC Reference: 157330

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220913A9, Run Date: 09/13/2022 14:16, Matrix: SO, Dilution: 64.1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		120.2	50.0	200.0

Organics - Volatiles, Analysis: Volatile Organics 5035

Run in Batch: 220909A5, Run Date: 09/09/2022 16:04, Matrix: SO, Dilution: 64.1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		97.3	50.0	200.0
1,4-Difluorobenzene		99.6	50.0	200.0
Chlorobenzene-D5		100.2	50.0	200.0
1,4-Dichlorobenzene-D4		100.2	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S40011.03

Sample Tag: SB-A4-MX60_6-8_090722

Collected Date/Time: 09/07/2022 10:09

Matrix: Soil

COC Reference: 157330

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220913A9, Run Date: 09/13/2022 15:01, Matrix: SO, Dilution: 58.6

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		117.6	50.0	200.0

Organics - Volatiles, Analysis: Volatile Organics 5035

Run in Batch: 220909A5, Run Date: 09/09/2022 16:27, Matrix: SO, Dilution: 58.6

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		95.5	50.0	200.0
1,4-Difluorobenzene		97.6	50.0	200.0
Chlorobenzene-D5		98.2	50.0	200.0
1,4-Dichlorobenzene-D4		95.9	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S40011.04

Sample Tag: SB-A4-MX60_8.5-10_090722

Collected Date/Time: 09/07/2022 10:14

Matrix: Soil

COC Reference: 157330

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220913A9, Run Date: 09/13/2022 15:21, Matrix: SO, Dilution: 62

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		124.1	50.0	200.0

Organics - Volatiles, Analysis: Volatile Organics 5035

Run in Batch: 220909A5, Run Date: 09/09/2022 16:50, Matrix: SO, Dilution: 62

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		94.0	50.0	200.0
1,4-Difluorobenzene		94.0	50.0	200.0
Chlorobenzene-D5		92.1	50.0	200.0
1,4-Dichlorobenzene-D4		89.9	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S40011.05

Sample Tag: SB-A4-MX60_10-12_090722

Collected Date/Time: 09/07/2022 10:19

Matrix: Soil

COC Reference: 157330

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220913A9, Run Date: 09/13/2022 15:42, Matrix: SO, Dilution: 79.4

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		112.9	50.0	200.0

Organics - Volatiles, Analysis: Volatile Organics 5035

Run in Batch: 220909A5, Run Date: 09/09/2022 17:14, Matrix: SO, Dilution: 79.4

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		98.1	50.0	200.0
1,4-Difluorobenzene		98.8	50.0	200.0
Chlorobenzene-D5		97.8	50.0	200.0
1,4-Dichlorobenzene-D4		95.9	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S40011.06

Sample Tag: Trip Blank

Collected Date/Time: 09/07/2022 00:01

Matrix: Methanol

COC Reference: 157330

Organics - Volatiles, Analysis: Volatile Organics 5035

Run in Batch: 220909A5, Run Date: 09/09/2022 15:17, Matrix: SO, Dilution: 50

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		95.7	50.0	200.0
1,4-Difluorobenzene		96.6	50.0	200.0
Chlorobenzene-D5		95.3	50.0	200.0
1,4-Dichlorobenzene-D4		92.7	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: VF220909S1

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220909A5.BLKS09A

Run in Batch: 220909A5, Run Date: 09/09/2022 14:02, Prep Date: 09/09/2022, Matrix: SO, Dilution: 50

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		96.7	50.0	200.0
1,4-Difluorobenzene		96.0	50.0	200.0
Chlorobenzene-D5		95.0	50.0	200.0
1,4-Dichlorobenzene-D4		93.9	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220909A5.LCSS09A

Run in Batch: 220909A5, Run Date: 09/09/2022 12:07, Prep Date: 09/09/2022, Matrix: SO, Dilution: 50

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		100.2	50.0	200.0
1,4-Difluorobenzene		100.9	50.0	200.0
Chlorobenzene-D5		100.1	50.0	200.0
1,4-Dichlorobenzene-D4		99.6	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220909A5.LCSDS09A, Parent Sample ID: 220909A5.LCSS09A

Run in Batch: 220909A5, Run Date: 09/09/2022 12:30, Prep Date: 09/09/2022, Matrix: SO, Dilution: 50

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		99.6	50.0	200.0
1,4-Difluorobenzene		100.1	50.0	200.0
Chlorobenzene-D5		100.7	50.0	200.0
1,4-Dichlorobenzene-D4		102.2	50.0	200.0

Matrix Spike (MS)

Lab Sample ID: 220909A5.3987908M, Parent Sample ID: S39879.07

Run in Batch: 220909A5, Run Date: 09/09/2022 12:53, Prep Date: 09/09/2022, Matrix: SO, Dilution: 62.9

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		96.2	50.0	200.0
1,4-Difluorobenzene		94.7	50.0	200.0
Chlorobenzene-D5		91.9	50.0	200.0
1,4-Dichlorobenzene-D4		88.0	50.0	200.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220909A5.3987909N, Parent Sample ID: 220909A5.3987908M

Run in Batch: 220909A5, Run Date: 09/09/2022 13:16, Prep Date: 09/09/2022, Matrix: SO, Dilution: 62

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		95.4	50.0	200.0
1,4-Difluorobenzene		94.2	50.0	200.0
Chlorobenzene-D5		92.4	50.0	200.0
1,4-Dichlorobenzene-D4		90.1	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: VS220913S2

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220913A9.BLKS13A

Run in Batch: 220913A9, Run Date: 09/13/2022 13:17, Prep Date: 09/13/2022, Matrix: SO, Dilution: 50

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		118.1	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220913A9.LCSS13A

Run in Batch: 220913A9, Run Date: 09/13/2022 12:15, Prep Date: 09/13/2022, Matrix: SO, Dilution: 50

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		119.3	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220913A9.LCSDS13A, Parent Sample ID: 220913A9.LCSS13A

Run in Batch: 220913A9, Run Date: 09/13/2022 12:35, Prep Date: 09/13/2022, Matrix: SO, Dilution: 50

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		132.9	50.0	200.0

QC Report - Batch QC Results

Inorganics, Prep Batch ID: TS220907A

Surrogates: No, QC Types: BLK/LCS/DUP

Blank (BLK)

Lab Sample ID: TS220907A.LRB1

Run in Batch: TS220907A, Run Date: 09/07/2022 16:53, Prep Date: 09/07/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Total Solids		ND	1	%

Laboratory Control Sample (LCS)

Lab Sample ID: TS220907A.LCS1

Run in Batch: TS220907A, Run Date: 09/07/2022 16:53, Prep Date: 09/07/2022, Matrix: Liquid, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Total Solids		100	90	110

Duplicate (DUP)

Lab Sample ID: TS220907A.DP1, Parent Sample ID: S39993.01

Run in Batch: TS220907A, Run Date: 09/07/2022 16:53, Prep Date: 09/07/2022, Matrix: Soil, Dilution: 1

Analyte	Flags	RPD	RPD CL
Total Solids		1	5

Duplicate (DUP)

Lab Sample ID: TS220907A.DP2, Parent Sample ID: S40013.03

Run in Batch: TS220907A, Run Date: 09/07/2022 16:53, Prep Date: 09/07/2022, Matrix: Soil, Dilution: 1

Analyte	Flags	RPD	RPD CL
Total Solids		0	5

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF220909S1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 220909A5.BLKS09A

Run in Batch: 220909A5, Run Date: 09/09/2022 14:02, Prep Date: 09/09/2022, Matrix: SO, Dilution: 50

Analyte	Flags	Conc	RDL	Units
Diethyl ether		ND	50.0	ug/kg
Acetone		ND	500.0	ug/kg
Methyl iodide		ND	50.0	ug/kg
Carbon disulfide		ND	50.0	ug/kg
tert-Methyl butyl ether (MTBE)		ND	50.0	ug/kg
Acrylonitrile		ND	50.0	ug/kg
2-Butanone (MEK)		ND	500.0	ug/kg
Dichlorodifluoromethane		ND	50.0	ug/kg
Chloromethane		ND	50.0	ug/kg
Vinyl chloride		ND	50.0	ug/kg
Bromomethane		ND	50.0	ug/kg
Chloroethane		ND	50.0	ug/kg
Trichlorofluoromethane		ND	50.0	ug/kg
1,1-Dichloroethene		ND	50.0	ug/kg
Methylene chloride		ND	50.0	ug/kg
trans-1,2-Dichloroethene		ND	50.0	ug/kg
1,1-Dichloroethane		ND	50.0	ug/kg
cis-1,2-Dichloroethene		ND	50.0	ug/kg
Tetrahydrofuran		ND	500.0	ug/kg
Chloroform		ND	50.0	ug/kg
Bromochloromethane		ND	50.0	ug/kg
1,1,1-Trichloroethane		ND	50.0	ug/kg
4-Methyl-2-pentanone (MIBK)		ND	500.0	ug/kg
2-Hexanone		ND	500.0	ug/kg
Carbon tetrachloride		ND	50.0	ug/kg
Benzene		ND	50.0	ug/kg
1,2-Dichloroethane		ND	50.0	ug/kg
Trichloroethene		ND	50.0	ug/kg
1,2-Dichloropropane		ND	50.0	ug/kg
Bromodichloromethane		ND	50.0	ug/kg
Dibromomethane		ND	50.0	ug/kg
cis-1,3-Dichloropropene		ND	50.0	ug/kg
Toluene		ND	50.0	ug/kg
trans-1,3-Dichloropropene		ND	50.0	ug/kg
1,1,2-Trichloroethane		ND	50.0	ug/kg
Tetrachloroethene		ND	50.0	ug/kg
trans-1,4-Dichloro-2-butene		ND	50.0	ug/kg
Dibromochloromethane		ND	50.0	ug/kg
1,2-Dibromoethane		ND	50.0	ug/kg
Chlorobenzene		ND	50.0	ug/kg
1,1,1,2-Tetrachloroethane		ND	50.0	ug/kg
Ethylbenzene		ND	50.0	ug/kg
p,m-Xylene		ND	50.0	ug/kg
o-Xylene		ND	50.0	ug/kg
Styrene		ND	50.0	ug/kg
Isopropylbenzene		ND	50.0	ug/kg

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF220909S1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK) (continued)

Lab Sample ID: 220909A5.BLKS09A

Run in Batch: 220909A5, Run Date: 09/09/2022 14:02, Prep Date: 09/09/2022, Matrix: SO, Dilution: 50

Analyte	Flags	Conc	RDL	Units
Bromoform		ND	50.0	ug/kg
1,1,2,2-Tetrachloroethane		ND	50.0	ug/kg
1,2,3-Trichloropropane		ND	50.0	ug/kg
n-Propylbenzene		ND	50.0	ug/kg
Bromobenzene		ND	50.0	ug/kg
1,3,5-Trimethylbenzene		ND	50.0	ug/kg
tert-Butylbenzene		ND	50.0	ug/kg
1,2,4-Trimethylbenzene		ND	50.0	ug/kg
sec-Butylbenzene		ND	50.0	ug/kg
p-Isopropyltoluene		ND	50.0	ug/kg
1,3-Dichlorobenzene		ND	50.0	ug/kg
1,4-Dichlorobenzene		ND	50.0	ug/kg
1,2-Dichlorobenzene		ND	50.0	ug/kg
1,2,3-Trimethylbenzene		ND	50.0	ug/kg
n-Butylbenzene		ND	50.0	ug/kg
Hexachloroethane		ND	50.0	ug/kg
1,2-Dibromo-3-chloropropane		ND	50.0	ug/kg
1,2,4-Trichlorobenzene		ND	50.0	ug/kg
1,2,3-Trichlorobenzene		ND	50.0	ug/kg
Naphthalene		ND	50.0	ug/kg
2-Methylnaphthalene		ND	50.0	ug/kg

Laboratory Control Sample (LCS)

Lab Sample ID: 220909A5.LCSS09A

Run in Batch: 220909A5, Run Date: 09/09/2022 12:07, Prep Date: 09/09/2022, Matrix: SO, Dilution: 50

Analyte	Flags	% Rec	LCL	UCL
Diethyl ether		95.0	51.7	123.0
Acetone		101.7	25.3	155.1
Methyl iodide		107.0	56.9	110.8
Carbon disulfide		117.6	57.0	123.0
tert-Methyl butyl ether (MTBE)		102.1	67.5	123.7
Acrylonitrile		113.9	58.7	133.0
2-Butanone (MEK)		113.0	38.7	136.9
Dichlorodifluoromethane		113.6	10.0	171.8
Chloromethane		110.3	30.2	152.7
Vinyl chloride		109.7	45.3	138.7
Bromomethane		90.2	10.0	157.4
Chloroethane		82.5	10.0	169.1
Trichlorofluoromethane		106.4	25.7	157.8
1,1-Dichloroethene		106.8	59.2	137.5
Methylene chloride		102.9	70.5	121.5
trans-1,2-Dichloroethene		109.8	72.5	128.8
1,1-Dichloroethane		109.4	72.5	123.4
cis-1,2-Dichloroethene		109.8	75.0	120.5
Tetrahydrofuran		118.2	48.2	125.7
Chloroform		110.2	74.6	123.2

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF220909S1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 220909A5.LCSS09A

Run in Batch: 220909A5, Run Date: 09/09/2022 12:07, Prep Date: 09/09/2022, Matrix: SO, Dilution: 50

Analyte	Flags	% Rec	LCL	UCL
Bromochloromethane		109.4	72.3	122.8
1,1,1-Trichloroethane		109.7	73.8	128.9
4-Methyl-2-pentanone (MIBK)		117.7	60.4	133.8
2-Hexanone		118.9	45.7	141.9
Carbon tetrachloride		112.4	70.1	132.7
Benzene		111.8	74.6	128.9
1,2-Dichloroethane		109.3	73.2	125.4
Trichloroethene		114.5	74.1	127.6
1,2-Dichloropropane		110.4	77.6	124.4
Bromodichloromethane		118.3	76.7	128.4
Dibromomethane		113.1	72.5	127.3
cis-1,3-Dichloropropene		122.4	79.3	128.3
Toluene		110.1	74.8	129.2
trans-1,3-Dichloropropene		123.7	74.5	129.7
1,1,2-Trichloroethane		113.4	71.3	125.7
Tetrachloroethene		114.7	73.0	124.7
trans-1,4-Dichloro-2-butene		132.8	58.3	143.3
Dibromochloromethane		123.9	68.9	132.7
1,2-Dibromoethane		119.1	71.4	129.3
Chlorobenzene		113.0	74.2	128.1
1,1,1,2-Tetrachloroethane		112.3	76.6	133.0
Ethylbenzene		113.3	77.7	130.4
p,m-Xylene		114.6	79.8	132.0
o-Xylene		111.4	79.4	132.3
Styrene		115.8	71.3	119.3
Isopropylbenzene		111.8	70.3	128.2
Bromoform		126.7	54.7	137.4
1,1,2,2-Tetrachloroethane		117.6	65.4	134.9
1,2,3-Trichloropropane		114.6	67.2	154.5
n-Propylbenzene		114.7	77.3	135.2
Bromobenzene		113.1	74.0	132.4
1,3,5-Trimethylbenzene		112.0	75.6	137.0
tert-Butylbenzene		109.2	75.6	134.6
1,2,4-Trimethylbenzene		112.1	76.9	139.1
sec-Butylbenzene		113.6	72.7	135.6
p-Isopropyltoluene		116.1	77.1	140.9
1,3-Dichlorobenzene		117.3	77.3	131.0
1,4-Dichlorobenzene		117.1	33.1	125.8
1,2-Dichlorobenzene		115.4	73.5	132.7
1,2,3-Trimethylbenzene		105.8	70.9	130.2
n-Butylbenzene		121.8	75.0	138.6
Hexachloroethane		114.1	55.5	129.0
1,2-Dibromo-3-chloropropane		128.4	54.1	156.4
1,2,4-Trichlorobenzene		125.4	37.1	131.3
1,2,3-Trichlorobenzene		118.9	59.4	157.9
Naphthalene		118.6	39.3	129.2

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF220909S1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 220909A5.LCSS09A

Run in Batch: 220909A5, Run Date: 09/09/2022 12:07, Prep Date: 09/09/2022, Matrix: SO, Dilution: 50

Analyte	Flags	% Rec	LCL	UCL
2-Methylnaphthalene		112.1	10.0	175.9

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220909A5.LCSDS09A, Parent Sample ID: 220909A5.LCSS09A

Run in Batch: 220909A5, Run Date: 09/09/2022 12:30, Prep Date: 09/09/2022, Matrix: SO, Dilution: 50

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Diethyl ether		94.0	51.7	123.0	1.0	30.0
Acetone		99.5	25.3	155.1	2.2	30.0
Methyl iodide		110.8	56.9	110.8	3.5	30.0
Carbon disulfide		122.5	57.0	123.0	4.1	30.0
tert-Methyl butyl ether (MTBE)		103.0	67.5	123.7	0.9	30.0
Acrylonitrile		113.3	58.7	133.0	0.5	30.0
2-Butanone (MEK)		108.1	38.7	136.9	4.5	30.0
Dichlorodifluoromethane		116.9	10.0	171.8	2.9	30.0
Chloromethane		107.5	30.2	152.7	2.6	30.0
Vinyl chloride		110.0	45.3	138.7	0.3	30.0
Bromomethane		92.1	10.0	157.4	2.2	30.0
Chloroethane		85.2	10.0	169.1	3.3	30.0
Trichlorofluoromethane		108.3	25.7	157.8	1.7	30.0
1,1-Dichloroethene		109.2	59.2	137.5	2.1	30.0
Methylene chloride		106.0	70.5	121.5	3.0	30.0
trans-1,2-Dichloroethene		110.4	72.5	128.8	0.5	30.0
1,1-Dichloroethane		108.7	72.5	123.4	0.6	30.0
cis-1,2-Dichloroethene		108.4	75.0	120.5	1.3	30.0
Tetrahydrofuran		114.6	48.2	125.7	3.0	30.0
Chloroform		109.1	74.6	123.2	1.0	30.0
Bromochloromethane		108.0	72.3	122.8	1.2	30.0
1,1,1-Trichloroethane		111.6	73.8	128.9	1.7	30.0
4-Methyl-2-pentanone (MIBK)		116.0	60.4	133.8	1.4	30.0
2-Hexanone		114.2	45.7	141.9	4.0	30.0
Carbon tetrachloride		112.6	70.1	132.7	0.2	30.0
Benzene		110.6	74.6	128.9	1.0	30.0
1,2-Dichloroethane		106.1	73.2	125.4	3.0	30.0
Trichloroethene		111.9	74.1	127.6	2.3	30.0
1,2-Dichloropropane		109.9	77.6	124.4	0.5	30.0
Bromodichloromethane		116.7	76.7	128.4	1.4	30.0
Dibromomethane		111.6	72.5	127.3	1.4	30.0
cis-1,3-Dichloropropene		118.6	79.3	128.3	3.1	30.0
Toluene		109.0	74.8	129.2	1.1	30.0
trans-1,3-Dichloropropene		120.6	74.5	129.7	2.6	30.0
1,1,2-Trichloroethane		110.8	71.3	125.7	2.3	30.0
Tetrachloroethene		114.1	73.0	124.7	0.5	30.0
trans-1,4-Dichloro-2-butene		128.0	58.3	143.3	3.7	30.0
Dibromochloromethane		118.9	68.9	132.7	4.1	30.0
1,2-Dibromoethane		115.7	71.4	129.3	2.9	30.0
Chlorobenzene		110.2	74.2	128.1	2.5	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF220909S1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: 220909A5.LCSDS09A, Parent Sample ID: 220909A5.LCSS09A

Run in Batch: 220909A5, Run Date: 09/09/2022 12:30, Prep Date: 09/09/2022, Matrix: SO, Dilution: 50

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,1,1,2-Tetrachloroethane		111.8	76.6	133.0	0.5	30.0
Ethylbenzene		112.1	77.7	130.4	1.1	30.0
p,m-Xylene		111.8	79.8	132.0	2.4	30.0
o-Xylene		110.2	79.4	132.3	1.0	30.0
Styrene		113.5	71.3	119.3	2.0	30.0
Isopropylbenzene		110.9	70.3	128.2	0.8	30.0
Bromoform		122.4	54.7	137.4	3.5	30.0
1,1,2,2-Tetrachloroethane		115.0	65.4	134.9	2.2	30.0
1,2,3-Trichloropropane		112.1	67.2	154.5	2.2	30.0
n-Propylbenzene		113.7	77.3	135.2	0.8	30.0
Bromobenzene		112.1	74.0	132.4	0.9	30.0
1,3,5-Trimethylbenzene		110.2	75.6	137.0	1.6	30.0
tert-Butylbenzene		109.2	75.6	134.6	0.1	30.0
1,2,4-Trimethylbenzene		111.4	76.9	139.1	0.6	30.0
sec-Butylbenzene		111.5	72.7	135.6	1.9	30.0
p-Isopropyltoluene		114.8	77.1	140.9	1.1	30.0
1,3-Dichlorobenzene		113.9	77.3	131.0	3.0	30.0
1,4-Dichlorobenzene		113.3	33.1	125.8	3.3	30.0
1,2-Dichlorobenzene		111.9	73.5	132.7	3.1	30.0
1,2,3-Trimethylbenzene		103.5	70.9	130.2	2.2	30.0
n-Butylbenzene		118.3	75.0	138.6	2.9	30.0
Hexachloroethane		112.0	55.5	129.0	1.8	30.0
1,2-Dibromo-3-chloropropane		122.1	54.1	156.4	5.0	30.0
1,2,4-Trichlorobenzene		123.0	37.1	131.3	1.9	30.0
1,2,3-Trichlorobenzene		117.4	59.4	157.9	1.3	30.0
Naphthalene		116.4	39.3	129.2	1.9	30.0
2-Methylnaphthalene		109.0	10.0	175.9	2.8	30.0

Matrix Spike (MS)

Lab Sample ID: 220909A5.3987908M, Parent Sample ID: S39879.07

Run in Batch: 220909A5, Run Date: 09/09/2022 12:53, Prep Date: 09/09/2022, Matrix: SO, Dilution: 62.9

Analyte	Flags	% Rec	LCL	UCL
Diethyl ether		93.8	51.7	123.0
Acetone		90.6	25.3	155.1
Methyl iodide		105.2	56.9	110.8
Carbon disulfide		115.0	57.0	123.0
tert-Methyl butyl ether (MTBE)		93.0	67.5	123.7
Acrylonitrile		102.4	58.7	133.0
2-Butanone (MEK)		96.8	38.7	136.9
Dichlorodifluoromethane		114.0	10.0	171.8
Chloromethane		106.7	30.2	152.7
Vinyl chloride		108.6	45.3	138.7
Bromomethane		95.2	10.0	157.4
Chloroethane		95.0	10.0	169.1
Trichlorofluoromethane		38.4	25.7	157.8
1,1-Dichloroethene		108.9	59.2	137.5

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF220909S1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Matrix Spike (MS) (continued)

Lab Sample ID: 220909A5.3987908M, Parent Sample ID: S39879.07

Run in Batch: 220909A5, Run Date: 09/09/2022 12:53, Prep Date: 09/09/2022, Matrix: SO, Dilution: 62.9

Analyte	Flags	% Rec	LCL	UCL
Methylene chloride		92.4	70.5	121.5
trans-1,2-Dichloroethene		110.4	72.5	128.8
1,1-Dichloroethane		108.5	72.5	123.4
cis-1,2-Dichloroethene		106.1	75.0	120.5
Tetrahydrofuran		105.4	48.2	125.7
Chloroform		105.8	74.6	123.2
Bromochloromethane		101.1	72.3	122.8
1,1,1-Trichloroethane		109.2	73.8	128.9
4-Methyl-2-pentanone (MIBK)		100.0	60.4	133.8
2-Hexanone		101.3	45.7	141.9
Carbon tetrachloride		113.1	70.1	132.7
Benzene		109.9	74.6	128.9
1,2-Dichloroethane		100.8	73.2	125.4
Trichloroethene		114.0	74.1	127.6
1,2-Dichloropropane		107.4	77.6	124.4
Bromodichloromethane		108.9	76.7	128.4
Dibromomethane		103.0	72.5	127.3
cis-1,3-Dichloropropene		113.0	79.3	128.3
Toluene		108.3	74.8	129.2
trans-1,3-Dichloropropene		112.5	74.5	129.7
1,1,2-Trichloroethane		103.5	71.3	125.7
Tetrachloroethene		114.1	73.0	124.7
trans-1,4-Dichloro-2-butene		117.7	58.3	143.3
Dibromochloromethane		111.3	68.9	132.7
1,2-Dibromoethane		108.7	71.4	129.3
Chlorobenzene		110.0	74.2	128.1
1,1,1,2-Tetrachloroethane		109.4	76.6	133.0
Ethylbenzene		113.9	77.7	130.4
p,m-Xylene		113.7	79.8	132.0
o-Xylene		110.5	79.4	132.3
Styrene		111.1	71.3	119.3
Isopropylbenzene		115.1	70.3	128.2
Bromoform		109.5	54.7	137.4
1,1,2,2-Tetrachloroethane		105.4	65.4	134.9
1,2,3-Trichloropropane		103.4	67.2	154.5
n-Propylbenzene		116.4	77.3	135.2
Bromobenzene		108.0	74.0	132.4
1,3,5-Trimethylbenzene		113.0	75.6	137.0
tert-Butylbenzene		111.7	75.6	134.6
1,2,4-Trimethylbenzene		112.7	76.9	139.1
sec-Butylbenzene		121.1	72.7	135.6
p-Isopropyltoluene		122.4	77.1	140.9
1,3-Dichlorobenzene		116.9	77.3	131.0
1,4-Dichlorobenzene		115.8	33.1	125.8
1,2-Dichlorobenzene		113.9	73.5	132.7
1,2,3-Trimethylbenzene		108.2	70.9	130.2

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF220909S1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Matrix Spike (MS) (continued)

Lab Sample ID: 220909A5.3987908M, Parent Sample ID: S39879.07

Run in Batch: 220909A5, Run Date: 09/09/2022 12:53, Prep Date: 09/09/2022, Matrix: SO, Dilution: 62.9

Analyte	Flags	% Rec	LCL	UCL
n-Butylbenzene		127.2	75.0	138.6
Hexachloroethane		117.7	55.5	129.0
1,2-Dibromo-3-chloropropane		115.9	54.1	156.4
1,2,4-Trichlorobenzene		125.0	37.1	131.3
1,2,3-Trichlorobenzene		119.1	59.4	157.9
Naphthalene		115.7	39.3	129.2
2-Methylnaphthalene		113.9	10.0	175.9

Matrix Spike Duplicate (MSD)

Lab Sample ID: 220909A5.3987909N, Parent Sample ID: 220909A5.3987908M

Run in Batch: 220909A5, Run Date: 09/09/2022 13:16, Prep Date: 09/09/2022, Matrix: SO, Dilution: 62

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Diethyl ether		98.5	51.7	123.0	5.0	30.0
Acetone		102.1	25.3	155.1	11.6	30.0
Methyl iodide	*	112.0	56.9	110.8	6.2	30.0
Carbon disulfide	*	123.8	57.0	123.0	7.4	30.0
tert-Methyl butyl ether (MTBE)		101.1	67.5	123.7	8.3	30.0
Acrylonitrile		112.8	58.7	133.0	9.7	30.0
2-Butanone (MEK)		106.3	38.7	136.9	9.4	30.0
Dichlorodifluoromethane		121.6	10.0	171.8	6.5	30.0
Chloromethane		110.4	30.2	152.7	3.4	30.0
Vinyl chloride		113.5	45.3	138.7	4.3	30.0
Bromomethane		99.4	10.0	157.4	4.3	30.0
Chloroethane		101.9	10.0	169.1	7.0	30.0
Trichlorofluoromethane		48.7	25.7	157.8	23.7	30.0
1,1-Dichloroethene		115.8	59.2	137.5	6.1	30.0
Methylene chloride		100.1	70.5	121.5	7.3	30.0
trans-1,2-Dichloroethene		113.2	72.5	128.8	2.5	30.0
1,1-Dichloroethane		110.0	72.5	123.4	1.4	30.0
cis-1,2-Dichloroethene		107.6	75.0	120.5	1.5	30.0
Tetrahydrofuran		116.7	48.2	125.7	10.2	30.0
Chloroform		106.8	74.6	123.2	1.0	30.0
Bromochloromethane		103.8	72.3	122.8	2.6	30.0
1,1,1-Trichloroethane		113.4	73.8	128.9	3.8	30.0
4-Methyl-2-pentanone (MIBK)		109.7	60.4	133.8	9.3	30.0
2-Hexanone		111.9	45.7	141.9	9.9	30.0
Carbon tetrachloride		116.4	70.1	132.7	2.9	30.0
Benzene		111.6	74.6	128.9	1.5	30.0
1,2-Dichloroethane		104.1	73.2	125.4	3.3	30.0
Trichloroethene		113.2	74.1	127.6	0.7	30.0
1,2-Dichloropropane		108.6	77.6	124.4	1.1	30.0
Bromodichloromethane		110.4	76.7	128.4	1.4	30.0
Dibromomethane		106.2	72.5	127.3	3.0	30.0
cis-1,3-Dichloropropene		114.9	79.3	128.3	1.7	30.0
Toluene		109.8	74.8	129.2	1.4	30.0
trans-1,3-Dichloropropene		116.2	74.5	129.7	3.3	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF220909S1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Matrix Spike Duplicate (MSD) (continued)

Lab Sample ID: 220909A5.3987909N, Parent Sample ID: 220909A5.3987908M

Run in Batch: 220909A5, Run Date: 09/09/2022 13:16, Prep Date: 09/09/2022, Matrix: SO, Dilution: 62

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,1,2-Trichloroethane		106.8	71.3	125.7	3.2	30.0
Tetrachloroethene		114.5	73.0	124.7	0.4	30.0
trans-1,4-Dichloro-2-butene		123.4	58.3	143.3	4.7	30.0
Dibromochloromethane		113.4	68.9	132.7	1.9	30.0
1,2-Dibromoethane		112.3	71.4	129.3	3.2	30.0
Chlorobenzene		110.5	74.2	128.1	0.5	30.0
1,1,1,2-Tetrachloroethane		110.3	76.6	133.0	0.7	30.0
Ethylbenzene		113.8	77.7	130.4	0.1	30.0
p,m-Xylene		113.3	79.8	132.0	0.3	30.0
o-Xylene		111.3	79.4	132.3	0.7	30.0
Styrene		112.3	71.3	119.3	1.1	30.0
Isopropylbenzene		115.2	70.3	128.2	0.1	30.0
Bromoform		112.4	54.7	137.4	2.6	30.0
1,1,2,2-Tetrachloroethane		111.6	65.4	134.9	5.7	30.0
1,2,3-Trichloropropane		112.5	67.2	154.5	8.4	30.0
n-Propylbenzene		116.1	77.3	135.2	0.2	30.0
Bromobenzene		108.9	74.0	132.4	0.8	30.0
1,3,5-Trimethylbenzene		113.0	75.6	137.0	0.0	30.0
tert-Butylbenzene		112.3	75.6	134.6	0.5	30.0
1,2,4-Trimethylbenzene		112.5	76.9	139.1	0.1	30.0
sec-Butylbenzene		120.4	72.7	135.6	0.6	30.0
p-Isopropyltoluene		120.8	77.1	140.9	1.3	30.0
1,3-Dichlorobenzene		114.0	77.3	131.0	2.6	30.0
1,4-Dichlorobenzene		113.3	33.1	125.8	2.2	30.0
1,2-Dichlorobenzene		111.4	73.5	132.7	2.2	30.0
1,2,3-Trimethylbenzene		107.2	70.9	130.2	0.9	30.0
n-Butylbenzene		123.3	75.0	138.6	3.1	30.0
Hexachloroethane		115.0	55.5	129.0	2.3	30.0
1,2-Dibromo-3-chloropropane		120.6	54.1	156.4	4.0	30.0
1,2,4-Trichlorobenzene		121.1	37.1	131.3	3.2	30.0
1,2,3-Trichlorobenzene		117.0	59.4	157.9	1.8	30.0
Naphthalene		116.6	39.3	129.2	0.8	30.0
2-Methylnaphthalene		112.9	10.0	175.9	0.9	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VS220913S2

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220913A9.BLKS13A

Run in Batch: 220913A9, Run Date: 09/13/2022 13:17, Prep Date: 09/13/2022, Matrix: SO, Dilution: 50

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane	*	15	1	ug/kg

Laboratory Control Sample (LCS)

Lab Sample ID: 220913A9.LCSS13A

Run in Batch: 220913A9, Run Date: 09/13/2022 12:15, Prep Date: 09/13/2022, Matrix: SO, Dilution: 50

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		75.3	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220913A9.LCSDS13A, Parent Sample ID: 220913A9.LCSS13A

Run in Batch: 220913A9, Run Date: 09/13/2022 12:35, Prep Date: 09/13/2022, Matrix: SO, Dilution: 50

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		79.3	70.0	130.0	5.2	30.0

Merit Laboratories Login Checklist

Lab Set ID:S40011

Attention: Kaitlyn Hunt

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

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

Project: 30112892.04100 / RACER Lansing

Submitted:09/07/2022 12:50 Login User: MMC

Phone: O:248-809-4013 FAX:

Email: Kaitlyn.Hunt@arcadis.com

Selection	Description	Note
-----------	-------------	------

Sample Receiving

- | | | |
|-----|--|--|
| 01. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Samples are received at 4C +/- 2C Thermometer # IR 5.5 |
| 02. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Received on ice/ cooling process begun |
| 03. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples shipped |
| 04. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples left in 24 hr. drop box |
| 05. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Are there custody seals/tape or is the drop box locked |

Chain of Custody

- | | | |
|-----|--|--|
| 06. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | COC adequately filled out |
| 07. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | COC signed and relinquished to the lab |
| 08. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Sample tag on bottles match COC |
| 09. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Subcontracting needed? Subcontracted to: |

Preservation

- | | | |
|-----|--|---|
| 10. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Do sample have correct chemical preservation |
| 11. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Completed pH checks on preserved samples? (no VOAs) |
| 12. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Did any samples need to be preserved in the lab? |

Bottle Conditions

- | | | |
|-----|--|---|
| 13. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | All bottles intact |
| 14. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Appropriate analytical bottles are used |
| 15. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Merit bottles used |
| 16. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Sufficient sample volume received |
| 17. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples require laboratory filtration |
| 18. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Samples submitted within holding time |
| 19. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> 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: *Tiffany Linder*
 COMPANY: *Arcadis*
 ADDRESS: *28550 Cabot Drive, Suite 500*
 CITY: *Novi* STATE: *MI* ZIP CODE: *48377*
 PHONE NO.: *810-225-1928* CELL NO.: *517-861-0138* P.O. NO.:
 E-MAIL ADDRESS: *Tiffany.Linder@arcadis.com* QUOTE NO.:

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

PROJECT NO./NAME: *30112893.04100 / RCER Lansing* SAMPLER(S) - PLEASE PRINT/SIGN NAME: *Austin Westhuis / A.L. Linder*
 TURNAROUND TIME REQUIRED: 1 DAY 2 DAYS 3 DAYS STANDARD OTHER
 DELIVERABLES REQUIRED: STD LEVEL II LEVEL III LEVEL IV EDD OTHER

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

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

# Containers & Preservatives	NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER	Certifications		Project Locations		Special Instructions
								<input type="checkbox"/> OHIO VAP	<input type="checkbox"/> Drinking Water	<input type="checkbox"/> DoD	<input type="checkbox"/> NPDES	
1,4-Dioxane 8260 SEM VOC-8260								<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
								<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
								<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
								<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
								<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
								<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			

MERIT LAB NO. <small>FOR LAB USE ONLY</small>	COLLECTION		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER	Certifications	Project Locations	Special Instructions
	DATE	TIME													
0011.01	9/7/22	1000	SB-A4-MX60-1-3-090722	S	2								<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
.02	9/7/22	1005	SB-A4-MX60-4-6-090722	S	2								<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
.03	9/7/22	1009	SB-A4-MX60-6-8-090722	S	2								<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
.04	9/7/22	1014	SB-A4-MX60-8.5-10-090722	S	2								<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
.05	9/7/22	1019	SB-A4-MX60-10-12-090722	S	2								<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
.06	9/7/22	—	Trip Blank	S	1								<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

RELINQUISHED BY: *A.L. Linder / Arcadis* Sampler DATE: *9/7/22* TIME:
 RECEIVED BY: *Merit Drop Box* DATE: *9/7/22* TIME:
 RELINQUISHED BY: DATE: TIME:
 RECEIVED BY: DATE: TIME:

RELINQUISHED BY: DATE: TIME:
 RECEIVED BY: *Baite Ball* DATE: *9/7/2022* TIME: *1250*
 SEAL NO. SEAL INTACT YES NO INITIALS: NOTES: TEMP. ON ARRIVAL: *5.5*
 SEAL NO. SEAL INTACT YES NO INITIALS:

*Please also email results to: Caitlin.Cisco@arcadis.com and Alex.Villhauer@arcadis.com



Analytical Laboratory Report

Report ID: S40191.01(01)+QC01
Generated on 09/27/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Additional Contacts: Marina Samp, Tiffany Linder, Caitlin Cisco, Alex Villhauer

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): S40191.01-S40191.05
Project: 30112892.04100/Racer Lansing
Collected Date(s): 09/12/2022
Submitted Date/Time: 09/13/2022 08:45
Sampled by: Austin Westhuis
P.O. #: 30112892.04100

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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
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
S40191.01	MW-22-156_091222	Groundwater	09/12/22 11:05
S40191.02	MW-22-155_091222	Groundwater	09/12/22 12:05
S40191.03	MW-22-157_091222	Groundwater	09/12/22 14:10
S40191.04	MW-22-153_091222	Groundwater	09/12/22 15:00
S40191.05	MW-14-58R_091222	Groundwater	09/12/22 15:35



Analytical Laboratory Report

Lab Sample ID: S40191.01

Sample Tag: MW-22-156_091222

Collected Date/Time: 09/12/2022 11:05

Matrix: Groundwater

COC Reference: 157329

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	09/22/22 14:30	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 09/21/22 15:38, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	76	1		ug/L	1	123-91-1	



Analytical Laboratory Report

Lab Sample ID: S40191.02

Sample Tag: MW-22-155_091222

Collected Date/Time: 09/12/2022 12:05

Matrix: Groundwater

COC Reference: 157329

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	09/22/22 14:30	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 09/23/22 20:07, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	410	10		ug/L	10	123-91-1	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S40191.03

Sample Tag: MW-22-157_091222

Collected Date/Time: 09/12/2022 14:10

Matrix: Groundwater

COC Reference: 157329

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	09/22/22 14:30	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 09/26/22 20:00, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	3	1		ug/L	1	123-91-1	



Analytical Laboratory Report

Lab Sample ID: S40191.04

Sample Tag: MW-22-153_091222

Collected Date/Time: 09/12/2022 15:00

Matrix: Groundwater

COC Reference: 157329

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	09/22/22 14:30	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 09/21/22 16:43, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	55	1		ug/L	1	123-91-1	



Analytical Laboratory Report

Lab Sample ID: S40191.05

Sample Tag: MW-14-58R_091222

Collected Date/Time: 09/12/2022 15:35

Matrix: Groundwater

COC Reference: 157329

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	09/22/22 14:30	BML	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 09/23/22 19:24, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	187	1		ug/L	1	123-91-1	



Quality Control Report

Report ID: S40191.01(01)+QC01
Generated on 09/27/2022

Report to
Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Report Produced by
Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

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

Phone: O:248-809-4013 C:947-777-5215 FAX:

Report Summary

Lab Sample ID(s): S40191.01-S40191.05
Project: 30112892.04100/Racer Lansing
Submitted Date/Time: 09/13/2022 08:45
Sampled by: Austin Westhuis
P.O. #: 30112892.04100

QC Report Sections

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Analysis Summary (Pages 12-16)
Prep Batch Summary (Page 17)
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Internal Standards per Lab Sample (Pages 21-25)
Internal Standards per QC Sample (Pages 26-28)
Batch QC Results (Pages 29-31)

Report Flag Descriptions

*: QC result is outside of indicated control limits
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

QC Report - Analysis Summary

Lab Sample ID: S40191.01

Sample Tag: MW-22-156_091222

Collected Date/Time: 09/12/2022 11:05

Matrix: Groundwater

COC Reference: 157329

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	09/21/22 15:38	220921A9	VS220921W1	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S40191.02

Sample Tag: MW-22-155_091222

Collected Date/Time: 09/12/2022 12:05

Matrix: Groundwater

COC Reference: 157329

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	09/23/22 20:07	220923A9	VS220923W1	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S40191.03

Sample Tag: MW-22-157_091222

Collected Date/Time: 09/12/2022 14:10

Matrix: Groundwater

COC Reference: 157329

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	09/26/22 20:00	220926A9	VS220926W1	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S40191.04

Sample Tag: MW-22-153_091222

Collected Date/Time: 09/12/2022 15:00

Matrix: Groundwater

COC Reference: 157329

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	09/21/22 16:43	220921A9	VS220921W1	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S40191.05

Sample Tag: MW-14-58R_091222

Collected Date/Time: 09/12/2022 15:35

Matrix: Groundwater

COC Reference: 157329

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	09/23/22 19:24	220923A9	VS220923W1	Yes	BLK/LCS/LCSD

QC Report - Prep Batch Summary

Organics - Volatiles, Prep Batch ID: VS220921W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S40191.01	1,4-Dioxane	SW8260B - SIM	09/21/22 15:38	220921A9
S40191.04	1,4-Dioxane	SW8260B - SIM	09/21/22 16:43	220921A9

Organics - Volatiles, Prep Batch ID: VS220923W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S40191.02	1,4-Dioxane	SW8260B - SIM	09/23/22 20:07	220923A9
S40191.05	1,4-Dioxane	SW8260B - SIM	09/23/22 19:24	220923A9

Organics - Volatiles, Prep Batch ID: VS220926W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S40191.03	1,4-Dioxane	SW8260B - SIM	09/26/22 20:00	220926A9

QC Report - Surrogates per QC Sample

Organics - Volatiles, Prep Batch ID: VS220921W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220921A9.BLKW21A

Run in Batch: 220921A9, Run Date: 09/21/2022 15:05, Prep Date: 09/21/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
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No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: 220921A9.LCSW21A

Run in Batch: 220921A9, Run Date: 09/21/2022 14:04, Prep Date: 09/21/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
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No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220921A9.LCSDW21A, Parent Sample ID: 220921A9.LCSW21A

Run in Batch: 220921A9, Run Date: 09/21/2022 14:25, Prep Date: 09/21/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
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No Surrogates

QC Report - Surrogates per QC Sample

Organics - Volatiles, Prep Batch ID: VS220923W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220923A9.BLKW23A

Run in Batch: 220923A9, Run Date: 09/23/2022 18:19, Prep Date: 09/23/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
-----------	-------	------	-----	-----

No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: 220923A9.LCSW23A

Run in Batch: 220923A9, Run Date: 09/23/2022 16:36, Prep Date: 09/23/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
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No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220923A9.LCSDW23A, Parent Sample ID: 220923A9.LCSW23A

Run in Batch: 220923A9, Run Date: 09/23/2022 16:57, Prep Date: 09/23/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
-----------	-------	------	-----	-----

No Surrogates

QC Report - Surrogates per QC Sample

Organics - Volatiles, Prep Batch ID: VS220926W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220926A9.BLKW26A

Run in Batch: 220926A9, Run Date: 09/26/2022 19:39, Prep Date: 09/26/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
-----------	-------	------	-----	-----

No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: 220926A9.LCSW26A

Run in Batch: 220926A9, Run Date: 09/26/2022 18:37, Prep Date: 09/26/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
-----------	-------	------	-----	-----

No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220926A9.LCSDW26A, Parent Sample ID: 220926A9.LCSW26A

Run in Batch: 220926A9, Run Date: 09/26/2022 18:58, Prep Date: 09/26/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
-----------	-------	------	-----	-----

No Surrogates

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S40191.01

Sample Tag: MW-22-156_091222

Collected Date/Time: 09/12/2022 11:05

Matrix: Groundwater

COC Reference: 157329

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220921A9, Run Date: 09/21/2022 15:38, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		96.9	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S40191.02

Sample Tag: MW-22-155_091222

Collected Date/Time: 09/12/2022 12:05

Matrix: Groundwater

COC Reference: 157329

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220923A9, Run Date: 09/23/2022 20:07, Matrix: WW, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		113.4	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S40191.03

Sample Tag: MW-22-157_091222

Collected Date/Time: 09/12/2022 14:10

Matrix: Groundwater

COC Reference: 157329

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220926A9, Run Date: 09/26/2022 20:00, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		99.9	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S40191.04

Sample Tag: MW-22-153_091222

Collected Date/Time: 09/12/2022 15:00

Matrix: Groundwater

COC Reference: 157329

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220921A9, Run Date: 09/21/2022 16:43, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		102.0	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S40191.05

Sample Tag: MW-14-58R_091222

Collected Date/Time: 09/12/2022 15:35

Matrix: Groundwater

COC Reference: 157329

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 220923A9, Run Date: 09/23/2022 19:24, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		118.7	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: VS220921W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220921A9.BLKW21A

Run in Batch: 220921A9, Run Date: 09/21/2022 15:05, Prep Date: 09/21/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		98.2	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220921A9.LCSW21A

Run in Batch: 220921A9, Run Date: 09/21/2022 14:04, Prep Date: 09/21/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		94.2	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220921A9.LCSDW21A, Parent Sample ID: 220921A9.LCSW21A

Run in Batch: 220921A9, Run Date: 09/21/2022 14:25, Prep Date: 09/21/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		91.6	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: VS220923W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220923A9.BLKW23A

Run in Batch: 220923A9, Run Date: 09/23/2022 18:19, Prep Date: 09/23/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		95.9	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220923A9.LCSW23A

Run in Batch: 220923A9, Run Date: 09/23/2022 16:36, Prep Date: 09/23/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		107.1	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220923A9.LCSDW23A, Parent Sample ID: 220923A9.LCSW23A

Run in Batch: 220923A9, Run Date: 09/23/2022 16:57, Prep Date: 09/23/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		115.2	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: VS220926W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220926A9.BLKW26A

Run in Batch: 220926A9, Run Date: 09/26/2022 19:39, Prep Date: 09/26/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		97.1	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 220926A9.LCSW26A

Run in Batch: 220926A9, Run Date: 09/26/2022 18:37, Prep Date: 09/26/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		114.6	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220926A9.LCSDW26A, Parent Sample ID: 220926A9.LCSW26A

Run in Batch: 220926A9, Run Date: 09/26/2022 18:58, Prep Date: 09/26/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		101.3	50.0	200.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VS220921W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220921A9.BLKW21A

Run in Batch: 220921A9, Run Date: 09/21/2022 15:05, Prep Date: 09/21/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane	*	0.44	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220921A9.LCSW21A

Run in Batch: 220921A9, Run Date: 09/21/2022 14:04, Prep Date: 09/21/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		90.3	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220921A9.LCSDW21A, Parent Sample ID: 220921A9.LCSW21A

Run in Batch: 220921A9, Run Date: 09/21/2022 14:25, Prep Date: 09/21/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		92.5	70.0	130.0	2.5	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VS220923W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220923A9.BLKW23A

Run in Batch: 220923A9, Run Date: 09/23/2022 18:19, Prep Date: 09/23/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane	*	0.61	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220923A9.LCSW23A

Run in Batch: 220923A9, Run Date: 09/23/2022 16:36, Prep Date: 09/23/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		93.8	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220923A9.LCSDW23A, Parent Sample ID: 220923A9.LCSW23A

Run in Batch: 220923A9, Run Date: 09/23/2022 16:57, Prep Date: 09/23/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		92.8	70.0	130.0	1.0	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VS220926W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 220926A9.BLKW26A

Run in Batch: 220926A9, Run Date: 09/26/2022 19:39, Prep Date: 09/26/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane	*	0.42	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 220926A9.LCSW26A

Run in Batch: 220926A9, Run Date: 09/26/2022 18:37, Prep Date: 09/26/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		88.3	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 220926A9.LCSDW26A, Parent Sample ID: 220926A9.LCSW26A

Run in Batch: 220926A9, Run Date: 09/26/2022 18:58, Prep Date: 09/26/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		89.1	70.0	130.0	0.9	30.0

Merit Laboratories Login Checklist

Lab Set ID:S40191

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

Project: 30112892.04100/Racer Lansing

Submitted:09/13/2022 08:45 Login User: BJB

Attention: Kaitlyn Hunt

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

Phone: O:248-809-4013 FAX:

Email: Kaitlyn.Hunt@arcadis.com

Selection	Description	Note
-----------	-------------	------

Sample Receiving

- | | | |
|-----|--|--|
| 01. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Samples are received at 4C +/- 2C Thermometer # IR 4.4 |
| 02. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Received on ice/ cooling process begun |
| 03. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples shipped |
| 04. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Samples left in 24 hr. drop box |
| 05. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Are there custody seals/tape or is the drop box locked |

Chain of Custody

- | | | |
|-----|--|--|
| 06. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | COC adequately filled out |
| 07. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | COC signed and relinquished to the lab |
| 08. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Sample tag on bottles match COC |
| 09. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Subcontracting needed? Subcontracted to: |

Preservation

- | | | |
|-----|--|---|
| 10. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Do sample have correct chemical preservation |
| 11. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Completed pH checks on preserved samples? (no VOAs) |
| 12. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Did any samples need to be preserved in the lab? |

Bottle Conditions

- | | | |
|-----|--|---|
| 13. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | All bottles intact |
| 14. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Appropriate analytical bottles are used |
| 15. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Merit bottles used |
| 16. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Sufficient sample volume received |
| 17. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples require laboratory filtration |
| 18. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Samples submitted within holding time |
| 19. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> 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: _____

Plant 2



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 157329

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME: Tiffany Linder
 COMPANY: Arcadis
 ADDRESS: 28550 Cabot Drive, Suite 500
 CITY: Novi STATE: MI ZIP CODE: 48377
 PHONE NO.: 810-225-1928 CELL NO.: 517-861-0138 P.O. NO.:
 E-MAIL ADDRESS: QUOTE NO.:

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

ANALYSIS (ATTACH LIST IF MORE SPACE IS REQUIRED)

PROJECT NO./NAME: 30112892.04100/RACER Lansing SAMPLER(S) - PLEASE PRINT/SIGN NAME: Austin Westhuis/Austin Westhuis
 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	1,4-Dioxane 2,2,6,6-tetramethylpiperidine 2,2,6,6-tetramethylpiperidine 2,2,6,6-tetramethylpiperidine	Certifications	Project Locations	Special Instructions
	DATE	TIME														
40191.01	9/12/22	1105	MW-22-156-091222	GW	3		3						X	<input type="checkbox"/> OHIO VAP <input type="checkbox"/> Drinking Water	<input type="checkbox"/> Detroit <input type="checkbox"/> New York	
.02	9/12/22	1205	MW-22-155-091222	GW	3		3						X	<input type="checkbox"/> DoD <input type="checkbox"/> NPDES		
.03	9/12/22	1410	MW-22-157-091222	GW	3		3						X	<input type="checkbox"/> Other <u>MI</u>		
.04	9/12/22	1500	MW-22-153-091222	GW	3		3						X			
.05	9/12/22	1535	MW-14-58R-091222	GW	3		3						X			

RELINQUISHED BY: Austin Westhuis/Arcadis Sampler DATE: 9/13/22 TIME: 0845
 RECEIVED BY: Merit Drop Box DATE: 9/13/22 TIME:
 RELINQUISHED BY: DATE: TIME:
 RECEIVED BY: DATE: TIME:

RELINQUISHED BY: Merit Drop Box DATE: 9/13/2022 TIME: 0846
 RECEIVED BY: Barbra Ball DATE: 9/13/2022 TIME: 0846
 SEAL NO. SEAL INTACT YES NO INITIALS: NOTES: TEMP. ON ARRIVAL: 4.4
 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: S41458.01(01)+QC01
Generated on 10/21/2022

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Additional Contacts: Marina Samp, Tiffany Linder, Caitlin Cisco, Alex Villhauer

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): S41458.01-S41458.08
Project: 30112892.04100 / Racer Lansing
Collected Date(s): 10/14/2022
Submitted Date/Time: 10/14/2022 16:15
Sampled by: Austin Westhuis
P.O. #: 30112892.04100

Table of Contents

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- General Report Notes (Page 2)
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- QC Report (Pages 14-32)

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
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
S41458.01	MW-22-157_101422	Groundwater	10/14/22 10:25
S41458.02	MW-22-157_101422 MS	Groundwater	10/14/22 10:25
S41458.03	MW-22-157_101422 MSD	Groundwater	10/14/22 10:25
S41458.04	MW-22-155_101422	Groundwater	10/14/22 11:50
S41458.05	MW-22-153_101422	Groundwater	10/14/22 12:50
S41458.06	MW-22-156_101422	Groundwater	10/14/22 13:35
S41458.07	MW-14-58R_101422	Groundwater	10/14/22 14:20
S41458.08	Dup-01_101422	Groundwater	10/14/22 00:01



Analytical Laboratory Report

Lab Sample ID: S41458.01

Sample Tag: MW-22-157_101422

Collected Date/Time: 10/14/2022 10:25

Matrix: Groundwater

COC Reference: 154889

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	10/21/22 10:00	KAG	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 10/20/22 16:03, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	3	1		ug/L	1	123-91-1	



Analytical Laboratory Report

Lab Sample ID: S41458.02

Sample Tag: MW-22-157_101422 MS

Collected Date/Time: 10/14/2022 10:25

Matrix: Groundwater

COC Reference: 154889

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	10/21/22 10:00	KAG	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 10/20/22 13:53, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	51	1		ug/L	1	123-91-1	1

1-Spiked at 50ug/L



Analytical Laboratory Report

Lab Sample ID: S41458.03

Sample Tag: MW-22-157_101422 MSD

Collected Date/Time: 10/14/2022 10:25

Matrix: Groundwater

COC Reference: 154889

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	10/21/22 10:00	KAG	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 10/20/22 14:14, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	53	1		ug/L	1	123-91-1	1

1-Spiked at 50ug/L



Analytical Laboratory Report

Lab Sample ID: S41458.04

Sample Tag: MW-22-155_101422

Collected Date/Time: 10/14/2022 11:50

Matrix: Groundwater

COC Reference: 154889

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	10/21/22 10:00	KAG	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 10/20/22 18:34, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	400	10		ug/L	10	123-91-1	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S41458.05

Sample Tag: MW-22-153_101422

Collected Date/Time: 10/14/2022 12:50

Matrix: Groundwater

COC Reference: 154889

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	10/21/22 10:00	KAG	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 10/20/22 18:56, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	52	1		ug/L	1	123-91-1	



Analytical Laboratory Report

Lab Sample ID: S41458.06

Sample Tag: MW-22-156_101422

Collected Date/Time: 10/14/2022 13:35

Matrix: Groundwater

COC Reference: 154889

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	10/21/22 10:00	KAG	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 10/20/22 19:17, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	81	1		ug/L	1	123-91-1	



Analytical Laboratory Report

Lab Sample ID: S41458.07

Sample Tag: MW-14-58R_101422

Collected Date/Time: 10/14/2022 14:20

Matrix: Groundwater

COC Reference: 154889

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	10/21/22 10:00	KAG	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 10/20/22 19:38, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	173	1		ug/L	1	123-91-1	



Analytical Laboratory Report

Lab Sample ID: S41458.08

Sample Tag: Dup-01_101422

Collected Date/Time: 10/14/2022 00:01

Matrix: Groundwater

COC Reference: 154889

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	4.3	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	10/21/22 10:00	KAG	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 10/20/22 20:00, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	173	1		ug/L	1	123-91-1	



Quality Control Report

Report ID: S41458.01(01)+QC01
Generated on 10/21/2022

Report to
Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Report Produced by
Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

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

Phone: O:248-809-4013 C:947-777-5215 FAX:

Report Summary

Lab Sample ID(s): S41458.01-S41458.08
Project: 30112892.04100 / Racer Lansing
Submitted Date/Time: 10/14/2022 16:15
Sampled by: Austin Westhuis
P.O. #: 30112892.04100

QC Report Sections

Cover Page (Page 14)
Analysis Summary (Pages 15-22)
Prep Batch Summary (Page 23)
Surrogates per QC Sample (Page 24)
Internal Standards per Lab Sample (Pages 25-30)
Internal Standards per QC Sample (Page 31)
Batch QC Results (Page 32)

Report Flag Descriptions

*: QC result is outside of indicated control limits
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

QC Report - Analysis Summary

Lab Sample ID: S41458.01

Sample Tag: MW-22-157_101422

Collected Date/Time: 10/14/2022 10:25

Matrix: Groundwater

COC Reference: 154889

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	10/20/22 16:03	221020A9	VS221020W1	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S41458.02

Sample Tag: MW-22-157_101422 MS

Collected Date/Time: 10/14/2022 10:25

Matrix: Groundwater

COC Reference: 154889

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	10/20/22 13:53	221020A9	VS221020W1	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S41458.03

Sample Tag: MW-22-157_101422 MSD

Collected Date/Time: 10/14/2022 10:25

Matrix: Groundwater

COC Reference: 154889

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	10/20/22 14:14	221020A9	VS221020W1	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S41458.04

Sample Tag: MW-22-155_101422

Collected Date/Time: 10/14/2022 11:50

Matrix: Groundwater

COC Reference: 154889

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	10/20/22 18:34	221020A9	VS221020W1	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S41458.05

Sample Tag: MW-22-153_101422

Collected Date/Time: 10/14/2022 12:50

Matrix: Groundwater

COC Reference: 154889

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	10/20/22 18:56	221020A9	VS221020W1	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S41458.06

Sample Tag: MW-22-156_101422

Collected Date/Time: 10/14/2022 13:35

Matrix: Groundwater

COC Reference: 154889

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	10/20/22 19:17	221020A9	VS221020W1	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S41458.07

Sample Tag: MW-14-58R_101422

Collected Date/Time: 10/14/2022 14:20

Matrix: Groundwater

COC Reference: 154889

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	10/20/22 19:38	221020A9	VS221020W1	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S41458.08

Sample Tag: Dup-01_101422

Collected Date/Time: 10/14/2022 00:01

Matrix: Groundwater

COC Reference: 154889

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	10/20/22 20:00	221020A9	VS221020W1	Yes	BLK/LCS/LCSD

QC Report - Prep Batch Summary

Organics - Volatiles, Prep Batch ID: VS221020W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S41458.01	1,4-Dioxane	SW8260B - SIM	10/20/22 16:03	221020A9
S41458.02	1,4-Dioxane	SW8260B - SIM	10/20/22 13:53	221020A9
S41458.03	1,4-Dioxane	SW8260B - SIM	10/20/22 14:14	221020A9
S41458.04	1,4-Dioxane	SW8260B - SIM	10/20/22 18:34	221020A9
S41458.05	1,4-Dioxane	SW8260B - SIM	10/20/22 18:56	221020A9
S41458.06	1,4-Dioxane	SW8260B - SIM	10/20/22 19:17	221020A9
S41458.07	1,4-Dioxane	SW8260B - SIM	10/20/22 19:38	221020A9
S41458.08	1,4-Dioxane	SW8260B - SIM	10/20/22 20:00	221020A9

QC Report - Surrogates per QC Sample

Organics - Volatiles, Prep Batch ID: VS221020W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 221020A9.BLKS20A

Run in Batch: 221020A9, Run Date: 10/20/2022 14:55, Prep Date: 10/20/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
-----------	-------	------	-----	-----

No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: 221020A9.LCSS20A

Run in Batch: 221020A9, Run Date: 10/20/2022 12:32, Prep Date: 10/20/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
-----------	-------	------	-----	-----

No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221020A9.LCSDS20A, Parent Sample ID: 221020A9.LCSS20A

Run in Batch: 221020A9, Run Date: 10/20/2022 12:52, Prep Date: 10/20/2022, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
-----------	-------	------	-----	-----

No Surrogates

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S41458.01

Sample Tag: MW-22-157_101422

Collected Date/Time: 10/14/2022 10:25

Matrix: Groundwater

COC Reference: 154889

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221020A9, Run Date: 10/20/2022 16:03, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		98.4	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S41458.04

Sample Tag: MW-22-155_101422

Collected Date/Time: 10/14/2022 11:50

Matrix: Groundwater

COC Reference: 154889

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221020A9, Run Date: 10/20/2022 18:34, Matrix: WW, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		81.8	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S41458.05

Sample Tag: MW-22-153_101422

Collected Date/Time: 10/14/2022 12:50

Matrix: Groundwater

COC Reference: 154889

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221020A9, Run Date: 10/20/2022 18:56, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		105.6	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S41458.06

Sample Tag: MW-22-156_101422

Collected Date/Time: 10/14/2022 13:35

Matrix: Groundwater

COC Reference: 154889

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221020A9, Run Date: 10/20/2022 19:17, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		103.3	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S41458.07

Sample Tag: MW-14-58R_101422

Collected Date/Time: 10/14/2022 14:20

Matrix: Groundwater

COC Reference: 154889

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221020A9, Run Date: 10/20/2022 19:38, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		102.6	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S41458.08

Sample Tag: Dup-01_101422

Collected Date/Time: 10/14/2022 00:01

Matrix: Groundwater

COC Reference: 154889

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 221020A9, Run Date: 10/20/2022 20:00, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		107.5	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: VS221020W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 221020A9.BLKS20A

Run in Batch: 221020A9, Run Date: 10/20/2022 14:55, Prep Date: 10/20/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		96.2	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 221020A9.LCSS20A

Run in Batch: 221020A9, Run Date: 10/20/2022 12:32, Prep Date: 10/20/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		97.9	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221020A9.LCSDS20A, Parent Sample ID: 221020A9.LCSS20A

Run in Batch: 221020A9, Run Date: 10/20/2022 12:52, Prep Date: 10/20/2022, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		88.5	50.0	200.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VS221020W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 221020A9.BLKS20A

Run in Batch: 221020A9, Run Date: 10/20/2022 14:55, Prep Date: 10/20/2022, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane	*	0.45	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 221020A9.LCSS20A

Run in Batch: 221020A9, Run Date: 10/20/2022 12:32, Prep Date: 10/20/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		89.7	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 221020A9.LCSDS20A, Parent Sample ID: 221020A9.LCSS20A

Run in Batch: 221020A9, Run Date: 10/20/2022 12:52, Prep Date: 10/20/2022, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		85.1	70.0	130.0	5.3	30.0

Merit Laboratories Login Checklist

Lab Set ID:S41458

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

Project: 30112892.04100 / Racer Lansing

Submitted: 10/14/2022 16:15 Login User: MMC

Attention: Kaitlyn Hunt

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

Phone: O:248-809-4013 FAX:

Email: Kaitlyn.Hunt@arcadis.com

Selection	Description	Note
Sample Receiving		
01.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Samples are received at 4C +/- 2C Thermometer # IR 4.3
02.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Received on ice/ cooling process begun
03.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples shipped
04.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples left in 24 hr. drop box
05.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Are there custody seals/tape or is the drop box locked
Chain of Custody		
06.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	COC adequately filled out
07.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	COC signed and relinquished to the lab
08.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Sample tag on bottles match COC
09.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Subcontracting needed? Subcontracted to:
Preservation		
10.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Do sample have correct chemical preservation
11.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Completed pH checks on preserved samples? (no VOAs)
12.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Did any samples need to be preserved in the lab?
Bottle Conditions		
13.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	All bottles intact
14.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Appropriate analytical bottles are used
15.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Merit bottles used
16.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Sufficient sample volume received
17.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples require laboratory filtration
18.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Samples submitted within holding time
19.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> 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 154889

REPORT TO

CHAIN OF CUSTODY RECORD

Plant 2

INVOICE TO

CONTACT NAME: Tiffany Linder
 COMPANY: Arcadis
 ADDRESS: 28550 Cabot Drive, Suite 500
 CITY: Novi STATE: MI ZIP CODE: 48377
 PHONE NO.: 517-861-0138 CELL NO.: 810-225-1928 PO NO:
 E-MAIL ADDRESS: Tiffany.Linder@arcadis.com 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: 30112892-04100/RACER Lansing SAMPLER(S) - PLEASE PRINT/SIGN NAME: Austin Westhuis / Am LeWink
 TURNAROUND TIME REQUIRED: 1 DAY 2 DAYS 3 DAYS STANDARD OTHER 1-Week
 DELIVERABLES REQUIRED: STD LEVEL II LEVEL III LEVEL IV EDD OTHER

Certifications
 OHIO VAP Drinking Water
 DoD NPDES
 Project Locations
 Detroit New York
 Other MI
 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

MERIT LAB NO. <small>FOR LAB USE ONLY</small>	COLLECTION		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER	1,4-Dioxane 8260 SIM							
	DATE	TIME																		
41458.01	10/14/22	1025	MW-22-157_101422	GW	9		9						X							
.02/.03 .04	10/14/22	1150	MW-22-155_101422	GW	3		3						X							
.05	10/14/22	1250	MW-22-153_101422	GW	3		3						X							
.06	10/14/22	1335	MW-22-156_101422	GW	3		3						X							
.07	10/14/22	1420	MW-14-58R_101422	GW	3		3						X							
.08	10/14/22	—	Dup-01_101422	GW	3		3						X							

See TAT Request

RELINQUISHED BY: Am LeWink / Arcadis Sampler DATE: 10/14/22 TIME: 1615
 RECEIVED BY: Merit Drop Box DATE: 10/14/22 TIME: 1615
 RELINQUISHED BY: DATE: TIME:
 RECEIVED BY: DATE: TIME:

RELINQUISHED BY: Merit Drop Box DATE: 10/14/22 TIME: 1615
 RECEIVED BY: M. Cileati DATE: 10/14/22 TIME: 1615
 SEAL NO: SEAL INTACT: YES NO INITIALS: NOTES: TEMP ON ARRIVAL: 4.3°C
 SEAL NO: SEAL INTACT: YES NO INITIALS:



Analytical Laboratory Report

Report ID: S45491.01(01)+QC01
Generated on 02/28/2023

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Additional Contacts: Marina Samp, Tiffany Linder, Caitlin Cisco

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): S45491.01-S45491.14
Project: 30112892 / RACER Lansing
Collected Date(s): 02/15/2023 - 02/16/2023
Submitted Date/Time: 02/17/2023 15:30
Sampled by: Austin Westhuis
P.O. #: 30112892

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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
SW3510C	SW 846 Method 3510C Revision 3 December 1996
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
SW8270D	SW 846 Method 8270D Revision 4 February 2007



Analytical Laboratory Report

Sample Summary (14 samples)

Sample ID	Sample Tag	Matrix	Collected Date/Time
S45491.01	MW-22-156_021523	Groundwater	02/15/23 10:15
S45491.02	MW-22-153_021523	Groundwater	02/15/23 11:10
S45491.03	MW-22-155_021523	Groundwater	02/15/23 12:20
S45491.04	MW-14-58R_021523	Groundwater	02/15/23 13:25
S45491.05	DUP-01_021523	Groundwater	02/15/23 00:01
S45491.06	MW-22-157_021523	Groundwater	02/15/23 14:30
S45491.07	MW-21-139_021523	Groundwater	02/15/23 15:55
S45491.08	MW-21-140_021623	Groundwater	02/16/23 09:20
S45491.09	MW-21-140_021623 MS	Groundwater	02/16/23 09:20
S45491.10	MW-21-140_021623 MSD	Groundwater	02/16/23 09:20
S45491.11	MW-16-78_021623	Groundwater	02/16/23 11:20
S45491.12	DUP-02_021623	Groundwater	02/16/23 00:01
S45491.13	Trip Blank	Water	02/15/23 00:01
S45491.14	MW-19-123_021623	Groundwater	02/16/23 12:55



Analytical Laboratory Report

Lab Sample ID: S45491.01

Sample Tag: MW-22-156_021523

Collected Date/Time: 02/15/2023 10:15

Matrix: Groundwater

COC Reference: 152333

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	5.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	02/21/23 08:45	ASW	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 02/24/23 17:20, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	47	1		ug/L	1	123-91-1	

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 02/20/23 17:59, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	2	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	16	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	25	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	463	1		ug/L	1	75-34-3	E
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	1	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	

E-Concentration exceeds calibration range



Analytical Laboratory Report

Lab Sample ID: S45491.01 (continued)

Sample Tag: MW-22-156_021523

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 02/20/23 17:59, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Volatile Organics - DEQ List (Replicate 01), Method: SW5030C/8260C, Run Date: 02/24/23 13:26, Analyst: KAG

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

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S45491.01 (continued)

Sample Tag: MW-22-156_021523

Volatile Organics - DEQ List (Replicate 01), Method: SW5030C/8260C, Run Date: 02/24/23 13:26, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloroethane	Not detected	50		ug/L	10	75-00-3	Y
Trichlorofluoromethane	Not detected	10		ug/L	10	75-69-4	Y
1,1-Dichloroethene	20	10		ug/L	10	75-35-4	Y
Methylene chloride	Not detected	50		ug/L	10	75-09-2	Y
trans-1,2-Dichloroethene	Not detected	10		ug/L	10	156-60-5	Y
1,1-Dichloroethane	390	10		ug/L	10	75-34-3	Y
cis-1,2-Dichloroethene	Not detected	10		ug/L	10	156-59-2	Y
Tetrahydrofuran*	Not detected	900		ug/L	10	109-99-9	Y
Chloroform	Not detected	10		ug/L	10	67-66-3	Y
Bromochloromethane	Not detected	10		ug/L	10	74-97-5	Y
1,1,1-Trichloroethane	Not detected	10		ug/L	10	71-55-6	Y
4-Methyl-2-pentanone (MIBK)	Not detected	500		ug/L	10	108-10-1	Y
2-Hexanone	Not detected	500		ug/L	10	591-78-6	Y
Carbon tetrachloride	Not detected	10		ug/L	10	56-23-5	Y
Benzene	Not detected	10		ug/L	10	71-43-2	Y
1,2-Dichloroethane	Not detected	10		ug/L	10	107-06-2	Y
Trichloroethene	Not detected	10		ug/L	10	79-01-6	Y
1,2-Dichloropropane	Not detected	10		ug/L	10	78-87-5	Y
Bromodichloromethane	Not detected	10		ug/L	10	75-27-4	Y
Dibromomethane	Not detected	50		ug/L	10	74-95-3	Y
cis-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-01-5	Y
Toluene	Not detected	10		ug/L	10	108-88-3	Y
trans-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-02-6	Y
1,1,2-Trichloroethane	Not detected	10		ug/L	10	79-00-5	Y
Tetrachloroethene	Not detected	10		ug/L	10	127-18-4	Y
trans-1,4-Dichloro-2-butene	Not detected	10		ug/L	10	110-57-6	Y
Dibromochloromethane	Not detected	50		ug/L	10	124-48-1	Y
1,2-Dibromoethane	Not detected	10		ug/L	10	106-93-4	Y
Chlorobenzene	Not detected	10		ug/L	10	108-90-7	Y
1,1,1,2-Tetrachloroethane	Not detected	10		ug/L	10	630-20-6	Y
Ethylbenzene	Not detected	10		ug/L	10	100-41-4	Y
p,m-Xylene*	Not detected	20		ug/L	10		Y
o-Xylene	Not detected	10		ug/L	10	95-47-6	Y
Styrene	Not detected	10		ug/L	10	100-42-5	Y
Isopropylbenzene	Not detected	50		ug/L	10	98-82-8	Y
Bromoform	Not detected	10		ug/L	10	75-25-2	Y
1,1,2,2-Tetrachloroethane	Not detected	10		ug/L	10	79-34-5	Y
1,2,3-Trichloropropane	Not detected	10		ug/L	10	96-18-4	Y
n-Propylbenzene	Not detected	10		ug/L	10	103-65-1	Y
Bromobenzene	Not detected	10		ug/L	10	108-86-1	Y
1,3,5-Trimethylbenzene	Not detected	10		ug/L	10	108-67-8	Y
tert-Butylbenzene	Not detected	10		ug/L	10	98-06-6	Y
1,2,4-Trimethylbenzene	Not detected	10		ug/L	10	95-63-6	Y
sec-Butylbenzene	Not detected	10		ug/L	10	135-98-8	Y
p-Isopropyltoluene	Not detected	50		ug/L	10	99-87-6	Y
1,3-Dichlorobenzene	Not detected	10		ug/L	10	541-73-1	Y
1,4-Dichlorobenzene	Not detected	10		ug/L	10	106-46-7	Y
1,2-Dichlorobenzene	Not detected	10		ug/L	10	95-50-1	Y
1,2,3-Trimethylbenzene	Not detected	10		ug/L	10	526-73-8	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S45491.01 (continued)

Sample Tag: MW-22-156_021523

Volatile Organics - DEQ List (Replicate 01), Method: SW5030C/8260C, Run Date: 02/24/23 13:26, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
n-Butylbenzene	Not detected	10		ug/L	10	104-51-8	Y
Hexachloroethane	Not detected	50		ug/L	10	67-72-1	Y
1,2-Dibromo-3-chloropropane	Not detected	50		ug/L	10	96-12-8	Y
1,2,4-Trichlorobenzene	Not detected	50		ug/L	10	120-82-1	Y
1,2,3-Trichlorobenzene	Not detected	50		ug/L	10	87-61-6	Y
Naphthalene	Not detected	50		ug/L	10	91-20-3	Y
2-Methylnaphthalene	Not detected	50		ug/L	10	91-57-6	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S45491.02

Sample Tag: MW-22-153_021523

Collected Date/Time: 02/15/2023 11:10

Matrix: Groundwater

COC Reference: 152333

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	5.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	02/21/23 08:45	ASW	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 02/24/23 17:42, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	26	1		ug/L	1	123-91-1	

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 02/20/23 18:22, Analyst: KAG

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



Analytical Laboratory Report

Lab Sample ID: S45491.02 (continued)

Sample Tag: MW-22-153_021523

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 02/20/23 18:22, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S45491.03

Sample Tag: MW-22-155_021523

Collected Date/Time: 02/15/2023 12:20

Matrix: Groundwater

COC Reference: 152333

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	5.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	02/21/23 08:45	ASW	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 02/24/23 18:04, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	36	1		ug/L	1	123-91-1	

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 02/20/23 18:46, Analyst: KAG

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



Analytical Laboratory Report

Lab Sample ID: S45491.03 (continued)

Sample Tag: MW-22-155_021523

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 02/20/23 18:46, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S45491.04

Sample Tag: MW-14-58R_021523

Collected Date/Time: 02/15/2023 13:25

Matrix: Groundwater

COC Reference: 152333

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	5.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	02/21/23 08:45	ASW	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 02/24/23 18:25, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	178	1		ug/L	1	123-91-1	

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 02/20/23 19:09, Analyst: KAG

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



Analytical Laboratory Report

Lab Sample ID: S45491.04 (continued)

Sample Tag: MW-14-58R_021523

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 02/20/23 19:09, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S45491.05

Sample Tag: DUP-01_021523

Collected Date/Time: 02/15/2023 00:01

Matrix: Groundwater

COC Reference: 152333

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	5.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	02/21/23 08:45	ASW	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 02/24/23 18:47, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	181	1		ug/L	1	123-91-1	

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 02/20/23 19:32, Analyst: KAG

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



Analytical Laboratory Report

Lab Sample ID: S45491.05 (continued)

Sample Tag: DUP-01_021523

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 02/20/23 19:32, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S45491.06

Sample Tag: MW-22-157_021523

Collected Date/Time: 02/15/2023 14:30

Matrix: Groundwater

COC Reference: 152333

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	5.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	02/24/23 15:24	ACK	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 02/23/23 14:16, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	5	1		ug/L	1	123-91-1	



Analytical Laboratory Report

Lab Sample ID: S45491.07

Sample Tag: MW-21-139_021523

Collected Date/Time: 02/15/2023 15:55

Matrix: Groundwater

COC Reference: 152333

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	5.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	02/27/23 10:25	NDK	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 02/27/23 18:08, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	2	1		ug/L	1	123-91-1	



Analytical Laboratory Report

Lab Sample ID: S45491.08

Sample Tag: MW-21-140_021623

Collected Date/Time: 02/16/2023 09:20

Matrix: Groundwater

COC Reference: 152333

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	5.4	IR
2	1L Amber	None	Yes	5.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	02/27/23 10:25	NDK	
BNA Extraction	Completed	SW3510C	02/22/23 13:30	JWR	

Organics - Semi-Volatiles

Semi-Volatile Organics - MDEQ, Method: SW8270D, Run Date: 02/23/23 23:41, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acenaphthene	Not detected	5		ug/L	2	83-32-9	
Acenaphthylene	Not detected	5		ug/L	2	208-96-8	
Anthracene	Not detected	5		ug/L	2	120-12-7	
Benzo(a)anthracene	Not detected	1		ug/L	2	56-55-3	
Benzo(b)fluoranthene	Not detected	1		ug/L	2	205-99-2	
Benzo(k)fluoranthene	Not detected	1		ug/L	2	207-08-9	
Benzo(ghi)perylene	Not detected	1		ug/L	2	191-24-2	
Benzo(a)pyrene	Not detected	1		ug/L	2	50-32-8	
bis(2-Chloroethoxy)methane	Not detected	5		ug/L	2	111-91-1	
bis(2-Chloroethyl)ether	Not detected	5		ug/L	2	111-44-4	
bis(2-Chloroisopropyl)ether*	Not detected	5		ug/L	2	108-60-1	
bis(2-Ethylhexyl)phthalate	Not detected	5		ug/L	2	117-81-7	
4-Bromophenyl phenyl ether	Not detected	5		ug/L	2	101-55-3	
Butyl benzyl phthalate	Not detected	5		ug/L	2	85-68-7	
4-Chloroaniline	Not detected	10		ug/L	2	106-47-8	
2-Chloronaphthalene	Not detected	5		ug/L	2	91-58-7	
4-Chloro-3-methylphenol	Not detected	5		ug/L	2	59-50-7	
2-Chlorophenol	Not detected	10		ug/L	2	95-57-8	
4-Chlorophenyl phenyl ether	Not detected	5		ug/L	2	7005-72-3	
Chrysene	Not detected	1		ug/L	2	218-01-9	
3-, 4-Methylphenol (p,m-Cresol)	Not detected	20		ug/L	2	3/4-CRESOL	
2-Methylphenol (o-Cresol)	Not detected	10		ug/L	2	95-48-7	
Dibenzo(ah)anthracene	Not detected	2		ug/L	2	53-70-3	
Dibenzofuran	Not detected	4		ug/L	2	132-64-9	
di-n-Butyl phthalate	Not detected	5		ug/L	2	84-74-2	
1,2-Dichlorobenzene	Not detected	1		ug/L	2	95-50-1	
1,3-Dichlorobenzene	Not detected	1		ug/L	2	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	2	106-46-7	
3,3'-Dichlorobenzidine	Not detected	5		ug/L	2	91-94-1	
2,4-Dichlorophenol	Not detected	10		ug/L	2	120-83-2	
Diethyl phthalate	Not detected	5		ug/L	2	84-66-2	
2,4-Dimethylphenol	Not detected	5		ug/L	2	105-67-9	
Dimethyl phthalate	Not detected	5		ug/L	2	131-11-3	
4,6-Dinitro-2-methylphenol	Not detected	20		ug/L	2	534-52-1	
2,4-Dinitrophenol	Not detected	25		ug/L	2	51-28-5	



Analytical Laboratory Report

Lab Sample ID: S45491.08 (continued)

Sample Tag: MW-21-140_021623

Semi-Volatile Organics - MDEQ, Method: SW8270D, Run Date: 02/23/23 23:41, Analyst: PL (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
2,4-Dinitrotoluene	Not detected	5		ug/L	2	121-14-2	
2,6-Dinitrotoluene	Not detected	5		ug/L	2	606-20-2	
1,2-Diphenylhydrazine*	Not detected	5		ug/L	2	122-66-7	
di-n-Octyl phthalate	Not detected	5		ug/L	2	117-84-0	
Fluoranthene	Not detected	1		ug/L	2	206-44-0	
Fluorene	Not detected	5		ug/L	2	86-73-7	
Hexachlorobenzene	Not detected	5		ug/L	2	118-74-1	
Hexachlorobutadiene	Not detected	10		ug/L	2	87-68-3	
Hexachlorocyclopentadiene*	Not detected	5		ug/L	2	77-47-4	
Hexachloroethane	Not detected	5		ug/L	2	67-72-1	
Indeno(1,2,3-cd)pyrene	Not detected	2		ug/L	2	193-39-5	
Isophorone	Not detected	5		ug/L	2	78-59-1	
2-Methylnaphthalene	Not detected	5		ug/L	2	91-57-6	
Naphthalene	Not detected	5		ug/L	2	91-20-3	
2-Nitroaniline	Not detected	25		ug/L	2	88-74-4	
3-Nitroaniline	Not detected	25		ug/L	2	99-09-2	
4-Nitroaniline	Not detected	25		ug/L	2	100-01-6	
Nitrobenzene	Not detected	5		ug/L	2	98-95-3	
2-Nitrophenol	Not detected	5		ug/L	2	88-75-5	
4-Nitrophenol	Not detected	25		ug/L	2	100-02-7	
N-Nitrosodiphenylamine	Not detected	5		ug/L	2	86-30-6	
N-Nitrosodi-n-propylamine	Not detected	5		ug/L	2	621-64-7	
Pentachlorophenol	Not detected	5		ug/L	2	87-86-5	
Phenanthrene	Not detected	2		ug/L	2	85-01-8	
Phenol	Not detected	5		ug/L	2	108-95-2	
Pyrene	Not detected	5		ug/L	2	129-00-0	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	2	120-82-1	
2,4,5-Trichlorophenol	Not detected	5		ug/L	2	95-95-4	
2,4,6-Trichlorophenol	Not detected	4		ug/L	2	88-06-2	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 02/28/23 15:13, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	Not detected	1		ug/L	1	123-91-1	

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 02/20/23 19:56, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	



Analytical Laboratory Report

Lab Sample ID: S45491.08 (continued)

Sample Tag: MW-21-140_021623

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 02/20/23 19:56, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	



Analytical Laboratory Report

Lab Sample ID: S45491.08 (continued)

Sample Tag: MW-21-140_021623

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 02/20/23 19:56, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S45491.09

Sample Tag: MW-21-140_021623 MS

Collected Date/Time: 02/16/2023 09:20

Matrix: Groundwater

COC Reference: 152333

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	5.4	IR
2	1L Amber	None	Yes	5.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	02/21/23 08:45	ASW	
BNA Extraction	Completed	SW3510C	02/22/23 13:30	JWR	

Organics - Semi-Volatiles

Semi-Volatile Organics - MDEQ, Method: SW8270D, Run Date: 02/24/23 00:11, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acenaphthene	33	5		ug/L	2	83-32-9	1
Acenaphthylene	34	5		ug/L	2	208-96-8	1
Anthracene	35	5		ug/L	2	120-12-7	1
Benzo(a)anthracene	34	1		ug/L	2	56-55-3	1
Benzo(b)fluoranthene	36	1		ug/L	2	205-99-2	1
Benzo(k)fluoranthene	34	1		ug/L	2	207-08-9	1
Benzo(ghi)perylene	33	1		ug/L	2	191-24-2	1
Benzo(a)pyrene	34	1		ug/L	2	50-32-8	1
bis(2-Chloroethoxy)methane	32	5		ug/L	2	111-91-1	1
bis(2-Chloroethyl)ether	29	5		ug/L	2	111-44-4	1
bis(2-Chloroisopropyl)ether*	27	5		ug/L	2	108-60-1	1
bis(2-Ethylhexyl)phthalate	33	5		ug/L	2	117-81-7	1
4-Bromophenyl phenyl ether	35	5		ug/L	2	101-55-3	1
Butyl benzyl phthalate	33	5		ug/L	2	85-68-7	1
4-Chloroaniline	21	10		ug/L	2	106-47-8	1
2-Chloronaphthalene	33	5		ug/L	2	91-58-7	1
4-Chloro-3-methylphenol	32	5		ug/L	2	59-50-7	1
2-Chlorophenol	27	10		ug/L	2	95-57-8	1
4-Chlorophenyl phenyl ether	34	5		ug/L	2	7005-72-3	1
Chrysene	33	1		ug/L	2	218-01-9	1
3-, 4-Methylphenol (p,m-Cresol)	24	20		ug/L	2	3/4-CRESOL	1
2-Methylphenol (o-Cresol)	25	10		ug/L	2	95-48-7	1
Dibenzo(ah)anthracene	34	2		ug/L	2	53-70-3	1
Dibenzofuran	34	4		ug/L	2	132-64-9	1
di-n-Butyl phthalate	35	5		ug/L	2	84-74-2	1
1,2-Dichlorobenzene	29	1		ug/L	2	95-50-1	1
1,3-Dichlorobenzene	28	1		ug/L	2	541-73-1	1
1,4-Dichlorobenzene	28	1		ug/L	2	106-46-7	1
3,3'-Dichlorobenzidine	28	5		ug/L	2	91-94-1	1
2,4-Dichlorophenol	32	10		ug/L	2	120-83-2	1
Diethyl phthalate	34	5		ug/L	2	84-66-2	1
2,4-Dimethylphenol	31	5		ug/L	2	105-67-9	1
Dimethyl phthalate	34	5		ug/L	2	131-11-3	1
4,6-Dinitro-2-methylphenol	30	20		ug/L	2	534-52-1	1

1-Sample spiked at 0.050 mg/l



Analytical Laboratory Report

Lab Sample ID: S45491.09 (continued)

Sample Tag: MW-21-140_021623 MS

Semi-Volatile Organics - MDEQ, Method: SW8270D, Run Date: 02/24/23 00:11, Analyst: PL (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
2,4-Dinitrophenol	Not detected	25		ug/L	2	51-28-5	1
2,4-Dinitrotoluene	34	5		ug/L	2	121-14-2	1
2,6-Dinitrotoluene	34	5		ug/L	2	606-20-2	1
1,2-Diphenylhydrazine*	33	5		ug/L	2	122-66-7	1
di-n-Octyl phthalate	36	5		ug/L	2	117-84-0	1
Fluoranthene	34	1		ug/L	2	206-44-0	1
Fluorene	34	5		ug/L	2	86-73-7	1
Hexachlorobenzene	34	5		ug/L	2	118-74-1	1
Hexachlorobutadiene	33	10		ug/L	2	87-68-3	1
Hexachlorocyclopentadiene*	37	5		ug/L	2	77-47-4	1
Hexachloroethane	28	5		ug/L	2	67-72-1	1
Indeno(1,2,3-cd)pyrene	34	2		ug/L	2	193-39-5	1
Isophorone	32	5		ug/L	2	78-59-1	1
2-Methylnaphthalene	33	5		ug/L	2	91-57-6	1
Naphthalene	32	5		ug/L	2	91-20-3	1
2-Nitroaniline	33	25		ug/L	2	88-74-4	1
3-Nitroaniline	26	25		ug/L	2	99-09-2	1
4-Nitroaniline	30	25		ug/L	2	100-01-6	1
Nitrobenzene	30	5		ug/L	2	98-95-3	1
2-Nitrophenol	32	5		ug/L	2	88-75-5	1
4-Nitrophenol	Not detected	25		ug/L	2	100-02-7	1
N-Nitrosodiphenylamine	35	5		ug/L	2	86-30-6	1
N-Nitrosodi-n-propylamine	31	5		ug/L	2	621-64-7	1
Pentachlorophenol	26	5		ug/L	2	87-86-5	1
Phenanthrene	33	2		ug/L	2	85-01-8	1
Phenol	13	5		ug/L	2	108-95-2	1
Pyrene	34	5		ug/L	2	129-00-0	1
1,2,4-Trichlorobenzene	32	5		ug/L	2	120-82-1	1
2,4,5-Trichlorophenol	34	5		ug/L	2	95-95-4	1
2,4,6-Trichlorophenol	32	4		ug/L	2	88-06-2	1

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 02/28/23 12:48, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	43	1		ug/L	1	123-91-1	2

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 02/20/23 23:27, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	64	10		ug/L	1	60-29-7	2
Acetone	64	50		ug/L	1	67-64-1	2
Methyl iodide	49	1		ug/L	1	74-88-4	2
Carbon disulfide	44	5		ug/L	1	75-15-0	2
tert-Methyl butyl ether (MTBE)	55	5		ug/L	1	1634-04-4	2
Acrylonitrile	62	2		ug/L	1	107-13-1	2
2-Butanone (MEK)	68	25		ug/L	1	78-93-3	2
Dichlorodifluoromethane	43	5		ug/L	1	75-71-8	2
Chloromethane	54	5		ug/L	1	74-87-3	2
Vinyl chloride	49	1		ug/L	1	75-01-4	2

1-Sample spiked at 0.050 mg/l

2-Spiked at 50ug/L



Analytical Laboratory Report

Lab Sample ID: S45491.09 (continued)

Sample Tag: MW-21-140_021623 MS

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 02/20/23 23:27, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Bromomethane	54	5		ug/L	1	74-83-9	1
Chloroethane	54	5		ug/L	1	75-00-3	1
Trichlorofluoromethane	47	1		ug/L	1	75-69-4	1
1,1-Dichloroethene	53	1		ug/L	1	75-35-4	1
Methylene chloride	52	5		ug/L	1	75-09-2	1
trans-1,2-Dichloroethene	48	1		ug/L	1	156-60-5	1
1,1-Dichloroethane	50	1		ug/L	1	75-34-3	1
cis-1,2-Dichloroethene	50	1		ug/L	1	156-59-2	1
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	1
Chloroform	50	1		ug/L	1	67-66-3	1
Bromochloromethane	51	1		ug/L	1	74-97-5	1
1,1,1-Trichloroethane	46	1		ug/L	1	71-55-6	1
4-Methyl-2-pentanone (MIBK)	55	50		ug/L	1	108-10-1	1
2-Hexanone	56	50		ug/L	1	591-78-6	1
Carbon tetrachloride	42	1		ug/L	1	56-23-5	1
Benzene	46	1		ug/L	1	71-43-2	1
1,2-Dichloroethane	48	1		ug/L	1	107-06-2	1
Trichloroethene	46	1		ug/L	1	79-01-6	1
1,2-Dichloropropane	48	1		ug/L	1	78-87-5	1
Bromodichloromethane	47	1		ug/L	1	75-27-4	1
Dibromomethane	50	5		ug/L	1	74-95-3	1
cis-1,3-Dichloropropene	47	1		ug/L	1	10061-01-5	1
Toluene	47	1		ug/L	1	108-88-3	1
trans-1,3-Dichloropropene	47	1		ug/L	1	10061-02-6	1
1,1,2-Trichloroethane	49	1		ug/L	1	79-00-5	1
Tetrachloroethene	46	1		ug/L	1	127-18-4	1
trans-1,4-Dichloro-2-butene	41	1		ug/L	1	110-57-6	1
Dibromochloromethane	45	5		ug/L	1	124-48-1	1
1,2-Dibromoethane	48	1		ug/L	1	106-93-4	1
Chlorobenzene	46	1		ug/L	1	108-90-7	1
1,1,1,2-Tetrachloroethane	45	1		ug/L	1	630-20-6	1
Ethylbenzene	47	1		ug/L	1	100-41-4	1
p,m-Xylene*	91	2		ug/L	1		1
o-Xylene	46	1		ug/L	1	95-47-6	1
Styrene	46	1		ug/L	1	100-42-5	1
Isopropylbenzene	46	5		ug/L	1	98-82-8	1
Bromoform	46	1		ug/L	1	75-25-2	1
1,1,2,2-Tetrachloroethane	51	1		ug/L	1	79-34-5	1
1,2,3-Trichloropropane	49	1		ug/L	1	96-18-4	1
n-Propylbenzene	47	1		ug/L	1	103-65-1	1
Bromobenzene	47	1		ug/L	1	108-86-1	1
1,3,5-Trimethylbenzene	46	1		ug/L	1	108-67-8	1
tert-Butylbenzene	45	1		ug/L	1	98-06-6	1
1,2,4-Trimethylbenzene	47	1		ug/L	1	95-63-6	1
sec-Butylbenzene	47	1		ug/L	1	135-98-8	1
p-Isopropyltoluene	48	5		ug/L	1	99-87-6	1
1,3-Dichlorobenzene	47	1		ug/L	1	541-73-1	1
1,4-Dichlorobenzene	48	1		ug/L	1	106-46-7	1
1,2-Dichlorobenzene	47	1		ug/L	1	95-50-1	1

1-Spiked at 50ug/L



Analytical Laboratory Report

Lab Sample ID: S45491.09 (continued)

Sample Tag: MW-21-140_021623 MS

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 02/20/23 23:27, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2,3-Trimethylbenzene	47	1		ug/L	1	526-73-8	1
n-Butylbenzene	48	1		ug/L	1	104-51-8	1
Hexachloroethane	43	5		ug/L	1	67-72-1	1
1,2-Dibromo-3-chloropropane	52	5		ug/L	1	96-12-8	1
1,2,4-Trichlorobenzene	50	5		ug/L	1	120-82-1	1
1,2,3-Trichlorobenzene	49	5		ug/L	1	87-61-6	1
Naphthalene	50	5		ug/L	1	91-20-3	1
2-Methylnaphthalene	49	5		ug/L	1	91-57-6	1

1-Spiked at 50ug/L



Analytical Laboratory Report

Lab Sample ID: S45491.10

Sample Tag: MW-21-140_021623 MSD

Collected Date/Time: 02/16/2023 09:20

Matrix: Groundwater

COC Reference: 152333

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	5.4	IR
2	1L Amber	None	Yes	5.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	02/21/23 08:45	ASW	
BNA Extraction	Completed	SW3510C	02/22/23 13:30	JWR	

Organics - Semi-Volatiles

Semi-Volatile Organics - MDEQ, Method: SW8270D, Run Date: 02/24/23 00:41, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acenaphthene	35	5		ug/L	2	83-32-9	1
Acenaphthylene	36	5		ug/L	2	208-96-8	1
Anthracene	38	5		ug/L	2	120-12-7	1
Benzo(a)anthracene	38	1		ug/L	2	56-55-3	1
Benzo(b)fluoranthene	39	1		ug/L	2	205-99-2	1
Benzo(k)fluoranthene	37	1		ug/L	2	207-08-9	1
Benzo(ghi)perylene	35	1		ug/L	2	191-24-2	1
Benzo(a)pyrene	37	1		ug/L	2	50-32-8	1
bis(2-Chloroethoxy)methane	33	5		ug/L	2	111-91-1	1
bis(2-Chloroethyl)ether	31	5		ug/L	2	111-44-4	1
bis(2-Chloroisopropyl)ether*	28	5		ug/L	2	108-60-1	1
bis(2-Ethylhexyl)phthalate	37	5		ug/L	2	117-81-7	1
4-Bromophenyl phenyl ether	37	5		ug/L	2	101-55-3	1
Butyl benzyl phthalate	37	5		ug/L	2	85-68-7	1
4-Chloroaniline	20	10		ug/L	2	106-47-8	1
2-Chloronaphthalene	34	5		ug/L	2	91-58-7	1
4-Chloro-3-methylphenol	33	5		ug/L	2	59-50-7	1
2-Chlorophenol	29	10		ug/L	2	95-57-8	1
4-Chlorophenyl phenyl ether	37	5		ug/L	2	7005-72-3	1
Chrysene	37	1		ug/L	2	218-01-9	1
3-, 4-Methylphenol (p,m-Cresol)	25	20		ug/L	2	3/4-CRESOL	1
2-Methylphenol (o-Cresol)	27	10		ug/L	2	95-48-7	1
Dibenzo(ah)anthracene	35	2		ug/L	2	53-70-3	1
Dibenzofuran	36	4		ug/L	2	132-64-9	1
di-n-Butyl phthalate	40	5		ug/L	2	84-74-2	1
1,2-Dichlorobenzene	31	1		ug/L	2	95-50-1	1
1,3-Dichlorobenzene	31	1		ug/L	2	541-73-1	1
1,4-Dichlorobenzene	30	1		ug/L	2	106-46-7	1
3,3'-Dichlorobenzidine	30	5		ug/L	2	91-94-1	1
2,4-Dichlorophenol	34	10		ug/L	2	120-83-2	1
Diethyl phthalate	38	5		ug/L	2	84-66-2	1
2,4-Dimethylphenol	32	5		ug/L	2	105-67-9	1
Dimethyl phthalate	37	5		ug/L	2	131-11-3	1
4,6-Dinitro-2-methylphenol	34	20		ug/L	2	534-52-1	1

1-Sample spiked at 0.050 mg/l



Analytical Laboratory Report

Lab Sample ID: S45491.10 (continued)

Sample Tag: MW-21-140_021623 MSD

Semi-Volatile Organics - MDEQ, Method: SW8270D, Run Date: 02/24/23 00:41, Analyst: PL (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
2,4-Dinitrophenol	26	25		ug/L	2	51-28-5	1
2,4-Dinitrotoluene	38	5		ug/L	2	121-14-2	1
2,6-Dinitrotoluene	37	5		ug/L	2	606-20-2	1
1,2-Diphenylhydrazine*	36	5		ug/L	2	122-66-7	1
di-n-Octyl phthalate	38	5		ug/L	2	117-84-0	1
Fluoranthene	38	1		ug/L	2	206-44-0	1
Fluorene	37	5		ug/L	2	86-73-7	1
Hexachlorobenzene	38	5		ug/L	2	118-74-1	1
Hexachlorobutadiene	33	10		ug/L	2	87-68-3	1
Hexachlorocyclopentadiene*	39	5		ug/L	2	77-47-4	1
Hexachloroethane	29	5		ug/L	2	67-72-1	1
Indeno(1,2,3-cd)pyrene	36	2		ug/L	2	193-39-5	1
Isophorone	34	5		ug/L	2	78-59-1	1
2-Methylnaphthalene	34	5		ug/L	2	91-57-6	1
Naphthalene	34	5		ug/L	2	91-20-3	1
2-Nitroaniline	35	25		ug/L	2	88-74-4	1
3-Nitroaniline	Not detected	25		ug/L	2	99-09-2	1
4-Nitroaniline	32	25		ug/L	2	100-01-6	1
Nitrobenzene	31	5		ug/L	2	98-95-3	1
2-Nitrophenol	33	5		ug/L	2	88-75-5	1
4-Nitrophenol	Not detected	25		ug/L	2	100-02-7	1
N-Nitrosodiphenylamine	37	5		ug/L	2	86-30-6	1
N-Nitrosodi-n-propylamine	32	5		ug/L	2	621-64-7	1
Pentachlorophenol	29	5		ug/L	2	87-86-5	1
Phenanthrene	37	2		ug/L	2	85-01-8	1
Phenol	13	5		ug/L	2	108-95-2	1
Pyrene	37	5		ug/L	2	129-00-0	1
1,2,4-Trichlorobenzene	33	5		ug/L	2	120-82-1	1
2,4,5-Trichlorophenol	37	5		ug/L	2	95-95-4	1
2,4,6-Trichlorophenol	35	4		ug/L	2	88-06-2	1

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 02/28/23 13:08, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	55	1		ug/L	1	123-91-1	2

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 02/20/23 23:50, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	58	10		ug/L	1	60-29-7	2
Acetone	55	50		ug/L	1	67-64-1	2
Methyl iodide	46	1		ug/L	1	74-88-4	2
Carbon disulfide	42	5		ug/L	1	75-15-0	2
tert-Methyl butyl ether (MTBE)	49	5		ug/L	1	1634-04-4	2
Acrylonitrile	53	2		ug/L	1	107-13-1	2
2-Butanone (MEK)	54	25		ug/L	1	78-93-3	2
Dichlorodifluoromethane	36	5		ug/L	1	75-71-8	2
Chloromethane	48	5		ug/L	1	74-87-3	2
Vinyl chloride	46	1		ug/L	1	75-01-4	2

1-Sample spiked at 0.050 mg/l

2-Spiked at 50ug/L



Analytical Laboratory Report

Lab Sample ID: S45491.10 (continued)

Sample Tag: MW-21-140_021623 MSD

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 02/20/23 23:50, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Bromomethane	50	5		ug/L	1	74-83-9	1
Chloroethane	52	5		ug/L	1	75-00-3	1
Trichlorofluoromethane	43	1		ug/L	1	75-69-4	1
1,1-Dichloroethene	44	1		ug/L	1	75-35-4	1
Methylene chloride	48	5		ug/L	1	75-09-2	1
trans-1,2-Dichloroethene	45	1		ug/L	1	156-60-5	1
1,1-Dichloroethane	46	1		ug/L	1	75-34-3	1
cis-1,2-Dichloroethene	46	1		ug/L	1	156-59-2	1
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	1
Chloroform	46	1		ug/L	1	67-66-3	1
Bromochloromethane	47	1		ug/L	1	74-97-5	1
1,1,1-Trichloroethane	43	1		ug/L	1	71-55-6	1
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	1
2-Hexanone	52	50		ug/L	1	591-78-6	1
Carbon tetrachloride	39	1		ug/L	1	56-23-5	1
Benzene	44	1		ug/L	1	71-43-2	1
1,2-Dichloroethane	45	1		ug/L	1	107-06-2	1
Trichloroethene	42	1		ug/L	1	79-01-6	1
1,2-Dichloropropane	46	1		ug/L	1	78-87-5	1
Bromodichloromethane	45	1		ug/L	1	75-27-4	1
Dibromomethane	47	5		ug/L	1	74-95-3	1
cis-1,3-Dichloropropene	46	1		ug/L	1	10061-01-5	1
Toluene	44	1		ug/L	1	108-88-3	1
trans-1,3-Dichloropropene	45	1		ug/L	1	10061-02-6	1
1,1,2-Trichloroethane	48	1		ug/L	1	79-00-5	1
Tetrachloroethene	42	1		ug/L	1	127-18-4	1
trans-1,4-Dichloro-2-butene	40	1		ug/L	1	110-57-6	1
Dibromochloromethane	44	5		ug/L	1	124-48-1	1
1,2-Dibromoethane	46	1		ug/L	1	106-93-4	1
Chlorobenzene	44	1		ug/L	1	108-90-7	1
1,1,1,2-Tetrachloroethane	44	1		ug/L	1	630-20-6	1
Ethylbenzene	44	1		ug/L	1	100-41-4	1
p,m-Xylene*	86	2		ug/L	1		1
o-Xylene	44	1		ug/L	1	95-47-6	1
Styrene	44	1		ug/L	1	100-42-5	1
Isopropylbenzene	43	5		ug/L	1	98-82-8	1
Bromoform	44	1		ug/L	1	75-25-2	1
1,1,2,2-Tetrachloroethane	49	1		ug/L	1	79-34-5	1
1,2,3-Trichloropropane	48	1		ug/L	1	96-18-4	1
n-Propylbenzene	43	1		ug/L	1	103-65-1	1
Bromobenzene	46	1		ug/L	1	108-86-1	1
1,3,5-Trimethylbenzene	43	1		ug/L	1	108-67-8	1
tert-Butylbenzene	42	1		ug/L	1	98-06-6	1
1,2,4-Trimethylbenzene	44	1		ug/L	1	95-63-6	1
sec-Butylbenzene	43	1		ug/L	1	135-98-8	1
p-Isopropyltoluene	43	5		ug/L	1	99-87-6	1
1,3-Dichlorobenzene	45	1		ug/L	1	541-73-1	1
1,4-Dichlorobenzene	45	1		ug/L	1	106-46-7	1
1,2-Dichlorobenzene	45	1		ug/L	1	95-50-1	1

1-Spiked at 50ug/L



Analytical Laboratory Report

Lab Sample ID: S45491.10 (continued)

Sample Tag: MW-21-140_021623 MSD

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 02/20/23 23:50, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2,3-Trimethylbenzene	45	1		ug/L	1	526-73-8	1
n-Butylbenzene	44	1		ug/L	1	104-51-8	1
Hexachloroethane	41	5		ug/L	1	67-72-1	1
1,2-Dibromo-3-chloropropane	49	5		ug/L	1	96-12-8	1
1,2,4-Trichlorobenzene	47	5		ug/L	1	120-82-1	1
1,2,3-Trichlorobenzene	49	5		ug/L	1	87-61-6	1
Naphthalene	49	5		ug/L	1	91-20-3	1
2-Methylnaphthalene	50	5		ug/L	1	91-57-6	1

1-Spiked at 50ug/L



Analytical Laboratory Report

Lab Sample ID: S45491.11

Sample Tag: MW-16-78_021623

Collected Date/Time: 02/16/2023 11:20

Matrix: Groundwater

COC Reference: 152333

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	5.4	IR
2	1L Amber	None	Yes	5.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	02/21/23 08:45	ASW	
BNA Extraction	Completed	SW3510C	02/22/23 13:30	JWR	

Organics - Semi-Volatiles

Semi-Volatile Organics - MDEQ, Method: SW8270D, Run Date: 02/24/23 01:10, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acenaphthene	Not detected	5		ug/L	2	83-32-9	
Acenaphthylene	Not detected	5		ug/L	2	208-96-8	
Anthracene	Not detected	5		ug/L	2	120-12-7	
Benzo(a)anthracene	Not detected	1		ug/L	2	56-55-3	
Benzo(b)fluoranthene	Not detected	1		ug/L	2	205-99-2	
Benzo(k)fluoranthene	Not detected	1		ug/L	2	207-08-9	
Benzo(ghi)perylene	Not detected	1		ug/L	2	191-24-2	
Benzo(a)pyrene	Not detected	1		ug/L	2	50-32-8	
bis(2-Chloroethoxy)methane	Not detected	5		ug/L	2	111-91-1	
bis(2-Chloroethyl)ether	Not detected	5		ug/L	2	111-44-4	
bis(2-Chloroisopropyl)ether*	Not detected	5		ug/L	2	108-60-1	
bis(2-Ethylhexyl)phthalate	Not detected	5		ug/L	2	117-81-7	
4-Bromophenyl phenyl ether	Not detected	5		ug/L	2	101-55-3	
Butyl benzyl phthalate	Not detected	5		ug/L	2	85-68-7	
4-Chloroaniline	Not detected	10		ug/L	2	106-47-8	
2-Chloronaphthalene	Not detected	5		ug/L	2	91-58-7	
4-Chloro-3-methylphenol	Not detected	5		ug/L	2	59-50-7	
2-Chlorophenol	Not detected	10		ug/L	2	95-57-8	
4-Chlorophenyl phenyl ether	Not detected	5		ug/L	2	7005-72-3	
Chrysene	Not detected	1		ug/L	2	218-01-9	
3-, 4-Methylphenol (p,m-Cresol)	Not detected	20		ug/L	2	3/4-CRESOL	
2-Methylphenol (o-Cresol)	Not detected	10		ug/L	2	95-48-7	
Dibenzo(ah)anthracene	Not detected	2		ug/L	2	53-70-3	
Dibenzofuran	Not detected	4		ug/L	2	132-64-9	
di-n-Butyl phthalate	Not detected	5		ug/L	2	84-74-2	
1,2-Dichlorobenzene	Not detected	1		ug/L	2	95-50-1	
1,3-Dichlorobenzene	Not detected	1		ug/L	2	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	2	106-46-7	
3,3'-Dichlorobenzidine	Not detected	5		ug/L	2	91-94-1	
2,4-Dichlorophenol	Not detected	10		ug/L	2	120-83-2	
Diethyl phthalate	Not detected	5		ug/L	2	84-66-2	
2,4-Dimethylphenol	Not detected	5		ug/L	2	105-67-9	
Dimethyl phthalate	Not detected	5		ug/L	2	131-11-3	
4,6-Dinitro-2-methylphenol	Not detected	20		ug/L	2	534-52-1	
2,4-Dinitrophenol	Not detected	25		ug/L	2	51-28-5	



Analytical Laboratory Report

Lab Sample ID: S45491.11 (continued)

Sample Tag: MW-16-78_021623

Semi-Volatile Organics - MDEQ, Method: SW8270D, Run Date: 02/24/23 01:10, Analyst: PL (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
2,4-Dinitrotoluene	Not detected	5		ug/L	2	121-14-2	
2,6-Dinitrotoluene	Not detected	5		ug/L	2	606-20-2	
1,2-Diphenylhydrazine*	Not detected	5		ug/L	2	122-66-7	
di-n-Octyl phthalate	Not detected	5		ug/L	2	117-84-0	
Fluoranthene	Not detected	1		ug/L	2	206-44-0	
Fluorene	Not detected	5		ug/L	2	86-73-7	
Hexachlorobenzene	Not detected	5		ug/L	2	118-74-1	
Hexachlorobutadiene	Not detected	10		ug/L	2	87-68-3	
Hexachlorocyclopentadiene*	Not detected	5		ug/L	2	77-47-4	
Hexachloroethane	Not detected	5		ug/L	2	67-72-1	
Indeno(1,2,3-cd)pyrene	Not detected	2		ug/L	2	193-39-5	
Isophorone	Not detected	5		ug/L	2	78-59-1	
2-Methylnaphthalene	Not detected	5		ug/L	2	91-57-6	
Naphthalene	Not detected	5		ug/L	2	91-20-3	
2-Nitroaniline	Not detected	25		ug/L	2	88-74-4	
3-Nitroaniline	Not detected	25		ug/L	2	99-09-2	
4-Nitroaniline	Not detected	25		ug/L	2	100-01-6	
Nitrobenzene	Not detected	5		ug/L	2	98-95-3	
2-Nitrophenol	Not detected	5		ug/L	2	88-75-5	
4-Nitrophenol	Not detected	25		ug/L	2	100-02-7	
N-Nitrosodiphenylamine	Not detected	5		ug/L	2	86-30-6	
N-Nitrosodi-n-propylamine	Not detected	5		ug/L	2	621-64-7	
Pentachlorophenol	Not detected	5		ug/L	2	87-86-5	
Phenanthrene	Not detected	2		ug/L	2	85-01-8	
Phenol	Not detected	5		ug/L	2	108-95-2	
Pyrene	Not detected	5		ug/L	2	129-00-0	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	2	120-82-1	
2,4,5-Trichlorophenol	Not detected	5		ug/L	2	95-95-4	
2,4,6-Trichlorophenol	Not detected	4		ug/L	2	88-06-2	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 02/27/23 18:51, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	1	1		ug/L	1	123-91-1	

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 02/20/23 20:19, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	



Analytical Laboratory Report

Lab Sample ID: S45491.11 (continued)

Sample Tag: MW-16-78_021623

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 02/20/23 20:19, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	



Analytical Laboratory Report

Lab Sample ID: S45491.11 (continued)

Sample Tag: MW-16-78_021623

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 02/20/23 20:19, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S45491.12

Sample Tag: DUP-02_021623

Collected Date/Time: 02/16/2023 00:01

Matrix: Groundwater

COC Reference: 152333

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	5.4	IR
2	1L Amber	None	Yes	5.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	02/21/23 08:45	ASW	
BNA Extraction	Completed	SW3510C	02/22/23 13:30	JWR	

Organics - Semi-Volatiles

Semi-Volatile Organics - MDEQ, Method: SW8270D, Run Date: 02/24/23 01:40, Analyst: PL

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Acenaphthene	Not detected	5		ug/L	2	83-32-9	
Acenaphthylene	Not detected	5		ug/L	2	208-96-8	
Anthracene	Not detected	5		ug/L	2	120-12-7	
Benzo(a)anthracene	Not detected	1		ug/L	2	56-55-3	
Benzo(b)fluoranthene	Not detected	1		ug/L	2	205-99-2	
Benzo(k)fluoranthene	Not detected	1		ug/L	2	207-08-9	
Benzo(ghi)perylene	Not detected	1		ug/L	2	191-24-2	
Benzo(a)pyrene	Not detected	1		ug/L	2	50-32-8	
bis(2-Chloroethoxy)methane	Not detected	5		ug/L	2	111-91-1	
bis(2-Chloroethyl)ether	Not detected	5		ug/L	2	111-44-4	
bis(2-Chloroisopropyl)ether*	Not detected	5		ug/L	2	108-60-1	
bis(2-Ethylhexyl)phthalate	Not detected	5		ug/L	2	117-81-7	
4-Bromophenyl phenyl ether	Not detected	5		ug/L	2	101-55-3	
Butyl benzyl phthalate	Not detected	5		ug/L	2	85-68-7	
4-Chloroaniline	Not detected	10		ug/L	2	106-47-8	
2-Chloronaphthalene	Not detected	5		ug/L	2	91-58-7	
4-Chloro-3-methylphenol	Not detected	5		ug/L	2	59-50-7	
2-Chlorophenol	Not detected	10		ug/L	2	95-57-8	
4-Chlorophenyl phenyl ether	Not detected	5		ug/L	2	7005-72-3	
Chrysene	Not detected	1		ug/L	2	218-01-9	
3-, 4-Methylphenol (p,m-Cresol)	Not detected	20		ug/L	2	3/4-CRESOL	
2-Methylphenol (o-Cresol)	Not detected	10		ug/L	2	95-48-7	
Dibenzo(ah)anthracene	Not detected	2		ug/L	2	53-70-3	
Dibenzofuran	Not detected	4		ug/L	2	132-64-9	
di-n-Butyl phthalate	Not detected	5		ug/L	2	84-74-2	
1,2-Dichlorobenzene	Not detected	1		ug/L	2	95-50-1	
1,3-Dichlorobenzene	Not detected	1		ug/L	2	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	2	106-46-7	
3,3'-Dichlorobenzidine	Not detected	5		ug/L	2	91-94-1	
2,4-Dichlorophenol	Not detected	10		ug/L	2	120-83-2	
Diethyl phthalate	Not detected	5		ug/L	2	84-66-2	
2,4-Dimethylphenol	Not detected	5		ug/L	2	105-67-9	
Dimethyl phthalate	Not detected	5		ug/L	2	131-11-3	
4,6-Dinitro-2-methylphenol	Not detected	20		ug/L	2	534-52-1	
2,4-Dinitrophenol	Not detected	25		ug/L	2	51-28-5	



Analytical Laboratory Report

Lab Sample ID: S45491.12 (continued)

Sample Tag: DUP-02_021623

Semi-Volatile Organics - MDEQ, Method: SW8270D, Run Date: 02/24/23 01:40, Analyst: PL (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
2,4-Dinitrotoluene	Not detected	5		ug/L	2	121-14-2	
2,6-Dinitrotoluene	Not detected	5		ug/L	2	606-20-2	
1,2-Diphenylhydrazine*	Not detected	5		ug/L	2	122-66-7	
di-n-Octyl phthalate	Not detected	5		ug/L	2	117-84-0	
Fluoranthene	Not detected	1		ug/L	2	206-44-0	
Fluorene	Not detected	5		ug/L	2	86-73-7	
Hexachlorobenzene	Not detected	5		ug/L	2	118-74-1	
Hexachlorobutadiene	Not detected	10		ug/L	2	87-68-3	
Hexachlorocyclopentadiene*	Not detected	5		ug/L	2	77-47-4	
Hexachloroethane	Not detected	5		ug/L	2	67-72-1	
Indeno(1,2,3-cd)pyrene	Not detected	2		ug/L	2	193-39-5	
Isophorone	Not detected	5		ug/L	2	78-59-1	
2-Methylnaphthalene	Not detected	5		ug/L	2	91-57-6	
Naphthalene	Not detected	5		ug/L	2	91-20-3	
2-Nitroaniline	Not detected	25		ug/L	2	88-74-4	
3-Nitroaniline	Not detected	25		ug/L	2	99-09-2	
4-Nitroaniline	Not detected	25		ug/L	2	100-01-6	
Nitrobenzene	Not detected	5		ug/L	2	98-95-3	
2-Nitrophenol	Not detected	5		ug/L	2	88-75-5	
4-Nitrophenol	Not detected	25		ug/L	2	100-02-7	
N-Nitrosodiphenylamine	Not detected	5		ug/L	2	86-30-6	
N-Nitrosodi-n-propylamine	Not detected	5		ug/L	2	621-64-7	
Pentachlorophenol	Not detected	5		ug/L	2	87-86-5	
Phenanthrene	Not detected	2		ug/L	2	85-01-8	
Phenol	Not detected	5		ug/L	2	108-95-2	
Pyrene	Not detected	5		ug/L	2	129-00-0	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	2	120-82-1	
2,4,5-Trichlorophenol	Not detected	5		ug/L	2	95-95-4	
2,4,6-Trichlorophenol	Not detected	4		ug/L	2	88-06-2	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 02/27/23 19:13, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	1	1		ug/L	1	123-91-1	

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 02/20/23 20:43, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	Not detected	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	Not detected	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	



Analytical Laboratory Report

Lab Sample ID: S45491.12 (continued)

Sample Tag: DUP-02_021623

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 02/20/23 20:43, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,1-Dichloroethene	Not detected	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	Not detected	1		ug/L	1	75-34-3	
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	Not detected	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	



Analytical Laboratory Report

Lab Sample ID: S45491.12 (continued)

Sample Tag: DUP-02_021623

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 02/20/23 20:43, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S45491.13

Sample Tag: Trip Blank

Collected Date/Time: 02/15/2023 00:01

Matrix: Water

COC Reference: 152333

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	5.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	02/21/23 08:45	ASW	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 02/20/23 21:06, Analyst: KAG

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



Analytical Laboratory Report

Lab Sample ID: S45491.13 (continued)

Sample Tag: Trip Blank

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 02/20/23 21:06, Analyst: KAG (continued)

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



Analytical Laboratory Report

Lab Sample ID: S45491.14

Sample Tag: MW-19-123_021623

Collected Date/Time: 02/16/2023 12:55

Matrix: Groundwater

COC Reference: 152333

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	5.4	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	02/24/23 15:24	ACK	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 02/23/23 14:38, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	26	1		ug/L	1	123-91-1	



Quality Control Report

Report ID: S45491.01(01)+QC01
Generated on 02/28/2023

Report to
Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Report Produced by
Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

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

Phone: O:248-809-4013 C:947-777-5215 FAX:

Report Summary

Lab Sample ID(s): S45491.01-S45491.14
Project: 30112892 / RACER Lansing
Submitted Date/Time: 02/17/2023 15:30
Sampled by: Austin Westhuis
P.O. #: 30112892

QC Report Sections

- Cover Page (Page 43)
- Analysis Summary (Pages 44-57)
- Prep Batch Summary (Pages 58-59)
- Surrogates per Lab Sample (Pages 60-68)
- Surrogates per QC Sample (Pages 69-76)
- Internal Standards per Lab Sample (Pages 77-88)
- Internal Standards per QC Sample (Pages 89-96)
- Batch QC Results (Pages 97-121)

Report Flag Descriptions

- *: QC result is outside of indicated control limits
- W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

QC Report - Analysis Summary

Lab Sample ID: S45491.01

Sample Tag: MW-22-156_021523

Collected Date/Time: 02/15/2023 10:15

Matrix: Groundwater

COC Reference: 152333

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	02/24/23 17:20	230224A9	VS230224W1	Yes	BLK/LCS/LCSD
Volatile Organics - DEQ List	SW5030C/8260C	02/20/23 17:59	230220A7	VF230220W2	Yes	BLK/LCS/LCSD/MS/MS
Volatile Organics - DEQ List (Replicate 01)	SW5030C/8260C	02/24/23 13:26	230223C7	VF230223W3	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S45491.02

Sample Tag: MW-22-153_021523

Collected Date/Time: 02/15/2023 11:10

Matrix: Groundwater

COC Reference: 152333

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr QC Types
Organics - Volatiles					
1,4-Dioxane	SW8260B - SIM	02/24/23 17:42	230224A9	VS230224W1	Yes BLK/LCS/LCSD
Volatile Organics - DEQ List	SW5030C/8260C	02/20/23 18:22	230220A7	VF230220W2	Yes BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S45491.03

Sample Tag: MW-22-155_021523

Collected Date/Time: 02/15/2023 12:20

Matrix: Groundwater

COC Reference: 152333

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr QC Types
Organics - Volatiles					
1,4-Dioxane	SW8260B - SIM	02/24/23 18:04	230224A9	VS230224W1	Yes BLK/LCS/LCSD
Volatile Organics - DEQ List	SW5030C/8260C	02/20/23 18:46	230220A7	VF230220W2	Yes BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S45491.04

Sample Tag: MW-14-58R_021523

Collected Date/Time: 02/15/2023 13:25

Matrix: Groundwater

COC Reference: 152333

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr QC Types
Organics - Volatiles					
1,4-Dioxane	SW8260B - SIM	02/24/23 18:25	230224A9	VS230224W1	Yes BLK/LCS/LCSD
Volatile Organics - DEQ List	SW5030C/8260C	02/20/23 19:09	230220A7	VF230220W2	Yes BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S45491.05

Sample Tag: DUP-01_021523

Collected Date/Time: 02/15/2023 00:01

Matrix: Groundwater

COC Reference: 152333

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	02/24/23 18:47	230224A9	VS230224W1	Yes	BLK/LCS/LCSD
Volatile Organics - DEQ List	SW5030C/8260C	02/20/23 19:32	230220A7	VF230220W2	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S45491.06

Sample Tag: MW-22-157_021523

Collected Date/Time: 02/15/2023 14:30

Matrix: Groundwater

COC Reference: 152333

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	02/23/23 14:16	230223A9	VS230223W1	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S45491.07

Sample Tag: MW-21-139_021523

Collected Date/Time: 02/15/2023 15:55

Matrix: Groundwater

COC Reference: 152333

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	02/27/23 18:08	230227A9	VS230227W1	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S45491.08

Sample Tag: MW-21-140_021623

Collected Date/Time: 02/16/2023 09:20

Matrix: Groundwater

COC Reference: 152333

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Semi-Volatiles						
Semi-Volatile Organics - MDEQ	SW8270D	02/23/23 23:41	P230223B	SF230222W1	Yes	BLK/LCS/LCSD/MS/MS
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	02/28/23 15:13	230228A9	VS230228W1	Yes	BLK/LCS/LCSD/MS/MS
Volatile Organics - DEQ List	SW5030C/8260C	02/20/23 19:56	230220A7	VF230220W2	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S45491.09

Sample Tag: MW-21-140_021623 MS

Collected Date/Time: 02/16/2023 09:20

Matrix: Groundwater

COC Reference: 152333

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Semi-Volatiles						
Semi-Volatile Organics - MDEQ	SW8270D	02/24/23 00:11	P230223B	SF230222W1	Yes	BLK/LCS/LCSD/MS/MS
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	02/28/23 12:48	230228A9	VS230228W1	Yes	BLK/LCS/LCSD/MS/MS
Volatile Organics - DEQ List	SW5030C/8260C	02/20/23 23:27	230220A7	VF230220W2	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S45491.10

Sample Tag: MW-21-140_021623 MSD

Collected Date/Time: 02/16/2023 09:20

Matrix: Groundwater

COC Reference: 152333

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Semi-Volatiles						
Semi-Volatile Organics - MDEQ	SW8270D	02/24/23 00:41	P230223B	SF230222W1	Yes	BLK/LCS/LCSD/MS/MS
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	02/28/23 13:08	230228A9	VS230228W1	Yes	BLK/LCS/LCSD/MS/MS
Volatile Organics - DEQ List	SW5030C/8260C	02/20/23 23:50	230220A7	VF230220W2	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S45491.11

Sample Tag: MW-16-78_021623

Collected Date/Time: 02/16/2023 11:20

Matrix: Groundwater

COC Reference: 152333

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Semi-Volatiles						
Semi-Volatile Organics - MDEQ	SW8270D	02/24/23 01:10	P230223B	SF230222W1	Yes	BLK/LCS/LCSD/MS/MS
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	02/27/23 18:51	230227A9	VS230227W1	Yes	BLK/LCS/LCSD
Volatile Organics - DEQ List	SW5030C/8260C	02/20/23 20:19	230220A7	VF230220W2	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S45491.12

Sample Tag: DUP-02_021623

Collected Date/Time: 02/16/2023 00:01

Matrix: Groundwater

COC Reference: 152333

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Semi-Volatiles						
Semi-Volatile Organics - MDEQ	SW8270D	02/24/23 01:40	P230223B	SF230222W1	Yes	BLK/LCS/LCSD/MS/MS
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	02/27/23 19:13	230227A9	VS230227W1	Yes	BLK/LCS/LCSD
Volatile Organics - DEQ List	SW5030C/8260C	02/20/23 20:43	230220A7	VF230220W2	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S45491.13

Sample Tag: Trip Blank

Collected Date/Time: 02/15/2023 00:01

Matrix: Water

COC Reference: 152333

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
Volatile Organics - DEQ List	SW5030C/8260C	02/20/23 21:06	230220A7	VF230220W2	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S45491.14

Sample Tag: MW-19-123_021623

Collected Date/Time: 02/16/2023 12:55

Matrix: Groundwater

COC Reference: 152333

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	02/23/23 14:38	230223A9	VS230223W1	Yes	BLK/LCS/LCSD

QC Report - Prep Batch Summary

Organics - Semi-Volatiles, Prep Batch ID: SF230222W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S45491.08	Semi-Volatile Organics - MDEQ	SW8270D	02/23/23 23:41	P230223B
S45491.09	Semi-Volatile Organics - MDEQ	SW8270D	02/24/23 00:11	P230223B
S45491.10	Semi-Volatile Organics - MDEQ	SW8270D	02/24/23 00:41	P230223B
S45491.11	Semi-Volatile Organics - MDEQ	SW8270D	02/24/23 01:10	P230223B
S45491.12	Semi-Volatile Organics - MDEQ	SW8270D	02/24/23 01:40	P230223B

Organics - Volatiles, Prep Batch ID: VF230220W2

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S45491.01	Volatile Organics - DEQ List	SW5030C/8260C	02/20/23 17:59	230220A7
S45491.02	Volatile Organics - DEQ List	SW5030C/8260C	02/20/23 18:22	230220A7
S45491.03	Volatile Organics - DEQ List	SW5030C/8260C	02/20/23 18:46	230220A7
S45491.04	Volatile Organics - DEQ List	SW5030C/8260C	02/20/23 19:09	230220A7
S45491.05	Volatile Organics - DEQ List	SW5030C/8260C	02/20/23 19:32	230220A7
S45491.08	Volatile Organics - DEQ List	SW5030C/8260C	02/20/23 19:56	230220A7
S45491.09	Volatile Organics - DEQ List	SW5030C/8260C	02/20/23 23:27	230220A7
S45491.10	Volatile Organics - DEQ List	SW5030C/8260C	02/20/23 23:50	230220A7
S45491.11	Volatile Organics - DEQ List	SW5030C/8260C	02/20/23 20:19	230220A7
S45491.12	Volatile Organics - DEQ List	SW5030C/8260C	02/20/23 20:43	230220A7
S45491.13	Volatile Organics - DEQ List	SW5030C/8260C	02/20/23 21:06	230220A7

Organics - Volatiles, Prep Batch ID: VF230223W3

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S45491.01	Volatile Organics - DEQ List (Replicate 01)	SW5030C/8260C	02/24/23 13:26	230223C7

Organics - Volatiles, Prep Batch ID: VS230223W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S45491.06	1,4-Dioxane	SW8260B - SIM	02/23/23 14:16	230223A9
S45491.14	1,4-Dioxane	SW8260B - SIM	02/23/23 14:38	230223A9

Organics - Volatiles, Prep Batch ID: VS230224W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S45491.01	1,4-Dioxane	SW8260B - SIM	02/24/23 17:20	230224A9
S45491.02	1,4-Dioxane	SW8260B - SIM	02/24/23 17:42	230224A9
S45491.03	1,4-Dioxane	SW8260B - SIM	02/24/23 18:04	230224A9
S45491.04	1,4-Dioxane	SW8260B - SIM	02/24/23 18:25	230224A9
S45491.05	1,4-Dioxane	SW8260B - SIM	02/24/23 18:47	230224A9

Organics - Volatiles, Prep Batch ID: VS230227W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S45491.07	1,4-Dioxane	SW8260B - SIM	02/27/23 18:08	230227A9
S45491.11	1,4-Dioxane	SW8260B - SIM	02/27/23 18:51	230227A9
S45491.12	1,4-Dioxane	SW8260B - SIM	02/27/23 19:13	230227A9

QC Report - Prep Batch Summary

Organics - Volatiles, Prep Batch ID: VS230228W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S45491.08	1,4-Dioxane	SW8260B - SIM	02/28/23 15:13	230228A9
S45491.09	1,4-Dioxane	SW8260B - SIM	02/28/23 12:48	230228A9
S45491.10	1,4-Dioxane	SW8260B - SIM	02/28/23 13:08	230228A9

QC Report - Surrogates per Lab Sample

Lab Sample ID: S45491.01

Sample Tag: MW-22-156_021523

Collected Date/Time: 02/15/2023 10:15

Matrix: Groundwater

COC Reference: 152333

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 230220A7, Run Date: 02/20/2023 17:59, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		108.5	80.0	124.0
1,2-Dichloroethane-D4		110.2	72.0	125.0
Toluene-D8		109.8	89.0	112.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List (Replicate 01)

Run in Batch: 230223C7, Run Date: 02/24/2023 13:26, Matrix: WW, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		111.7	80.0	124.0
1,2-Dichloroethane-D4		110.5	72.0	125.0
Toluene-D8		109.6	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S45491.02

Sample Tag: MW-22-153_021523

Collected Date/Time: 02/15/2023 11:10

Matrix: Groundwater

COC Reference: 152333

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 230220A7, Run Date: 02/20/2023 18:22, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		107.9	80.0	124.0
1,2-Dichloroethane-D4		112.0	72.0	125.0
Toluene-D8		108.8	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S45491.03

Sample Tag: MW-22-155_021523

Collected Date/Time: 02/15/2023 12:20

Matrix: Groundwater

COC Reference: 152333

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 230220A7, Run Date: 02/20/2023 18:46, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		108.3	80.0	124.0
1,2-Dichloroethane-D4		114.5	72.0	125.0
Toluene-D8		109.5	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S45491.04

Sample Tag: MW-14-58R_021523

Collected Date/Time: 02/15/2023 13:25

Matrix: Groundwater

COC Reference: 152333

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 230220A7, Run Date: 02/20/2023 19:09, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		110.9	80.0	124.0
1,2-Dichloroethane-D4		106.9	72.0	125.0
Toluene-D8		108.7	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S45491.05

Sample Tag: DUP-01_021523

Collected Date/Time: 02/15/2023 00:01

Matrix: Groundwater

COC Reference: 152333

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 230220A7, Run Date: 02/20/2023 19:32, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		108.8	80.0	124.0
1,2-Dichloroethane-D4		109.9	72.0	125.0
Toluene-D8		110.2	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S45491.08

Sample Tag: MW-21-140_021623

Collected Date/Time: 02/16/2023 09:20

Matrix: Groundwater

COC Reference: 152333

Organics - Semi-Volatiles, Analysis: Semi-Volatile Organics - MDEQ

Run in Batch: P230223B, Run Date: 02/23/2023 23:41, Matrix: WW, Dilution: 2

Surrogate	Flags	%Rec	LCL	UCL
2-Fluorophenol		37.9	10.0	110.0
Phenol-D5		30.2	10.0	110.0
Nitrobenzene-D5		64.3	10.0	114.0
2-Fluorobiphenyl		74.1	10.0	116.0
2,4,6-Tribromophenol		77.6	10.0	123.0
Terphenyl-D14		78.7	10.0	141.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 230220A7, Run Date: 02/20/2023 19:56, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		110.1	80.0	124.0
1,2-Dichloroethane-D4		115.1	72.0	125.0
Toluene-D8		108.9	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S45491.11

Sample Tag: MW-16-78_021623

Collected Date/Time: 02/16/2023 11:20

Matrix: Groundwater

COC Reference: 152333

Organics - Semi-Volatiles, Analysis: Semi-Volatile Organics - MDEQ

Run in Batch: P230223B, Run Date: 02/24/2023 01:10, Matrix: WW, Dilution: 2

Surrogate	Flags	%Rec	LCL	UCL
2-Fluorophenol		36.8	10.0	110.0
Phenol-D5		29.2	10.0	110.0
Nitrobenzene-D5		65.3	10.0	114.0
2-Fluorobiphenyl		72.1	10.0	116.0
2,4,6-Tribromophenol		74.6	10.0	123.0
Terphenyl-D14		75.9	10.0	141.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 230220A7, Run Date: 02/20/2023 20:19, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		108.6	80.0	124.0
1,2-Dichloroethane-D4		112.3	72.0	125.0
Toluene-D8		109.3	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S45491.12

Sample Tag: DUP-02_021623

Collected Date/Time: 02/16/2023 00:01

Matrix: Groundwater

COC Reference: 152333

Organics - Semi-Volatiles, Analysis: Semi-Volatile Organics - MDEQ

Run in Batch: P230223B, Run Date: 02/24/2023 01:40, Matrix: WW, Dilution: 2

Surrogate	Flags	%Rec	LCL	UCL
2-Fluorophenol		37.7	10.0	110.0
Phenol-D5		29.7	10.0	110.0
Nitrobenzene-D5		64.2	10.0	114.0
2-Fluorobiphenyl		70.8	10.0	116.0
2,4,6-Tribromophenol		74.7	10.0	123.0
Terphenyl-D14		76.5	10.0	141.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 230220A7, Run Date: 02/20/2023 20:43, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		107.9	80.0	124.0
1,2-Dichloroethane-D4		112.0	72.0	125.0
Toluene-D8		108.6	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S45491.13

Sample Tag: Trip Blank

Collected Date/Time: 02/15/2023 00:01

Matrix: Water

COC Reference: 152333

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 230220A7, Run Date: 02/20/2023 21:06, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		109.5	80.0	124.0
1,2-Dichloroethane-D4		116.0	72.0	125.0
Toluene-D8		109.8	89.0	112.0

QC Report - Surrogates per QC Sample

Organics - Semi-Volatiles, Prep Batch ID: SF230222W1

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: P230223B.BLKW22A

Run in Batch: P230223B, Run Date: 02/23/2023 22:11, Prep Date: 02/22/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
2-Fluorophenol		37.6	10.0	110.0
Phenol-D5		29.9	10.0	110.0
Nitrobenzene-D5		62.6	10.0	114.0
2-Fluorobiphenyl		65.5	10.0	116.0
2,4,6-Tribromophenol		74.9	10.0	123.0
Terphenyl-D14		70.8	10.0	141.0

Blank (BLK)

Lab Sample ID: P230223C.BLKW22A

Run in Batch: P230223C, Run Date: 02/23/2023 22:11, Prep Date: 02/22/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
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No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: P230223B.LCSW22A

Run in Batch: P230223B, Run Date: 02/23/2023 22:42, Prep Date: 02/22/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
2-Fluorophenol		43.8	10.0	110.0
Phenol-D5		36.8	10.0	110.0
Nitrobenzene-D5		67.3	10.0	114.0
2-Fluorobiphenyl		73.9	10.0	116.0
2,4,6-Tribromophenol		83.4	10.0	123.0
Terphenyl-D14		74.3	10.0	141.0

Laboratory Control Sample (LCS)

Lab Sample ID: P230223C.LCSW22A

Run in Batch: P230223C, Run Date: 02/23/2023 22:42, Prep Date: 02/22/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
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No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: P230223B.LCSDW22A, Parent Sample ID: P230223B.LCSW22A

Run in Batch: P230223B, Run Date: 02/23/2023 23:12, Prep Date: 02/22/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
2-Fluorophenol		42.6	10.0	110.0
Phenol-D5		35.2	10.0	110.0
Nitrobenzene-D5		67.4	10.0	114.0
2-Fluorobiphenyl		74.7	10.0	116.0
2,4,6-Tribromophenol		82.7	10.0	123.0
Terphenyl-D14		73.3	10.0	141.0

QC Report - Surrogates per QC Sample

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: P230223C.LCSDW22A, Parent Sample ID: P230223C.LCSW22A

Run in Batch: P230223C, Run Date: 02/23/2023 23:12, Prep Date: 02/22/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
No Surrogates				

Matrix Spike (MS)

Lab Sample ID: P230223B.4549109M, Parent Sample ID: S45491.08

Run in Batch: P230223B, Run Date: 02/24/2023 00:11, Prep Date: 02/22/2023, Matrix: WW, Dilution: 2

Surrogate	Flags	%Rec	LCL	UCL
2-Fluorophenol		38.7	10.0	110.0
Phenol-D5		31.0	10.0	110.0
Nitrobenzene-D5		69.3	10.0	114.0
2-Fluorobiphenyl		76.3	10.0	116.0
2,4,6-Tribromophenol		77.1	10.0	123.0
Terphenyl-D14		78.5	10.0	141.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: P230223B.4549110N, Parent Sample ID: P230223B.4549109M

Run in Batch: P230223B, Run Date: 02/24/2023 00:41, Prep Date: 02/22/2023, Matrix: WW, Dilution: 2

Surrogate	Flags	%Rec	LCL	UCL
2-Fluorophenol		38.9	10.0	110.0
Phenol-D5		31.8	10.0	110.0
Nitrobenzene-D5		69.5	10.0	114.0
2-Fluorobiphenyl		78.0	10.0	116.0
2,4,6-Tribromophenol		83.0	10.0	123.0
Terphenyl-D14		84.2	10.0	141.0

QC Report - Surrogates per QC Sample

Organics - Volatiles, Prep Batch ID: VF230220W2

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 230220A7.BLKW20A

Run in Batch: 230220A7, Run Date: 02/20/2023 15:20, Prep Date: 02/20/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		111.9	80.0	124.0
1,2-Dichloroethane-D4		114.4	72.0	125.0
Toluene-D8		109.4	89.0	112.0

Laboratory Control Sample (LCS)

Lab Sample ID: 230220A7.LCSW20A

Run in Batch: 230220A7, Run Date: 02/20/2023 13:46, Prep Date: 02/20/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		110.6	80.0	124.0
1,2-Dichloroethane-D4		107.1	72.0	125.0
Toluene-D8		109.4	89.0	112.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 230220A7.LCSDW20A, Parent Sample ID: 230220A7.LCSW20A

Run in Batch: 230220A7, Run Date: 02/20/2023 14:09, Prep Date: 02/20/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		110.5	80.0	124.0
1,2-Dichloroethane-D4		111.8	72.0	125.0
Toluene-D8		109.5	89.0	112.0

Matrix Spike (MS)

Lab Sample ID: 230220A7.4549109M, Parent Sample ID: S45491.08

Run in Batch: 230220A7, Run Date: 02/20/2023 23:27, Prep Date: 02/20/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		108.5	80.0	124.0
1,2-Dichloroethane-D4		116.4	72.0	125.0
Toluene-D8		109.9	89.0	112.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 230220A7.4549110N, Parent Sample ID: 230220A7.4549109M

Run in Batch: 230220A7, Run Date: 02/20/2023 23:50, Prep Date: 02/20/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		109.7	80.0	124.0
1,2-Dichloroethane-D4		114.7	72.0	125.0
Toluene-D8		109.6	89.0	112.0

QC Report - Surrogates per QC Sample

Organics - Volatiles, Prep Batch ID: VF230223W3

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 230223C7.BLKW23C

Run in Batch: 230223C7, Run Date: 02/24/2023 05:58, Prep Date: 02/23/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		109.6	80.0	124.0
1,2-Dichloroethane-D4		104.3	72.0	125.0
Toluene-D8		108.4	89.0	112.0

Laboratory Control Sample (LCS)

Lab Sample ID: 230223C7.LCSW23C

Run in Batch: 230223C7, Run Date: 02/24/2023 04:24, Prep Date: 02/23/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		109.2	80.0	124.0
1,2-Dichloroethane-D4		105.9	72.0	125.0
Toluene-D8		108.9	89.0	112.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 230223C7.LCSDW23C, Parent Sample ID: 230223C7.LCSW23C

Run in Batch: 230223C7, Run Date: 02/24/2023 04:48, Prep Date: 02/23/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		108.8	80.0	124.0
1,2-Dichloroethane-D4		109.5	72.0	125.0
Toluene-D8		109.9	89.0	112.0

QC Report - Surrogates per QC Sample

Organics - Volatiles, Prep Batch ID: VS230223W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 230223A9.BLKW23A

Run in Batch: 230223A9, Run Date: 02/23/2023 13:54, Prep Date: 02/23/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
No Surrogates				

Laboratory Control Sample (LCS)

Lab Sample ID: 230223A9.LCSS23A

Run in Batch: 230223A9, Run Date: 02/23/2023 12:30, Prep Date: 02/23/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
No Surrogates				

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 230223A9.LCSDS23A, Parent Sample ID: 230223A9.LCSS23A

Run in Batch: 230223A9, Run Date: 02/23/2023 12:51, Prep Date: 02/23/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
No Surrogates				

QC Report - Surrogates per QC Sample

Organics - Volatiles, Prep Batch ID: VS230224W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 230224A9.BLKW24A

Run in Batch: 230224A9, Run Date: 02/24/2023 16:38, Prep Date: 02/24/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
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No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: 230224A9.LCSS24A

Run in Batch: 230224A9, Run Date: 02/24/2023 14:12, Prep Date: 02/24/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
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No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 230224A9.LCSD24A, Parent Sample ID: 230224A9.LCSS24A

Run in Batch: 230224A9, Run Date: 02/24/2023 14:33, Prep Date: 02/24/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
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No Surrogates

QC Report - Surrogates per QC Sample

Organics - Volatiles, Prep Batch ID: VS230227W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 230227A9.BLKW27A

Run in Batch: 230227A9, Run Date: 02/27/2023 16:44, Prep Date: 02/27/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
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No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: 230227A9.LCSS27A

Run in Batch: 230227A9, Run Date: 02/27/2023 14:18, Prep Date: 02/27/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
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No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 230227A9.LCSDS27A, Parent Sample ID: 230227A9.LCSS27A

Run in Batch: 230227A9, Run Date: 02/27/2023 14:39, Prep Date: 02/27/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
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No Surrogates

QC Report - Surrogates per QC Sample

Organics - Volatiles, Prep Batch ID: VS230228W1

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 230228A9.BLKS28A

Run in Batch: 230228A9, Run Date: 02/28/2023 14:52, Prep Date: 02/28/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
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No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: 230228A9.LCSS28A

Run in Batch: 230228A9, Run Date: 02/28/2023 11:59, Prep Date: 02/28/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
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No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 230228A9.LCSDS28A, Parent Sample ID: 230228A9.LCSS28A

Run in Batch: 230228A9, Run Date: 02/28/2023 12:27, Prep Date: 02/28/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
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No Surrogates

Matrix Spike (MS)

Lab Sample ID: 230228A9.4549109M, Parent Sample ID: S45491.08

Run in Batch: 230228A9, Run Date: 02/28/2023 12:48, Prep Date: 02/28/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
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No Surrogates

Matrix Spike (MS)

Lab Sample ID: 230228A9.4549403M, Parent Sample ID: S45494.02

Run in Batch: 230228A9, Run Date: 02/28/2023 13:29, Prep Date: 02/28/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
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No Surrogates

Matrix Spike Duplicate (MSD)

Lab Sample ID: 230228A9.4549110N, Parent Sample ID: 230228A9.4549109M

Run in Batch: 230228A9, Run Date: 02/28/2023 13:08, Prep Date: 02/28/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
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No Surrogates

Matrix Spike Duplicate (MSD)

Lab Sample ID: 230228A9.4549404N, Parent Sample ID: 230228A9.4549403M

Run in Batch: 230228A9, Run Date: 02/28/2023 13:49, Prep Date: 02/28/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
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No Surrogates

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S45491.01

Sample Tag: MW-22-156_021523

Collected Date/Time: 02/15/2023 10:15

Matrix: Groundwater

COC Reference: 152333

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 230224A9, Run Date: 02/24/2023 17:20, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		104.0	50.0	200.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 230220A7, Run Date: 02/20/2023 17:59, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		90.7	50.0	200.0
1,4-Difluorobenzene		94.9	50.0	200.0
Chlorobenzene-D5		95.2	50.0	200.0
1,4-Dichlorobenzene-D4		94.3	50.0	200.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List (Replicate 01)

Run in Batch: 230223C7, Run Date: 02/24/2023 13:26, Matrix: WW, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		98.7	50.0	200.0
1,4-Difluorobenzene		100.5	50.0	200.0
Chlorobenzene-D5		100.3	50.0	200.0
1,4-Dichlorobenzene-D4		100.2	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S45491.02

Sample Tag: MW-22-153_021523

Collected Date/Time: 02/15/2023 11:10

Matrix: Groundwater

COC Reference: 152333

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 230224A9, Run Date: 02/24/2023 17:42, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		100.4	50.0	200.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 230220A7, Run Date: 02/20/2023 18:22, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		94.2	50.0	200.0
1,4-Difluorobenzene		99.7	50.0	200.0
Chlorobenzene-D5		101.0	50.0	200.0
1,4-Dichlorobenzene-D4		100.0	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S45491.03

Sample Tag: MW-22-155_021523

Collected Date/Time: 02/15/2023 12:20

Matrix: Groundwater

COC Reference: 152333

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 230224A9, Run Date: 02/24/2023 18:04, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		97.7	50.0	200.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 230220A7, Run Date: 02/20/2023 18:46, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		94.6	50.0	200.0
1,4-Difluorobenzene		99.8	50.0	200.0
Chlorobenzene-D5		102.4	50.0	200.0
1,4-Dichlorobenzene-D4		102.3	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S45491.04

Sample Tag: MW-14-58R_021523

Collected Date/Time: 02/15/2023 13:25

Matrix: Groundwater

COC Reference: 152333

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 230224A9, Run Date: 02/24/2023 18:25, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		106.9	50.0	200.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 230220A7, Run Date: 02/20/2023 19:09, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		90.1	50.0	200.0
1,4-Difluorobenzene		95.2	50.0	200.0
Chlorobenzene-D5		93.4	50.0	200.0
1,4-Dichlorobenzene-D4		92.9	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S45491.05

Sample Tag: DUP-01_021523

Collected Date/Time: 02/15/2023 00:01

Matrix: Groundwater

COC Reference: 152333

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 230224A9, Run Date: 02/24/2023 18:47, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		94.8	50.0	200.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 230220A7, Run Date: 02/20/2023 19:32, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		90.7	50.0	200.0
1,4-Difluorobenzene		95.4	50.0	200.0
Chlorobenzene-D5		95.8	50.0	200.0
1,4-Dichlorobenzene-D4		96.3	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S45491.06

Sample Tag: MW-22-157_021523

Collected Date/Time: 02/15/2023 14:30

Matrix: Groundwater

COC Reference: 152333

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 230223A9, Run Date: 02/23/2023 14:16, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		99.8	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S45491.07

Sample Tag: MW-21-139_021523

Collected Date/Time: 02/15/2023 15:55

Matrix: Groundwater

COC Reference: 152333

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 230227A9, Run Date: 02/27/2023 18:08, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		98.1	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S45491.08

Sample Tag: MW-21-140_021623

Collected Date/Time: 02/16/2023 09:20

Matrix: Groundwater

COC Reference: 152333

Organics - Semi-Volatiles, Analysis: Semi-Volatile Organics - MDEQ

Run in Batch: P230223B, Run Date: 02/23/2023 23:41, Matrix: WW, Dilution: 2

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dichlorobenzene-D4		83.6	50.0	200.0
Naphthalene-D8		82.8	50.0	200.0
Acenaphthalene-D10		82.6	50.0	200.0
Phenanthrene-D10		81.4	50.0	200.0
Chrysene-D12		81.9	50.0	200.0
Perylene-D12		83.8	50.0	200.0

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 230228A9, Run Date: 02/28/2023 15:13, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		83.5	50.0	200.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 230220A7, Run Date: 02/20/2023 19:56, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		96.5	50.0	200.0
1,4-Difluorobenzene		102.3	50.0	200.0
Chlorobenzene-D5		103.6	50.0	200.0
1,4-Dichlorobenzene-D4		102.7	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S45491.11

Sample Tag: MW-16-78_021623

Collected Date/Time: 02/16/2023 11:20

Matrix: Groundwater

COC Reference: 152333

Organics - Semi-Volatiles, Analysis: Semi-Volatile Organics - MDEQ

Run in Batch: P230223B, Run Date: 02/24/2023 01:10, Matrix: WW, Dilution: 2

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dichlorobenzene-D4		89.2	50.0	200.0
Naphthalene-D8		87.3	50.0	200.0
Acenaphthalene-D10		87.7	50.0	200.0
Phenanthrene-D10		85.4	50.0	200.0
Chrysene-D12		86.0	50.0	200.0
Perylene-D12		88.1	50.0	200.0

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 230227A9, Run Date: 02/27/2023 18:51, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		96.2	50.0	200.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 230220A7, Run Date: 02/20/2023 20:19, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		92.9	50.0	200.0
1,4-Difluorobenzene		98.2	50.0	200.0
Chlorobenzene-D5		98.4	50.0	200.0
1,4-Dichlorobenzene-D4		98.6	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S45491.12

Sample Tag: DUP-02_021623

Collected Date/Time: 02/16/2023 00:01

Matrix: Groundwater

COC Reference: 152333

Organics - Semi-Volatiles, Analysis: Semi-Volatile Organics - MDEQ

Run in Batch: P230223B, Run Date: 02/24/2023 01:40, Matrix: WW, Dilution: 2

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dichlorobenzene-D4		85.6	50.0	200.0
Naphthalene-D8		84.6	50.0	200.0
Acenaphthalene-D10		84.6	50.0	200.0
Phenanthrene-D10		84.0	50.0	200.0
Chrysene-D12		84.2	50.0	200.0
Perylene-D12		83.4	50.0	200.0

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 230227A9, Run Date: 02/27/2023 19:13, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		101.4	50.0	200.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 230220A7, Run Date: 02/20/2023 20:43, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		93.4	50.0	200.0
1,4-Difluorobenzene		99.4	50.0	200.0
Chlorobenzene-D5		100.0	50.0	200.0
1,4-Dichlorobenzene-D4		98.9	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S45491.13

Sample Tag: Trip Blank

Collected Date/Time: 02/15/2023 00:01

Matrix: Water

COC Reference: 152333

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 230220A7, Run Date: 02/20/2023 21:06, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		93.8	50.0	200.0
1,4-Difluorobenzene		99.6	50.0	200.0
Chlorobenzene-D5		103.1	50.0	200.0
1,4-Dichlorobenzene-D4		102.2	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S45491.14

Sample Tag: MW-19-123_021623

Collected Date/Time: 02/16/2023 12:55

Matrix: Groundwater

COC Reference: 152333

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 230223A9, Run Date: 02/23/2023 14:38, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		96.8	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Semi-Volatiles, Prep Batch ID: SF230222W1

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: P230223B.BLKW22A

Run in Batch: P230223B, Run Date: 02/23/2023 22:11, Prep Date: 02/22/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dichlorobenzene-D4		95.8	50.0	200.0
Naphthalene-D8		93.0	50.0	200.0
Acenaphthalene-D10		94.0	50.0	200.0
Phenanthrene-D10		91.6	50.0	200.0
Chrysene-D12		94.9	50.0	200.0
Perylene-D12		92.8	50.0	200.0

Blank (BLK)

Lab Sample ID: P230223C.BLKW22A

Run in Batch: P230223C, Run Date: 02/23/2023 22:11, Prep Date: 02/22/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dichlorobenzene-D4		103.0	50.0	200.0
Naphthalene-D8		98.9	50.0	200.0
Acenaphthalene-D10		99.8	50.0	200.0
Phenanthrene-D10		99.8	50.0	200.0
Chrysene-D12		102.1	50.0	200.0
Perylene-D12		96.7	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: P230223B.LCSW22A

Run in Batch: P230223B, Run Date: 02/23/2023 22:42, Prep Date: 02/22/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dichlorobenzene-D4		94.5	50.0	200.0
Naphthalene-D8		94.0	50.0	200.0
Acenaphthalene-D10		92.4	50.0	200.0
Phenanthrene-D10		92.7	50.0	200.0
Chrysene-D12		93.3	50.0	200.0
Perylene-D12		98.5	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: P230223C.LCSW22A

Run in Batch: P230223C, Run Date: 02/23/2023 22:42, Prep Date: 02/22/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dichlorobenzene-D4		107.8	50.0	200.0
Naphthalene-D8		100.2	50.0	200.0
Acenaphthalene-D10		101.4	50.0	200.0
Phenanthrene-D10		100.9	50.0	200.0
Chrysene-D12		100.3	50.0	200.0
Perylene-D12		102.6	50.0	200.0

QC Report - Internal Standards per QC Sample

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: P230223B.LCSDW22A, Parent Sample ID: P230223B.LCSW22A

Run in Batch: P230223B, Run Date: 02/23/2023 23:12, Prep Date: 02/22/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dichlorobenzene-D4		91.2	50.0	200.0
Naphthalene-D8		89.5	50.0	200.0
Acenaphthalene-D10		88.8	50.0	200.0
Phenanthrene-D10		89.3	50.0	200.0
Chrysene-D12		88.1	50.0	200.0
Perylene-D12		91.1	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: P230223C.LCSDW22A, Parent Sample ID: P230223C.LCSW22A

Run in Batch: P230223C, Run Date: 02/23/2023 23:12, Prep Date: 02/22/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dichlorobenzene-D4		104.3	50.0	200.0
Naphthalene-D8		95.4	50.0	200.0
Acenaphthalene-D10		95.5	50.0	200.0
Phenanthrene-D10		97.2	50.0	200.0
Chrysene-D12		94.9	50.0	200.0
Perylene-D12		95.0	50.0	200.0

Matrix Spike (MS)

Lab Sample ID: P230223B.4549109M, Parent Sample ID: S45491.08

Run in Batch: P230223B, Run Date: 02/24/2023 00:11, Prep Date: 02/22/2023, Matrix: WW, Dilution: 2

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dichlorobenzene-D4		96.2	50.0	200.0
Naphthalene-D8		92.9	50.0	200.0
Acenaphthalene-D10		94.6	50.0	200.0
Phenanthrene-D10		91.9	50.0	200.0
Chrysene-D12		93.3	50.0	200.0
Perylene-D12		94.0	50.0	200.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: P230223B.4549110N, Parent Sample ID: P230223B.4549109M

Run in Batch: P230223B, Run Date: 02/24/2023 00:41, Prep Date: 02/22/2023, Matrix: WW, Dilution: 2

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dichlorobenzene-D4		90.1	50.0	200.0
Naphthalene-D8		88.4	50.0	200.0
Acenaphthalene-D10		88.7	50.0	200.0
Phenanthrene-D10		86.1	50.0	200.0
Chrysene-D12		87.5	50.0	200.0
Perylene-D12		91.0	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: VF230220W2

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 230220A7.BLKW20A

Run in Batch: 230220A7, Run Date: 02/20/2023 15:20, Prep Date: 02/20/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		101.1	50.0	200.0
1,4-Difluorobenzene		105.7	50.0	200.0
Chlorobenzene-D5		106.3	50.0	200.0
1,4-Dichlorobenzene-D4		107.7	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 230220A7.LCSW20A

Run in Batch: 230220A7, Run Date: 02/20/2023 13:46, Prep Date: 02/20/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		102.8	50.0	200.0
1,4-Difluorobenzene		103.5	50.0	200.0
Chlorobenzene-D5		104.6	50.0	200.0
1,4-Dichlorobenzene-D4		104.5	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 230220A7.LCSDW20A, Parent Sample ID: 230220A7.LCSW20A

Run in Batch: 230220A7, Run Date: 02/20/2023 14:09, Prep Date: 02/20/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		101.6	50.0	200.0
1,4-Difluorobenzene		102.8	50.0	200.0
Chlorobenzene-D5		104.0	50.0	200.0
1,4-Dichlorobenzene-D4		104.1	50.0	200.0

Matrix Spike (MS)

Lab Sample ID: 230220A7.4549109M, Parent Sample ID: S45491.08

Run in Batch: 230220A7, Run Date: 02/20/2023 23:27, Prep Date: 02/20/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		92.2	50.0	200.0
1,4-Difluorobenzene		97.2	50.0	200.0
Chlorobenzene-D5		98.9	50.0	200.0
1,4-Dichlorobenzene-D4		97.6	50.0	200.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 230220A7.4549110N, Parent Sample ID: 230220A7.4549109M

Run in Batch: 230220A7, Run Date: 02/20/2023 23:50, Prep Date: 02/20/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		94.7	50.0	200.0
1,4-Difluorobenzene		98.2	50.0	200.0
Chlorobenzene-D5		99.7	50.0	200.0
1,4-Dichlorobenzene-D4		99.6	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: VF230223W3

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 230223C7.BLKW23C

Run in Batch: 230223C7, Run Date: 02/24/2023 05:58, Prep Date: 02/23/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		98.7	50.0	200.0
1,4-Difluorobenzene		97.8	50.0	200.0
Chlorobenzene-D5		95.5	50.0	200.0
1,4-Dichlorobenzene-D4		92.7	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 230223C7.LCSW23C

Run in Batch: 230223C7, Run Date: 02/24/2023 04:24, Prep Date: 02/23/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		100.2	50.0	200.0
1,4-Difluorobenzene		99.8	50.0	200.0
Chlorobenzene-D5		100.6	50.0	200.0
1,4-Dichlorobenzene-D4		98.2	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 230223C7.LCSDW23C, Parent Sample ID: 230223C7.LCSW23C

Run in Batch: 230223C7, Run Date: 02/24/2023 04:48, Prep Date: 02/23/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		100.1	50.0	200.0
1,4-Difluorobenzene		100.1	50.0	200.0
Chlorobenzene-D5		100.8	50.0	200.0
1,4-Dichlorobenzene-D4		98.6	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: VS230223W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 230223A9.BLKW23A

Run in Batch: 230223A9, Run Date: 02/23/2023 13:54, Prep Date: 02/23/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		85.1	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 230223A9.LCSS23A

Run in Batch: 230223A9, Run Date: 02/23/2023 12:30, Prep Date: 02/23/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		99.4	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 230223A9.LCSDS23A, Parent Sample ID: 230223A9.LCSS23A

Run in Batch: 230223A9, Run Date: 02/23/2023 12:51, Prep Date: 02/23/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		106.6	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: VS230224W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 230224A9.BLKW24A

Run in Batch: 230224A9, Run Date: 02/24/2023 16:38, Prep Date: 02/24/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		100.4	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 230224A9.LCSS24A

Run in Batch: 230224A9, Run Date: 02/24/2023 14:12, Prep Date: 02/24/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		89.5	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 230224A9.LCSD24A, Parent Sample ID: 230224A9.LCSS24A

Run in Batch: 230224A9, Run Date: 02/24/2023 14:33, Prep Date: 02/24/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		98.2	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: VS230227W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 230227A9.BLKW27A

Run in Batch: 230227A9, Run Date: 02/27/2023 16:44, Prep Date: 02/27/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		76.0	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 230227A9.LCSS27A

Run in Batch: 230227A9, Run Date: 02/27/2023 14:18, Prep Date: 02/27/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		88.1	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 230227A9.LCSDS27A, Parent Sample ID: 230227A9.LCSS27A

Run in Batch: 230227A9, Run Date: 02/27/2023 14:39, Prep Date: 02/27/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		89.9	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: VS230228W1

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 230228A9.BLKS28A

Run in Batch: 230228A9, Run Date: 02/28/2023 14:52, Prep Date: 02/28/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		71.5	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 230228A9.LCSS28A

Run in Batch: 230228A9, Run Date: 02/28/2023 11:59, Prep Date: 02/28/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		86.5	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 230228A9.LCSDS28A, Parent Sample ID: 230228A9.LCSS28A

Run in Batch: 230228A9, Run Date: 02/28/2023 12:27, Prep Date: 02/28/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		85.1	50.0	200.0

Matrix Spike (MS)

Lab Sample ID: 230228A9.4549109M, Parent Sample ID: S45491.08

Run in Batch: 230228A9, Run Date: 02/28/2023 12:48, Prep Date: 02/28/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		77.3	50.0	200.0

Matrix Spike (MS)

Lab Sample ID: 230228A9.4549403M, Parent Sample ID: S45494.02

Run in Batch: 230228A9, Run Date: 02/28/2023 13:29, Prep Date: 02/28/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		71.8	50.0	200.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 230228A9.4549110N, Parent Sample ID: 230228A9.4549109M

Run in Batch: 230228A9, Run Date: 02/28/2023 13:08, Prep Date: 02/28/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		68.9	50.0	200.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 230228A9.4549404N, Parent Sample ID: 230228A9.4549403M

Run in Batch: 230228A9, Run Date: 02/28/2023 13:49, Prep Date: 02/28/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		78.9	50.0	200.0

QC Report - Batch QC Results

Organics - Semi-Volatiles, Prep Batch ID: SF230222W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: P230223B.BLKW22A

Run in Batch: P230223B, Run Date: 02/23/2023 22:11, Prep Date: 02/22/2023, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Acenaphthene		ND	0.00050	mg/l
Acenaphthylene		ND	0.00050	mg/l
Anthracene		ND	0.00050	mg/l
Benzo(a)anthracene		ND	0.00050	mg/l
Benzo(b)fluoranthene		ND	0.00050	mg/l
Benzo(k)fluoranthene		ND	0.00050	mg/l
Benzo(ghi)perylene		ND	0.00050	mg/l
Benzo(a)pyrene		ND	0.00050	mg/l
bis(2-Chloroethoxy)methane		ND	0.00050	mg/l
bis(2-Chloroethyl)ether		ND	0.00050	mg/l
bis(2-Chloroisopropyl)ether		ND	0.00050	mg/l
bis(2-Ethylhexyl)phthalate		ND	0.00050	mg/l
4-Bromophenyl phenyl ether		ND	0.00050	mg/l
Butyl benzyl phthalate		ND	0.00050	mg/l
4-Chloroaniline		ND	0.00050	mg/l
2-Chloronaphthalene		ND	0.00050	mg/l
4-Chloro-3-methylphenol		ND	0.00050	mg/l
2-Chlorophenol		ND	0.00050	mg/l
4-Chlorophenyl phenyl ether		ND	0.00050	mg/l
Chrysene		ND	0.00050	mg/l
3-, 4-Methylphenol (p,m-Cresol)		ND	0.00050	mg/l
2-Methylphenol (o-Cresol)		ND	0.00050	mg/l
Dibenzo(ah)anthracene		ND	0.00050	mg/l
Dibenzofuran		ND	0.00050	mg/l
di-n-Butyl phthalate		ND	0.00050	mg/l
1,2-Dichlorobenzene		ND	0.00050	mg/l
1,3-Dichlorobenzene		ND	0.00050	mg/l
1,4-Dichlorobenzene		ND	0.00050	mg/l
3,3'-Dichlorobenzidine		ND	0.00050	mg/l
2,4-Dichlorophenol		ND	0.00050	mg/l
Diethyl phthalate		ND	0.00050	mg/l
2,4-Dimethylphenol		ND	0.00050	mg/l
Dimethyl phthalate		ND	0.00050	mg/l
4,6-Dinitro-2-methylphenol		ND	0.00050	mg/l
2,4-Dinitrophenol		ND	0.00050	mg/l
2,4-Dinitrotoluene		ND	0.00050	mg/l
2,6-Dinitrotoluene		ND	0.00050	mg/l
1,2-Diphenylhydrazine		ND	0.00050	mg/l
di-n-Octyl phthalate		ND	0.00050	mg/l
Fluoranthene		ND	0.00050	mg/l
Fluorene		ND	0.00050	mg/l
Hexachlorobenzene		ND	0.00050	mg/l
Hexachlorobutadiene		ND	0.00050	mg/l
Hexachlorocyclopentadiene		ND	0.00050	mg/l
Hexachloroethane		ND	0.00050	mg/l
Indeno(1,2,3-cd)pyrene		ND	0.00050	mg/l

QC Report - Batch QC Results

Organics - Semi-Volatiles, Prep Batch ID: SF230222W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK) (continued)

Lab Sample ID: P230223B.BLKW22A

Run in Batch: P230223B, Run Date: 02/23/2023 22:11, Prep Date: 02/22/2023, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Isophorone		ND	0.00050	mg/l
2-Methylnaphthalene		ND	0.00050	mg/l
Naphthalene		ND	0.00050	mg/l
2-Nitroaniline		ND	0.00050	mg/l
3-Nitroaniline		ND	0.00050	mg/l
4-Nitroaniline		ND	0.00050	mg/l
Nitrobenzene		ND	0.00050	mg/l
2-Nitrophenol		ND	0.00050	mg/l
4-Nitrophenol		ND	0.00050	mg/l
N-Nitrosodiphenylamine		ND	0.00050	mg/l
N-Nitrosodi-n-propylamine		ND	0.00050	mg/l
Pentachlorophenol		ND	0.00050	mg/l
Phenanthrene		ND	0.00050	mg/l
Phenol		ND	0.00050	mg/l
Pyrene		ND	0.00050	mg/l
1,2,4-Trichlorobenzene		ND	0.00050	mg/l
2,4,5-Trichlorophenol		ND	0.00050	mg/l
2,4,6-Trichlorophenol		ND	0.00050	mg/l

Laboratory Control Sample (LCS)

Lab Sample ID: P230223B.LCSW22A

Run in Batch: P230223B, Run Date: 02/23/2023 22:42, Prep Date: 02/22/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Acenaphthene		64.5	27	111
Acenaphthylene		65.8	16	116
Anthracene		63.9	31	119
Benzo(a)anthracene		65.2	35	119
Benzo(b)fluoranthene		66.3	27	129
Benzo(k)fluoranthene		61.1	36	120
Benzo(ghi)perylene		63.0	31	126
Benzo(a)pyrene		62.3	32	121
bis(2-Chloroethoxy)methane		61.2	23	106
bis(2-Chloroethyl)ether		57.9	29	94
bis(2-Chloroisopropyl)ether		51.8	23	91
bis(2-Ethylhexyl)phthalate		63.9	35	121
4-Bromophenyl phenyl ether		68.0	27	122
Butyl benzyl phthalate		65.9	36	117
4-Chloroaniline		37.0	19	91
2-Chloronaphthalene		63.4	21	109
4-Chloro-3-methylphenol		63.6	36	105
2-Chlorophenol		57.3	24	94
4-Chlorophenyl phenyl ether		67.0	31	114
Chrysene		61.4	34	119
3-, 4-Methylphenol (p,m-Cresol)		51.6	21	90
2-Methylphenol (o-Cresol)		52.7	23	79
Dibenzo(ah)anthracene		64.5	32	119

QC Report - Batch QC Results

Organics - Semi-Volatiles, Prep Batch ID: SF230222W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: P230223B.LCSW22A

Run in Batch: P230223B, Run Date: 02/23/2023 22:42, Prep Date: 02/22/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Dibenzofuran		67.5	29	115
di-n-Butyl phthalate		68.2	34	121
1,2-Dichlorobenzene		49.8	11	88
1,3-Dichlorobenzene		47.5	10	85
1,4-Dichlorobenzene		48.0	10	85
3,3'-Dichlorobenzidine		49.8	27	110
2,4-Dichlorophenol		63.5	33	106
Diethyl phthalate		66.8	36	116
2,4-Dimethylphenol		62.0	30	105
Dimethyl phthalate		67.3	35	116
4,6-Dinitro-2-methylphenol		60.8	19	116
2,4-Dinitrophenol		48.0	10	125
2,4-Dinitrotoluene		69.9	33	119
2,6-Dinitrotoluene		68.3	34	117
1,2-Diphenylhydrazine		63.8	34	113
di-n-Octyl phthalate		67.1	30	133
Fluoranthene		66.6	35	121
Fluorene		64.8	32	114
Hexachlorobenzene		64.3	26	126
Hexachlorobutadiene		52.2	10	95
Hexachlorocyclopentadiene		68.4	10	90
Hexachloroethane		44.2	10	82
Indeno(1,2,3-cd)pyrene		64.3	31	124
Isophorone		61.7	26	104
2-Methylnaphthalene		60.2	21	103
Naphthalene		57.8	21	99
2-Nitroaniline		67.2	34	111
3-Nitroaniline		43.8	34	111
4-Nitroaniline		60.5	34	100
Nitrobenzene		57.7	30	98
2-Nitrophenol		62.3	31	108
4-Nitrophenol		43.1	10	90
N-Nitrosodiphenylamine		65.1	31	120
N-Nitrosodi-n-propylamine		60.9	33	102
Pentachlorophenol		56.7	10	108
Phenanthrene		61.6	35	113
Phenol		30.9	10	43
Pyrene		66.1	33	120
1,2,4-Trichlorobenzene		55.2	10	98
2,4,5-Trichlorophenol		67.3	31	120
2,4,6-Trichlorophenol		67.3	31	114

QC Report - Batch QC Results

Organics - Semi-Volatiles, Prep Batch ID: SF230222W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: P230223B.LCSDW22A, Parent Sample ID: P230223B.LCSW22A

Run in Batch: P230223B, Run Date: 02/23/2023 23:12, Prep Date: 02/22/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Acenaphthene		68.1	27	111	5.4	30.0
Acenaphthylene		69.3	16	116	5.2	30.0
Anthracene		67.7	31	119	5.7	30.0
Benzo(a)anthracene		69.8	35	119	6.9	30.0
Benzo(b)fluoranthene		69.3	27	129	4.3	30.0
Benzo(k)fluoranthene		69.9	36	120	13.5	30.0
Benzo(ghi)perylene		69.3	31	126	9.5	30.0
Benzo(a)pyrene		70.7	32	121	12.6	30.0
bis(2-Chloroethoxy)methane		64.2	23	106	4.8	30.0
bis(2-Chloroethyl)ether		60.7	29	94	4.8	30.0
bis(2-Chloroisopropyl)ether		51.2	23	91	1.0	30.0
bis(2-Ethylhexyl)phthalate		68.0	35	121	6.3	30.0
4-Bromophenyl phenyl ether		69.4	27	122	2.1	30.0
Butyl benzyl phthalate		70.0	36	117	6.0	30.0
4-Chloroaniline		36.9	19	91	0.2	30.0
2-Chloronaphthalene		64.9	21	109	2.4	30.0
4-Chloro-3-methylphenol		66.7	36	105	4.7	30.0
2-Chlorophenol		58.2	24	94	1.5	30.0
4-Chlorophenyl phenyl ether		70.5	31	114	5.1	30.0
Chrysene		66.8	34	119	8.5	30.0
3-, 4-Methylphenol (p,m-Cresol)		52.4	21	90	1.5	30.0
2-Methylphenol (o-Cresol)		53.8	23	79	2.1	30.0
Dibenzo(ah)anthracene		70.8	32	119	9.3	30.0
Dibenzofuran		69.2	29	115	2.5	30.0
di-n-Butyl phthalate		71.1	34	121	4.1	30.0
1,2-Dichlorobenzene		51.0	11	88	2.5	30.0
1,3-Dichlorobenzene		48.7	10	85	2.5	30.0
1,4-Dichlorobenzene		49.4	10	85	3.0	30.0
3,3'-Dichlorobenzidine		55.4	27	110	10.5	30.0
2,4-Dichlorophenol		66.7	33	106	5.0	30.0
Diethyl phthalate		69.5	36	116	4.0	30.0
2,4-Dimethylphenol		63.9	30	105	2.9	30.0
Dimethyl phthalate		70.0	35	116	3.9	30.0
4,6-Dinitro-2-methylphenol		62.8	19	116	3.2	30.0
2,4-Dinitrophenol		52.3	10	125	8.6	30.0
2,4-Dinitrotoluene		72.7	33	119	3.9	30.0
2,6-Dinitrotoluene		71.2	34	117	4.1	30.0
1,2-Diphenylhydrazine		66.9	34	113	4.8	30.0
di-n-Octyl phthalate		72.6	30	133	7.9	30.0
Fluoranthene		68.9	35	121	3.5	30.0
Fluorene		67.7	32	114	4.4	30.0
Hexachlorobenzene		68.8	26	126	6.7	30.0
Hexachlorobutadiene		54.8	10	95	4.8	30.0
Hexachlorocyclopentadiene		70.5	10	90	3.1	30.0
Hexachloroethane		45.0	10	82	1.8	30.0
Indeno(1,2,3-cd)pyrene		71.8	31	124	11.1	30.0

QC Report - Batch QC Results

Organics - Semi-Volatiles, Prep Batch ID: SF230222W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: P230223B.LCSDW22A, Parent Sample ID: P230223B.LCSW22A

Run in Batch: P230223B, Run Date: 02/23/2023 23:12, Prep Date: 02/22/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Isophorone		65.0	26	104	5.1	30.0
2-Methylnaphthalene		62.9	21	103	4.4	30.0
Naphthalene		60.7	21	99	5.0	30.0
2-Nitroaniline		71.6	34	111	6.5	30.0
3-Nitroaniline		44.6	34	111	1.9	30.0
4-Nitroaniline		63.5	34	100	4.7	30.0
Nitrobenzene		59.7	30	98	3.4	30.0
2-Nitrophenol		65.3	31	108	4.7	30.0
4-Nitrophenol		42.3	10	90	1.7	30.0
N-Nitrosodiphenylamine		68.5	31	120	5.0	30.0
N-Nitrosodi-n-propylamine		62.6	33	102	2.7	30.0
Pentachlorophenol		59.7	10	108	5.1	30.0
Phenanthrene		65.0	35	113	5.4	30.0
Phenol		30.8	10	43	0.4	30.0
Pyrene		69.6	33	120	5.2	30.0
1,2,4-Trichlorobenzene		57.5	10	98	4.0	30.0
2,4,5-Trichlorophenol		70.7	31	120	4.9	30.0
2,4,6-Trichlorophenol		69.9	31	114	3.8	30.0

Matrix Spike (MS)

Lab Sample ID: P230223B.4549109M, Parent Sample ID: S45491.08

Run in Batch: P230223B, Run Date: 02/24/2023 00:11, Prep Date: 02/22/2023, Matrix: WW, Dilution: 2

Analyte	Flags	% Rec	LCL	UCL
Acenaphthene		64.9	27	111
Acenaphthylene		66.2	16	116
Anthracene		67.7	31	119
Benzo(a)anthracene		66.5	35	119
Benzo(b)fluoranthene		70.4	27	129
Benzo(k)fluoranthene		67.1	36	120
Benzo(ghi)perylene		63.8	31	126
Benzo(a)pyrene		67.2	32	121
bis(2-Chloroethoxy)methane		61.8	23	106
bis(2-Chloroethyl)ether		57.5	29	94
bis(2-Chloroisopropyl)ether		53.1	23	91
bis(2-Ethylhexyl)phthalate		64.9	35	121
4-Bromophenyl phenyl ether		68.3	27	122
Butyl benzyl phthalate		65.4	36	117
4-Chloroaniline		42.1	19	91
2-Chloronaphthalene		63.8	21	109
4-Chloro-3-methylphenol		62.2	36	105
2-Chlorophenol		53.2	24	94
4-Chlorophenyl phenyl ether		66.5	31	114
Chrysene		65.0	34	119
3-, 4-Methylphenol (p,m-Cresol)		46.4	21	90
2-Methylphenol (o-Cresol)		48.7	23	79
Dibenzo(ah)anthracene		65.8	32	119

QC Report - Batch QC Results

Organics - Semi-Volatiles, Prep Batch ID: SF230222W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Matrix Spike (MS) (continued)

Lab Sample ID: P230223B.4549109M, Parent Sample ID: S45491.08

Run in Batch: P230223B, Run Date: 02/24/2023 00:11, Prep Date: 02/22/2023, Matrix: WW, Dilution: 2

Analyte	Flags	% Rec	LCL	UCL
Dibenzofuran		66.2	29	115
di-n-Butyl phthalate		69.5	34	121
1,2-Dichlorobenzene		56.9	11	88
1,3-Dichlorobenzene		55.3	10	85
1,4-Dichlorobenzene		55.8	10	85
3,3'-Dichlorobenzidine		54.9	27	110
2,4-Dichlorophenol		62.6	33	106
Diethyl phthalate		66.4	36	116
2,4-Dimethylphenol		60.0	30	105
Dimethyl phthalate		66.3	35	116
4,6-Dinitro-2-methylphenol		58.5	19	116
2,4-Dinitrophenol		43.1	10	125
2,4-Dinitrotoluene		66.1	33	119
2,6-Dinitrotoluene		66.9	34	117
1,2-Diphenylhydrazine		64.9	34	113
di-n-Octyl phthalate		69.6	30	133
Fluoranthene		67.1	35	121
Fluorene		66.4	32	114
Hexachlorobenzene		66.4	26	126
Hexachlorobutadiene		63.8	10	95
Hexachlorocyclopentadiene		71.8	10	90
Hexachloroethane		54.5	10	82
Indeno(1,2,3-cd)pyrene		65.7	31	124
Isophorone		63.0	26	104
2-Methylnaphthalene		65.2	21	103
Naphthalene		63.1	21	99
2-Nitroaniline		64.1	34	111
3-Nitroaniline		50.0	34	111
4-Nitroaniline		59.0	34	100
Nitrobenzene		58.7	30	98
2-Nitrophenol		62.4	31	108
4-Nitrophenol		35.8	10	90
N-Nitrosodiphenylamine		67.7	31	120
N-Nitrosodi-n-propylamine		60.1	33	102
Pentachlorophenol		50.9	10	108
Phenanthrene		65.1	35	113
Phenol		25.3	10	43
Pyrene		66.6	33	120
1,2,4-Trichlorobenzene		63.0	10	98
2,4,5-Trichlorophenol		65.8	31	120
2,4,6-Trichlorophenol		63.3	31	114

QC Report - Batch QC Results

Organics - Semi-Volatiles, Prep Batch ID: SF230222W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Matrix Spike Duplicate (MSD)

Lab Sample ID: P230223B.4549110N, Parent Sample ID: P230223B.4549109M

Run in Batch: P230223B, Run Date: 02/24/2023 00:41, Prep Date: 02/22/2023, Matrix: WW, Dilution: 2

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Acenaphthene		67.3	27	111	3.6	30.0
Acenaphthylene		68.8	16	116	3.8	30.0
Anthracene		71.9	31	119	6.0	30.0
Benzo(a)anthracene		71.4	35	119	7.1	30.0
Benzo(b)fluoranthene		74.8	27	129	6.1	30.0
Benzo(k)fluoranthene		70.6	36	120	5.0	30.0
Benzo(ghi)perylene		66.9	31	126	4.7	30.0
Benzo(a)pyrene		69.5	32	121	3.4	30.0
bis(2-Chloroethoxy)methane		62.8	23	106	1.6	30.0
bis(2-Chloroethyl)ether		58.8	29	94	2.3	30.0
bis(2-Chloroisopropyl)ether		53.9	23	91	1.4	30.0
bis(2-Ethylhexyl)phthalate		70.6	35	121	8.5	30.0
4-Bromophenyl phenyl ether		70.6	27	122	3.3	30.0
Butyl benzyl phthalate		70.0	36	117	6.8	30.0
4-Chloroaniline		38.1	19	91	10.0	30.0
2-Chloronaphthalene		65.4	21	109	2.4	30.0
4-Chloro-3-methylphenol		63.4	36	105	1.8	30.0
2-Chlorophenol		54.9	24	94	3.2	30.0
4-Chlorophenyl phenyl ether		69.8	31	114	4.8	30.0
Chrysene		69.4	34	119	6.4	30.0
3-, 4-Methylphenol (p,m-Cresol)		47.1	21	90	1.3	30.0
2-Methylphenol (o-Cresol)		50.8	23	79	4.1	30.0
Dibenzo(ah)anthracene		67.1	32	119	2.0	30.0
Dibenzofuran		68.7	29	115	3.7	30.0
di-n-Butyl phthalate		76.1	34	121	9.0	30.0
1,2-Dichlorobenzene		58.9	11	88	3.5	30.0
1,3-Dichlorobenzene		58.4	10	85	5.4	30.0
1,4-Dichlorobenzene		57.6	10	85	3.1	30.0
3,3'-Dichlorobenzidine		57.4	27	110	4.6	30.0
2,4-Dichlorophenol		64.8	33	106	3.4	30.0
Diethyl phthalate		71.3	36	116	7.1	30.0
2,4-Dimethylphenol		61.0	30	105	1.7	30.0
Dimethyl phthalate		69.6	35	116	4.9	30.0
4,6-Dinitro-2-methylphenol		65.1	19	116	10.7	30.0
2,4-Dinitrophenol		49.8	10	125	14.3	30.0
2,4-Dinitrotoluene		71.5	33	119	7.8	30.0
2,6-Dinitrotoluene		70.0	34	117	4.5	30.0
1,2-Diphenylhydrazine		69.0	34	113	6.2	30.0
di-n-Octyl phthalate		72.7	30	133	4.4	30.0
Fluoranthene		71.9	35	121	6.9	30.0
Fluorene		69.4	32	114	4.4	30.0
Hexachlorobenzene		72.1	26	126	8.2	30.0
Hexachlorobutadiene		62.5	10	95	2.0	30.0
Hexachlorocyclopentadiene		73.6	10	90	2.4	30.0
Hexachloroethane		55.7	10	82	2.3	30.0
Indeno(1,2,3-cd)pyrene		67.6	31	124	2.9	30.0

QC Report - Batch QC Results

Organics - Semi-Volatiles, Prep Batch ID: SF230222W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Matrix Spike Duplicate (MSD) (continued)

Lab Sample ID: P230223B.4549110N, Parent Sample ID: P230223B.4549109M

Run in Batch: P230223B, Run Date: 02/24/2023 00:41, Prep Date: 02/22/2023, Matrix: WW, Dilution: 2

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Isophorone		63.7	26	104	1.1	30.0
2-Methylnaphthalene		63.8	21	103	2.3	30.0
Naphthalene		63.7	21	99	1.0	30.0
2-Nitroaniline		67.1	34	111	4.6	30.0
3-Nitroaniline		46.4	34	111	7.4	30.0
4-Nitroaniline		60.6	34	100	2.7	30.0
Nitrobenzene		59.7	30	98	1.6	30.0
2-Nitrophenol		62.4	31	108	0.1	30.0
4-Nitrophenol		37.6	10	90	4.9	30.0
N-Nitrosodiphenylamine		70.1	31	120	3.6	30.0
N-Nitrosodi-n-propylamine		61.4	33	102	2.2	30.0
Pentachlorophenol		55.1	10	108	7.9	30.0
Phenanthrene		70.0	35	113	7.2	30.0
Phenol		25.6	10	43	1.4	30.0
Pyrene		70.1	33	120	5.1	30.0
1,2,4-Trichlorobenzene		63.0	10	98	0.0	30.0
2,4,5-Trichlorophenol		69.9	31	120	5.9	30.0
2,4,6-Trichlorophenol		65.8	31	114	3.9	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF230220W2

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 230220A7.BLKW20A

Run in Batch: 230220A7, Run Date: 02/20/2023 15:20, Prep Date: 02/20/2023, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Diethyl ether		ND	1.00	ug/l
Acetone		ND	10.00	ug/l
Methyl iodide		ND	1.00	ug/l
Carbon disulfide		ND	1.00	ug/l
tert-Methyl butyl ether (MTBE)		ND	1.00	ug/l
Acrylonitrile		ND	1.00	ug/l
2-Butanone (MEK)		ND	10.00	ug/l
Dichlorodifluoromethane		ND	1.00	ug/l
Chloromethane		ND	1.00	ug/l
Vinyl chloride		ND	1.00	ug/l
Bromomethane		ND	1.00	ug/l
Chloroethane		ND	1.00	ug/l
Trichlorofluoromethane		ND	1.00	ug/l
1,1-Dichloroethene		ND	1.00	ug/l
Methylene chloride		ND	1.00	ug/l
trans-1,2-Dichloroethene		ND	1.00	ug/l
1,1-Dichloroethane		ND	1.00	ug/l
cis-1,2-Dichloroethene		ND	1.00	ug/l
Tetrahydrofuran		ND	10.00	ug/l
Chloroform		ND	1.00	ug/l
Bromochloromethane		ND	1.00	ug/l
1,1,1-Trichloroethane		ND	1.00	ug/l
4-Methyl-2-pentanone (MIBK)		ND	10.00	ug/l
2-Hexanone		ND	10.00	ug/l
Carbon tetrachloride		ND	1.00	ug/l
Benzene		ND	1.00	ug/l
1,2-Dichloroethane		ND	1.00	ug/l
Trichloroethene		ND	1.00	ug/l
1,2-Dichloropropane		ND	1.00	ug/l
Bromodichloromethane		ND	1.00	ug/l
Dibromomethane		ND	1.00	ug/l
cis-1,3-Dichloropropene		ND	1.00	ug/l
Toluene		ND	1.00	ug/l
trans-1,3-Dichloropropene		ND	1.00	ug/l
1,1,2-Trichloroethane		ND	1.00	ug/l
Tetrachloroethene		ND	1.00	ug/l
trans-1,4-Dichloro-2-butene		ND	1.00	ug/l
Dibromochloromethane		ND	1.00	ug/l
1,2-Dibromoethane		ND	1.00	ug/l
Chlorobenzene		ND	1.00	ug/l
1,1,1,2-Tetrachloroethane		ND	1.00	ug/l
Ethylbenzene		ND	1.00	ug/l
p,m-Xylene		ND	1.00	ug/l
o-Xylene		ND	1.00	ug/l
Styrene		ND	1.00	ug/l
Isopropylbenzene		ND	1.00	ug/l

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF230220W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK) (continued)

Lab Sample ID: 230220A7.BLKW20A

Run in Batch: 230220A7, Run Date: 02/20/2023 15:20, Prep Date: 02/20/2023, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Bromoform		ND	1.00	ug/l
1,1,2,2-Tetrachloroethane		ND	1.00	ug/l
1,2,3-Trichloropropane		ND	1.00	ug/l
n-Propylbenzene		ND	1.00	ug/l
Bromobenzene		ND	1.00	ug/l
1,3,5-Trimethylbenzene		ND	1.00	ug/l
tert-Butylbenzene		ND	1.00	ug/l
1,2,4-Trimethylbenzene		ND	1.00	ug/l
sec-Butylbenzene		ND	1.00	ug/l
p-Isopropyltoluene		ND	1.00	ug/l
1,3-Dichlorobenzene		ND	1.00	ug/l
1,4-Dichlorobenzene		ND	1.00	ug/l
1,2-Dichlorobenzene		ND	1.00	ug/l
1,2,3-Trimethylbenzene		ND	1.00	ug/l
n-Butylbenzene		ND	1.00	ug/l
Hexachloroethane		ND	1.00	ug/l
1,2-Dibromo-3-chloropropane		ND	1.00	ug/l
1,2,4-Trichlorobenzene		ND	1.00	ug/l
1,2,3-Trichlorobenzene		ND	1.00	ug/l
Naphthalene		ND	1.00	ug/l
2-Methylnaphthalene		ND	1.00	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 230220A7.LCSW20A

Run in Batch: 230220A7, Run Date: 02/20/2023 13:46, Prep Date: 02/20/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Diethyl ether		108.4	67.4	121.2
Acetone		117.5	29.9	161.5
Methyl iodide		108.7	68.8	116.4
Carbon disulfide		98.9	63.8	137.4
tert-Methyl butyl ether (MTBE)		113.8	73.2	122.4
Acrylonitrile		113.1	69.9	128.9
2-Butanone (MEK)		117.5	44.0	134.4
Dichlorodifluoromethane		85.4	10.0	222.8
Chloromethane		123.6	23.8	166.5
Vinyl chloride		113.4	43.5	149.1
Bromomethane		128.5	56.8	151.3
Chloroethane		126.0	53.4	149.4
Trichlorofluoromethane		103.7	59.7	151.8
1,1-Dichloroethene		100.9	69.6	139.4
Methylene chloride		111.2	73.3	121.1
trans-1,2-Dichloroethene		105.1	73.6	129.3
1,1-Dichloroethane		106.6	71.5	126.2
cis-1,2-Dichloroethene		109.2	76.6	122.1
Tetrahydrofuran		107.2	59.0	117.9
Chloroform		109.2	78.4	124.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF230220W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 230220A7.LCSW20A

Run in Batch: 230220A7, Run Date: 02/20/2023 13:46, Prep Date: 02/20/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Bromochloromethane		111.5	78.2	120.8
1,1,1-Trichloroethane		99.4	79.4	130.9
4-Methyl-2-pentanone (MIBK)		109.3	71.6	125.2
2-Hexanone		116.3	55.4	136.9
Carbon tetrachloride		94.7	72.6	133.0
Benzene		108.2	79.9	124.9
1,2-Dichloroethane		109.2	76.0	126.3
Trichloroethene		105.1	79.7	124.2
1,2-Dichloropropane		112.3	78.6	126.4
Bromodichloromethane		112.4	80.4	128.2
Dibromomethane		116.7	76.9	122.1
cis-1,3-Dichloropropene		116.2	79.8	129.9
Toluene		109.3	79.8	124.5
trans-1,3-Dichloropropene		115.3	74.0	131.3
1,1,2-Trichloroethane		115.6	78.7	123.1
Tetrachloroethene		107.2	74.5	124.5
trans-1,4-Dichloro-2-butene		94.0	68.6	135.4
Dibromochloromethane		112.4	74.6	127.2
1,2-Dibromoethane		113.3	70.3	133.7
Chlorobenzene		109.2	79.2	122.7
1,1,1,2-Tetrachloroethane		109.2	80.3	128.2
Ethylbenzene		108.9	79.5	129.1
p,m-Xylene		107.9	79.4	132.2
o-Xylene		109.3	80.2	131.0
Styrene		113.1	69.5	126.7
Isopropylbenzene		106.8	74.4	121.5
Bromoform		110.2	69.4	128.0
1,1,2,2-Tetrachloroethane		112.4	79.8	126.3
1,2,3-Trichloropropane		111.9	78.3	138.8
n-Propylbenzene		108.8	82.0	130.7
Bromobenzene		114.0	78.7	124.6
1,3,5-Trimethylbenzene		108.5	81.3	128.9
tert-Butylbenzene		107.0	80.7	128.9
1,2,4-Trimethylbenzene		109.3	81.4	130.8
sec-Butylbenzene		110.9	77.4	129.8
p-Isopropyltoluene		112.9	79.8	137.5
1,3-Dichlorobenzene		113.2	77.0	131.3
1,4-Dichlorobenzene		115.4	20.7	137.7
1,2-Dichlorobenzene		113.9	10.0	166.2
1,2,3-Trimethylbenzene		113.3	76.3	124.2
n-Butylbenzene		114.9	80.0	133.3
Hexachloroethane		110.9	23.8	138.1
1,2-Dibromo-3-chloropropane		111.5	21.2	189.4
1,2,4-Trichlorobenzene		121.8	27.4	143.4
1,2,3-Trichlorobenzene		124.5	75.4	131.4
Naphthalene		116.3	32.9	135.8

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF230220W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 230220A7.LCSW20A

Run in Batch: 230220A7, Run Date: 02/20/2023 13:46, Prep Date: 02/20/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
2-Methylnaphthalene		127.7	25.5	165.5

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 230220A7.LCSDW20A, Parent Sample ID: 230220A7.LCSW20A

Run in Batch: 230220A7, Run Date: 02/20/2023 14:09, Prep Date: 02/20/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Diethyl ether		109.2	67.4	121.2	0.7	30.0
Acetone		97.9	29.9	161.5	18.2	30.0
Methyl iodide		90.7	68.8	116.4	18.0	30.0
Carbon disulfide		82.6	63.8	137.4	17.9	30.0
tert-Methyl butyl ether (MTBE)		95.1	73.2	122.4	17.9	30.0
Acrylonitrile		95.2	69.9	128.9	17.2	30.0
2-Butanone (MEK)		103.7	44.0	134.4	12.5	30.0
Dichlorodifluoromethane		67.5	10.0	222.8	23.4	30.0
Chloromethane		94.9	23.8	166.5	26.3	30.0
Vinyl chloride		86.2	43.5	149.1	27.3	30.0
Bromomethane		97.4	56.8	151.3	27.5	30.0
Chloroethane		98.6	53.4	149.4	24.4	30.0
Trichlorofluoromethane		81.9	59.7	151.8	23.4	30.0
1,1-Dichloroethene		101.5	69.6	139.4	0.6	30.0
Methylene chloride		93.0	73.3	121.1	17.9	30.0
trans-1,2-Dichloroethene		86.5	73.6	129.3	19.4	30.0
1,1-Dichloroethane		90.0	71.5	126.2	16.9	30.0
cis-1,2-Dichloroethene		90.6	76.6	122.1	18.7	30.0
Tetrahydrofuran		87.6	59.0	117.9	20.1	30.0
Chloroform		90.4	78.4	124.0	18.9	30.0
Bromochloromethane		93.2	78.2	120.8	17.9	30.0
1,1,1-Trichloroethane		82.0	79.4	130.9	19.1	30.0
4-Methyl-2-pentanone (MIBK)		91.7	71.6	125.2	17.5	30.0
2-Hexanone		93.0	55.4	136.9	22.3	30.0
Carbon tetrachloride		76.3	72.6	133.0	21.5	30.0
Benzene		88.2	79.9	124.9	20.3	30.0
1,2-Dichloroethane		89.7	76.0	126.3	19.6	30.0
Trichloroethene		84.6	79.7	124.2	21.6	30.0
1,2-Dichloropropane		92.7	78.6	126.4	19.2	30.0
Bromodichloromethane		91.9	80.4	128.2	20.1	30.0
Dibromomethane		93.4	76.9	122.1	22.2	30.0
cis-1,3-Dichloropropene		92.7	79.8	129.9	22.5	30.0
Toluene		88.8	79.8	124.5	20.7	30.0
trans-1,3-Dichloropropene		91.9	74.0	131.3	22.6	30.0
1,1,2-Trichloroethane		93.5	78.7	123.1	21.1	30.0
Tetrachloroethene		84.1	74.5	124.5	24.2	30.0
trans-1,4-Dichloro-2-butene		75.2	68.6	135.4	22.2	30.0
Dibromochloromethane		89.0	74.6	127.2	23.2	30.0
1,2-Dibromoethane		92.8	70.3	133.7	19.8	30.0
Chlorobenzene		87.8	79.2	122.7	21.8	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF230220W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: 230220A7.LCSDW20A, Parent Sample ID: 230220A7.LCSW20A

Run in Batch: 230220A7, Run Date: 02/20/2023 14:09, Prep Date: 02/20/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,1,1,2-Tetrachloroethane		89.7	80.3	128.2	19.6	30.0
Ethylbenzene		87.4	79.5	129.1	21.9	30.0
p,m-Xylene		87.4	79.4	132.2	21.0	30.0
o-Xylene		88.4	80.2	131.0	21.1	30.0
Styrene		90.5	69.5	126.7	22.2	30.0
Isopropylbenzene		86.6	74.4	121.5	20.9	30.0
Bromoform		90.1	69.4	128.0	20.0	30.0
1,1,2,2-Tetrachloroethane		92.9	79.8	126.3	19.0	30.0
1,2,3-Trichloropropane		90.4	78.3	138.8	21.2	30.0
n-Propylbenzene		86.9	82.0	130.7	22.4	30.0
Bromobenzene		92.6	78.7	124.6	20.7	30.0
1,3,5-Trimethylbenzene		87.8	81.3	128.9	21.1	30.0
tert-Butylbenzene		84.3	80.7	128.9	23.8	30.0
1,2,4-Trimethylbenzene		88.4	81.4	130.8	21.1	30.0
sec-Butylbenzene		87.5	77.4	129.8	23.6	30.0
p-Isopropyltoluene		88.6	79.8	137.5	24.1	30.0
1,3-Dichlorobenzene		91.3	77.0	131.3	21.4	30.0
1,4-Dichlorobenzene		93.0	20.7	137.7	21.5	30.0
1,2-Dichlorobenzene		92.7	10.0	166.2	20.5	30.0
1,2,3-Trimethylbenzene		92.7	76.3	124.2	20.1	30.0
n-Butylbenzene		91.8	80.0	133.3	22.4	30.0
Hexachloroethane		87.1	23.8	138.1	24.0	30.0
1,2-Dibromo-3-chloropropane		91.2	21.2	189.4	20.0	30.0
1,2,4-Trichlorobenzene		96.1	27.4	143.4	23.6	30.0
1,2,3-Trichlorobenzene		98.6	75.4	131.4	23.3	30.0
Naphthalene		92.9	32.9	135.8	22.4	30.0
2-Methylnaphthalene		97.6	25.5	165.5	26.7	30.0

Matrix Spike (MS)

Lab Sample ID: 230220A7.4549109M, Parent Sample ID: S45491.08

Run in Batch: 230220A7, Run Date: 02/20/2023 23:27, Prep Date: 02/20/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Diethyl ether	*	127.4	67.4	121.2
Acetone		128.1	29.9	161.5
Methyl iodide		98.6	68.8	116.4
Carbon disulfide		88.5	63.8	137.4
tert-Methyl butyl ether (MTBE)		110.5	73.2	122.4
Acrylonitrile		124.8	69.9	128.9
2-Butanone (MEK)	*	136.0	44.0	134.4
Dichlorodifluoromethane		85.4	10.0	222.8
Chloromethane		108.9	23.8	166.5
Vinyl chloride		98.6	43.5	149.1
Bromomethane		107.7	56.8	151.3
Chloroethane		108.6	53.4	149.4
Trichlorofluoromethane		94.5	59.7	151.8
1,1-Dichloroethene		105.4	69.6	139.4

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF230220W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Matrix Spike (MS) (continued)

Lab Sample ID: 230220A7.4549109M, Parent Sample ID: S45491.08

Run in Batch: 230220A7, Run Date: 02/20/2023 23:27, Prep Date: 02/20/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Methylene chloride		103.1	73.3	121.1
trans-1,2-Dichloroethene		95.8	73.6	129.3
1,1-Dichloroethane		100.6	71.5	126.2
cis-1,2-Dichloroethene		100.0	76.6	122.1
Tetrahydrofuran		116.4	59.0	117.9
Chloroform		100.2	78.4	124.0
Bromochloromethane		102.5	78.2	120.8
1,1,1-Trichloroethane		91.0	79.4	130.9
4-Methyl-2-pentanone (MIBK)		109.6	71.6	125.2
2-Hexanone		111.6	55.4	136.9
Carbon tetrachloride		83.8	72.6	133.0
Benzene		92.9	79.9	124.9
1,2-Dichloroethane		95.7	76.0	126.3
Trichloroethene		91.0	79.7	124.2
1,2-Dichloropropane		95.3	78.6	126.4
Bromodichloromethane		93.9	80.4	128.2
Dibromomethane		99.3	76.9	122.1
cis-1,3-Dichloropropene		94.5	79.8	129.9
Toluene		93.7	79.8	124.5
trans-1,3-Dichloropropene		93.1	74.0	131.3
1,1,2-Trichloroethane		98.8	78.7	123.1
Tetrachloroethene		92.2	74.5	124.5
trans-1,4-Dichloro-2-butene		82.2	68.6	135.4
Dibromochloromethane		91.0	74.6	127.2
1,2-Dibromoethane		96.3	70.3	133.7
Chlorobenzene		91.2	79.2	122.7
1,1,1,2-Tetrachloroethane		90.2	80.3	128.2
Ethylbenzene		93.3	79.5	129.1
p,m-Xylene		90.7	79.4	132.2
o-Xylene		92.4	80.2	131.0
Styrene		91.5	69.5	126.7
Isopropylbenzene		92.7	74.4	121.5
Bromoform		91.3	69.4	128.0
1,1,2,2-Tetrachloroethane		101.3	79.8	126.3
1,2,3-Trichloropropane		98.7	78.3	138.8
n-Propylbenzene		93.1	82.0	130.7
Bromobenzene		94.6	78.7	124.6
1,3,5-Trimethylbenzene		92.4	81.3	128.9
tert-Butylbenzene		90.7	80.7	128.9
1,2,4-Trimethylbenzene		93.1	81.4	130.8
sec-Butylbenzene		94.2	77.4	129.8
p-Isopropyltoluene		95.3	79.8	137.5
1,3-Dichlorobenzene		94.3	77.0	131.3
1,4-Dichlorobenzene		95.6	20.7	137.7
1,2-Dichlorobenzene		94.9	10.0	166.2
1,2,3-Trimethylbenzene		94.9	76.3	124.2

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF230220W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Matrix Spike (MS) (continued)

Lab Sample ID: 230220A7.4549109M, Parent Sample ID: S45491.08

Run in Batch: 230220A7, Run Date: 02/20/2023 23:27, Prep Date: 02/20/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
n-Butylbenzene		96.0	80.0	133.3
Hexachloroethane		86.3	23.8	138.1
1,2-Dibromo-3-chloropropane		103.2	21.2	189.4
1,2,4-Trichlorobenzene		99.6	27.4	143.4
1,2,3-Trichlorobenzene		97.2	75.4	131.4
Naphthalene		99.9	32.9	135.8
2-Methylnaphthalene		97.6	25.5	165.5

Matrix Spike Duplicate (MSD)

Lab Sample ID: 230220A7.4549110N, Parent Sample ID: 230220A7.4549109M

Run in Batch: 230220A7, Run Date: 02/20/2023 23:50, Prep Date: 02/20/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Diethyl ether		116.2	67.4	121.2	9.2	30.0
Acetone		110.8	29.9	161.5	14.4	30.0
Methyl iodide		91.3	68.8	116.4	7.6	30.0
Carbon disulfide		84.9	63.8	137.4	4.2	30.0
tert-Methyl butyl ether (MTBE)		98.1	73.2	122.4	11.8	30.0
Acrylonitrile		105.6	69.9	128.9	16.6	30.0
2-Butanone (MEK)		107.2	44.0	134.4	23.7	30.0
Dichlorodifluoromethane		72.3	10.0	222.8	16.7	30.0
Chloromethane		96.3	23.8	166.5	12.3	30.0
Vinyl chloride		91.5	43.5	149.1	7.5	30.0
Bromomethane		100.5	56.8	151.3	6.9	30.0
Chloroethane		103.2	53.4	149.4	5.1	30.0
Trichlorofluoromethane		86.9	59.7	151.8	8.4	30.0
1,1-Dichloroethene		88.8	69.6	139.4	17.2	30.0
Methylene chloride		96.0	73.3	121.1	7.1	30.0
trans-1,2-Dichloroethene		90.1	73.6	129.3	6.2	30.0
1,1-Dichloroethane		91.4	71.5	126.2	9.5	30.0
cis-1,2-Dichloroethene		91.5	76.6	122.1	8.9	30.0
Tetrahydrofuran		95.2	59.0	117.9	20.0	30.0
Chloroform		92.0	78.4	124.0	8.5	30.0
Bromochloromethane		94.7	78.2	120.8	7.9	30.0
1,1,1-Trichloroethane		85.1	79.4	130.9	6.7	30.0
4-Methyl-2-pentanone (MIBK)		98.8	71.6	125.2	10.3	30.0
2-Hexanone		104.5	55.4	136.9	6.6	30.0
Carbon tetrachloride		77.4	72.6	133.0	8.0	30.0
Benzene		88.8	79.9	124.9	4.4	30.0
1,2-Dichloroethane		90.4	76.0	126.3	5.7	30.0
Trichloroethene		84.2	79.7	124.2	7.8	30.0
1,2-Dichloropropane		92.0	78.6	126.4	3.6	30.0
Bromodichloromethane		90.1	80.4	128.2	4.0	30.0
Dibromomethane		94.4	76.9	122.1	5.1	30.0
cis-1,3-Dichloropropene		91.4	79.8	129.9	3.4	30.0
Toluene		89.0	79.8	124.5	5.2	30.0
trans-1,3-Dichloropropene		90.5	74.0	131.3	2.9	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF230220W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Matrix Spike Duplicate (MSD) (continued)

Lab Sample ID: 230220A7.4549110N, Parent Sample ID: 230220A7.4549109M

Run in Batch: 230220A7, Run Date: 02/20/2023 23:50, Prep Date: 02/20/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,1,2-Trichloroethane		95.4	78.7	123.1	3.5	30.0
Tetrachloroethene		84.0	74.5	124.5	9.3	30.0
trans-1,4-Dichloro-2-butene		80.3	68.6	135.4	2.4	30.0
Dibromochloromethane		87.3	74.6	127.2	4.1	30.0
1,2-Dibromoethane		92.6	70.3	133.7	3.8	30.0
Chlorobenzene		88.8	79.2	122.7	2.7	30.0
1,1,1,2-Tetrachloroethane		87.4	80.3	128.2	3.2	30.0
Ethylbenzene		87.1	79.5	129.1	6.9	30.0
p,m-Xylene		85.7	79.4	132.2	5.6	30.0
o-Xylene		87.5	80.2	131.0	5.5	30.0
Styrene		88.9	69.5	126.7	2.8	30.0
Isopropylbenzene		85.6	74.4	121.5	8.0	30.0
Bromoform		88.9	69.4	128.0	2.7	30.0
1,1,2,2-Tetrachloroethane		97.1	79.8	126.3	4.3	30.0
1,2,3-Trichloropropane		96.5	78.3	138.8	2.2	30.0
n-Propylbenzene		85.2	82.0	130.7	8.8	30.0
Bromobenzene		91.4	78.7	124.6	3.4	30.0
1,3,5-Trimethylbenzene		86.4	81.3	128.9	6.7	30.0
tert-Butylbenzene		84.0	80.7	128.9	7.7	30.0
1,2,4-Trimethylbenzene		87.6	81.4	130.8	6.1	30.0
sec-Butylbenzene		85.9	77.4	129.8	9.3	30.0
p-Isopropyltoluene		85.9	79.8	137.5	10.3	30.0
1,3-Dichlorobenzene		89.3	77.0	131.3	5.4	30.0
1,4-Dichlorobenzene		90.0	20.7	137.7	6.0	30.0
1,2-Dichlorobenzene		90.8	10.0	166.2	4.4	30.0
1,2,3-Trimethylbenzene		90.0	76.3	124.2	5.3	30.0
n-Butylbenzene		87.2	80.0	133.3	9.6	30.0
Hexachloroethane		81.8	23.8	138.1	5.4	30.0
1,2-Dibromo-3-chloropropane		97.1	21.2	189.4	6.1	30.0
1,2,4-Trichlorobenzene		94.9	27.4	143.4	4.8	30.0
1,2,3-Trichlorobenzene		97.6	75.4	131.4	0.5	30.0
Naphthalene		98.3	32.9	135.8	1.7	30.0
2-Methylnaphthalene		99.7	25.5	165.5	2.1	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF230223W3

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 230223C7.BLKW23C

Run in Batch: 230223C7, Run Date: 02/24/2023 05:58, Prep Date: 02/23/2023, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Diethyl ether		ND	1.00	ug/l
Acetone		ND	10.00	ug/l
Methyl iodide		ND	1.00	ug/l
Carbon disulfide		ND	1.00	ug/l
tert-Methyl butyl ether (MTBE)		ND	1.00	ug/l
Acrylonitrile		ND	1.00	ug/l
2-Butanone (MEK)		ND	10.00	ug/l
Dichlorodifluoromethane		ND	1.00	ug/l
Chloromethane		ND	1.00	ug/l
Vinyl chloride		ND	1.00	ug/l
Bromomethane		ND	1.00	ug/l
Chloroethane		ND	1.00	ug/l
Trichlorofluoromethane		ND	1.00	ug/l
1,1-Dichloroethene		ND	1.00	ug/l
Methylene chloride		ND	1.00	ug/l
trans-1,2-Dichloroethene		ND	1.00	ug/l
1,1-Dichloroethane		ND	1.00	ug/l
cis-1,2-Dichloroethene		ND	1.00	ug/l
Tetrahydrofuran		ND	10.00	ug/l
Chloroform		ND	1.00	ug/l
Bromochloromethane		ND	1.00	ug/l
1,1,1-Trichloroethane		ND	1.00	ug/l
4-Methyl-2-pentanone (MIBK)		ND	10.00	ug/l
2-Hexanone		ND	10.00	ug/l
Carbon tetrachloride		ND	1.00	ug/l
Benzene		ND	1.00	ug/l
1,2-Dichloroethane		ND	1.00	ug/l
Trichloroethene		ND	1.00	ug/l
1,2-Dichloropropane		ND	1.00	ug/l
Bromodichloromethane		ND	1.00	ug/l
Dibromomethane		ND	1.00	ug/l
cis-1,3-Dichloropropene		ND	1.00	ug/l
Toluene		ND	1.00	ug/l
trans-1,3-Dichloropropene		ND	1.00	ug/l
1,1,2-Trichloroethane		ND	1.00	ug/l
Tetrachloroethene		ND	1.00	ug/l
trans-1,4-Dichloro-2-butene		ND	1.00	ug/l
Dibromochloromethane		ND	1.00	ug/l
1,2-Dibromoethane		ND	1.00	ug/l
Chlorobenzene		ND	1.00	ug/l
1,1,1,2-Tetrachloroethane		ND	1.00	ug/l
Ethylbenzene		ND	1.00	ug/l
p,m-Xylene		ND	1.00	ug/l
o-Xylene		ND	1.00	ug/l
Styrene		ND	1.00	ug/l
Isopropylbenzene		ND	1.00	ug/l

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF230223W3 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK) (continued)

Lab Sample ID: 230223C7.BLKW23C

Run in Batch: 230223C7, Run Date: 02/24/2023 05:58, Prep Date: 02/23/2023, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Bromoform		ND	1.00	ug/l
1,1,2,2-Tetrachloroethane		ND	1.00	ug/l
1,2,3-Trichloropropane		ND	1.00	ug/l
n-Propylbenzene		ND	1.00	ug/l
Bromobenzene		ND	1.00	ug/l
1,3,5-Trimethylbenzene		ND	1.00	ug/l
tert-Butylbenzene		ND	1.00	ug/l
1,2,4-Trimethylbenzene		ND	1.00	ug/l
sec-Butylbenzene		ND	1.00	ug/l
p-Isopropyltoluene		ND	1.00	ug/l
1,3-Dichlorobenzene		ND	1.00	ug/l
1,4-Dichlorobenzene		ND	1.00	ug/l
1,2-Dichlorobenzene		ND	1.00	ug/l
1,2,3-Trimethylbenzene		ND	1.00	ug/l
n-Butylbenzene		ND	1.00	ug/l
Hexachloroethane		ND	1.00	ug/l
1,2-Dibromo-3-chloropropane		ND	1.00	ug/l
1,2,4-Trichlorobenzene		ND	1.00	ug/l
1,2,3-Trichlorobenzene		ND	1.00	ug/l
Naphthalene		ND	1.00	ug/l
2-Methylnaphthalene		ND	1.00	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 230223C7.LCSW23C

Run in Batch: 230223C7, Run Date: 02/24/2023 04:24, Prep Date: 02/23/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Diethyl ether		117.0	67.4	121.2
Acetone		117.6	29.9	161.5
Methyl iodide		99.6	68.8	116.4
Carbon disulfide		98.0	63.8	137.4
tert-Methyl butyl ether (MTBE)		100.8	73.2	122.4
Acrylonitrile		106.1	69.9	128.9
2-Butanone (MEK)		107.9	44.0	134.4
Dichlorodifluoromethane		97.8	10.0	222.8
Chloromethane		121.2	23.8	166.5
Vinyl chloride		118.6	43.5	149.1
Bromomethane		121.9	56.8	151.3
Chloroethane		124.4	53.4	149.4
Trichlorofluoromethane		108.3	59.7	151.8
1,1-Dichloroethene		102.6	69.6	139.4
Methylene chloride		99.9	73.3	121.1
trans-1,2-Dichloroethene		100.9	73.6	129.3
1,1-Dichloroethane		101.1	71.5	126.2
cis-1,2-Dichloroethene		99.1	76.6	122.1
Tetrahydrofuran		97.0	59.0	117.9
Chloroform		98.8	78.4	124.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF230223W3 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 230223C7.LCSW23C

Run in Batch: 230223C7, Run Date: 02/24/2023 04:24, Prep Date: 02/23/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Bromochloromethane		97.0	78.2	120.8
1,1,1-Trichloroethane		95.3	79.4	130.9
4-Methyl-2-pentanone (MIBK)		103.0	71.6	125.2
2-Hexanone		106.2	55.4	136.9
Carbon tetrachloride		93.2	72.6	133.0
Benzene		100.2	79.9	124.9
1,2-Dichloroethane		98.0	76.0	126.3
Trichloroethene		97.6	79.7	124.2
1,2-Dichloropropane		101.5	78.6	126.4
Bromodichloromethane		97.9	80.4	128.2
Dibromomethane		98.4	76.9	122.1
cis-1,3-Dichloropropene		98.9	79.8	129.9
Toluene		101.1	79.8	124.5
trans-1,3-Dichloropropene		97.6	74.0	131.3
1,1,2-Trichloroethane		100.6	78.7	123.1
Tetrachloroethene		98.9	74.5	124.5
trans-1,4-Dichloro-2-butene		89.2	68.6	135.4
Dibromochloromethane		91.1	74.6	127.2
1,2-Dibromoethane		95.7	70.3	133.7
Chlorobenzene		96.4	79.2	122.7
1,1,1,2-Tetrachloroethane		92.5	80.3	128.2
Ethylbenzene		99.2	79.5	129.1
p,m-Xylene		96.9	79.4	132.2
o-Xylene		95.6	80.2	131.0
Styrene		97.2	69.5	126.7
Isopropylbenzene		97.7	74.4	121.5
Bromoform		91.3	69.4	128.0
1,1,2,2-Tetrachloroethane		99.6	79.8	126.3
1,2,3-Trichloropropane		96.9	78.3	138.8
n-Propylbenzene		98.0	82.0	130.7
Bromobenzene		97.8	78.7	124.6
1,3,5-Trimethylbenzene		95.9	81.3	128.9
tert-Butylbenzene		95.2	80.7	128.9
1,2,4-Trimethylbenzene		96.6	81.4	130.8
sec-Butylbenzene		100.1	77.4	129.8
p-Isopropyltoluene		99.8	79.8	137.5
1,3-Dichlorobenzene		98.0	77.0	131.3
1,4-Dichlorobenzene		98.6	20.7	137.7
1,2-Dichlorobenzene		98.1	10.0	166.2
1,2,3-Trimethylbenzene		100.8	76.3	124.2
n-Butylbenzene		102.0	80.0	133.3
Hexachloroethane		95.1	23.8	138.1
1,2-Dibromo-3-chloropropane		98.8	21.2	189.4
1,2,4-Trichlorobenzene		102.2	27.4	143.4
1,2,3-Trichlorobenzene		105.0	75.4	131.4
Naphthalene		101.8	32.9	135.8

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF230223W3 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 230223C7.LCSW23C

Run in Batch: 230223C7, Run Date: 02/24/2023 04:24, Prep Date: 02/23/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
2-Methylnaphthalene		107.0	25.5	165.5

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 230223C7.LCSDW23C, Parent Sample ID: 230223C7.LCSW23C

Run in Batch: 230223C7, Run Date: 02/24/2023 04:48, Prep Date: 02/23/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Diethyl ether		96.0	67.4	121.2	19.7	30.0
Acetone		101.9	29.9	161.5	14.3	30.0
Methyl iodide		97.8	68.8	116.4	1.8	30.0
Carbon disulfide		95.7	63.8	137.4	2.3	30.0
tert-Methyl butyl ether (MTBE)		99.5	73.2	122.4	1.3	30.0
Acrylonitrile		97.4	69.9	128.9	8.6	30.0
2-Butanone (MEK)		94.3	44.0	134.4	13.4	30.0
Dichlorodifluoromethane		96.8	10.0	222.8	1.0	30.0
Chloromethane		123.9	23.8	166.5	2.2	30.0
Vinyl chloride		120.3	43.5	149.1	1.5	30.0
Bromomethane		124.8	56.8	151.3	2.4	30.0
Chloroethane		127.9	53.4	149.4	2.8	30.0
Trichlorofluoromethane		109.0	59.7	151.8	0.6	30.0
1,1-Dichloroethene		100.0	69.6	139.4	2.5	30.0
Methylene chloride		100.6	73.3	121.1	0.6	30.0
trans-1,2-Dichloroethene		98.6	73.6	129.3	2.3	30.0
1,1-Dichloroethane		99.5	71.5	126.2	1.6	30.0
cis-1,2-Dichloroethene		99.7	76.6	122.1	0.6	30.0
Tetrahydrofuran		84.3	59.0	117.9	14.0	30.0
Chloroform		100.5	78.4	124.0	1.8	30.0
Bromochloromethane		99.1	78.2	120.8	2.2	30.0
1,1,1-Trichloroethane		95.5	79.4	130.9	0.2	30.0
4-Methyl-2-pentanone (MIBK)		93.7	71.6	125.2	9.5	30.0
2-Hexanone		91.7	55.4	136.9	14.6	30.0
Carbon tetrachloride		90.5	72.6	133.0	2.9	30.0
Benzene		99.2	79.9	124.9	1.0	30.0
1,2-Dichloroethane		98.9	76.0	126.3	0.9	30.0
Trichloroethene		97.6	79.7	124.2	0.1	30.0
1,2-Dichloropropane		101.8	78.6	126.4	0.3	30.0
Bromodichloromethane		99.9	80.4	128.2	2.0	30.0
Dibromomethane		100.3	76.9	122.1	2.0	30.0
cis-1,3-Dichloropropene		101.2	79.8	129.9	2.3	30.0
Toluene		100.2	79.8	124.5	0.9	30.0
trans-1,3-Dichloropropene		98.9	74.0	131.3	1.3	30.0
1,1,2-Trichloroethane		101.1	78.7	123.1	0.5	30.0
Tetrachloroethene		98.7	74.5	124.5	0.2	30.0
trans-1,4-Dichloro-2-butene		83.0	68.6	135.4	7.1	30.0
Dibromochloromethane		92.5	74.6	127.2	1.6	30.0
1,2-Dibromoethane		94.5	70.3	133.7	1.2	30.0
Chlorobenzene		96.3	79.2	122.7	0.1	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF230223W3 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: 230223C7.LCSDW23C, Parent Sample ID: 230223C7.LCSW23C

Run in Batch: 230223C7, Run Date: 02/24/2023 04:48, Prep Date: 02/23/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,1,1,2-Tetrachloroethane		95.6	80.3	128.2	3.3	30.0
Ethylbenzene		96.6	79.5	129.1	2.6	30.0
p,m-Xylene		95.4	79.4	132.2	1.6	30.0
o-Xylene		97.7	80.2	131.0	2.2	30.0
Styrene		98.2	69.5	126.7	1.0	30.0
Isopropylbenzene		96.6	74.4	121.5	1.2	30.0
Bromoform		89.6	69.4	128.0	1.9	30.0
1,1,2,2-Tetrachloroethane		92.7	79.8	126.3	7.2	30.0
1,2,3-Trichloropropane		90.8	78.3	138.8	6.5	30.0
n-Propylbenzene		97.1	82.0	130.7	0.9	30.0
Bromobenzene		98.3	78.7	124.6	0.5	30.0
1,3,5-Trimethylbenzene		96.9	81.3	128.9	1.1	30.0
tert-Butylbenzene		95.5	80.7	128.9	0.3	30.0
1,2,4-Trimethylbenzene		96.3	81.4	130.8	0.2	30.0
sec-Butylbenzene		100.2	77.4	129.8	0.0	30.0
p-Isopropyltoluene		99.7	79.8	137.5	0.1	30.0
1,3-Dichlorobenzene		98.9	77.0	131.3	1.0	30.0
1,4-Dichlorobenzene		100.5	20.7	137.7	1.9	30.0
1,2-Dichlorobenzene		99.9	10.0	166.2	1.9	30.0
1,2,3-Trimethylbenzene		100.9	76.3	124.2	0.1	30.0
n-Butylbenzene		100.9	80.0	133.3	1.1	30.0
Hexachloroethane		93.6	23.8	138.1	1.6	30.0
1,2-Dibromo-3-chloropropane		87.3	21.2	189.4	12.4	30.0
1,2,4-Trichlorobenzene		103.5	27.4	143.4	1.2	30.0
1,2,3-Trichlorobenzene		104.6	75.4	131.4	0.4	30.0
Naphthalene		95.2	32.9	135.8	6.6	30.0
2-Methylnaphthalene		102.2	25.5	165.5	4.6	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VS230223W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 230223A9.BLKW23A

Run in Batch: 230223A9, Run Date: 02/23/2023 13:54, Prep Date: 02/23/2023, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane		ND	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 230223A9.LCSS23A

Run in Batch: 230223A9, Run Date: 02/23/2023 12:30, Prep Date: 02/23/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		92.6	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 230223A9.LCSDS23A, Parent Sample ID: 230223A9.LCSS23A

Run in Batch: 230223A9, Run Date: 02/23/2023 12:51, Prep Date: 02/23/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		90.3	70.0	130.0	2.6	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VS230224W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 230224A9.BLKW24A

Run in Batch: 230224A9, Run Date: 02/24/2023 16:38, Prep Date: 02/24/2023, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane		ND	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 230224A9.LCSS24A

Run in Batch: 230224A9, Run Date: 02/24/2023 14:12, Prep Date: 02/24/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		95.3	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 230224A9.LCSD24A, Parent Sample ID: 230224A9.LCSS24A

Run in Batch: 230224A9, Run Date: 02/24/2023 14:33, Prep Date: 02/24/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		88.0	70.0	130.0	7.9	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VS230227W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 230227A9.BLKW27A

Run in Batch: 230227A9, Run Date: 02/27/2023 16:44, Prep Date: 02/27/2023, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane		ND	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 230227A9.LCSS27A

Run in Batch: 230227A9, Run Date: 02/27/2023 14:18, Prep Date: 02/27/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		89.8	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 230227A9.LCSDS27A, Parent Sample ID: 230227A9.LCSS27A

Run in Batch: 230227A9, Run Date: 02/27/2023 14:39, Prep Date: 02/27/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		96.7	70.0	130.0	7.4	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VS230228W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 230228A9.BLKS28A

Run in Batch: 230228A9, Run Date: 02/28/2023 14:52, Prep Date: 02/28/2023, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane		ND	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 230228A9.LCSS28A

Run in Batch: 230228A9, Run Date: 02/28/2023 11:59, Prep Date: 02/28/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		84.0	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 230228A9.LCSDS28A, Parent Sample ID: 230228A9.LCSS28A

Run in Batch: 230228A9, Run Date: 02/28/2023 12:27, Prep Date: 02/28/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		85.6	70.0	130.0	1.9	30.0

Matrix Spike (MS)

Lab Sample ID: 230228A9.4549109M, Parent Sample ID: S45491.08

Run in Batch: 230228A9, Run Date: 02/28/2023 12:48, Prep Date: 02/28/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		85.7	70.0	130.0

Matrix Spike (MS)

Lab Sample ID: 230228A9.4549403M, Parent Sample ID: S45494.02

Run in Batch: 230228A9, Run Date: 02/28/2023 13:29, Prep Date: 02/28/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		101.0	70.0	130.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 230228A9.4549110N, Parent Sample ID: 230228A9.4549109M

Run in Batch: 230228A9, Run Date: 02/28/2023 13:08, Prep Date: 02/28/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		110.1	70.0	130.0	24.9	30.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 230228A9.4549404N, Parent Sample ID: 230228A9.4549403M

Run in Batch: 230228A9, Run Date: 02/28/2023 13:49, Prep Date: 02/28/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		100.1	70.0	130.0	0.7	30.0

Merit Laboratories Login Checklist

Lab Set ID:S45491

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

Project: 30112892 / RACER Lansing

Submitted:02/17/2023 15:30 Login User: MMC

Attention: Kaitlyn Hunt

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

Phone: O:248-809-4013 FAX:

Email: Kaitlyn.Hunt@arcadis.com

Selection	Description	Note
Sample Receiving		
01.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Samples are received at 4C +/- 2C Thermometer # IR 5.4
02.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Received on ice/ cooling process begun
03.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples shipped
04.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples left in 24 hr. drop box
05.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Are there custody seals/tape or is the drop box locked
Chain of Custody		
06.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	COC adequately filled out
07.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	COC signed and relinquished to the lab
08.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Sample tag on bottles match COC
09.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Subcontracting needed? Subcontracted to:
Preservation		
10.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Do sample have correct chemical preservation
11.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	Completed pH checks on preserved samples? (no VOAs)
12.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Did any samples need to be preserved in the lab?
Bottle Conditions		
13.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	All bottles intact
14.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Appropriate analytical bottles are used
15.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Merit bottles used
16.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Sufficient sample volume received
17.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	Samples require laboratory filtration
18.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	Samples submitted within holding time
19.	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> 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 152333

REPORT TO

CHAIN OF CUSTODY RECORD Plant 2

INVOICE TO

CONTACT NAME Kaitlin Hunt
 COMPANY Arcadis
 ADDRESS 28550 Cabot Drive, Suite 500
 CITY Novi STATE MI ZIP CODE 48377
 PHONE NO. 947-777-5215 CELL NO. 947-777-5215 P.O. NO. _____
 E-MAIL ADDRESS Kaitlin.Hunt@arcadis.com 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 30112892 / RCER Lansing SAMPLER(S) - PLEASE PRINT/SIGN NAME Austin Westhuis / [Signature]
 TURNAROUND TIME REQUIRED 1 DAY 2 DAYS 3 DAYS STANDARD OTHER _____
 DELIVERABLES REQUIRED STD LEVEL II LEVEL III LEVEL IV EDD OTHER _____

<u>1,4-Dioxane</u>	<u>8260B SEMS</u>	<u>VOCs 8260B SEMS</u>	<u>SVOCs 8270 SEMS</u>																	
--------------------	-------------------	------------------------	------------------------	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Certifications
 OHIO VAP Drinking Water
 DoD NPDES
 Project Locations
 Detroit New York
 Other MI
 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

MERIT LAB NO. <small>FOR LAB USE ONLY</small>	COLLECTION		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	# Containers & Preservatives																
	DATE	TIME				NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER	1,4-Dioxane	8260B SEMS	VOCs 8260B SEMS	SVOCs 8270 SEMS						
45491.01	2/15/23	1015	mw-22-156_021523	GW	3	3									X	X						
.02	2/15/23	1110	mw-22-153_021523	GW	3	3									X	X						
.03	2/15/23	1220	mw-22-155_021523	GW	3	3									X	X						
.04	2/15/23	1325	mw-14-58R_021523	GW	3	3									X	X						
.05	2/15/23	—	DUP-01_021523	GW	3	3									X	X						
.06	2/15/23	1430	mw-22-157_021523	GW	3	3									X							
.07	2/15/23	1555	mw-21-139_021523	GW	3	3									X							
08/09/10	2/16/23	0920	mw-21-140_021623	GW	15	69									X	X	X					ms/msd
.11	2/16/23	1120	mw-16-78_021623	GW	5	23									X	X	X					
.12	2/16/23	—	DUP-02_021623	GW	5	23									X	X	X					
.13	2/15/23	—	Trip Blank	GW	1	1										X						
.14	2/16/23	1255	mw-19-123_021623	GW	3	3									X							

RELINQUISHED BY: [Signature] / Arcadis Sampler DATE 2/17/23 TIME 1530
 RECEIVED BY: [Signature] DATE 2/17/23 TIME 1530
 RELINQUISHED BY: _____ DATE _____ TIME _____
 RECEIVED BY: _____ DATE _____ TIME _____

RELINQUISHED BY: _____ DATE _____ TIME _____
 RECEIVED BY: _____ DATE _____ TIME _____
 SEAL NO. SEAL INTACT YES NO INITIALS _____
 SEAL NO. SEAL INTACT YES NO INITIALS _____
 NOTES: TEMP. ON ARRIVAL 5.4



Analytical Laboratory Report

Report ID: S48713.01(01)+QC01
Generated on 05/26/2023

Report to

Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Phone: O:248-809-4013 C:947-777-5215 FAX:
Email: Kaitlyn.Hunt@arcadis.com

Additional Contacts: Marina Samp, Tiffany Linder, Caitlin Cisco

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): S48713.01-S48713.08
Project: 30171056.0470A / RACER Lansing
Collected Date(s): 05/16/2023 - 05/17/2023
Submitted Date/Time: 05/17/2023 16:50
Sampled by: Jackie Schulte
P.O. #: 30171056.0470A

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- Sample Summary (Page 5)
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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
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
S48713.01	MW-21-139_051623	Groundwater	05/16/23 14:20
S48713.02	DUP-01_051623	Groundwater	05/16/23 00:01
S48713.03	MW-14-58R_051623	Groundwater	05/16/23 16:30
S48713.04	MW-22-156_051723	Groundwater	05/17/23 09:35
S48713.05	MW-22-153_051723	Groundwater	05/17/23 11:00
S48713.06	MW-22-155_051723	Groundwater	05/17/23 13:06
S48713.07	MW-22-157_051723	Groundwater	05/17/23 15:10
S48713.08	Trip Blank	Water	05/17/23 00:01



Analytical Laboratory Report

Lab Sample ID: S48713.01

Sample Tag: MW-21-139_051623

Collected Date/Time: 05/16/2023 14:20

Matrix: Groundwater

COC Reference: 152804

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.1	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	05/24/23 10:30	NDK	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 05/23/23 14:59, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	2	1		ug/L	1	123-91-1	



Analytical Laboratory Report

Lab Sample ID: S48713.02

Sample Tag: DUP-01_051623

Collected Date/Time: 05/16/2023 00:01

Matrix: Groundwater

COC Reference: 152804

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.1	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	05/24/23 10:30	NDK	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 05/25/23 19:07, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	2	1		ug/L	1	123-91-1	



Analytical Laboratory Report

Lab Sample ID: S48713.03

Sample Tag: MW-14-58R_051623

Collected Date/Time: 05/16/2023 16:30

Matrix: Groundwater

COC Reference: 152804

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.1	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	05/23/23 11:00	BDO	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 05/23/23 15:42, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	173	1		ug/L	1	123-91-1	

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 05/22/23 17:02, Analyst: KAG

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



Analytical Laboratory Report

Lab Sample ID: S48713.03 (continued)

Sample Tag: MW-14-58R_051623

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 05/22/23 17:02, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S48713.04

Sample Tag: MW-22-156_051723

Collected Date/Time: 05/17/2023 09:35

Matrix: Groundwater

COC Reference: 152804

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.1	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	05/23/23 11:00	BDO	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 05/23/23 21:56, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	101	1		ug/L	1	123-91-1	

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 05/22/23 17:21, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Diethyl ether	Not detected	10		ug/L	1	60-29-7	
Acetone	Not detected	50		ug/L	1	67-64-1	
Methyl iodide	Not detected	1		ug/L	1	74-88-4	
Carbon disulfide	Not detected	5		ug/L	1	75-15-0	
tert-Methyl butyl ether (MTBE)	Not detected	5		ug/L	1	1634-04-4	
Acrylonitrile	Not detected	2		ug/L	1	107-13-1	
2-Butanone (MEK)	Not detected	25		ug/L	1	78-93-3	
Dichlorodifluoromethane	Not detected	5		ug/L	1	75-71-8	
Chloromethane	Not detected	5		ug/L	1	74-87-3	
Vinyl chloride	1	1		ug/L	1	75-01-4	
Bromomethane	Not detected	5		ug/L	1	74-83-9	
Chloroethane	27	5		ug/L	1	75-00-3	
Trichlorofluoromethane	Not detected	1		ug/L	1	75-69-4	
1,1-Dichloroethene	38	1		ug/L	1	75-35-4	
Methylene chloride	Not detected	5		ug/L	1	75-09-2	
trans-1,2-Dichloroethene	Not detected	1		ug/L	1	156-60-5	
1,1-Dichloroethane	471	1		ug/L	1	75-34-3	E
cis-1,2-Dichloroethene	Not detected	1		ug/L	1	156-59-2	
Tetrahydrofuran*	Not detected	90		ug/L	1	109-99-9	
Chloroform	Not detected	1		ug/L	1	67-66-3	
Bromochloromethane	Not detected	1		ug/L	1	74-97-5	
1,1,1-Trichloroethane	Not detected	1		ug/L	1	71-55-6	
4-Methyl-2-pentanone (MIBK)	Not detected	50		ug/L	1	108-10-1	
2-Hexanone	Not detected	50		ug/L	1	591-78-6	
Carbon tetrachloride	Not detected	1		ug/L	1	56-23-5	
Benzene	Not detected	1		ug/L	1	71-43-2	
1,2-Dichloroethane	1	1		ug/L	1	107-06-2	
Trichloroethene	Not detected	1		ug/L	1	79-01-6	
1,2-Dichloropropane	Not detected	1		ug/L	1	78-87-5	
Bromodichloromethane	Not detected	1		ug/L	1	75-27-4	
Dibromomethane	Not detected	5		ug/L	1	74-95-3	
cis-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-01-5	

E-Concentration exceeds calibration range



Analytical Laboratory Report

Lab Sample ID: S48713.04 (continued)

Sample Tag: MW-22-156_051723

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 05/22/23 17:21, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	

Volatile Organics - DEQ List (Replicate 01), Method: SW5030C/8260C, Run Date: 05/23/23 20:55, Analyst: KAG

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

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S48713.04 (continued)

Sample Tag: MW-22-156_051723

Volatile Organics - DEQ List (Replicate 01), Method: SW5030C/8260C, Run Date: 05/23/23 20:55, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Chloroethane	Not detected	50		ug/L	10	75-00-3	Y
Trichlorofluoromethane	Not detected	10		ug/L	10	75-69-4	Y
1,1-Dichloroethene	30	10		ug/L	10	75-35-4	Y
Methylene chloride	Not detected	50		ug/L	10	75-09-2	Y
trans-1,2-Dichloroethene	Not detected	10		ug/L	10	156-60-5	Y
1,1-Dichloroethane	320	10		ug/L	10	75-34-3	Y
cis-1,2-Dichloroethene	Not detected	10		ug/L	10	156-59-2	Y
Tetrahydrofuran*	Not detected	900		ug/L	10	109-99-9	Y
Chloroform	Not detected	10		ug/L	10	67-66-3	Y
Bromochloromethane	Not detected	10		ug/L	10	74-97-5	Y
1,1,1-Trichloroethane	Not detected	10		ug/L	10	71-55-6	Y
4-Methyl-2-pentanone (MIBK)	Not detected	500		ug/L	10	108-10-1	Y
2-Hexanone	Not detected	500		ug/L	10	591-78-6	Y
Carbon tetrachloride	Not detected	10		ug/L	10	56-23-5	Y
Benzene	Not detected	10		ug/L	10	71-43-2	Y
1,2-Dichloroethane	Not detected	10		ug/L	10	107-06-2	Y
Trichloroethene	Not detected	10		ug/L	10	79-01-6	Y
1,2-Dichloropropane	Not detected	10		ug/L	10	78-87-5	Y
Bromodichloromethane	Not detected	10		ug/L	10	75-27-4	Y
Dibromomethane	Not detected	50		ug/L	10	74-95-3	Y
cis-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-01-5	Y
Toluene	Not detected	10		ug/L	10	108-88-3	Y
trans-1,3-Dichloropropene	Not detected	10		ug/L	10	10061-02-6	Y
1,1,2-Trichloroethane	Not detected	10		ug/L	10	79-00-5	Y
Tetrachloroethene	Not detected	10		ug/L	10	127-18-4	Y
trans-1,4-Dichloro-2-butene	Not detected	10		ug/L	10	110-57-6	Y
Dibromochloromethane	Not detected	50		ug/L	10	124-48-1	Y
1,2-Dibromoethane	Not detected	10		ug/L	10	106-93-4	Y
Chlorobenzene	Not detected	10		ug/L	10	108-90-7	Y
1,1,1,2-Tetrachloroethane	Not detected	10		ug/L	10	630-20-6	Y
Ethylbenzene	Not detected	10		ug/L	10	100-41-4	Y
p,m-Xylene*	Not detected	20		ug/L	10		Y
o-Xylene	Not detected	10		ug/L	10	95-47-6	Y
Styrene	Not detected	10		ug/L	10	100-42-5	Y
Isopropylbenzene	Not detected	50		ug/L	10	98-82-8	Y
Bromoform	Not detected	10		ug/L	10	75-25-2	Y
1,1,2,2-Tetrachloroethane	Not detected	10		ug/L	10	79-34-5	Y
1,2,3-Trichloropropane	Not detected	10		ug/L	10	96-18-4	Y
n-Propylbenzene	Not detected	10		ug/L	10	103-65-1	Y
Bromobenzene	Not detected	10		ug/L	10	108-86-1	Y
1,3,5-Trimethylbenzene	Not detected	10		ug/L	10	108-67-8	Y
tert-Butylbenzene	Not detected	10		ug/L	10	98-06-6	Y
1,2,4-Trimethylbenzene	Not detected	10		ug/L	10	95-63-6	Y
sec-Butylbenzene	Not detected	10		ug/L	10	135-98-8	Y
p-Isopropyltoluene	Not detected	50		ug/L	10	99-87-6	Y
1,3-Dichlorobenzene	Not detected	10		ug/L	10	541-73-1	Y
1,4-Dichlorobenzene	Not detected	10		ug/L	10	106-46-7	Y
1,2-Dichlorobenzene	Not detected	10		ug/L	10	95-50-1	Y
1,2,3-Trimethylbenzene	Not detected	10		ug/L	10	526-73-8	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S48713.04 (continued)

Sample Tag: MW-22-156_051723

Volatile Organics - DEQ List (Replicate 01), Method: SW5030C/8260C, Run Date: 05/23/23 20:55, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
n-Butylbenzene	Not detected	10		ug/L	10	104-51-8	Y
Hexachloroethane	Not detected	50		ug/L	10	67-72-1	Y
1,2-Dibromo-3-chloropropane	Not detected	50		ug/L	10	96-12-8	Y
1,2,4-Trichlorobenzene	Not detected	50		ug/L	10	120-82-1	Y
1,2,3-Trichlorobenzene	Not detected	50		ug/L	10	87-61-6	Y
Naphthalene	Not detected	50		ug/L	10	91-20-3	Y
2-Methylnaphthalene	Not detected	50		ug/L	10	91-57-6	Y

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S48713.05

Sample Tag: MW-22-153_051723

Collected Date/Time: 05/17/2023 11:00

Matrix: Groundwater

COC Reference: 152804

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.1	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	05/23/23 11:00	BDO	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 05/23/23 16:04, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	61	1		ug/L	1	123-91-1	

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 05/22/23 17:41, Analyst: KAG

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



Analytical Laboratory Report

Lab Sample ID: S48713.05 (continued)

Sample Tag: MW-22-153_051723

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 05/22/23 17:41, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S48713.06

Sample Tag: MW-22-155_051723

Collected Date/Time: 05/17/2023 13:06

Matrix: Groundwater

COC Reference: 152804

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.1	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	05/23/23 11:00	BDO	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 05/24/23 22:24, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	270	10		ug/L	10	123-91-1	Y

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 05/22/23 18:01, Analyst: KAG

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

Y-Elevated reporting limit due to high target concentration



Analytical Laboratory Report

Lab Sample ID: S48713.06 (continued)

Sample Tag: MW-22-155_051723

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 05/22/23 18:01, Analyst: KAG (continued)

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
Toluene	Not detected	1		ug/L	1	108-88-3	
trans-1,3-Dichloropropene	Not detected	1		ug/L	1	10061-02-6	
1,1,2-Trichloroethane	Not detected	1		ug/L	1	79-00-5	
Tetrachloroethene	Not detected	1		ug/L	1	127-18-4	
trans-1,4-Dichloro-2-butene	Not detected	1		ug/L	1	110-57-6	
Dibromochloromethane	Not detected	5		ug/L	1	124-48-1	
1,2-Dibromoethane	Not detected	1		ug/L	1	106-93-4	
Chlorobenzene	Not detected	1		ug/L	1	108-90-7	
1,1,1,2-Tetrachloroethane	Not detected	1		ug/L	1	630-20-6	
Ethylbenzene	Not detected	1		ug/L	1	100-41-4	
p,m-Xylene*	Not detected	2		ug/L	1		
o-Xylene	Not detected	1		ug/L	1	95-47-6	
Styrene	Not detected	1		ug/L	1	100-42-5	
Isopropylbenzene	Not detected	5		ug/L	1	98-82-8	
Bromoform	Not detected	1		ug/L	1	75-25-2	
1,1,2,2-Tetrachloroethane	Not detected	1		ug/L	1	79-34-5	
1,2,3-Trichloropropane	Not detected	1		ug/L	1	96-18-4	
n-Propylbenzene	Not detected	1		ug/L	1	103-65-1	
Bromobenzene	Not detected	1		ug/L	1	108-86-1	
1,3,5-Trimethylbenzene	Not detected	1		ug/L	1	108-67-8	
tert-Butylbenzene	Not detected	1		ug/L	1	98-06-6	
1,2,4-Trimethylbenzene	Not detected	1		ug/L	1	95-63-6	
sec-Butylbenzene	Not detected	1		ug/L	1	135-98-8	
p-Isopropyltoluene	Not detected	5		ug/L	1	99-87-6	
1,3-Dichlorobenzene	Not detected	1		ug/L	1	541-73-1	
1,4-Dichlorobenzene	Not detected	1		ug/L	1	106-46-7	
1,2-Dichlorobenzene	Not detected	1		ug/L	1	95-50-1	
1,2,3-Trimethylbenzene	Not detected	1		ug/L	1	526-73-8	
n-Butylbenzene	Not detected	1		ug/L	1	104-51-8	
Hexachloroethane	Not detected	5		ug/L	1	67-72-1	
1,2-Dibromo-3-chloropropane	Not detected	5		ug/L	1	96-12-8	
1,2,4-Trichlorobenzene	Not detected	5		ug/L	1	120-82-1	
1,2,3-Trichlorobenzene	Not detected	5		ug/L	1	87-61-6	
Naphthalene	Not detected	5		ug/L	1	91-20-3	
2-Methylnaphthalene	Not detected	5		ug/L	1	91-57-6	



Analytical Laboratory Report

Lab Sample ID: S48713.07

Sample Tag: MW-22-157_051723

Collected Date/Time: 05/17/2023 15:10

Matrix: Groundwater

COC Reference: 152804

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
3	40ml Glass	HCL	Yes	3.1	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	05/24/23 10:30	NDK	

Organics - Volatiles

Method: SW8260B - SIM, Run Date: 05/23/23 16:48, Analyst: KAG

Parameter	Result	RL	MDL	Units	Dilution	CAS#	Flags
1,4-Dioxane*	44	1		ug/L	1	123-91-1	



Analytical Laboratory Report

Lab Sample ID: S48713.08

Sample Tag: Trip Blank

Collected Date/Time: 05/17/2023 00:01

Matrix: Water

COC Reference: 152804

Sample Containers

#	Type	Preservative(s)	Refrigerated?	Arrival Temp. (C)	Thermometer #
1	40ml Glass	HCL	Yes	3.1	IR

Extraction / Prep.

Parameter	Result	Method	Run Date	Analyst	Flags
pH check for VOCs*	<2	N/A	05/23/23 11:00	BDO	

Organics - Volatiles

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 05/22/23 16:43, Analyst: KAG

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



Analytical Laboratory Report

Lab Sample ID: S48713.08 (continued)

Sample Tag: Trip Blank

Volatile Organics - DEQ List, Method: SW5030C/8260C, Run Date: 05/22/23 16:43, Analyst: KAG (continued)

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



Quality Control Report

Report ID: S48713.01(01)+QC01
Generated on 05/26/2023

Report to
Attention: Kaitlyn Hunt
Arcadis
28550 Cabot Drive
Suite 500
Novi, MI 48377

Report Produced by
Merit Laboratories
2680 East Lansing Drive
East Lansing, MI 48823

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

Phone: O:248-809-4013 C:947-777-5215 FAX:

Report Summary

Lab Sample ID(s): S48713.01-S48713.08
Project: 30171056.0470A / RACER Lansing
Submitted Date/Time: 05/17/2023 16:50
Sampled by: Jackie Schulte
P.O. #: 30171056.0470A

QC Report Sections

Cover Page (Page 21)
Analysis Summary (Pages 22-29)
Prep Batch Summary (Page 30)
Surrogates per Lab Sample (Pages 31-35)
Surrogates per QC Sample (Pages 36-41)
Internal Standards per Lab Sample (Pages 42-49)
Internal Standards per QC Sample (Pages 50-55)
Batch QC Results (Pages 56-71)

Report Flag Descriptions

*: QC result is outside of indicated control limits
W: Surrogate result not applicable due to sample dilution

I certify that this data package is in compliance with the terms and conditions of the program, and project, and contractual requirements both technically and for completeness. Release of the data contained in this hardcopy data package and its computer-readable data submitted has been authorized by the Quality Assurance Manager and his/her designee, as verified by the following signature.

Barbara Ball
Quality Assurance Manager

QC Report - Analysis Summary

Lab Sample ID: S48713.01

Sample Tag: MW-21-139_051623

Collected Date/Time: 05/16/2023 14:20

Matrix: Groundwater

COC Reference: 152804

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	05/23/23 14:59	230523A9	VS230523W1	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S48713.02

Sample Tag: DUP-01_051623

Collected Date/Time: 05/16/2023 00:01

Matrix: Groundwater

COC Reference: 152804

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	05/25/23 19:07	230525A9	VS230525W1	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S48713.03

Sample Tag: MW-14-58R_051623

Collected Date/Time: 05/16/2023 16:30

Matrix: Groundwater

COC Reference: 152804

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr QC Types
Organics - Volatiles					
1,4-Dioxane	SW8260B - SIM	05/23/23 15:42	230523A9	VS230523W1	Yes BLK/LCS/LCSD
Volatile Organics - DEQ List	SW5030C/8260C	05/22/23 17:02	230522A9	VF230522W1	Yes BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S48713.04

Sample Tag: MW-22-156_051723

Collected Date/Time: 05/17/2023 09:35

Matrix: Groundwater

COC Reference: 152804

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr QC Types
Organics - Volatiles					
1,4-Dioxane	SW8260B - SIM	05/23/23 21:56	230523A9	VS230523W1	Yes BLK/LCS/LCSD
Volatile Organics - DEQ List	SW5030C/8260C	05/22/23 17:21	230522A9	VF230522W1	Yes BLK/LCS/LCSD/MS/MS
Volatile Organics - DEQ List (Replicate 01)	SW5030C/8260C	05/23/23 20:55	230523A3	VF230523W2	Yes BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S48713.05

Sample Tag: MW-22-153_051723

Collected Date/Time: 05/17/2023 11:00

Matrix: Groundwater

COC Reference: 152804

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr QC Types
Organics - Volatiles					
1,4-Dioxane	SW8260B - SIM	05/23/23 16:04	230523A9	VS230523W1	Yes BLK/LCS/LCSD
Volatile Organics - DEQ List	SW5030C/8260C	05/22/23 17:41	230522A9	VF230522W1	Yes BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S48713.06

Sample Tag: MW-22-155_051723

Collected Date/Time: 05/17/2023 13:06

Matrix: Groundwater

COC Reference: 152804

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr QC Types
Organics - Volatiles					
1,4-Dioxane	SW8260B - SIM	05/24/23 22:24	230524A9	VS230524W1	Yes BLK/LCS/LCSD
Volatile Organics - DEQ List	SW5030C/8260C	05/22/23 18:01	230522A9	VF230522W1	Yes BLK/LCS/LCSD/MS/MS

QC Report - Analysis Summary

Lab Sample ID: S48713.07

Sample Tag: MW-22-157_051723

Collected Date/Time: 05/17/2023 15:10

Matrix: Groundwater

COC Reference: 152804

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
1,4-Dioxane	SW8260B - SIM	05/23/23 16:48	230523A9	VS230523W1	Yes	BLK/LCS/LCSD

QC Report - Analysis Summary

Lab Sample ID: S48713.08

Sample Tag: Trip Blank

Collected Date/Time: 05/17/2023 00:01

Matrix: Water

COC Reference: 152804

Analysis	Method	Run Date/Time	Batch ID	Prep ID	Surr	QC Types
Organics - Volatiles						
Volatile Organics - DEQ List	SW5030C/8260C	05/22/23 16:43	230522A9	VF230522W1	Yes	BLK/LCS/LCSD/MS/MS

QC Report - Prep Batch Summary

Organics - Volatiles, Prep Batch ID: VF230522W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S48713.03	Volatile Organics - DEQ List	SW5030C/8260C	05/22/23 17:02	230522A9
S48713.04	Volatile Organics - DEQ List	SW5030C/8260C	05/22/23 17:21	230522A9
S48713.05	Volatile Organics - DEQ List	SW5030C/8260C	05/22/23 17:41	230522A9
S48713.06	Volatile Organics - DEQ List	SW5030C/8260C	05/22/23 18:01	230522A9
S48713.08	Volatile Organics - DEQ List	SW5030C/8260C	05/22/23 16:43	230522A9

Organics - Volatiles, Prep Batch ID: VF230523W2

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S48713.04	Volatile Organics - DEQ List (Replicate 01)	SW5030C/8260C	05/23/23 20:55	230523A3

Organics - Volatiles, Prep Batch ID: VS230523W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S48713.01	1,4-Dioxane	SW8260B - SIM	05/23/23 14:59	230523A9
S48713.03	1,4-Dioxane	SW8260B - SIM	05/23/23 15:42	230523A9
S48713.04	1,4-Dioxane	SW8260B - SIM	05/23/23 21:56	230523A9
S48713.05	1,4-Dioxane	SW8260B - SIM	05/23/23 16:04	230523A9
S48713.07	1,4-Dioxane	SW8260B - SIM	05/23/23 16:48	230523A9

Organics - Volatiles, Prep Batch ID: VS230524W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S48713.06	1,4-Dioxane	SW8260B - SIM	05/24/23 22:24	230524A9

Organics - Volatiles, Prep Batch ID: VS230525W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Sample ID	Analysis	Method	Run Date/Time	Batch ID
S48713.02	1,4-Dioxane	SW8260B - SIM	05/25/23 19:07	230525A9

QC Report - Surrogates per Lab Sample

Lab Sample ID: S48713.03

Sample Tag: MW-14-58R_051623

Collected Date/Time: 05/16/2023 16:30

Matrix: Groundwater

COC Reference: 152804

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 230522A9, Run Date: 05/22/2023 17:02, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		95.3	80.0	124.0
1,2-Dichloroethane-D4		121.0	72.0	125.0
Toluene-D8		101.9	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S48713.04

Sample Tag: MW-22-156_051723

Collected Date/Time: 05/17/2023 09:35

Matrix: Groundwater

COC Reference: 152804

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 230522A9, Run Date: 05/22/2023 17:21, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		94.4	80.0	124.0
1,2-Dichloroethane-D4		119.3	72.0	125.0
Toluene-D8		101.5	89.0	112.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List (Replicate 01)

Run in Batch: 230523A3, Run Date: 05/23/2023 20:55, Matrix: WW, Dilution: 10

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		96.9	80.0	124.0
1,2-Dichloroethane-D4		82.8	72.0	125.0
Toluene-D8		90.0	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S48713.05

Sample Tag: MW-22-153_051723

Collected Date/Time: 05/17/2023 11:00

Matrix: Groundwater

COC Reference: 152804

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 230522A9, Run Date: 05/22/2023 17:41, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		94.3	80.0	124.0
1,2-Dichloroethane-D4		122.2	72.0	125.0
Toluene-D8		100.8	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S48713.06

Sample Tag: MW-22-155_051723

Collected Date/Time: 05/17/2023 13:06

Matrix: Groundwater

COC Reference: 152804

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 230522A9, Run Date: 05/22/2023 18:01, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		94.9	80.0	124.0
1,2-Dichloroethane-D4		121.7	72.0	125.0
Toluene-D8		101.3	89.0	112.0

QC Report - Surrogates per Lab Sample

Lab Sample ID: S48713.08

Sample Tag: Trip Blank

Collected Date/Time: 05/17/2023 00:01

Matrix: Water

COC Reference: 152804

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 230522A9, Run Date: 05/22/2023 16:43, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		90.8	80.0	124.0
1,2-Dichloroethane-D4		107.4	72.0	125.0
Toluene-D8		101.0	89.0	112.0

QC Report - Surrogates per QC Sample

Organics - Volatiles, Prep Batch ID: VF230522W1

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 230522A9.BLKW22A

Run in Batch: 230522A9, Run Date: 05/22/2023 14:47, Prep Date: 05/22/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		93.0	80.0	124.0
1,2-Dichloroethane-D4		104.8	72.0	125.0
Toluene-D8		99.5	89.0	112.0

Blank (BLK)

Lab Sample ID: 230522B9.BLKW22A

Run in Batch: 230522B9, Run Date: 05/22/2023 14:47, Prep Date: 05/22/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
Toluene-D8		102.7	86.0	118.0

Laboratory Control Sample (LCS)

Lab Sample ID: 230522A9.LCSW22A

Run in Batch: 230522A9, Run Date: 05/22/2023 13:10, Prep Date: 05/22/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		101.7	80.0	124.0
1,2-Dichloroethane-D4		100.4	72.0	125.0
Toluene-D8		99.6	89.0	112.0

Laboratory Control Sample (LCS)

Lab Sample ID: 230522B9.LCSG22A

Run in Batch: 230522B9, Run Date: 05/22/2023 14:08, Prep Date: 05/22/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
Toluene-D8		104.1	86.0	118.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 230522A9.LCSDW22A, Parent Sample ID: 230522A9.LCSW22A

Run in Batch: 230522A9, Run Date: 05/22/2023 13:29, Prep Date: 05/22/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		100.2	80.0	124.0
1,2-Dichloroethane-D4		97.0	72.0	125.0
Toluene-D8		98.6	89.0	112.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 230522B9.LCSDG22A, Parent Sample ID: 230522B9.LCSG22A

Run in Batch: 230522B9, Run Date: 05/22/2023 14:27, Prep Date: 05/22/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
Toluene-D8		103.7	86.0	118.0

QC Report - Surrogates per QC Sample

Matrix Spike (MS)

Lab Sample ID: 230522A9.4871414M, Parent Sample ID: S48714.13

Run in Batch: 230522A9, Run Date: 05/22/2023 21:15, Prep Date: 05/22/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		102.6	80.0	124.0
1,2-Dichloroethane-D4		107.6	72.0	125.0
Toluene-D8		98.9	89.0	112.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 230522A9.4871415N, Parent Sample ID: 230522A9.4871414M

Run in Batch: 230522A9, Run Date: 05/22/2023 21:34, Prep Date: 05/22/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		102.5	80.0	124.0
1,2-Dichloroethane-D4		102.4	72.0	125.0
Toluene-D8		100.9	89.0	112.0

QC Report - Surrogates per QC Sample

Organics - Volatiles, Prep Batch ID: VF230523W2

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 230523A3.BLKW23A

Run in Batch: 230523A3, Run Date: 05/23/2023 14:15, Prep Date: 05/23/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		95.5	80.0	124.0
1,2-Dichloroethane-D4		80.2	72.0	125.0
Toluene-D8		90.7	89.0	112.0

Laboratory Control Sample (LCS)

Lab Sample ID: 230523A3.LCSW23A

Run in Batch: 230523A3, Run Date: 05/23/2023 12:40, Prep Date: 05/23/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		95.5	80.0	124.0
1,2-Dichloroethane-D4		76.0	72.0	125.0
Toluene-D8		91.7	89.0	112.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 230523A3.LCSDW23A, Parent Sample ID: 230523A3.LCSW23A

Run in Batch: 230523A3, Run Date: 05/23/2023 13:04, Prep Date: 05/23/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
4-Bromofluorobenzene		97.0	80.0	124.0
1,2-Dichloroethane-D4		79.0	72.0	125.0
Toluene-D8		91.7	89.0	112.0

QC Report - Surrogates per QC Sample

Organics - Volatiles, Prep Batch ID: VS230523W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 230523A9.BLKS23A

Run in Batch: 230523A9, Run Date: 05/23/2023 14:38, Prep Date: 05/23/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
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No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: 230523A9.LCSS23A

Run in Batch: 230523A9, Run Date: 05/23/2023 13:15, Prep Date: 05/23/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
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No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 230523A9.LCSDS23A, Parent Sample ID: 230523A9.LCSS23A

Run in Batch: 230523A9, Run Date: 05/23/2023 13:36, Prep Date: 05/23/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
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No Surrogates

QC Report - Surrogates per QC Sample

Organics - Volatiles, Prep Batch ID: VS230524W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 230524A9.BLKS24A

Run in Batch: 230524A9, Run Date: 05/24/2023 14:32, Prep Date: 05/24/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
No Surrogates				

Laboratory Control Sample (LCS)

Lab Sample ID: 230524A9.LCSS24A

Run in Batch: 230524A9, Run Date: 05/24/2023 13:09, Prep Date: 05/24/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
No Surrogates				

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 230524A9.LCSDS24A, Parent Sample ID: 230524A9.LCSS24A

Run in Batch: 230524A9, Run Date: 05/24/2023 13:30, Prep Date: 05/24/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
No Surrogates				

QC Report - Surrogates per QC Sample

Organics - Volatiles, Prep Batch ID: VS230525W1

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 230525A9.BLKS25A

Run in Batch: 230525A9, Run Date: 05/25/2023 12:57, Prep Date: 05/25/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
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No Surrogates

Laboratory Control Sample (LCS)

Lab Sample ID: 230525A9.LCSS25A

Run in Batch: 230525A9, Run Date: 05/25/2023 10:53, Prep Date: 05/25/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
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No Surrogates

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 230525A9.LCSDS25A, Parent Sample ID: 230525A9.LCSS25A

Run in Batch: 230525A9, Run Date: 05/25/2023 11:14, Prep Date: 05/25/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
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No Surrogates

Matrix Spike (MS)

Lab Sample ID: 230525A9.4882702M, Parent Sample ID: S48827.01

Run in Batch: 230525A9, Run Date: 05/25/2023 20:32, Prep Date: 05/25/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
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No Surrogates

Matrix Spike (MS)

Lab Sample ID: 230525A9.4892802M, Parent Sample ID: S48928.01

Run in Batch: 230525A9, Run Date: 05/25/2023 11:34, Prep Date: 05/25/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
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No Surrogates

Matrix Spike Duplicate (MSD)

Lab Sample ID: 230525A9.4882703N, Parent Sample ID: 230525A9.4882702M

Run in Batch: 230525A9, Run Date: 05/25/2023 20:53, Prep Date: 05/25/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
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No Surrogates

Matrix Spike Duplicate (MSD)

Lab Sample ID: 230525A9.4892803N, Parent Sample ID: 230525A9.4892802M

Run in Batch: 230525A9, Run Date: 05/25/2023 11:55, Prep Date: 05/25/2023, Matrix: WW, Dilution: 1

Surrogate	Flags	%Rec	LCL	UCL
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No Surrogates

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S48713.01

Sample Tag: MW-21-139_051623

Collected Date/Time: 05/16/2023 14:20

Matrix: Groundwater

COC Reference: 152804

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 230523A9, Run Date: 05/23/2023 14:59, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		109.9	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S48713.02

Sample Tag: DUP-01_051623

Collected Date/Time: 05/16/2023 00:01

Matrix: Groundwater

COC Reference: 152804

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 230525A9, Run Date: 05/25/2023 19:07, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		97.0	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S48713.03

Sample Tag: MW-14-58R_051623

Collected Date/Time: 05/16/2023 16:30

Matrix: Groundwater

COC Reference: 152804

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 230523A9, Run Date: 05/23/2023 15:42, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		110.0	50.0	200.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 230522A9, Run Date: 05/22/2023 17:02, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		83.3	50.0	200.0
1,4-Difluorobenzene		89.6	50.0	200.0
Chlorobenzene-D5		92.0	50.0	200.0
1,4-Dichlorobenzene-D4		84.5	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S48713.04

Sample Tag: MW-22-156_051723

Collected Date/Time: 05/17/2023 09:35

Matrix: Groundwater

COC Reference: 152804

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 230523A9, Run Date: 05/23/2023 21:56, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		109.1	50.0	200.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 230522A9, Run Date: 05/22/2023 17:21, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		81.6	50.0	200.0
1,4-Difluorobenzene		87.4	50.0	200.0
Chlorobenzene-D5		88.9	50.0	200.0
1,4-Dichlorobenzene-D4		80.0	50.0	200.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List (Replicate 01)

Run in Batch: 230523A3, Run Date: 05/23/2023 20:55, Matrix: WW, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		95.5	50.0	200.0
1,4-Difluorobenzene		96.6	50.0	200.0
Chlorobenzene-D5		95.3	50.0	200.0
1,4-Dichlorobenzene-D4		95.4	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S48713.05

Sample Tag: MW-22-153_051723

Collected Date/Time: 05/17/2023 11:00

Matrix: Groundwater

COC Reference: 152804

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 230523A9, Run Date: 05/23/2023 16:04, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		108.5	50.0	200.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 230522A9, Run Date: 05/22/2023 17:41, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		83.3	50.0	200.0
1,4-Difluorobenzene		89.6	50.0	200.0
Chlorobenzene-D5		91.4	50.0	200.0
1,4-Dichlorobenzene-D4		83.4	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S48713.06

Sample Tag: MW-22-155_051723

Collected Date/Time: 05/17/2023 13:06

Matrix: Groundwater

COC Reference: 152804

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 230524A9, Run Date: 05/24/2023 22:24, Matrix: WW, Dilution: 10

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		75.5	50.0	200.0

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 230522A9, Run Date: 05/22/2023 18:01, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		82.2	50.0	200.0
1,4-Difluorobenzene		88.9	50.0	200.0
Chlorobenzene-D5		91.2	50.0	200.0
1,4-Dichlorobenzene-D4		83.7	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S48713.07

Sample Tag: MW-22-157_051723

Collected Date/Time: 05/17/2023 15:10

Matrix: Groundwater

COC Reference: 152804

Organics - Volatiles, Analysis: 1,4-Dioxane

Run in Batch: 230523A9, Run Date: 05/23/2023 16:48, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		106.0	50.0	200.0

QC Report - Internal Standards per Lab Sample

Lab Sample ID: S48713.08

Sample Tag: Trip Blank

Collected Date/Time: 05/17/2023 00:01

Matrix: Water

COC Reference: 152804

Organics - Volatiles, Analysis: Volatile Organics - DEQ List

Run in Batch: 230522A9, Run Date: 05/22/2023 16:43, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		87.2	50.0	200.0
1,4-Difluorobenzene		91.3	50.0	200.0
Chlorobenzene-D5		91.0	50.0	200.0
1,4-Dichlorobenzene-D4		78.8	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: VF230522W1

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 230522A9.BLKW22A

Run in Batch: 230522A9, Run Date: 05/22/2023 14:47, Prep Date: 05/22/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		93.6	50.0	200.0
1,4-Difluorobenzene		97.3	50.0	200.0
Chlorobenzene-D5		95.0	50.0	200.0
1,4-Dichlorobenzene-D4		84.0	50.0	200.0

Blank (BLK)

Lab Sample ID: 230522B9.BLKW22A

Run in Batch: 230522B9, Run Date: 05/22/2023 14:47, Prep Date: 05/22/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Difluorobenzene		93.6	50.0	200.0
Chlorobenzene-D5		91.4	50.0	200.0
1,4-Dichlorobenzene-D4		86.1	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 230522A9.LCSW22A

Run in Batch: 230522A9, Run Date: 05/22/2023 13:10, Prep Date: 05/22/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		105.6	50.0	200.0
1,4-Difluorobenzene		105.9	50.0	200.0
Chlorobenzene-D5		104.8	50.0	200.0
1,4-Dichlorobenzene-D4		105.0	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 230522B9.LCSG22A

Run in Batch: 230522B9, Run Date: 05/22/2023 14:08, Prep Date: 05/22/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Difluorobenzene		94.7	50.0	200.0
Chlorobenzene-D5		93.8	50.0	200.0
1,4-Dichlorobenzene-D4		95.7	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 230522A9.LCSDW22A, Parent Sample ID: 230522A9.LCSW22A

Run in Batch: 230522A9, Run Date: 05/22/2023 13:29, Prep Date: 05/22/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		102.1	50.0	200.0
1,4-Difluorobenzene		101.5	50.0	200.0
Chlorobenzene-D5		98.8	50.0	200.0
1,4-Dichlorobenzene-D4		97.9	50.0	200.0

QC Report - Internal Standards per QC Sample

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 230522B9.LCSDG22A, Parent Sample ID: 230522B9.LCSDG22A

Run in Batch: 230522B9, Run Date: 05/22/2023 14:27, Prep Date: 05/22/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Difluorobenzene		97.7	50.0	200.0
Chlorobenzene-D5		96.6	50.0	200.0
1,4-Dichlorobenzene-D4		97.5	50.0	200.0

Matrix Spike (MS)

Lab Sample ID: 230522A9.4871414M, Parent Sample ID: S48714.13

Run in Batch: 230522A9, Run Date: 05/22/2023 21:15, Prep Date: 05/22/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		98.3	50.0	200.0
1,4-Difluorobenzene		99.5	50.0	200.0
Chlorobenzene-D5		101.5	50.0	200.0
1,4-Dichlorobenzene-D4		103.7	50.0	200.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 230522A9.4871415N, Parent Sample ID: 230522A9.4871414M

Run in Batch: 230522A9, Run Date: 05/22/2023 21:34, Prep Date: 05/22/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		100.9	50.0	200.0
1,4-Difluorobenzene		100.6	50.0	200.0
Chlorobenzene-D5		101.8	50.0	200.0
1,4-Dichlorobenzene-D4		102.1	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: VF230523W2

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 230523A3.BLKW23A

Run in Batch: 230523A3, Run Date: 05/23/2023 14:15, Prep Date: 05/23/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		93.0	50.0	200.0
1,4-Difluorobenzene		93.3	50.0	200.0
Chlorobenzene-D5		91.7	50.0	200.0
1,4-Dichlorobenzene-D4		90.6	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 230523A3.LCSW23A

Run in Batch: 230523A3, Run Date: 05/23/2023 12:40, Prep Date: 05/23/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		95.7	50.0	200.0
1,4-Difluorobenzene		95.0	50.0	200.0
Chlorobenzene-D5		92.9	50.0	200.0
1,4-Dichlorobenzene-D4		90.4	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 230523A3.LCSDW23A, Parent Sample ID: 230523A3.LCSW23A

Run in Batch: 230523A3, Run Date: 05/23/2023 13:04, Prep Date: 05/23/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
Pentafluorobenzene		95.4	50.0	200.0
1,4-Difluorobenzene		94.0	50.0	200.0
Chlorobenzene-D5		92.4	50.0	200.0
1,4-Dichlorobenzene-D4		92.3	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: VS230523W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 230523A9.BLKS23A

Run in Batch: 230523A9, Run Date: 05/23/2023 14:38, Prep Date: 05/23/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		101.3	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 230523A9.LCSS23A

Run in Batch: 230523A9, Run Date: 05/23/2023 13:15, Prep Date: 05/23/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		109.2	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 230523A9.LCSDS23A, Parent Sample ID: 230523A9.LCSS23A

Run in Batch: 230523A9, Run Date: 05/23/2023 13:36, Prep Date: 05/23/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		106.7	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: VS230524W1

QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 230524A9.BLKS24A

Run in Batch: 230524A9, Run Date: 05/24/2023 14:32, Prep Date: 05/24/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		88.7	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 230524A9.LCSS24A

Run in Batch: 230524A9, Run Date: 05/24/2023 13:09, Prep Date: 05/24/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		111.1	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 230524A9.LCSDS24A, Parent Sample ID: 230524A9.LCSS24A

Run in Batch: 230524A9, Run Date: 05/24/2023 13:30, Prep Date: 05/24/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		96.1	50.0	200.0

QC Report - Internal Standards per QC Sample

Organics - Volatiles, Prep Batch ID: VS230525W1

QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 230525A9.BLKS25A

Run in Batch: 230525A9, Run Date: 05/25/2023 12:57, Prep Date: 05/25/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		102.8	50.0	200.0

Laboratory Control Sample (LCS)

Lab Sample ID: 230525A9.LCSS25A

Run in Batch: 230525A9, Run Date: 05/25/2023 10:53, Prep Date: 05/25/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		97.1	50.0	200.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 230525A9.LCSDS25A, Parent Sample ID: 230525A9.LCSS25A

Run in Batch: 230525A9, Run Date: 05/25/2023 11:14, Prep Date: 05/25/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		97.6	50.0	200.0

Matrix Spike (MS)

Lab Sample ID: 230525A9.4882702M, Parent Sample ID: S48827.01

Run in Batch: 230525A9, Run Date: 05/25/2023 20:32, Prep Date: 05/25/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		94.8	50.0	200.0

Matrix Spike (MS)

Lab Sample ID: 230525A9.4892802M, Parent Sample ID: S48928.01

Run in Batch: 230525A9, Run Date: 05/25/2023 11:34, Prep Date: 05/25/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		110.9	50.0	200.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 230525A9.4882703N, Parent Sample ID: 230525A9.4882702M

Run in Batch: 230525A9, Run Date: 05/25/2023 20:53, Prep Date: 05/25/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		98.2	50.0	200.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 230525A9.4892803N, Parent Sample ID: 230525A9.4892802M

Run in Batch: 230525A9, Run Date: 05/25/2023 11:55, Prep Date: 05/25/2023, Matrix: WW, Dilution: 1

Internal Standard	Flags	%Rec	LCL	UCL
1,4-Dioxane-D8		99.7	50.0	200.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF230522W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 230522A9.BLKW22A

Run in Batch: 230522A9, Run Date: 05/22/2023 14:47, Prep Date: 05/22/2023, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Diethyl ether		ND	1.00	ug/l
Acetone		ND	10.00	ug/l
Methyl iodide		ND	1.00	ug/l
Carbon disulfide		ND	1.00	ug/l
tert-Methyl butyl ether (MTBE)		ND	1.00	ug/l
Acrylonitrile		ND	1.00	ug/l
2-Butanone (MEK)		ND	10.00	ug/l
Dichlorodifluoromethane		ND	1.00	ug/l
Chloromethane		ND	1.00	ug/l
Vinyl chloride		ND	1.00	ug/l
Bromomethane		ND	1.00	ug/l
Chloroethane		ND	1.00	ug/l
Trichlorofluoromethane		ND	1.00	ug/l
1,1-Dichloroethene		ND	1.00	ug/l
Methylene chloride		ND	1.00	ug/l
trans-1,2-Dichloroethene		ND	1.00	ug/l
1,1-Dichloroethane		ND	1.00	ug/l
cis-1,2-Dichloroethene		ND	1.00	ug/l
Tetrahydrofuran		ND	10.00	ug/l
Chloroform		ND	1.00	ug/l
Bromochloromethane		ND	1.00	ug/l
1,1,1-Trichloroethane		ND	1.00	ug/l
4-Methyl-2-pentanone (MIBK)		ND	10.00	ug/l
2-Hexanone		ND	10.00	ug/l
Carbon tetrachloride		ND	1.00	ug/l
Benzene		ND	1.00	ug/l
1,2-Dichloroethane		ND	1.00	ug/l
Trichloroethene		ND	1.00	ug/l
1,2-Dichloropropane		ND	1.00	ug/l
Bromodichloromethane		ND	1.00	ug/l
Dibromomethane		ND	1.00	ug/l
cis-1,3-Dichloropropene		ND	1.00	ug/l
Toluene		ND	1.00	ug/l
trans-1,3-Dichloropropene		ND	1.00	ug/l
1,1,2-Trichloroethane		ND	1.00	ug/l
Tetrachloroethene		ND	1.00	ug/l
trans-1,4-Dichloro-2-butene		ND	1.00	ug/l
Dibromochloromethane		ND	1.00	ug/l
1,2-Dibromoethane		ND	1.00	ug/l
Chlorobenzene		ND	1.00	ug/l
1,1,1,2-Tetrachloroethane		ND	1.00	ug/l
Ethylbenzene		ND	1.00	ug/l
p,m-Xylene		ND	1.00	ug/l
o-Xylene		ND	1.00	ug/l
Styrene		ND	1.00	ug/l
Isopropylbenzene		ND	1.00	ug/l

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF230522W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK) (continued)

Lab Sample ID: 230522A9.BLKW22A

Run in Batch: 230522A9, Run Date: 05/22/2023 14:47, Prep Date: 05/22/2023, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Bromoform		ND	1.00	ug/l
1,1,2,2-Tetrachloroethane		ND	1.00	ug/l
1,2,3-Trichloropropane		ND	1.00	ug/l
n-Propylbenzene		ND	1.00	ug/l
Bromobenzene		ND	1.00	ug/l
1,3,5-Trimethylbenzene		ND	1.00	ug/l
tert-Butylbenzene		ND	1.00	ug/l
1,2,4-Trimethylbenzene		ND	1.00	ug/l
sec-Butylbenzene		ND	1.00	ug/l
p-Isopropyltoluene		ND	1.00	ug/l
1,3-Dichlorobenzene		ND	1.00	ug/l
1,4-Dichlorobenzene		ND	1.00	ug/l
1,2-Dichlorobenzene		ND	1.00	ug/l
1,2,3-Trimethylbenzene		ND	1.00	ug/l
n-Butylbenzene		ND	1.00	ug/l
Hexachloroethane		ND	1.00	ug/l
1,2-Dibromo-3-chloropropane		ND	1.00	ug/l
1,2,4-Trichlorobenzene		ND	1.00	ug/l
1,2,3-Trichlorobenzene		ND	1.00	ug/l
Naphthalene		ND	1.00	ug/l
2-Methylnaphthalene		ND	1.00	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 230522A9.LCSW22A

Run in Batch: 230522A9, Run Date: 05/22/2023 13:10, Prep Date: 05/22/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Diethyl ether		113.3	67.4	121.2
Acetone		113.3	29.9	161.5
Methyl iodide	*	117.6	68.8	116.4
Carbon disulfide		120.7	63.8	137.4
tert-Methyl butyl ether (MTBE)		117.9	73.2	122.4
Acrylonitrile		110.6	69.9	128.9
2-Butanone (MEK)		109.9	44.0	134.4
Dichlorodifluoromethane		108.2	10.0	222.8
Chloromethane		114.7	23.8	166.5
Vinyl chloride		113.0	43.5	149.1
Bromomethane		113.2	56.8	151.3
Chloroethane		109.5	53.4	149.4
Trichlorofluoromethane		111.2	59.7	151.8
1,1-Dichloroethene		117.7	69.6	139.4
Methylene chloride		112.7	73.3	121.1
trans-1,2-Dichloroethene		115.5	73.6	129.3
1,1-Dichloroethane		114.3	71.5	126.2
cis-1,2-Dichloroethene		113.1	76.6	122.1
Tetrahydrofuran		107.4	59.0	117.9
Chloroform		113.2	78.4	124.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF230522W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 230522A9.LCSW22A

Run in Batch: 230522A9, Run Date: 05/22/2023 13:10, Prep Date: 05/22/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Bromochloromethane		112.8	78.2	120.8
1,1,1-Trichloroethane		114.3	79.4	130.9
4-Methyl-2-pentanone (MIBK)		116.3	71.6	125.2
2-Hexanone		119.5	55.4	136.9
Carbon tetrachloride		113.7	72.6	133.0
Benzene		112.2	79.9	124.9
1,2-Dichloroethane		109.9	76.0	126.3
Trichloroethene		113.3	79.7	124.2
1,2-Dichloropropane		111.5	78.6	126.4
Bromodichloromethane		110.4	80.4	128.2
Dibromomethane		109.4	76.9	122.1
cis-1,3-Dichloropropene		115.5	79.8	129.9
Toluene		113.9	79.8	124.5
trans-1,3-Dichloropropene		114.9	74.0	131.3
1,1,2-Trichloroethane		108.9	78.7	123.1
Tetrachloroethene		114.2	74.5	124.5
trans-1,4-Dichloro-2-butene		118.7	68.6	135.4
Dibromochloromethane		112.2	74.6	127.2
1,2-Dibromoethane		112.0	70.3	133.7
Chlorobenzene		112.5	79.2	122.7
1,1,1,2-Tetrachloroethane		115.5	80.3	128.2
Ethylbenzene		115.1	79.5	129.1
p,m-Xylene		116.3	79.4	132.2
o-Xylene		115.7	80.2	131.0
Styrene		114.9	69.5	126.7
Isopropylbenzene		117.4	74.4	121.5
Bromoform		113.3	69.4	128.0
1,1,2,2-Tetrachloroethane		114.4	79.8	126.3
1,2,3-Trichloropropane		108.4	78.3	138.8
n-Propylbenzene		116.8	82.0	130.7
Bromobenzene		114.2	78.7	124.6
1,3,5-Trimethylbenzene		116.1	81.3	128.9
tert-Butylbenzene		116.8	80.7	128.9
1,2,4-Trimethylbenzene		119.6	81.4	130.8
sec-Butylbenzene		115.9	77.4	129.8
p-Isopropyltoluene		115.6	79.8	137.5
1,3-Dichlorobenzene		113.1	77.0	131.3
1,4-Dichlorobenzene		113.8	20.7	137.7
1,2-Dichlorobenzene		113.3	10.0	166.2
1,2,3-Trimethylbenzene		114.6	76.3	124.2
n-Butylbenzene		115.6	80.0	133.3
Hexachloroethane		118.7	23.8	138.1
1,2-Dibromo-3-chloropropane		113.3	21.2	189.4
1,2,4-Trichlorobenzene		114.3	27.4	143.4
1,2,3-Trichlorobenzene		115.3	75.4	131.4
Naphthalene		114.6	32.9	135.8

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF230522W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 230522A9.LCSW22A

Run in Batch: 230522A9, Run Date: 05/22/2023 13:10, Prep Date: 05/22/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
2-Methylnaphthalene		122.1	25.5	165.5

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 230522A9.LCSDW22A, Parent Sample ID: 230522A9.LCSW22A

Run in Batch: 230522A9, Run Date: 05/22/2023 13:29, Prep Date: 05/22/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Diethyl ether		110.2	67.4	121.2	2.8	30.0
Acetone		112.8	29.9	161.5	0.4	30.0
Methyl iodide		116.2	68.8	116.4	1.2	30.0
Carbon disulfide		118.7	63.8	137.4	1.6	30.0
tert-Methyl butyl ether (MTBE)		117.6	73.2	122.4	0.3	30.0
Acrylonitrile		114.8	69.9	128.9	3.8	30.0
2-Butanone (MEK)		114.7	44.0	134.4	4.2	30.0
Dichlorodifluoromethane		120.1	10.0	222.8	10.4	30.0
Chloromethane		113.2	23.8	166.5	1.2	30.0
Vinyl chloride		113.9	43.5	149.1	0.8	30.0
Bromomethane		110.1	56.8	151.3	2.8	30.0
Chloroethane		107.2	53.4	149.4	2.2	30.0
Trichlorofluoromethane		115.6	59.7	151.8	3.9	30.0
1,1-Dichloroethene		117.1	69.6	139.4	0.6	30.0
Methylene chloride		110.6	73.3	121.1	1.9	30.0
trans-1,2-Dichloroethene		113.4	73.6	129.3	1.9	30.0
1,1-Dichloroethane		112.5	71.5	126.2	1.6	30.0
cis-1,2-Dichloroethene		111.9	76.6	122.1	1.0	30.0
Tetrahydrofuran		111.7	59.0	117.9	3.9	30.0
Chloroform		110.8	78.4	124.0	2.2	30.0
Bromochloromethane		113.2	78.2	120.8	0.3	30.0
1,1,1-Trichloroethane		111.4	79.4	130.9	2.6	30.0
4-Methyl-2-pentanone (MIBK)		118.7	71.6	125.2	2.1	30.0
2-Hexanone		121.8	55.4	136.9	1.9	30.0
Carbon tetrachloride		115.7	72.6	133.0	1.7	30.0
Benzene		110.4	79.9	124.9	1.7	30.0
1,2-Dichloroethane		108.1	76.0	126.3	1.6	30.0
Trichloroethene		113.2	79.7	124.2	0.1	30.0
1,2-Dichloropropane		110.8	78.6	126.4	0.6	30.0
Bromodichloromethane		110.3	80.4	128.2	0.1	30.0
Dibromomethane		109.6	76.9	122.1	0.2	30.0
cis-1,3-Dichloropropene		111.9	79.8	129.9	3.2	30.0
Toluene		111.5	79.8	124.5	2.1	30.0
trans-1,3-Dichloropropene		113.6	74.0	131.3	1.1	30.0
1,1,2-Trichloroethane		109.7	78.7	123.1	0.7	30.0
Tetrachloroethene		113.0	74.5	124.5	1.1	30.0
trans-1,4-Dichloro-2-butene		121.1	68.6	135.4	2.0	30.0
Dibromochloromethane		113.9	74.6	127.2	1.5	30.0
1,2-Dibromoethane		114.0	70.3	133.7	1.7	30.0
Chlorobenzene		111.4	79.2	122.7	1.0	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF230522W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: 230522A9.LCSDW22A, Parent Sample ID: 230522A9.LCSW22A

Run in Batch: 230522A9, Run Date: 05/22/2023 13:29, Prep Date: 05/22/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,1,1,2-Tetrachloroethane		112.5	80.3	128.2	2.6	30.0
Ethylbenzene		113.6	79.5	129.1	1.3	30.0
p,m-Xylene		115.1	79.4	132.2	1.0	30.0
o-Xylene		114.9	80.2	131.0	0.7	30.0
Styrene		114.1	69.5	126.7	0.7	30.0
Isopropylbenzene		116.7	74.4	121.5	0.6	30.0
Bromoform		115.7	69.4	128.0	2.1	30.0
1,1,2,2-Tetrachloroethane		117.3	79.8	126.3	2.6	30.0
1,2,3-Trichloropropane		111.5	78.3	138.8	2.8	30.0
n-Propylbenzene		116.8	82.0	130.7	0.1	30.0
Bromobenzene		114.5	78.7	124.6	0.3	30.0
1,3,5-Trimethylbenzene		115.8	81.3	128.9	0.3	30.0
tert-Butylbenzene		116.6	80.7	128.9	0.2	30.0
1,2,4-Trimethylbenzene		118.1	81.4	130.8	1.3	30.0
sec-Butylbenzene		117.4	77.4	129.8	1.3	30.0
p-Isopropyltoluene		117.0	79.8	137.5	1.2	30.0
1,3-Dichlorobenzene		113.1	77.0	131.3	0.0	30.0
1,4-Dichlorobenzene		113.9	20.7	137.7	0.0	30.0
1,2-Dichlorobenzene		114.8	10.0	166.2	1.4	30.0
1,2,3-Trimethylbenzene		114.9	76.3	124.2	0.3	30.0
n-Butylbenzene		115.7	80.0	133.3	0.1	30.0
Hexachloroethane		119.6	23.8	138.1	0.8	30.0
1,2-Dibromo-3-chloropropane		120.6	21.2	189.4	6.2	30.0
1,2,4-Trichlorobenzene		118.1	27.4	143.4	3.3	30.0
1,2,3-Trichlorobenzene		118.3	75.4	131.4	2.6	30.0
Naphthalene		122.6	32.9	135.8	6.8	30.0
2-Methylnaphthalene		130.2	25.5	165.5	6.5	30.0

Matrix Spike (MS)

Lab Sample ID: 230522A9.4871414M, Parent Sample ID: S48714.13

Run in Batch: 230522A9, Run Date: 05/22/2023 21:15, Prep Date: 05/22/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Diethyl ether		113.9	67.4	121.2
Acetone		115.4	29.9	161.5
Methyl iodide		116.0	68.8	116.4
Carbon disulfide		117.8	63.8	137.4
tert-Methyl butyl ether (MTBE)		117.7	73.2	122.4
Acrylonitrile		115.8	69.9	128.9
2-Butanone (MEK)		117.0	44.0	134.4
Dichlorodifluoromethane		118.0	10.0	222.8
Chloromethane		109.2	23.8	166.5
Vinyl chloride		113.6	43.5	149.1
Bromomethane		109.1	56.8	151.3
Chloroethane		107.3	53.4	149.4
Trichlorofluoromethane		116.2	59.7	151.8
1,1-Dichloroethene		116.6	69.6	139.4

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF230522W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Matrix Spike (MS) (continued)

Lab Sample ID: 230522A9.4871414M, Parent Sample ID: S48714.13

Run in Batch: 230522A9, Run Date: 05/22/2023 21:15, Prep Date: 05/22/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Methylene chloride		111.5	73.3	121.1
trans-1,2-Dichloroethene		112.1	73.6	129.3
1,1-Dichloroethane		111.8	71.5	126.2
cis-1,2-Dichloroethene		112.1	76.6	122.1
Tetrahydrofuran		108.5	59.0	117.9
Chloroform		112.4	78.4	124.0
Bromochloromethane		114.5	78.2	120.8
1,1,1-Trichloroethane		110.9	79.4	130.9
4-Methyl-2-pentanone (MIBK)		118.8	71.6	125.2
2-Hexanone		121.1	55.4	136.9
Carbon tetrachloride		113.3	72.6	133.0
Benzene		110.7	79.9	124.9
1,2-Dichloroethane		109.7	76.0	126.3
Trichloroethene		110.3	79.7	124.2
1,2-Dichloropropane		112.0	78.6	126.4
Bromodichloromethane		110.1	80.4	128.2
Dibromomethane		110.7	76.9	122.1
cis-1,3-Dichloropropene		111.2	79.8	129.9
Toluene		110.0	79.8	124.5
trans-1,3-Dichloropropene		112.9	74.0	131.3
1,1,2-Trichloroethane		112.0	78.7	123.1
Tetrachloroethene		110.3	74.5	124.5
trans-1,4-Dichloro-2-butene		110.3	68.6	135.4
Dibromochloromethane		109.7	74.6	127.2
1,2-Dibromoethane		108.7	70.3	133.7
Chlorobenzene		106.6	79.2	122.7
1,1,1,2-Tetrachloroethane		108.5	80.3	128.2
Ethylbenzene		107.6	79.5	129.1
p,m-Xylene		108.6	79.4	132.2
o-Xylene		108.5	80.2	131.0
Styrene		109.6	69.5	126.7
Isopropylbenzene		109.8	74.4	121.5
Bromoform		109.4	69.4	128.0
1,1,1,2-Tetrachloroethane		110.7	79.8	126.3
1,2,3-Trichloropropane		108.7	78.3	138.8
n-Propylbenzene		109.3	82.0	130.7
Bromobenzene		109.5	78.7	124.6
1,3,5-Trimethylbenzene		108.2	81.3	128.9
tert-Butylbenzene		107.5	80.7	128.9
1,2,4-Trimethylbenzene		111.9	81.4	130.8
sec-Butylbenzene		105.1	77.4	129.8
p-Isopropyltoluene		104.0	79.8	137.5
1,3-Dichlorobenzene		103.1	77.0	131.3
1,4-Dichlorobenzene		104.6	20.7	137.7
1,2-Dichlorobenzene		105.8	10.0	166.2
1,2,3-Trimethylbenzene		105.2	76.3	124.2

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF230522W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Matrix Spike (MS) (continued)

Lab Sample ID: 230522A9.4871414M, Parent Sample ID: S48714.13

Run in Batch: 230522A9, Run Date: 05/22/2023 21:15, Prep Date: 05/22/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
n-Butylbenzene		100.4	80.0	133.3
Hexachloroethane		103.4	23.8	138.1
1,2-Dibromo-3-chloropropane		107.3	21.2	189.4
1,2,4-Trichlorobenzene		101.8	27.4	143.4
1,2,3-Trichlorobenzene		102.7	75.4	131.4
Naphthalene		107.5	32.9	135.8
2-Methylnaphthalene		106.2	25.5	165.5

Matrix Spike Duplicate (MSD)

Lab Sample ID: 230522A9.4871415N, Parent Sample ID: 230522A9.4871414M

Run in Batch: 230522A9, Run Date: 05/22/2023 21:34, Prep Date: 05/22/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Diethyl ether		108.4	67.4	121.2	4.9	30.0
Acetone		111.2	29.9	161.5	3.5	30.0
Methyl iodide		113.0	68.8	116.4	2.7	30.0
Carbon disulfide		114.8	63.8	137.4	2.5	30.0
tert-Methyl butyl ether (MTBE)		114.5	73.2	122.4	2.7	30.0
Acrylonitrile		112.0	69.9	128.9	3.3	30.0
2-Butanone (MEK)		109.7	44.0	134.4	6.5	30.0
Dichlorodifluoromethane		106.5	10.0	222.8	10.2	30.0
Chloromethane		108.5	23.8	166.5	0.7	30.0
Vinyl chloride		110.9	43.5	149.1	2.4	30.0
Bromomethane		106.5	56.8	151.3	2.4	30.0
Chloroethane		105.6	53.4	149.4	1.7	30.0
Trichlorofluoromethane		110.2	59.7	151.8	5.3	30.0
1,1-Dichloroethene		113.8	69.6	139.4	2.4	30.0
Methylene chloride		110.2	73.3	121.1	1.2	30.0
trans-1,2-Dichloroethene		110.4	73.6	129.3	1.5	30.0
1,1-Dichloroethane		109.9	71.5	126.2	1.7	30.0
cis-1,2-Dichloroethene		109.1	76.6	122.1	2.7	30.0
Tetrahydrofuran		98.7	59.0	117.9	9.5	30.0
Chloroform		109.6	78.4	124.0	2.5	30.0
Bromochloromethane		110.8	78.2	120.8	3.3	30.0
1,1,1-Trichloroethane		109.6	79.4	130.9	1.2	30.0
4-Methyl-2-pentanone (MIBK)		113.9	71.6	125.2	4.2	30.0
2-Hexanone		116.3	55.4	136.9	4.0	30.0
Carbon tetrachloride		112.9	72.6	133.0	0.3	30.0
Benzene		107.9	79.9	124.9	2.6	30.0
1,2-Dichloroethane		105.9	76.0	126.3	3.5	30.0
Trichloroethene		109.6	79.7	124.2	0.7	30.0
1,2-Dichloropropane		108.8	78.6	126.4	2.8	30.0
Bromodichloromethane		107.3	80.4	128.2	2.5	30.0
Dibromomethane		109.0	76.9	122.1	1.5	30.0
cis-1,3-Dichloropropene		108.4	79.8	129.9	2.6	30.0
Toluene		109.1	79.8	124.5	0.8	30.0
trans-1,3-Dichloropropene		109.5	74.0	131.3	3.0	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF230522W1 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Matrix Spike Duplicate (MSD) (continued)

Lab Sample ID: 230522A9.4871415N, Parent Sample ID: 230522A9.4871414M

Run in Batch: 230522A9, Run Date: 05/22/2023 21:34, Prep Date: 05/22/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,1,2-Trichloroethane		108.0	78.7	123.1	3.6	30.0
Tetrachloroethene		108.2	74.5	124.5	1.8	30.0
trans-1,4-Dichloro-2-butene		106.5	68.6	135.4	3.5	30.0
Dibromochloromethane		106.8	74.6	127.2	2.7	30.0
1,2-Dibromoethane		107.9	70.3	133.7	0.8	30.0
Chlorobenzene		105.5	79.2	122.7	1.0	30.0
1,1,1,2-Tetrachloroethane		107.1	80.3	128.2	1.3	30.0
Ethylbenzene		107.0	79.5	129.1	0.5	30.0
p,m-Xylene		107.9	79.4	132.2	0.6	30.0
o-Xylene		108.7	80.2	131.0	0.2	30.0
Styrene		108.4	69.5	126.7	1.1	30.0
Isopropylbenzene		109.2	74.4	121.5	0.6	30.0
Bromoform		106.7	69.4	128.0	2.5	30.0
1,1,2,2-Tetrachloroethane		111.7	79.8	126.3	0.9	30.0
1,2,3-Trichloropropane		104.5	78.3	138.8	3.9	30.0
n-Propylbenzene		108.6	82.0	130.7	0.7	30.0
Bromobenzene		108.6	78.7	124.6	0.8	30.0
1,3,5-Trimethylbenzene		108.4	81.3	128.9	0.2	30.0
tert-Butylbenzene		108.7	80.7	128.9	1.1	30.0
1,2,4-Trimethylbenzene		111.7	81.4	130.8	0.2	30.0
sec-Butylbenzene		107.1	77.4	129.8	1.8	30.0
p-Isopropyltoluene		106.7	79.8	137.5	2.5	30.0
1,3-Dichlorobenzene		103.8	77.0	131.3	0.7	30.0
1,4-Dichlorobenzene		104.9	20.7	137.7	0.3	30.0
1,2-Dichlorobenzene		106.6	10.0	166.2	0.8	30.0
1,2,3-Trimethylbenzene		106.1	76.3	124.2	0.9	30.0
n-Butylbenzene		103.4	80.0	133.3	3.0	30.0
Hexachloroethane		106.3	23.8	138.1	2.8	30.0
1,2-Dibromo-3-chloropropane		107.5	21.2	189.4	0.2	30.0
1,2,4-Trichlorobenzene		104.8	27.4	143.4	2.9	30.0
1,2,3-Trichlorobenzene		105.9	75.4	131.4	3.0	30.0
Naphthalene		108.2	32.9	135.8	0.6	30.0
2-Methylnaphthalene		109.5	25.5	165.5	3.0	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF230523W2

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 230523A3.BLKW23A

Run in Batch: 230523A3, Run Date: 05/23/2023 14:15, Prep Date: 05/23/2023, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Diethyl ether		ND	1.00	ug/l
Acetone		ND	10.00	ug/l
Methyl iodide		ND	1.00	ug/l
Carbon disulfide		ND	1.00	ug/l
tert-Methyl butyl ether (MTBE)		ND	1.00	ug/l
Acrylonitrile		ND	1.00	ug/l
2-Butanone (MEK)		ND	10.00	ug/l
Dichlorodifluoromethane		ND	1.00	ug/l
Chloromethane		ND	1.00	ug/l
Vinyl chloride		ND	1.00	ug/l
Bromomethane		ND	1.00	ug/l
Chloroethane		ND	1.00	ug/l
Trichlorofluoromethane		ND	1.00	ug/l
1,1-Dichloroethene		ND	1.00	ug/l
Methylene chloride		ND	1.00	ug/l
trans-1,2-Dichloroethene		ND	1.00	ug/l
1,1-Dichloroethane		ND	1.00	ug/l
cis-1,2-Dichloroethene		ND	1.00	ug/l
Tetrahydrofuran		ND	10.00	ug/l
Chloroform		ND	1.00	ug/l
Bromochloromethane		ND	1.00	ug/l
1,1,1-Trichloroethane		ND	1.00	ug/l
4-Methyl-2-pentanone (MIBK)		ND	10.00	ug/l
2-Hexanone		ND	10.00	ug/l
Carbon tetrachloride		ND	1.00	ug/l
Benzene		ND	1.00	ug/l
1,2-Dichloroethane		ND	1.00	ug/l
Trichloroethene		ND	1.00	ug/l
1,2-Dichloropropane		ND	1.00	ug/l
Bromodichloromethane		ND	1.00	ug/l
Dibromomethane		ND	1.00	ug/l
cis-1,3-Dichloropropene		ND	1.00	ug/l
Toluene		ND	1.00	ug/l
trans-1,3-Dichloropropene		ND	1.00	ug/l
1,1,2-Trichloroethane		ND	1.00	ug/l
Tetrachloroethene		ND	1.00	ug/l
trans-1,4-Dichloro-2-butene		ND	1.00	ug/l
Dibromochloromethane		ND	1.00	ug/l
1,2-Dibromoethane		ND	1.00	ug/l
Chlorobenzene		ND	1.00	ug/l
1,1,1,2-Tetrachloroethane		ND	1.00	ug/l
Ethylbenzene		ND	1.00	ug/l
p,m-Xylene		ND	1.00	ug/l
o-Xylene		ND	1.00	ug/l
Styrene		ND	1.00	ug/l
Isopropylbenzene		ND	1.00	ug/l

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF230523W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK) (continued)

Lab Sample ID: 230523A3.BLKW23A

Run in Batch: 230523A3, Run Date: 05/23/2023 14:15, Prep Date: 05/23/2023, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
Bromoform		ND	1.00	ug/l
1,1,2,2-Tetrachloroethane		ND	1.00	ug/l
1,2,3-Trichloropropane		ND	1.00	ug/l
n-Propylbenzene		ND	1.00	ug/l
Bromobenzene		ND	1.00	ug/l
1,3,5-Trimethylbenzene		ND	1.00	ug/l
tert-Butylbenzene		ND	1.00	ug/l
1,2,4-Trimethylbenzene		ND	1.00	ug/l
sec-Butylbenzene		ND	1.00	ug/l
p-Isopropyltoluene		ND	1.00	ug/l
1,3-Dichlorobenzene		ND	1.00	ug/l
1,4-Dichlorobenzene		ND	1.00	ug/l
1,2-Dichlorobenzene		ND	1.00	ug/l
1,2,3-Trimethylbenzene		ND	1.00	ug/l
n-Butylbenzene		ND	1.00	ug/l
Hexachloroethane		ND	1.00	ug/l
1,2-Dibromo-3-chloropropane		ND	1.00	ug/l
1,2,4-Trichlorobenzene		ND	1.00	ug/l
1,2,3-Trichlorobenzene		ND	1.00	ug/l
Naphthalene		ND	1.00	ug/l
2-Methylnaphthalene		ND	1.00	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 230523A3.LCSW23A

Run in Batch: 230523A3, Run Date: 05/23/2023 12:40, Prep Date: 05/23/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Diethyl ether		110.7	67.4	121.2
Acetone		79.0	29.9	161.5
Methyl iodide		108.9	68.8	116.4
Carbon disulfide		116.5	63.8	137.4
tert-Methyl butyl ether (MTBE)		95.2	73.2	122.4
Acrylonitrile		95.6	69.9	128.9
2-Butanone (MEK)		87.4	44.0	134.4
Dichlorodifluoromethane		115.0	10.0	222.8
Chloromethane		128.7	23.8	166.5
Vinyl chloride		126.3	43.5	149.1
Bromomethane		105.7	56.8	151.3
Chloroethane		112.0	53.4	149.4
Trichlorofluoromethane		96.3	59.7	151.8
1,1-Dichloroethene		103.2	69.6	139.4
Methylene chloride		106.9	73.3	121.1
trans-1,2-Dichloroethene		101.1	73.6	129.3
1,1-Dichloroethane		103.5	71.5	126.2
cis-1,2-Dichloroethene		104.4	76.6	122.1
Tetrahydrofuran		78.0	59.0	117.9
Chloroform		97.4	78.4	124.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF230523W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 230523A3.LCSW23A

Run in Batch: 230523A3, Run Date: 05/23/2023 12:40, Prep Date: 05/23/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
Bromochloromethane		101.0	78.2	120.8
1,1,1-Trichloroethane		91.1	79.4	130.9
4-Methyl-2-pentanone (MIBK)		95.4	71.6	125.2
2-Hexanone		96.7	55.4	136.9
Carbon tetrachloride		92.8	72.6	133.0
Benzene		105.1	79.9	124.9
1,2-Dichloroethane		77.9	76.0	126.3
Trichloroethene		100.6	79.7	124.2
1,2-Dichloropropane		100.2	78.6	126.4
Bromodichloromethane		94.0	80.4	128.2
Dibromomethane		96.6	76.9	122.1
cis-1,3-Dichloropropene		103.3	79.8	129.9
Toluene		100.8	79.8	124.5
trans-1,3-Dichloropropene		99.1	74.0	131.3
1,1,2-Trichloroethane		99.0	78.7	123.1
Tetrachloroethene		100.4	74.5	124.5
trans-1,4-Dichloro-2-butene		88.3	68.6	135.4
Dibromochloromethane		104.3	74.6	127.2
1,2-Dibromoethane		104.0	70.3	133.7
Chlorobenzene		108.2	79.2	122.7
1,1,1,2-Tetrachloroethane		104.3	80.3	128.2
Ethylbenzene		108.0	79.5	129.1
p,m-Xylene		105.5	79.4	132.2
o-Xylene		104.2	80.2	131.0
Styrene		106.0	69.5	126.7
Isopropylbenzene		106.7	74.4	121.5
Bromoform		102.8	69.4	128.0
1,1,2,2-Tetrachloroethane		106.5	79.8	126.3
1,2,3-Trichloropropane		96.8	78.3	138.8
n-Propylbenzene		108.4	82.0	130.7
Bromobenzene		101.5	78.7	124.6
1,3,5-Trimethylbenzene		104.4	81.3	128.9
tert-Butylbenzene		96.3	80.7	128.9
1,2,4-Trimethylbenzene		103.2	81.4	130.8
sec-Butylbenzene		111.4	77.4	129.8
p-Isopropyltoluene		109.8	79.8	137.5
1,3-Dichlorobenzene		104.9	77.0	131.3
1,4-Dichlorobenzene		105.8	20.7	137.7
1,2-Dichlorobenzene		105.3	10.0	166.2
1,2,3-Trimethylbenzene		106.5	76.3	124.2
n-Butylbenzene		110.2	80.0	133.3
Hexachloroethane		117.0	23.8	138.1
1,2-Dibromo-3-chloropropane		104.0	21.2	189.4
1,2,4-Trichlorobenzene		105.8	27.4	143.4
1,2,3-Trichlorobenzene		103.3	75.4	131.4
Naphthalene		103.9	32.9	135.8

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF230523W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample (LCS) (continued)

Lab Sample ID: 230523A3.LCSW23A

Run in Batch: 230523A3, Run Date: 05/23/2023 12:40, Prep Date: 05/23/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
2-Methylnaphthalene		98.4	25.5	165.5

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 230523A3.LCSDW23A, Parent Sample ID: 230523A3.LCSW23A

Run in Batch: 230523A3, Run Date: 05/23/2023 13:04, Prep Date: 05/23/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
Diethyl ether		108.8	67.4	121.2	1.7	30.0
Acetone		84.0	29.9	161.5	6.1	30.0
Methyl iodide		99.9	68.8	116.4	8.6	30.0
Carbon disulfide		105.4	63.8	137.4	10.0	30.0
tert-Methyl butyl ether (MTBE)		95.2	73.2	122.4	0.1	30.0
Acrylonitrile		97.7	69.9	128.9	2.2	30.0
2-Butanone (MEK)		91.6	44.0	134.4	4.6	30.0
Dichlorodifluoromethane		108.3	10.0	222.8	6.0	30.0
Chloromethane		120.7	23.8	166.5	6.4	30.0
Vinyl chloride		115.2	43.5	149.1	9.2	30.0
Bromomethane		96.0	56.8	151.3	9.6	30.0
Chloroethane		104.6	53.4	149.4	6.8	30.0
Trichlorofluoromethane		87.3	59.7	151.8	9.7	30.0
1,1-Dichloroethene		92.5	69.6	139.4	10.9	30.0
Methylene chloride		101.5	73.3	121.1	5.2	30.0
trans-1,2-Dichloroethene		92.9	73.6	129.3	8.4	30.0
1,1-Dichloroethane		96.8	71.5	126.2	6.7	30.0
cis-1,2-Dichloroethene		98.5	76.6	122.1	5.7	30.0
Tetrahydrofuran		80.4	59.0	117.9	3.1	30.0
Chloroform		91.4	78.4	124.0	6.4	30.0
Bromochloromethane		98.0	78.2	120.8	3.0	30.0
1,1,1-Trichloroethane		84.5	79.4	130.9	7.6	30.0
4-Methyl-2-pentanone (MIBK)		101.4	71.6	125.2	6.1	30.0
2-Hexanone		104.1	55.4	136.9	7.4	30.0
Carbon tetrachloride		86.7	72.6	133.0	6.8	30.0
Benzene		98.3	79.9	124.9	6.7	30.0
1,2-Dichloroethane	*	75.6	76.0	126.3	2.9	30.0
Trichloroethene		93.3	79.7	124.2	7.6	30.0
1,2-Dichloropropane		95.8	78.6	126.4	4.5	30.0
Bromodichloromethane		90.1	80.4	128.2	4.2	30.0
Dibromomethane		94.3	76.9	122.1	2.4	30.0
cis-1,3-Dichloropropene		100.2	79.8	129.9	3.1	30.0
Toluene		94.2	79.8	124.5	6.8	30.0
trans-1,3-Dichloropropene		96.8	74.0	131.3	2.3	30.0
1,1,2-Trichloroethane		99.1	78.7	123.1	0.1	30.0
Tetrachloroethene		92.6	74.5	124.5	8.1	30.0
trans-1,4-Dichloro-2-butene		90.2	68.6	135.4	2.1	30.0
Dibromochloromethane		102.4	74.6	127.2	1.9	30.0
1,2-Dibromoethane		104.8	70.3	133.7	0.8	30.0
Chlorobenzene		101.2	79.2	122.7	6.7	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VF230523W2 (continued)

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Laboratory Control Sample Duplicate (LCSD) (continued)

Lab Sample ID: 230523A3.LCSDW23A, Parent Sample ID: 230523A3.LCSW23A

Run in Batch: 230523A3, Run Date: 05/23/2023 13:04, Prep Date: 05/23/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,1,1,2-Tetrachloroethane		100.4	80.3	128.2	3.8	30.0
Ethylbenzene		99.9	79.5	129.1	7.8	30.0
p,m-Xylene		98.4	79.4	132.2	7.0	30.0
o-Xylene		97.9	80.2	131.0	6.2	30.0
Styrene		99.9	69.5	126.7	5.9	30.0
Isopropylbenzene		99.2	74.4	121.5	7.3	30.0
Bromoform		103.5	69.4	128.0	0.6	30.0
1,1,2,2-Tetrachloroethane		109.0	79.8	126.3	2.4	30.0
1,2,3-Trichloropropane		98.1	78.3	138.8	1.4	30.0
n-Propylbenzene		100.8	82.0	130.7	7.2	30.0
Bromobenzene		96.3	78.7	124.6	5.3	30.0
1,3,5-Trimethylbenzene		98.9	81.3	128.9	5.5	30.0
tert-Butylbenzene		90.6	80.7	128.9	6.1	30.0
1,2,4-Trimethylbenzene		97.7	81.4	130.8	5.5	30.0
sec-Butylbenzene		102.2	77.4	129.8	8.6	30.0
p-Isopropyltoluene		99.7	79.8	137.5	9.7	30.0
1,3-Dichlorobenzene		97.4	77.0	131.3	7.5	30.0
1,4-Dichlorobenzene		98.2	20.7	137.7	7.5	30.0
1,2-Dichlorobenzene		98.8	10.0	166.2	6.4	30.0
1,2,3-Trimethylbenzene		98.9	76.3	124.2	7.5	30.0
n-Butylbenzene		101.8	80.0	133.3	7.9	30.0
Hexachloroethane		107.0	23.8	138.1	8.9	30.0
1,2-Dibromo-3-chloropropane		109.0	21.2	189.4	4.7	30.0
1,2,4-Trichlorobenzene		105.2	27.4	143.4	0.5	30.0
1,2,3-Trichlorobenzene		104.1	75.4	131.4	0.8	30.0
Naphthalene		108.0	32.9	135.8	3.8	30.0
2-Methylnaphthalene		106.4	25.5	165.5	7.8	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VS230523W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 230523A9.BLKS23A

Run in Batch: 230523A9, Run Date: 05/23/2023 14:38, Prep Date: 05/23/2023, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane	*	0.77	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 230523A9.LCSS23A

Run in Batch: 230523A9, Run Date: 05/23/2023 13:15, Prep Date: 05/23/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		104.4	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 230523A9.LCSDS23A, Parent Sample ID: 230523A9.LCSS23A

Run in Batch: 230523A9, Run Date: 05/23/2023 13:36, Prep Date: 05/23/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		101.1	70.0	130.0	3.3	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VS230524W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD

Blank (BLK)

Lab Sample ID: 230524A9.BLKS24A

Run in Batch: 230524A9, Run Date: 05/24/2023 14:32, Prep Date: 05/24/2023, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane	*	0.28	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 230524A9.LCSS24A

Run in Batch: 230524A9, Run Date: 05/24/2023 13:09, Prep Date: 05/24/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		105.0	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 230524A9.LCSDS24A, Parent Sample ID: 230524A9.LCSS24A

Run in Batch: 230524A9, Run Date: 05/24/2023 13:30, Prep Date: 05/24/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		123.9	70.0	130.0	16.5	30.0

QC Report - Batch QC Results

Organics - Volatiles, Prep Batch ID: VS230525W1

Surrogates: Yes, QC Types: BLK/LCS/LCSD/MS/MSD

Blank (BLK)

Lab Sample ID: 230525A9.BLKS25A

Run in Batch: 230525A9, Run Date: 05/25/2023 12:57, Prep Date: 05/25/2023, Matrix: WW, Dilution: 1

Analyte	Flags	Conc	RDL	Units
1,4-Dioxane	*	0.54	0.02	ug/l

Laboratory Control Sample (LCS)

Lab Sample ID: 230525A9.LCSS25A

Run in Batch: 230525A9, Run Date: 05/25/2023 10:53, Prep Date: 05/25/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		116.1	70.0	130.0

Laboratory Control Sample Duplicate (LCSD)

Lab Sample ID: 230525A9.LCSDS25A, Parent Sample ID: 230525A9.LCSS25A

Run in Batch: 230525A9, Run Date: 05/25/2023 11:14, Prep Date: 05/25/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		115.3	70.0	130.0	0.7	30.0

Matrix Spike (MS)

Lab Sample ID: 230525A9.4882702M, Parent Sample ID: S48827.01

Run in Batch: 230525A9, Run Date: 05/25/2023 20:32, Prep Date: 05/25/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		102.5	70.0	130.0

Matrix Spike (MS)

Lab Sample ID: 230525A9.4892802M, Parent Sample ID: S48928.01

Run in Batch: 230525A9, Run Date: 05/25/2023 11:34, Prep Date: 05/25/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL
1,4-Dioxane		103.6	70.0	130.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 230525A9.4882703N, Parent Sample ID: 230525A9.4882702M

Run in Batch: 230525A9, Run Date: 05/25/2023 20:53, Prep Date: 05/25/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		94.8	70.0	130.0	7.7	30.0

Matrix Spike Duplicate (MSD)

Lab Sample ID: 230525A9.4892803N, Parent Sample ID: 230525A9.4892802M

Run in Batch: 230525A9, Run Date: 05/25/2023 11:55, Prep Date: 05/25/2023, Matrix: WW, Dilution: 1

Analyte	Flags	% Rec	LCL	UCL	RPD	RPD CL
1,4-Dioxane		112.0	70.0	130.0	7.6	30.0

Merit Laboratories Login Checklist

Lab Set ID:S48713

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

Project: 30171056.0470A / RACER Lansing

Submitted:05/17/2023 16:50 Login User: MMC

Attention: Kaitlyn Hunt

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

Phone: O:248-809-4013 FAX:

Email: Kaitlyn.Hunt@arcadis.com

Selection	Description	Note
-----------	-------------	------

Sample Receiving

- | | | |
|-----|--|--|
| 01. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Samples are received at 4C +/- 2C Thermometer # IR 3.1 |
| 02. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Received on ice/ cooling process begun |
| 03. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples shipped |
| 04. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples left in 24 hr. drop box |
| 05. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Are there custody seals/tape or is the drop box locked |

Chain of Custody

- | | | |
|-----|--|--|
| 06. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | COC adequately filled out |
| 07. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | COC signed and relinquished to the lab |
| 08. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Sample tag on bottles match COC |
| 09. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Subcontracting needed? Subcontracted to: |

Preservation

- | | | |
|-----|--|---|
| 10. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Do sample have correct chemical preservation |
| 11. | <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A | Completed pH checks on preserved samples? (no VOAs) |
| 12. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Did any samples need to be preserved in the lab? |

Bottle Conditions

- | | | |
|-----|--|---|
| 13. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | All bottles intact |
| 14. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Appropriate analytical bottles are used |
| 15. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Merit bottles used |
| 16. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Sufficient sample volume received |
| 17. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A | Samples require laboratory filtration |
| 18. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A | Samples submitted within holding time |
| 19. | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> 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: _____

Plant 2



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

152804

REPORT TO

CHAIN OF CUSTODY RECORD

INVOICE TO

CONTACT NAME Kaitlyn Hunt

COMPANY Arcadis

ADDRESS 28550 Cabot Drive, Suite 500

CITY Novi STATE MI ZIP CODE 48377

PHONE NO. 947-777-5215 CELL NO. _____ P.O. NO. _____

E-MAIL ADDRESS Kaitlyn.Hunt@arcadis.com 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 30171056.0470A/RACER Lansing SAMPLER(S) - PLEASE PRINT/SIGN NAME Jackie Schulte

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 MI

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

MÉRIT LAB NO. <small>FOR LAB USE ONLY</small>	COLLECTION		SAMPLE TAG IDENTIFICATION-DESCRIPTION	MATRIX	# OF BOTTLES	NONE	HCl	HNO ₃	H ₂ SO ₄	NaOH	MeOH	OTHER	# Containers & Preservatives	ANALYSIS	CERTIFICATIONS	PROJECT LOCATIONS	SPECIAL INSTRUCTIONS
	DATE	TIME															
48713.01	5/16/23	1420	MW-21-139_051623		3		3						3				
.02	5/16/23		DUP-01_051623		3		3						3				
.03	5/16/23	1630	MW-14-58R_051623		3		3						3				
.04	5/17/23	0935	MW-22-156_051723		3		3						3				
.05	5/17/23	1100	MW-22-153_051723		3		3						3				
.06	5/17/23	1306	MW-22-155_051723		3		3						3				
.07	5/17/23	1510	MW-22-157_051723		3		3						3				
.08	5/16/23		Trip Blank		1		1						1				

RELINQUISHED BY: [Signature] Sampler DATE 5/17/23 TIME 1600

SIGNATURE/ORGANIZATION Arcadis

RECEIVED BY: [Signature] DATE 5/17/23 TIME 1650

SIGNATURE/ORGANIZATION [Signature]

RELINQUISHED BY: _____ DATE _____ TIME _____

SIGNATURE/ORGANIZATION _____

RECEIVED BY: _____ DATE _____ TIME _____

SIGNATURE/ORGANIZATION _____

RELINQUISHED BY: _____ DATE _____ TIME _____

SIGNATURE/ORGANIZATION _____

RECEIVED BY: _____ DATE _____ TIME _____

SIGNATURE/ORGANIZATION _____

SEAL NO. SEAL INTACT INITIALS

YES NO

SEAL NO. SEAL INTACT INITIALS

YES NO

NOTES: TEMP ON ARRIVAL 3.1

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

Attachment 3

Groundwater Sampling Logs

Groundwater Sampling Form



Project Number	30112892	Well ID	MW-14-58R	Date	02/10/2022
Project Name/Location	RACER Lansing GWS		Weather(°F)	30.0 degrees F and Haze. The wind is blowing W/SW at 12.8 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
				Well Casing Material	PVC
Static Water Level (ft-bmp)	13.84	Total Depth (ft-bmp)	29.6	Water Column (ft)	15.76
				Gallons in Well	2.56
Purge Start	10:50	Pump Intake (ft-bmp)	27.1	Purge Method	Low-Flow
				Purge Equipment	Peristaltic
Purge End	11:25	Volumes Purged	0.72	Sample ID	MW-14-58R_021022
				Sampled by	Austin Westhuis
Sample Time	11:20	Gallons Purged	1.85	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
10:55	0	0	200	13.84	0.26	7.03	1.48	24.6	0.31	7	-35.2	--	--
11:00	5	5	200	13.84	0.53	7.03	1.48	10.6	0.22	7.2	-42.8	--	--
11:05	5	10	200	13.84	0.79	7.03	1.46	3.63	0.2	7.1	-47.8	--	--
11:10	5	15	200	13.84	1.06	7.03	1.48	2.21	0.19	7.2	-51.8	--	--
11:15	5	20	200	13.84	1.32	7.03	1.47	2.01	0.19	7.2	-54.8	--	--
11:20	5	25	200	13.84	1.59	7.04	1.46	1.77	0.19	7.1	-55.8	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260 SIMS	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: See figure	Well Locked at Arrival: <u>yes</u>
Condition of Well: <u>Good condition</u>	Well Locked at Departure: <u>yes</u>
Well Completion: <u>Stick-up</u>	Key Number To Well: <u>6000B</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	30112892	Well ID	MW-14-58R	Date	04/06/2022
Project Name/Location	RACER Lansing GWS		Weather(°F)	51.1 degrees F and Mostly Clear. The wind is blowing E at 8.1 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
				Well Casing Material	PVC
Static Water Level (ft-bmp)	12.06	Total Depth (ft-bmp)	29.59	Water Column (ft)	17.53
				Gallons in Well	2.85
Purge Start	12:00	Pump Intake (ft-bmp)	27.59	Purge Method	Low-Flow
				Purge Equipment	Peristaltic
Purge End	12:25	Volumes Purged	0.46	Sample ID	MW-14-58R_040622
				Sampled by	Austin Westhuis
Sample Time	12:20	Gallons Purged	1.32	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
12:05	0	0	200	12.06	0.26	6.95	1.983	4.41	0.75	9.8	-24.3	--	--
12:10	5	5	200	12.06	0.53	6.97	1.988	1.91	0.71	9.8	-35	--	--
12:15	5	10	200	12.06	0.79	6.98	1.983	1.3	0.7	9.8	-36.6	--	--
12:20	5	15	200	12.06	1.06	6.99	1.976	1.22	0.69	9.8	-37.1	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs 8260 and 1,4-Dioxane 8260	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: See figure.	Well Locked at Arrival: yes
Condition of Well: <u>Good condition</u>	Well Locked at Departure: <u>yes</u>
Well Completion: <u>Stick-up</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 = milliv

Groundwater Sampling Form



Project Number	30112892	Well ID	MW-14-58R	Date	09/12/2022
Project Name/Location	RACER Lansing GWS 2022		Weather(°F)	64.9 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)	13.30	Total Depth (ft-bmp)	29.6	Water Column (ft)	16.3
				Gallons in Well	2.65
Purge Start	15:10	Pump Intake (ft-bmp)	27.1	Purge Method	Low-Flow
				Purge Equipment	Peristaltic
Purge End	15:40	Volumes Purged	0.50	Sample ID	MW-14-58R_091222
				Sampled by	Austin Westhuis
Sample Time	15:35	Gallons Purged	1.32	Replicate/ Code No.	NA
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallons Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
15:20	0	0	200	13.30	0.53	7.73	2.49	2.64	2.1	17.1	-45.8	--	--
15:25	5	5	200	13.30	0.79	6.95	2.59	2.14	0.22	16.7	-64.1	--	--
15:30	5	10	200	13.30	1.06	6.93	2.63	1.67	0.21	16.6	-70.5	--	--
15:35	5	15	200	13.30	1.32	6.93	2.65	1.6	0.21	16.6	-72.7	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260 SIM	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: See figure.	Well Locked at Arrival: <u>yes</u>
Condition of Well: <u>Good condition</u>	Well Locked at Departure: <u>yes</u>
Well Completion: <u>Stick-up</u>	Key Number To Well: <u>2035</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	30112892	Well ID	MW-14-58R	Date	10/14/2022
Project Name/Location	RACER Lansing GWS 2022		Weather(°F)	50.0 degrees F and Mostly Cloudy. The wind is blowing SW 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)	13.63	Total Depth (ft-bmp)	29.61	Water Column (ft)	15.98
				Gallons in Well	2.6
Purge Start	13:50	Pump Intake (ft-bmp)	27.11	Purge Method	Low-Flow
				Purge Equipment	Peristaltic
Purge End	14:25	Volumes Purged	0.71	Sample ID	MW-14-58R_101422
				Sampled by	Austin Westhuis
Sample Time	14:20	Gallons Purged	1.85	Replicate/ Code No.	Dup-01_101422
				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
13:55	0	0	200	13.68	0.26	7.72	2.01	14.68	0.13	15.6	-113.1	--	--
14:00	5	5	200	13.68	0.53	7.65	2.28	13.94	0.09	15.45	-128.6	--	--
14:05	5	10	200	13.68	0.79	7.31	2.2	13.34	0.08	15.29	-101.7	--	--
14:10	5	15	200	13.68	1.06	7.09	2.28	13.12	0.06	15.28	-82.6	--	--
14:15	5	20	200	13.68	1.32	7.07	2.29	12.51	0.06	15.26	-77.6	--	--
14:20	5	25	200	13.68	1.59	7.07	2.29	11.94	0.06	15.18	-77.3	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260 SIM	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: See figure.	Well Locked at Arrival: <u>yes</u>
Condition of Well: <u>Good condition</u>	Well Locked at Departure: <u>yes</u>
Well Completion: <u>Stick-up</u>	Key Number To Well: <u>2035</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	30171056	Well ID	MW-14-58R	Date	2/15/2023
Project Name/Location	RACER Lansing GWS 2023		Weather(°F)	51.1 degrees F and Mostly Cloudy.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
				Well Casing Material	PVC
Static Water Level (ft-bmp)	13.17	Total Depth (ft-bmp)	29.61	Water Column (ft)	16.44
				Gallons in Well	2.67
Purge Start	12:45	Pump Intake (ft-bmp)	27.11	Purge Method	Low-Flow
				Purge Equipment	Peristaltic
Purge End	13:30	Volumes Purged	0.89	Sample ID	MW-14-58R_021523
				Sampled by	Austin Westhuis
Sample Time	13:25	Gallons Purged		Replicate/ Code No.	Dup-01_021523
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
12:50	0	0	200	13.17	0.26	7.26	2.777	22.6	1.21	12.9	-112.5	Clear	None
12:55	5	5	200	13.17	0.53	7.2	2.786	15.8	0.21	12.9	-131.5	Clear	None
13:00	5	10	200	13.17	0.79	7.18	2.793	11.9	0.17	13	-149	Clear	None
13:05	5	15	200	13.17	1.06	7.02	2.834	6.98	0.09	13	-154.9	Clear	None
13:10	5	20	200	13.17	1.32	7.01	2.842	7.01	0.07	13.1	-162.3	Clear	None
13:15	5	25	200	13.17	1.59	7.01	2.845	5.91	0.07	13	-165.2	Clear	None
13:20	5	30	200	13.17	1.85	7.01	2.841	5.43	0.07	13	-173.6	Clear	None
13:25	5	35	200	13.17	2.11	7.01	2.847	4.93	0.07	12.9	-175.1	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: See figure.	Well Locked at Arrival: yes
Condition of Well: Good condition	Well Locked at Departure: yes
Well Completion: Stick-up	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



Location ID:	MW-14-58R	Date(s):	2023-05-16	Work Order(s):	Q2 2023 GWS (Q, SA event)	
Client:	RACER	Facility:	Lansing	Facility Location:	2801 W. Saginaw St., Lansing, MI	Area: 2
Weather(°F):	CLEAR, T:76.33 °F, rH:33%, Clouds: 0%, Wind:16.11mph W			Field Technician:	NA	
Measuring Pt. Description:	Top of Inner Casing	Screen Setting (ft-bgs):	-	Casing Diameter (in):	2.00	Well Casing Material: PVC
Static Water Level (ft-bmp):	12.83	Total Depth (ft-bmp):	15.35	Water Column(ft):	2.52	Liters in Well: 0.41
Depth to Product (ft-bmp):	NA	Pump Intake Depth(ft-bmp):	NA	Purge Method:	Low Flow	Purging Equipment: Peristaltic Pump
Purge Start Time:	NA	Total Volume Purged (liters):	10000	Sample ID:	NA	Sample Time: NA
Purge End Time:	16:25	Well Volumes Purged (total):	24,390.24	Replicate Type / Replicate ID:	NA / NA	Water Quality Meter/ ID: Hach 2100Q,YSI Pro Plus / NA
Scope of work completed?	Yes					

Time	Total Elapsed (min)	Flow Rate	Flow Rate Unit	Depth to Water (ft)	pH (S.U.)	Specific Conductivity (mS/cm ^c)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°C)	Redox (mV)	Appearance	
											Color	Odor
15:40	0	200	mL/min	12.88	7.45	3.05	1.01	1.32	13.9	200.9	Clear	No Odor
15:45	5	200	mL/min	12.88	7.51	3.07	0.02	0.6	13.9	191.1	Clear	No Odor
15:50	10	200	mL/min	12.88	7.53	3.03	0.47	0.72	13.9	185.4	Clear	No Odor
15:55	15	200	mL/min	12.88	7.52	3.03	1.48	0.45	14	181.7	Clear	No Odor
16:00	20	200	mL/min	12.88	7.26	3.08	1.46	0.72	14.2	154.4	Clear	No Odor
16:05	25	200	mL/min	12.88	6.98	3.1	0.82	0.16	14.2	120.7	Clear	No Odor
16:10	30	200	mL/min	12.88	6.98	3.1	0.67	0.13	14.2	109.6	Clear	No Odor
16:15	35	200	mL/min	12.88	6.98	3.1	0.36	0.09	14.3	102.4	Clear	No Odor
16:20	40	200	mL/min	12.88	6.98	3.09	1	0.08	14.4	96.9	Clear	No Odor
16:25	45	200	mL/min	12.88	6.98	3.09	1.27	0.16	14.2	92.5	Clear	No Odor

Constituent Sampled	Container	Number	Preservative
VOCs	40 mL Glass	3	HCL

Comments: None

Well Information:

Well Labeled Properly: yes

Is Well in Good Condition? good

Well Inspection Comments: NA

- ft-bmp = feet below measuring point
- in = inches
- ft = feet
- mL/min = milliliters per minute
- uS/cm = microSiemens per centimeter
- NTU = Nephelometric Turbidity Unit
- mg/L = milligrams per liter
- S.U = standard units
- mS/cm = milli

Groundwater Sampling Form



Project Number	30112892	Well ID	MW-22-153	Date	04/06/2022		
Project Name/Location	RACER Lansing GWS		Weather(°F)	51.1 degrees F and Mostly Clear. The wind is blowing E at 8.1 mph.			
Measuring Pt. Description	Top of Inner Casing	MP Elevation	Casing Diameter (in)	2	Well Casing Material	PVC	
Static Water Level (ft-bmp)	9.58	Total Depth (ft-bmp)	31.2	Water Column (ft)	21.62	Gallons in Well	3.51
Purge Start	11:15	Pump Intake (ft-bmp)	29.2	Purge Method	Low-Flow	Purge Equipment	Peristaltic
Purge End	11:50	Volumes Purged	0.53	Sample ID	MW-22-153_040622	Sampled by	Austin Westhuis
Sample Time	11:45	Gallons Purged	1.85	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	9.58	1.06	7.09	1.56	1.77	1.26	12	-43.6	--	--
11:40	5	5	200	9.58	1.32	7.08	1.562	1.43	1.24	12.1	-46.6	--	--
11:45	5	10	200	9.58	1.59	7.08	1.557	1.21	1.22	12.1	-48.9	Clear	None

Constituent Sampled	Container	Number	Preservative
VOCs 8260 and 1,4-Dioxane 8260	40 mL Glass	3	HCL

Comments: Lost first three sets of parameter readings after tablet malfunctioned.

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: See figure.	Well Locked at Arrival: yes
Condition of Well: <u>Good condition</u>	Well Locked at Departure: <u>yes</u>
Well Completion: <u>Stick-up</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 = milliv

Groundwater Sampling Form



Project Number	30112892	Well ID	MW-22-153	Date	09/12/2022		
Project Name/Location	RACER Lansing GWS 2022		Weather(°F)	64.9 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)	10.80	Total Depth (ft-bmp)	31.17	Water Column (ft)	20.37	Gallons in Well	3.31
Purge Start	14:40	Pump Intake (ft-bmp)	28.67	Purge Method	Low-Flow	Purge Equipment	Peristaltic
Purge End	15:05	Volumes Purged	0.40	Sample ID	MW-22-153_091222	Sampled by	Austin Westhuis
Sample Time	15:00	Gallons Purged	1.32	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
14:45	0	0	200	10.80	0.26	6.94	1.63	2.58	0.08	15.4	-62.7	--	--
14:50	5	5	200	10.80	0.53	6.96	1.68	2.12	0.05	15.4	-69.7	--	--
14:55	5	10	200	10.80	0.79	6.96	1.67	1.9	0.05	15.1	-73.2	--	--
15:00	5	15	200	10.80	1.06	6.97	1.67	1.43	0.05	15.1	-76.1	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260 SIM	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: See figure.	Well Locked at Arrival: <u>yes</u>
Condition of Well: <u>Good condition</u>	Well Locked at Departure: <u>yes</u>
Well Completion: <u>Stick-up</u>	Key Number To Well: <u>2035</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	30112892	Well ID	MW-22-153	Date	10/14/2022
Project Name/Location	RACER Lansing GWS 2022		Weather(°F)	46.0 degrees F and Cloudy. The wind is blowing SW 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)	11.12	Total Depth (ft-bmp)	31.18	Water Column (ft)	20.06
				Gallons in Well	3.26
Purge Start	12:10	Pump Intake (ft-bmp)	28.68	Purge Method	Low-Flow
				Purge Equipment	Peristaltic
Purge End	12:55	Volumes Purged	0.73	Sample ID	MW-22-153_101422
				Sampled by	Austin Westhuis
Sample Time	12:50	Gallons Purged	2.38	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	11.16	0.26	7.13	1.49	104	0.28	14.33	-60.6	--	--
12:20	5	5	200	11.16	0.53	7.13	1.5	70.39	0.19	14.21	-62.9	--	--
12:25	5	10	200	11.16	0.79	7.13	1.5	39.11	0.16	14.19	-64.1	--	--
12:30	5	15	200	11.16	1.06	7.13	1.49	19.24	0.15	14.13	-65.2	--	--
12:35	5	20	200	11.16	1.32	7.13	1.49	12.65	0.13	14.22	-65.9	--	--
12:40	5	25	200	11.16	1.59	7.13	1.49	11.5	0.13	14.25	-66.3	--	--
12:45	5	30	200	11.16	1.85	7.13	1.49	11.22	0.13	14.2	-66.2	--	--
12:50	5	35	200	11.16	2.11	7.13	1.49	11.01	0.12	14.25	-66.3	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260 SIM	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: See figure.	Well Locked at Arrival: <u>yes</u>
Condition of Well: <u>Good condition</u>	Well Locked at Departure: <u>yes</u>
Well Completion: <u>Stick-up</u>	Key Number To Well: <u>2035</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	30171056	Well ID	MW-22-153	Date	2/15/2023
Project Name/Location	RACER Lansing GWS 2023		Weather(°F)	52.0 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)	10.61	Total Depth (ft-bmp)	31.18	Water Column (ft)	20.57
				Gallons in Well	3.34
Purge Start	10:30	Pump Intake (ft-bmp)	28.68	Purge Method	Low-Flow
				Purge Equipment	Peristaltic
Purge End	11:15	Volumes Purged	0.71	Sample ID	MW-22-153_021523
				Sampled by	Austin Westhuis
Sample Time	11:10	Gallons Purged		Replicate/ Code No.	NA
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
10:35	0	0	200	10.61	0.26	6.83	2.735	15.4	0.35	12.6	-118	Clear	None
10:40	5	5	200	10.61	0.53	6.88	2.621	8.83	0.17	12.7	-133.3	Clear	None
10:45	5	10	200	10.61	0.79	6.93	2.417	3.35	0.12	12.7	-149.4	Clear	None
10:50	5	15	200	10.61	1.06	6.94	2.383	3.02	0.11	12.7	-158.6	Clear	None
10:55	5	20	200	10.61	1.32	6.95	2.353	1.81	0.1	12.8	-167.3	Clear	None
11:00	5	25	200	10.61	1.59	6.96	2.33	1.5	0.11	12.8	-173.9	Clear	None
11:05	5	30	200	10.61	1.85	6.96	2.308	1.23	0.12	12.8	-175.9	Clear	None
11:10	5	35	200	10.61	2.11	6.98	2.264	1.09	0.12	12.9	-181.6	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: See figure.	Well Locked at Arrival: <u>yes</u>
Condition of Well: <u>Good condition</u>	Well Locked at Departure: <u>yes</u>
Well Completion: <u>Stick-up</u>	Key Number To Well: <u>2035</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



Location ID:	MW-22-153	Date(s):	2023-05-17	Work Order(s):	Q2 2023 GWS (Q, SA event)	
Client:	RACER	Facility:	Lansing	Facility Location:	2801 W. Saginaw St., Lansing, MI	Area: 2
Weather(°F):	CLEAR, T:48.81 °F, rH:62%, Clouds: 0%, Wind:12.66mph NE			Field Technician:	Jackie Schulte	
Measuring Pt. Description:	Top of Inner Casing	Screen Setting (ft-bgs):	-	Casing Diameter (in):	2.00	Well Casing Material: PVC
Static Water Level (ft-bmp):	10.52	Total Depth (ft-bmp):	31.18	Water Column(ft):	20.66	Liters in Well: 3.36
Depth to Product (ft-bmp):	NA	Pump Intake Depth(ft-bmp):	NA	Purge Method:	Low Flow	Purging Equipment: Peristaltic Pump
Purge Start Time:	NA	Total Volume Purged (liters):	8	Sample ID:	MW-22-153_051723	Sample Time: 11:00
Purge End Time:	10:55	Well Volumes Purged (total):	2.38	Replicate Type / Replicate ID:	NA / NA	Water Quality Meter/ ID: Hach 2100Q,YSI Pro Plus / NA
Scope of work completed?	Yes					

Time	Total Elapsed (min)	Flow Rate	Flow Rate Unit	Depth to Water (ft)	pH (S.U.)	Specific Conductivity (mS/cm ^e)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°C)	Redox (mV)	Appearance	
											Color	Odor
10:25	0	200	mL/min	10.55	7.48	1.34	4.33	1.23	12.4	116	Clear	No Odor
10:30	5	200	mL/min	10.55	7.48	1.34	4.55	1.08	12.4	111.7	Clear	No Odor
10:35	10	200	mL/min	10.55	7.11	2.04	1.88	0.35	12.6	117	Clear	No Odor
10:40	15	200	mL/min	10.55	7.1	2.17	1.85	0.1	12.6	114.7	Clear	No Odor
10:45	20	200	mL/min	10.55	7.09	2.23	1.75	0.09	12.7	113.4	Clear	No Odor
10:51	26	200	mL/min	10.55	7.09	2.25	0.89	0.06	12.6	111	Clear	No Odor
10:55	30	200	mL/min	10.55	7.09	2.25	0.02	0.06	12.7	109.7	Clear	No Odor

Constituent Sampled	Container	Number	Preservative
VOCs (SW8260)	Clear Glass	3	HCl

Comments: None

Well Information:

Well Labeled Properly: yes

Is Well in Good Condition? good

Well Inspection Comments: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
uS/cm = microSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
S.U = standard units
mS/cm = milli

Groundwater Sampling Form



Project Number	30112892	Well ID	MW-22-155	Date	09/12/2022
Project Name/Location	RACER Lansing GWS 2022		Weather(°F)	61.0 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)	12.08	Total Depth (ft-bmp)	31.5	Water Column (ft)	19.42
				Gallons in Well	3.16
Purge Start	11:20	Pump Intake (ft-bmp)	29	Purge Method	Low-Flow
				Purge Equipment	Peristaltic
Purge End	12:10	Volumes Purged	0.84	Sample ID	MW-22-155_091222
				Sampled by	Austin Westhuis
Sample Time	12:05	Gallons Purged	2.64	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
11:25	0	0	200	12.08	0.26	7.1	1.7	512	0.66	14.2	-92.7	--	--
11:30	5	5	200	12.08	0.53	7.09	1.69	212	0.06	14.1	-99.1	--	--
11:35	5	10	200	12.08	0.79	7.08	1.69	124	0.06	14	-102	--	--
11:40	5	15	200	12.08	1.06	7.08	1.69	82.1	0.05	14.1	-104	--	--
11:45	5	20	200	12.08	1.32	7.07	1.69	31.9	0.05	14.1	-105.1	--	--
11:50	5	25	200	12.08	1.59	7.06	1.69	12.8	0.05	14	-105.7	--	--
11:55	5	30	200	12.08	1.85	7.06	1.69	4.49	0.05	14	-105.9	--	--
12:00	5	35	200	12.08	2.11	7.04	1.7	4.1	0.05	13.9	-106.5	--	--
12:05	5	40	200	12.08	2.38	7.03	1.7	3.78	0.05	13.9	-106.9	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260 SIM	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: See figure.	Well Locked at Arrival: <u>yes</u>
Condition of Well: <u>Good condition</u>	Well Locked at Departure: <u>yes</u>
Well Completion: <u>Stick-up</u>	Key Number To Well: <u>2035</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	30112892	Well ID	MW-22-155	Date	10/14/2022
Project Name/Location	RACER Lansing GWS 2022		Weather(°F)	43.0 degrees F and Cloudy. The wind is blowing S/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)	12.41	Total Depth (ft-bmp)	31.43	Water Column (ft)	19.02
				Gallons in Well	3.09
Purge Start	11:05	Pump Intake (ft-bmp)	28.93	Purge Method	Low-Flow
				Purge Equipment	Peristaltic
Purge End	11:55	Volumes Purged	0.77	Sample ID	MW-22-155_101422
				Sampled by	Austin Westhuis
Sample Time	11:50	Gallons Purged	2.38	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
11:10	0	0	200	12.50	0.26	7.2	1.48	664.04	0.12	13.84	-83.1	--	--
11:20	10	10	200	12.50	0.79	7.19	1.48	369.72	0.1	13.82	-85.3	--	--
11:25	5	15	200	12.50	1.06	7.18	1.48	181.22	0.06	13.74	-85.3	--	--
11:30	5	20	200	12.50	1.32	7.18	1.48	53.11	0.06	13.85	-85.6	--	--
11:35	5	25	200	12.50	1.59	7.17	1.48	21.03	0.06	13.85	-85.5	--	--
11:40	5	30	200	12.50	1.85	7.17	1.48	17.94	0.06	13.61	-85.7	--	--
11:45	5	35	200	12.50	2.11	7.17	1.48	17.11	0.06	13.56	-85.6	--	--
11:50	5	40	200	12.50	2.38	7.17	1.49	16.85	0.06	13.57	-85	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260 SIM	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: See figure.	Well Locked at Arrival: <u>yes</u>
Condition of Well: <u>Good condition</u>	Well Locked at Departure: <u>yes</u>
Well Completion: <u>Stick-up</u>	Key Number To Well: <u>2035</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	30171056	Well ID	MW-22-155	Date	2/15/2023
Project Name/Location	RACER Lansing GWS 2023		Weather(°F)	52.0 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)	11.89	Total Depth (ft-bmp)	31.43	Water Column (ft)	19.54
				Gallons in Well	3.18
Purge Start	11:35	Pump Intake (ft-bmp)	28.93	Purge Method	Low-Flow
				Purge Equipment	Peristaltic
Purge End	12:25	Volumes Purged	0.83	Sample ID	MW-22-155_021523
				Sampled by	Austin Westhuis
Sample Time	12:20	Gallons Purged		Replicate/ Code No.	NA
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
11:40	0	0	200	11.89	0.26	6.97	1.925	576	1.38	11.8	-143.5	Clear	None
11:45	5	5	200	11.89	0.53	6.96	1.942	223	1.26	12	-159.7	Clear	None
11:50	5	10	200	11.89	0.79	6.98	1.968	108	1.26	11.9	-168.7	Clear	None
11:55	5	15	200	11.89	1.06	6.98	1.972	44.8	1.25	11.8	-171.9	Clear	None
12:00	5	20	200	11.89	1.32	6.98	1.989	19.5	1.22	12.1	-173.8	Clear	None
12:05	5	25	200	11.89	1.59	6.98	2.007	8.93	1.1	11.7	-177.3	Clear	None
12:10	5	30	200	11.89	1.85	6.98	2.001	6.55	0.94	11.8	-179.3	Clear	None
12:15	5	35	200	11.89	2.11	6.98	2.015	6.03	0.89	12	-180.5	Clear	None
12:20	5	40	200	11.89	2.38	6.99	2.02	5.79	0.86	12	-182.6	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: See figure.	Well Locked at Arrival: <u>yes</u>
Condition of Well: <u>Good condition</u>	Well Locked at Departure: <u>yes</u>
Well Completion: <u>Stick-up</u>	Key Number To Well: <u>2035</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



Location ID:	MW-22-155	Date(s):	2023-05-17	Work Order(s):	Q2 2023 GWS (Q, SA event)	
Client:	RACER	Facility:	Lansing	Facility Location:	2801 W. Saginaw St., Lansing, MI	Area: 2
Weather(°F):	CLEAR, T:68.54 °F, rH:31%, Clouds: 0%, Wind:4.61mph N			Field Technician:	Jackie Schulte	
Measuring Pt. Description:	Top of Inner Casing	Screen Setting (ft-bgs):	-	Casing Diameter (in):	2.00	Well Casing Material: PVC
Static Water Level (ft-bmp):	11.82	Total Depth (ft-bmp):	31.5	Water Column(ft):	19.68	Liters in Well: 3.20
Depth to Product (ft-bmp):	NA	Pump Intake Depth(ft-bmp):	NA	Purge Method:	Low Flow	Purging Equipment: Peristaltic Pump
Purge Start Time:	NA	Total Volume Purged (liters):	11000	Sample ID:	MW-22-155_051723	Sample Time: 13:06
Purge End Time:	13:05	Well Volumes Purged (total):	3,437.50	Replicate Type / Replicate ID:	NA / NA	Water Quality Meter/ ID: Hach 2100Q, YSI Pro Plus / NA
Scope of work completed?	Yes					

Time	Total Elapsed (min)	Flow Rate	Flow Rate Unit	Depth to Water (ft)	pH (S.U.)	Specific Conductivity (mS/cm ^c)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°C)	Redox (mV)	Appearance	
											Color	Odor
12:05	0	200	mL/min	11.9	6.21	0	31.6	9.18	19.2	-255.1	Clear	No Odor
12:10	5	200	mL/min	11.9	6.01	0	37.9	9.33	18.6	-240.1	Clear	No Odor
12:15	10	200	mL/min	11.9	5.96	0	51.2	9.2	18.5	-239.5	Clear	No Odor
12:20	15	200	mL/min	11.9	5.8	0	63	8.79	18.9	-245.4	Clear	No Odor
12:25	20	200	mL/min	11.9	5.66	0	60.2	8.58	19.2	-264.5	Clear	No Odor
12:33	28	200	mL/min	11.9	7.14	0	47.5	10.08	16.4	48.6	Clear	No Odor
12:38	33	200	mL/min	11.9	6.87	0	50.6	8.93	18.3	28.1	Clear	No Odor
12:43	38	200	mL/min	11.9	6.75	0	42.6	8.49	19.2	15.1	Clear	No Odor
12:48	43	200	mL/min	11.9	6.58	0	40.3	8.25	19.7	-5	Clear	No Odor
12:53	48	200	mL/min	11.9	6.62	0	43.5	8.1	20	-55.9	Clear	No Odor
13:01	56	200	mL/min	11.9	7.91	0	39.8	7.9	20.1	-64	Clear	No Odor

Constituent Sampled	Container	Number	Preservative
VOCs (SW8260)	Clear Glass	3	HCl

Comments: None

Well Information:

Well Labeled Properly: yes

Is Well in Good Condition? good

Well Inspection Comments: NA

- ft-bmp = feet below measuring point
- in = inches
- ft = feet
- mL/min = milliliters per minute
- uS/cm = microSiemens per centimeter
- NTU = Nephelometric Turbidity Unit
- mg/L = milligrams per liter
- S.U = standard units
- mS/cm = milli

Groundwater Sampling Form



Project Number	30112892	Well ID	MW-22-156	Date	09/12/2022
Project Name/Location	RACER Lansing GWS 2022		Weather(°F)	61.0 degrees F and Cloudy. The wind is blowing S/SW at 8.1 mph.	
Measuring Pt. Description	Top of Inner Casing	MP Elevation		Casing Diameter (in)	2
				Well Casing Material	PVC
Static Water Level (ft-bmp)	13.29	Total Depth (ft-bmp)	31.06	Water Column (ft)	17.77
				Gallons in Well	2.89
Purge Start	10:20	Pump Intake (ft-bmp)	28.56	Purge Method	Low-Flow
				Purge Equipment	Peristaltic
Purge End	11:10	Volumes Purged	0.91	Sample ID	MW-22-156_091222
				Sampled by	Austin Westhuis
Sample Time	11:05	Gallons Purged	2.64	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
10:25	0	0	200	13.29	0.26	6.65	1.78	497	7.64	15.6	59.1	--	--
10:30	5	5	200	13.29	0.53	6.74	1.7	243	7.3	15.1	22.1	--	--
10:35	5	10	200	13.29	0.79	6.83	1.57	116	6.61	15	-16.3	--	--
10:40	5	15	200	13.29	1.06	6.86	1.51	73.9	6.28	14.9	-28.9	--	--
10:45	5	20	200	13.29	1.32	6.88	1.48	39.4	6.14	14.9	-40.4	--	--
10:50	5	25	200	13.29	1.59	6.91	1.44	12.6	3.52	14.9	-52.3	--	--
10:55	5	30	200	13.29	1.85	6.92	1.42	4.12	3.35	14.8	-60.6	--	--
11:00	5	35	200	13.29	2.11	6.93	1.42	3.66	3.2	14.8	-65.9	--	--
11:05	5	40	200	13.29	2.38	6.94	1.41	3.21	3.17	14.8	-69.8	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260 SIM	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: See figure.	Well Locked at Arrival: <u>yes</u>
Condition of Well: <u>Good condition</u>	Well Locked at Departure: <u>yes</u>
Well Completion: <u>Stick-up</u>	Key Number To Well: <u>2035</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	30112892	Well ID	MW-22-156	Date	10/14/2022
Project Name/Location	RACER Lansing GWS 2022		Weather(°F)	48.9 degrees F and Mostly Cloudy. The wind is blowing S 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)	13.57	Total Depth (ft-bmp)	31.06	Water Column (ft)	17.49
				Gallons in Well	2.84
Purge Start	13:05	Pump Intake (ft-bmp)	28.56	Purge Method	Low-Flow
				Purge Equipment	Peristaltic
Purge End	13:40	Volumes Purged	0.65	Sample ID	MW-22-156_101422
				Sampled by	Austin Westhuis
Sample Time	13:35	Gallons Purged	1.85	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
13:10	0	0	200	13.61	0.26	7.11	1.64	57.93	0.19	15.22	-58.2	--	--
13:15	5	5	200	13.61	0.53	7.12	1.49	25.28	0.13	15.32	-62.4	--	--
13:20	5	10	200	13.61	0.79	7.14	1.39	16.43	0.11	15.14	-63.7	--	--
13:25	5	15	200	13.61	1.06	7.15	1.35	13.28	0.11	15.16	-65	--	--
13:30	5	20	200	13.61	1.32	7.17	1.34	12.75	0.11	15.1	-66.6	--	--
13:35	5	25	200	13.61	1.59	7.18	1.32	12.03	0.11	15.1	-69.2	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260 SIM	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: See figure.	Well Locked at Arrival: <u>yes</u>
Condition of Well: <u>Good condition</u>	Well Locked at Departure: <u>yes</u>
Well Completion: <u>Stick-up</u>	Key Number To Well: <u>2035</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	30171056	Well ID	MW-22-156	Date	2/15/2023
Project Name/Location	RACER Lansing GWS 2023		Weather(°F)	53.1 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)	13.06	Total Depth (ft-bmp)	31.06	Water Column (ft)	18.00
				Gallons in Well	2.92
Purge Start	09:35	Pump Intake (ft-bmp)	28.56	Purge Method	Low-Flow
				Purge Equipment	Peristaltic
Purge End	10:20	Volumes Purged	0.81	Sample ID	MW-22-156_021523
				Sampled by	Austin Westhuis
Sample Time	10:15	Gallons Purged		Replicate/ Code No.	NA
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
09:40	0	0	200	13.12	0.26	7.07	1.368	3.11	3.9	12.8	5.7	Clear	None
09:45	5	5	200	13.12	0.53	6.89	1.772	2.71	0.64	12.9	-89.9	Clear	None
09:50	5	10	200	13.12	0.79	6.9	1.828	2.14	0.54	13	-108.9	Clear	None
09:55	5	15	200	13.12	1.06	6.95	1.913	1.69	0.43	13	-143.7	Clear	None
10:00	5	20	200	13.12	1.32	6.98	1.927	1.6	0.61	13.1	-154.6	Clear	None
10:05	5	25	200	13.12	1.59	7	1.953	1.45	0.61	13.2	-164.8	Clear	None
10:10	5	30	200	13.12	1.85	7.01	1.961	1.33	0.59	13.2	-166.7	Clear	None
10:15	5	35	200	13.12	2.11	7.02	1.968	1.12	0.57	13.1	-170.5	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: See figure.	Well Locked at Arrival: <u>yes</u>
Condition of Well: <u>Good condition</u>	Well Locked at Departure: <u>yes</u>
Well Completion: <u>Stick-up</u>	Key Number To Well: <u>2035</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



Location ID:	MW-22-156	Date(s):	2023-05-17	Work Order(s):	Q2 2023 GWS (Q, SA event)	
Client:	RACER	Facility:	Lansing	Facility Location:	2801 W. Saginaw St., Lansing, MI	Area: 2
Weather(°F):	CLEAR, T:45.03 °F, rH:72%, Clouds: 0%, Wind:6.91mph NE			Field Technician:	Jackie Schulte	
Measuring Pt. Description:	Top of Inner Casing	Screen Setting (ft-bgs):	-	Casing Diameter (in):	2.00	Well Casing Material: PVC
Static Water Level (ft-bmp):	12.99	Total Depth (ft-bmp):	31.6	Water Column(ft):	18.61	Liters in Well: 3.02
Depth to Product (ft-bmp):	NA	Pump Intake Depth(ft-bmp):	NA	Purge Method:	Low Flow	Purging Equipment: Peristaltic Pump
Purge Start Time:	NA	Total Volume Purged (liters):	5	Sample ID:	MW-22-156_051723	Sample Time: 09:35
Purge End Time:	09:35	Well Volumes Purged (total):	1.66	Replicate Type / Replicate ID:	NA / NA	Water Quality Meter/ ID: Hach 2100Q, YSI Pro Plus / NA
Scope of work completed?	Yes					

Time	Total Elapsed (min)	Flow Rate	Flow Rate Unit	Depth to Water (ft)	pH (S.U.)	Specific Conductivity (mS/cm ^e)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°C)	Redox (mV)	Appearance	
											Color	Odor
09:10	0	200	mL/min	12.99	7.63	1.66	0.02	4.49	12.3	140.7	Clear	No Odor
09:15	5	200	mL/min	12.99	7.26	1.87	0.02	0.72	12.5	135	Clear	No Odor
09:20	10	200	mL/min	12.99	7.21	2.03	0.02	0.47	12.7	130.6	Clear	No Odor
09:25	15	200	mL/min	12.99	7.19	2.08	1.09	0.23	12.7	127.2	Clear	No Odor
09:30	20	200	mL/min	12.99	7.19	2.08	1.13	0.24	12.7	123.6	Clear	No Odor

Constituent Sampled	Container	Number	Preservative
VOCs (SW8260)	Clear Glass	3	HCl

Comments: None

Well Information:

Well Labeled Properly: yes

Is Well in Good Condition? good

Well Inspection Comments: NA

ft-bmp = feet below measuring point
in = inches
ft = feet
mL/min = milliliters per minute
uS/cm = microSiemens per centimeter
NTU = Nephelometric Turbidity Unit
mg/L = milligrams per liter
S.U = standard units
mS/cm = milli

Groundwater Sampling Form



Project Number	30112892	Well ID	MW-22-157	Date	09/12/2022
Project Name/Location	RACER Lansing GWS 2022		Weather(°F)	64.9 degrees F and Cloudy. The wind is blowing S 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)	2.75	Total Depth (ft-bmp)	27.55	Water Column (ft)	24.8
				Gallons in Well	4.03
Purge Start	13:45	Pump Intake (ft-bmp)	25.05	Purge Method	Low-Flow
				Purge Equipment	Peristaltic
Purge End	14:10	Volumes Purged	0.33	Sample ID	MW-22-157_091222
				Sampled by	Austin Westhuis
Sample Time	14:10	Gallons Purged	1.32	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
13:50	0	0	200	2.75	0.26	7.06	1.48	3.09	0.2	16.7	-96.9	--	--
13:55	5	5	200	2.75	0.53	7.03	1.47	2.16	0.25	16.4	-95.7	--	--
14:00	5	10	200	2.75	0.79	7.02	1.47	1.77	0.23	16.4	-95.5	--	--
14:05	5	15	200	2.75	1.06	7.01	1.46	1.51	0.23	16.6	-95.2	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260 SIM	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: <u>See figure.</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>2035</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	30112892	Well ID	MW-22-157	Date	10/14/2022		
Project Name/Location	RACER Lansing GWS 2022		Weather(°F)	41.0 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)	3.08	Total Depth (ft-bmp)	27.61	Water Column (ft)	24.53	Gallons in Well	3.99
Purge Start	09:50	Pump Intake (ft-bmp)	25.11	Purge Method	Low-Flow	Purge Equipment	Peristaltic
Purge End	10:35	Volumes Purged	0.60	Sample ID	MW-22-157_101422	Sampled by	Austin Westhuis
Sample Time	10:25	Gallons Purged	2.38	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
10:05	0	0	200	3.08	0.79	7.13	1.41	25.96	0.12	15.38	-88.2	--	--
10:10	5	5	200	3.08	1.06	7.13	1.4	24.12	0.12	15.22	-89	--	--
10:15	5	10	200	3.08	1.32	7.14	1.39	21.14	0.09	15.32	-88.2	--	--
10:20	5	15	200	3.08	1.59	7.14	1.38	20.65	0.09	15.37	-87.8	--	--
10:25	5	20	200	3.08	1.85	7.14	1.36	20.01	0.09	15.38	-87.8	Clear	None

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8260 SIM	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: See figure.	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>2035</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	30171056	Well ID	MW-22-157	Date	2/15/2023
Project Name/Location	RACER Lansing GWS 2023		Weather(°F)	48.0 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)	2.63	Total Depth (ft-bmp)	27.61	Water Column (ft)	24.98
				Gallons in Well	4.06
Purge Start	14:00	Pump Intake (ft-bmp)	25.11	Purge Method	Low-Flow
				Purge Equipment	Peristaltic
Purge End	14:35	Volumes Purged	0.46	Sample ID	MW-22-157_021523
				Sampled by	Austin Westhuis
Sample Time	14:30	Gallons Purged		Replicate/ Code No.	NA
				Sample Type	Grab

Time	Minutes Elapsed	Total Elapsed Minutes	Rate mL/min	Depth to Water (ft)	Gallon Purged	pH (standard units)	Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature °C	Redox (mV)	Appearance	
												Color	Odor
14:05	0	0	200	2.63	0.26	6.95	1.948	2.96	0.19	12.7	-105.5	Clear	None
14:10	5	5	200	2.63	0.53	6.98	1.96	2.44	0.15	12.8	-126.7	Clear	None
14:15	5	10	200	2.63	0.79	7	1.968	2.34	0.11	12.9	-140.6	Clear	None
14:20	5	15	200	2.63	1.06	7.01	1.974	2.08	0.12	12.9	-150.9	Clear	None
14:25	5	20	200	2.63	1.32	7.01	1.977	1.68	0.11	12.9	-155.6	Clear	None
14:30	5	25	200	2.63	1.59	7.01	1.986	1.61	0.11	13	-157.7	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: See figure.

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



Location ID:	MW-22-157	Date(s):	2023-05-17	Work Order(s):	Q2 2023 GWS (Q, SA event)	
Client:	RACER	Facility:	Lansing	Facility Location:	2801 W. Saginaw St., Lansing, MI	Area: 2
Weather(°F):	CLEAR, T:56.5 °F, rH:50%, Clouds: 0%, Wind:11.5mph N-NE			Field Technician:	Jackie Schulte	
Measuring Pt. Description:	Top of Inner Casing	Screen Setting (ft-bgs):	-	Casing Diameter (in):	2.00	Well Casing Material: PVC
Static Water Level (ft-bmp):	2.5	Total Depth (ft-bmp):	27.63	Water Column(ft):	25.13	Liters in Well: 4.08
Depth to Product (ft-bmp):	NA	Pump Intake Depth(ft-bmp):	NA	Purge Method:	Low Flow	Purging Equipment: Peristaltic Pump
Purge Start Time:	NA	Total Volume Purged (liters):	10	Sample ID:	MW-22-157_051723	Sample Time: 15:10
Purge End Time:	15:06	Well Volumes Purged (total):	2.45	Replicate Type / Replicate ID:	NA / NA	Water Quality Meter/ ID: Hach 2100Q,YSI Pro Plus / NA
Scope of work completed?	Yes					

Time	Total Elapsed (min)	Flow Rate	Flow Rate Unit	Depth to Water (ft)	pH (S.U.)	Specific Conductivity (mS/cm ^c)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°C)	Redox (mV)	Appearance	
											Color	Odor
14:25	0	200	mL/min	2.58	7.18	1.284	0.02	4.3	14	216	Clear	No Odor
14:30	5	200	mL/min	2.58	7.21	1.285	0.3	4.24	13.9	198.8	Clear	No Odor
14:35	10	200	mL/min	2.58	6.97	1.441	1.56	1.4	14.1	-2	Clear	No Odor
14:40	15	200	mL/min	2.58	6.98	1.455	1.48	0.56	14	-16.1	Clear	No Odor
14:45	20	200	mL/min	5.58	6.99	1.452	2.27	0.58	14.1	-22.9	Clear	No Odor
14:50	25	200	mL/min	2.58	6.99	1.477	0.02	0.37	14.1	-42.1	Clear	No Odor
14:55	30	200	mL/min	2.58	7	1.482	0.75	0.29	14.1	-51	Clear	No Odor
15:00	35	200	mL/min	2.58	7	1.482	0.18	0.27	14.1	-55.5	Clear	No Odor
15:05	40	200	mL/min	2.58	7	1.482	0.58	0.23	14.1	-59.6	Clear	No Odor

Constituent Sampled	Container	Number	Preservative
1,4-Dioxane 8270D SIM	40 mL Glass	3	HCL

Comments: None

Well Information:

Well Labeled Properly: yes

Is Well in Good Condition? good

Well Inspection Comments: NA

- ft-bmp = feet below measuring point
- in = inches
- ft = feet
- mL/min = milliliters per minute
- uS/cm = microSiemens per centimeter
- NTU = Nephelometric Turbidity Unit
- mg/L = milligrams per liter
- S.U = standard units
- mS/cm = milli