



Annual Groundwater Report

PCC - Validation

RACER Trust

June 29, 2023

DRAFT

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1. Introduction

GHD is providing this Annual Groundwater Monitoring Report on behalf of Revitalizing Auto Communities Environmental Response (RACER) Trust for the former PCC-Validation property in Pontiac, Michigan (Site). A Site location map is presented on Figure 1. The purpose of this report is to provide a summary of the results from the July 2022, October 2022, and April 2023 groundwater monitoring events.

The May 5, 2018, Interim Groundwater Monitoring Plan (IGWMP), the corresponding reduced groundwater monitoring plan that was approved by US EPA on June 4, 2020, and subsequent communication with US EPA. The IGWMP amended the Sampling and Analysis Plan (SAP) submitted to the U.S. EPA on July 25, 2014, and Supplemental SAP submitted to the U.S. EPA on January 13, 2015. The current groundwater monitoring plan is summarized in Table 1. Groundwater Sampling and Analysis

2. Groundwater Sampling and Analysis

During the July 2022 quarterly monitoring event, four monitoring wells were sampled (MW-48-22R, MW-74-22R, MW-74D-22R, and MW-88-22R). Recently installed monitoring wells MW-90-22R and MW-94-22R were dry during the July 2022 sampling event; therefore, could not be sampled. A Site plan with the groundwater monitoring well locations is presented on Figure 2.

During the October 2022 quarterly monitoring event, three monitoring wells were sampled (MW-48-22R, MW-74D-22R, and MW-88-22R). Recently installed monitoring wells MW-74-22R, MW-90-22R, and MW-94-22R were dry during the October 2022 sampling event; therefore, could not be sampled.

During the April 2023 annual monitoring event, 19 monitoring wells were sampled (MW-02-07, MW-10-07, MW-21-07, MW-33-07, MW-38-07, MW-48-22R, MW-64-08, MW-68-08, MW-74-22R, MW-74D-22R, MW-79I-19, MW-79D-19, MW-80-12, MW-81-12, MW-85-12, MW-87-12, MW-92S-13, MW-92I-13, and MW-93I-13). Recently installed monitoring wells MW-90-22R, and MW-94-22R were dry during the April 2023 sampling event; therefore, were not sampled.

At monitoring well location MW-88-22R LNAPL was identified. A total thickness of 0.45 feet was measured. An LNAPL sample was collected for fingerprinting analysis. Further discussion is presented in Section 3.

Prior to groundwater sample collection, static groundwater elevations were measured and recorded. Groundwater samples were collected from the monitoring wells using low-flow sampling techniques with a peristaltic pump and dedicated tubing. Field parameters collected during purging included pH, temperature, conductivity, oxidation/reduction potential (ORP), dissolved oxygen (DO), and turbidity. Groundwater samples were collected after the field parameters stabilized. Groundwater field parameters collected from each monitoring well are presented on Monitoring Well Record for Low Flow Purging Forms included in Appendix A.

Groundwater samples were analyzed using USEPA Method 8260 for VOCs and/or Method 6020 for total and dissolved Aluminum, Lead, and Vanadium. Samples were analyzed for dissolved parameters to allow for consideration of the impact of suspended solids on the results. Groundwater samples were shipped under chain-of-custody protocol via courier to Eurofins-TestAmerica Laboratories in Barberton, Ohio for analysis. Table 3 presents the sample analysis summary.

3. LNAPL Sampling

During the April 2023 annual sampling event LNAPL was identified in monitoring well MW-88-22R while collecting water levels. LNAPL had not previously been identified, but sheen was observed during the October 2022 quarterly sampling event in the purge water during sampling. LNAPL was encountered in the well on April 12, 2023. The LNAPL was purged off the top of the water and placed in a glass 8-ounce jar, and the monitoring well was left over night to see if LNAPL would return. GHD returned the next day and checked the well and identified the LNAPL had returned overnight and measured at 0.45 feet thick. The LNAPL sample was sent to Eurofins-TestAmerica Laboratories in Lancaster, Pennsylvania for Quantitative Fingerprinting Analysis. Table 3 presents the sample analysis summary.

4. Analytical Results

Select groundwater results are shown on Figure 3. The analytical results were compared against the criteria and screening levels outlined below and provided on Table 4. The data validation memorandums dated August 11, 2022, December 21, 2022, and May 19, 2023, are presented in Appendix B. Based on the assessment discussed in the memorandums, the data was reviewed and identified to be acceptable.

Laboratory Analytical Reports are presented in Appendix C. Historical groundwater results from 2018 through 2022 are provided in Appendix D.

Groundwater analytical results were compared to all Michigan Environment, Great Lakes & Energy (EGLE) Cleanup Criteria Requirements for Response Activity (RRA), updated December 21, 2020 (Formerly the Part 201 Generic Cleanup Criteria and Screening Levels). Additionally, the results were compared to the site-specific volatilization to indoor air criteria. The criteria are presented in Appendix F. The results from the three sampling events (July 2022, October 2022, and April 2023) included in this annual period are summarized below:

- Total aluminum exceeded the EGLE Cleanup Criteria RRA Nonresidential/Residential Aesthetic Drinking Water Criteria (DWC) and the EGLE Residential Health Based Criteria during the April 2023 monitoring event in one well, MW-10-07. Dissolved aluminum exceeded the EGLE Cleanup Criteria RRA Nonresidential/Residential Aesthetic Drinking Water Criteria (DWC) in one well, MW-10-07; however, the results did not exceed the EGLE Residential Health Based DWC. Previously sampled monitoring well MW-21-07 was not sampled during this event for metals due to lack of available water to collect a sample.
- Trichloroethene (TCE) exceeded the EGLE Cleanup Criteria RRA Nonresidential/Residential DWC and SSVIAC Table 2 Residential Volatilization to Indoor Air in one well MW-74-22R during the July 2022 and April 2023 sampling events. MW-74-22R was dry during the October 2022 monitoring event.
- All other analyzed constituents were not detected or detected at concentrations below EGLE Cleanup Criteria RRA.
- The LNAPL results collected from MW-88-22R indicated that the sample is moderately weathered. Moderately weathered suggests that the LNAPL encountered is not a new release and is likely associated with the same LNAPL source previously identified at the Site. Based on review of the chromatogram the sample is identified to be moderately weathered diesel mixed with motor oil.

5. Discussion

Groundwater levels were collected from 20 of the 22 monitoring wells during the April 2023 sampling event; a groundwater elevation contour map is provided on Figure 4 and a summary table of groundwater levels is provided in

Table 2. While individual wells groundwater elevations varied compared to the April 2023 site-wide event, groundwater flow direction was generally the same as prior events, west in the mid-portion of the Site transitioning to the northwest in the northern portion of the Site. It is noted that the contours are based on a limited well distribution and saturated units that are generally limited in connectivity.

Monitoring wells MW-90-22R and MW-94-22R (installed in April 2022) were identified as dry during the July 2022, October 2022, and April 2023 sampling events. Monitoring well MW-74-22R was identified as dry during the October 2022 sampling event. It is not unusual for Site monitoring wells to be dry due to the discontinuous nature of the saturated sand seams. Absence of shallow groundwater near the south-central boundary indicates there is not shallow groundwater present which makes it unlikely for groundwater to travel off-site to the south. As depicted on Figure 4 the groundwater flow direction is to the west and northwest, which further shows groundwater is not traveling off-site to the south.

GHD compared the historical data for the previously abandoned monitoring wells (MW-48-07, MW-74-08, MW-74D-15, MW-88-12, MW-90-12, and MW-94-15) to the newly reinstalled replacement monitoring wells (MW-48-22R, MW-74-22R, MW-74D-22R, MW-90-22R, and MW-94-22R). The April 2015 and April 2023 sampling events were compared. Three monitoring wells (MW-48-07 (22R), MW-74D-15 (22R), and MW-88-12 (22R)) were non-detect for both April 2015 and April 2023 sampling events. Monitoring well MW-90-12 (22R) was non-detect during the April 2015 sampling event, but dry during the April 2023 sampling event. Monitoring well MW-94-15(22R) was dry during both the April 2015 and 2023 sampling events, so a sample could not be collected during these events.

The TCE concentrations at monitoring well MW-74-08 (22R) exceeded the EGLE Cleanup Criteria RRA Nonresidential/Residential Drinking Water Criteria (DWC) and SSVIAC Table 2 Residential Volatilization to Indoor Air for both the April 2015 and April 2023 sampling events. Although the replacement well (MW-74-22R) still exceeded criteria, the VOCs levels have attenuated significantly. The only remaining VOC exceedance at this location is TCE which decreased from 1,100 to 40 µg/L.

When the April 2022 groundwater elevations are compared to the April 2023 measurements the elevations in six of the monitoring wells varied between 0.1 to 1.5 feet lower than noted in April 2022. Two monitoring wells MW-90-22R and MW-94-22R) were dry during both April 2022 and April 2023 events. A historical data comparison is provided in Table 5.

A quarterly groundwater elevation comparison was completed for monitoring well location MW-88-22R due to the presence of LNAPL identified during the April 2023 annual sampling event. During the quarterly sampling events a water level was collected from MW-88-22R. The quarterly groundwater elevations for each quarter are as follows: April 2022 (937.52), July 2022 (937.48), October 2022 (935.61), and April 2023 (937.31). The April 2023 groundwater elevation is a corrected elevation based on the thickness and type of LNAPL present (0.45 ft thick and assumed specific gravity of 0.85). The lowest elevation was identified in October 2022, which was 1.91 feet lower than in April 2022. No LNAPL was observed in any of the monitoring wells on site following redevelopment, with the exception of MW-88-22R in April 2023.

Historically, impacted groundwater at the Site has been limited to the upper geologic unit that typically consists of fill and sand. The upper unit is underlain with a regional clay that limits vertical migration. Lateral groundwater migration within this upper geologic unit is discontinuous due to presence of intermittent sand seams; however, overall, the groundwater flow direction has consistently been to the west and northwest. Therefore, it is not expected that groundwater from the Site has a pathway to migrate laterally or vertically to the saturated geologic unit that supplies the private household well located approximately 0.45 miles to the southeast of the site or the wells located within the 0.5-mile radius that are the subject of the wellhead protection area that extends to the southeast portion of the Site. The private household well located 0.45 miles southeast of the site is screened between 122 to 130 feet bgs, and the wells located outside of the 0.5-mile radius of the site are screened at least 100 feet bgs.

LNAPL identified in MW-88-22R during the April 2023 event was collected and sent in for Qualitative Fingerprinting Analysis. The analysis identified the LNAPL to be moderately weathered diesel mixed with motor oil. GHD concluded that the LNAPL had undergone significant biological degradation. This type of LNAPL is relatively non-volatile and does not typically result in significant levels of dissolved or vapor phase impacts. The fact that it is significantly

degraded will further reduce the rates of dissolution and volatilization of chemical constituents and it is noted degradation can be expected to continue over time. No VOCs were detected above criteria during the three prior rounds of groundwater monitoring from this well, documenting that dissolution into dissolved phase groundwater is not taking place.

GHD compared the results to the previously documented LNAPL in the same general area of the Site (August 2, 2021, LNAPL Evaluation in the Former Plant 3 Area-Revised). Figure 3 identifies the approximate area of previously documented LNAPL and the location of MW-88-22R. Although MW-88-22R is slightly southwest of the previously documented LNAPL area, the comparison shows the current LNAPL identified in MW-88-22R is not related to a new release, but from the previously documented LNAPL source(s) on Site.

As discussed in the Corrective Measures Plan (CMP) submitted in October 2022 all existing wells would be sampled on an annual basis and newly reinstalled monitoring wells would be sampled on a quarterly basis for one year which consists of 4 quarterly events. This monitoring period has now been completed. Overall, the groundwater monitoring completed following redevelopment of the Site has had consistent results (or has attenuated) compared to the data obtained prior to redevelopment and further confirms the conceptual site model. Current DRC requirements adequately address groundwater conditions at the Site. Therefore, other than well abandonment, field activities associated with the Corrective Measures Proposal have been completed and no further groundwater sampling is proposed.

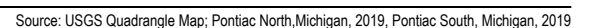
6. Schedule

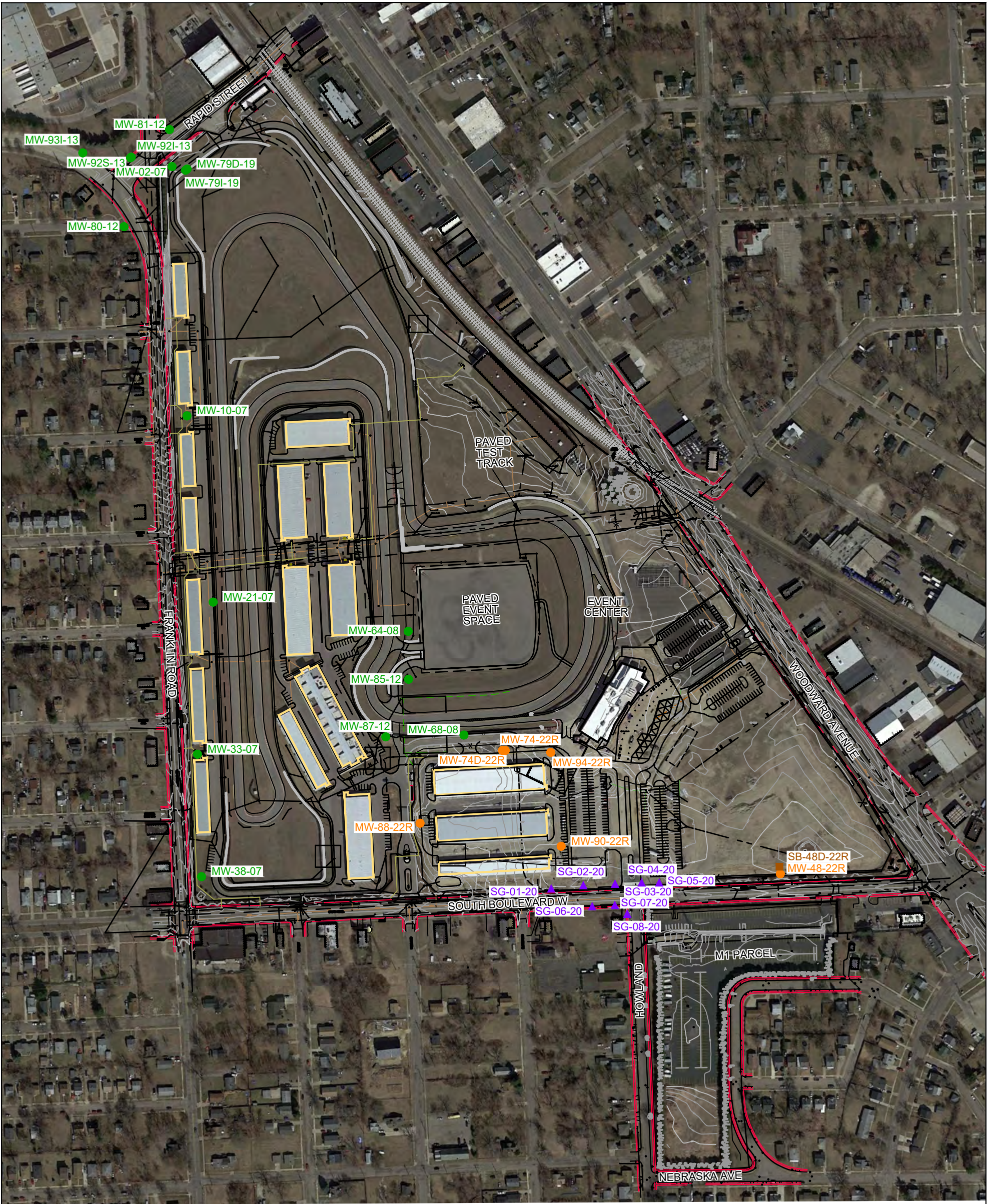
The final planned groundwater monitoring event was completed in April 2023. Four monitoring events have been completed for the replacement wells installed in April 2022. No additional sampling tasks are currently planned for this project. A summary of recent groundwater monitoring tasks completed is included below:

Task:	Approximate Timeline
Limited Quarterly Groundwater Monitoring	September 2020 - <i>Completed</i>
Limited Quarterly Groundwater Monitoring	December 2020 - <i>Completed</i>
Limited Quarterly Groundwater Monitoring	March 2021 - <i>Completed</i>
Annual Sitewide Groundwater Monitoring	June 2021 - <i>Completed</i>
Limited Quarterly & Annual Groundwater Monitoring Results	August 2021 – <i>Completed October 2021</i>
Limited Quarterly Groundwater Monitoring	September 2021 - <i>Completed</i>
Third Phase of Monitoring Well Installation	<i>Completed April 2022</i>
Annual Sitewide Groundwater Monitoring	April 2022 - <i>Completed</i>
Annual Groundwater Report (this report)	September 2022 - <i>Completed</i>
Limited Quarterly Groundwater Monitoring	July 2022 - <i>Completed</i>
Groundwater Sampling Results July 2022 Memorandum ⁽²⁾	September 2022 - <i>Completed</i>
Limited Quarterly Groundwater Monitoring	October 2022 - <i>Completed</i>
Annual Sitewide Groundwater Monitoring	April 2023 - <i>Completed</i>
Annual Groundwater Report	July 2023 (<i>this report</i>)

⁽¹⁾Monitoring events were performed in accordance with the current approved groundwater monitoring plan presented on Table 1.

Figures





LEGEND

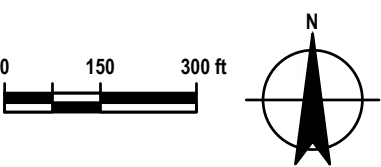
- APPROXIMATE PROPERTY BOUNDARY
- RAILROAD
- MW-80-12

ACTIVE MONITORING WELL LOCATION
- MW-90-22R

NEW ACTIVE MONITORING WELL LOCATION - APRIL 2022
- SG-01-20

SOIL GAS PROBE LOCATION
- SB-48D-22R

BOREHOLE LOCATION
- PRIVATE NON-RESIDENTIAL GARAGES

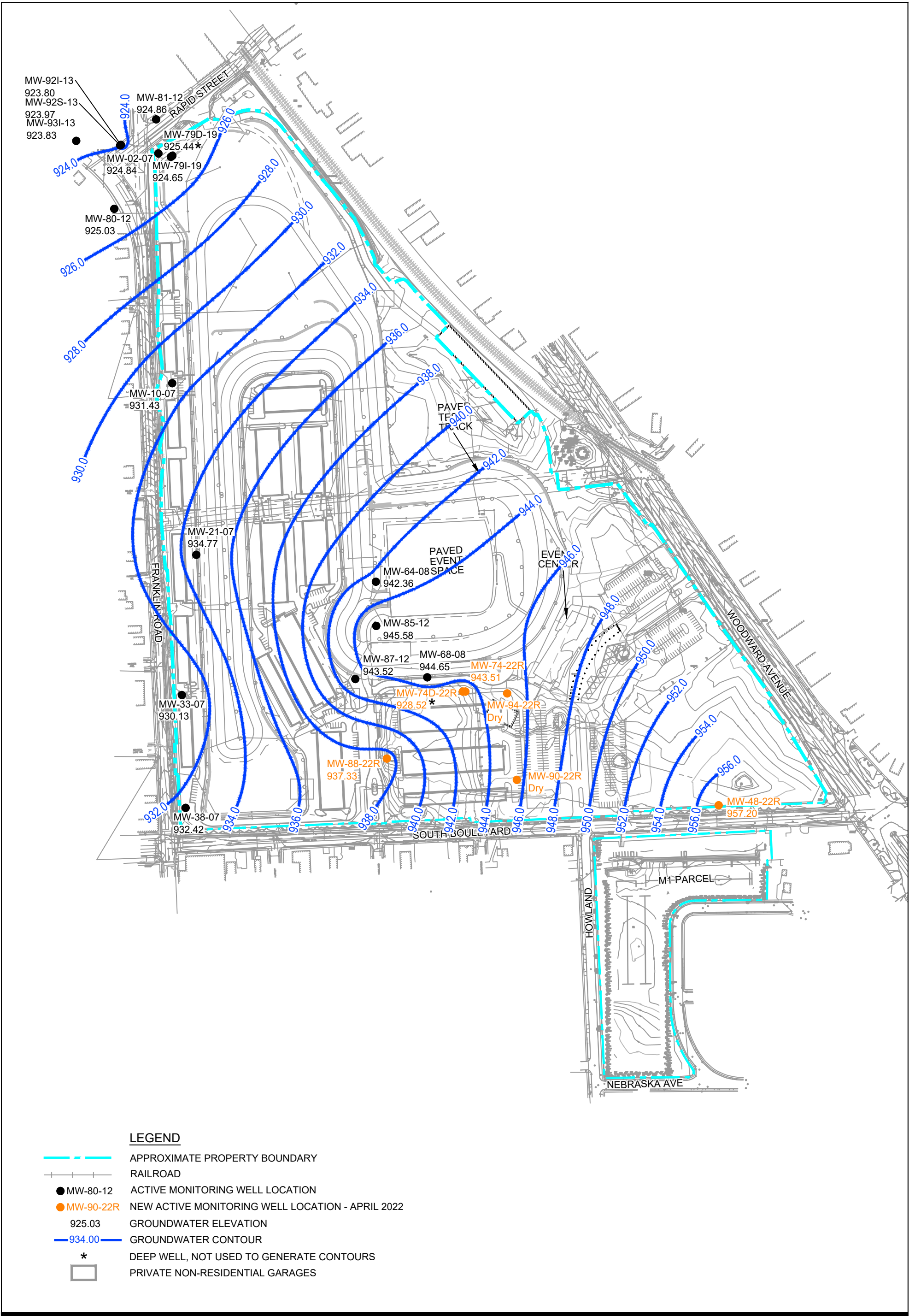


RACER
1 CONCOURSE DRIVE
PONTIAC, MICHIGAN

SITE PLAN WITH CURRENT
MONITORING LOCATIONS

Project No. 11223416
Date June 2023

FIGURE 2



Tables

Table 1

**Groundwater Monitoring Plan Summary
RACER PCC - Validation
Pontiac, Michigan**

Well ID	Most Recent Install Date	Sampling Parameters	Current Monitoring Frequency
MW-02-07	6/4/2018	TCL VOCs	Annually (1)
MW-10-07	6/1/2018	Al, Pb, V (Total+Dissolved)	Annually (1)
MW-21-07	5/22/2019	Al, Pb, V (Total+Dissolved)	Annually (1)
MW-33-07	5/31/2018	Al, Pb, V (Total+Dissolved)	Annually (1)
MW-38-07	5/30/2018	Al, Pb, V (Total+Dissolved)	Annually (1)
MW-64-08	5/29/2018	TCL VOCs	Annually (1)
MW-68-08	5/24/2019	TCL VOCs	Annually (1)
MW-79D-19	5/21/2019	TCL VOCs	Annually (1)
MW-79I-19	5/21/2019	TCL VOCs	Annually (1)
MW-80-12	8/28/2012	TCL VOCs	Annually (1)
MW-81-12	8/28/2012	TCL VOCs	Annually (1)
MW-85-12	5/28/2018	TCL VOCs	Annually (1)
MW-87-12	5/22/2019	TCL VOCs	Annually (1)
MW-92I-13	1/23/2013	TCL VOCs	Annually (1)
MW-92S-13	1/24/2013	TCL VOCs	Annually (1)
MW-93I-13	7/26/2013	TCL VOCs	Annually (1)
MW-74-22R	4/8/22	TCL VOCs	To be sampled quarterly for four events following install
MW-74D-22R	4/6/22	TCL VOCs	To be sampled quarterly for four events following install
MW-88-22R	4/11/22	TCL VOCs	To be sampled quarterly for four events following install
MW-90-22R	4/14/22	TCL VOCs	To be sampled quarterly for four events following install
MW-48-22R (2)	4/12/22	TCL VOCs	To be sampled quarterly for four events following install
MW-94-22R	4/8/22	TCL VOCs	To be sampled quarterly for four events following install

Notes:

(1) Annual sampling event will occur in Q2, the quarter with the most recent exceedance of Michigan EGLE Generic Groundwater Cleanup Criteria (Part 201).

(2) Proposed well MW-48-07R has replaced previously proposed MW-91-12.

Table 1

**Groundwater Monitoring Plan Summary
RACER PCC - Validation
Pontiac, Michigan**

Well ID	Most Recent Install Date	Sampling Parameters	Current Monitoring Frequency
MW-02-07	6/4/2018	TCL VOCs	Annually (1)
MW-10-07	6/1/2018	Al, Pb, V (Total+Dissolved)	Annually (1)
MW-21-07	5/22/2019	Al, Pb, V (Total+Dissolved)	Annually (1)
MW-33-07	5/31/2018	Al, Pb, V (Total+Dissolved)	Annually (1)
MW-38-07	5/30/2018	Al, Pb, V (Total+Dissolved)	Annually (1)
MW-64-08	5/29/2018	TCL VOCs	Annually (1)
MW-68-08	5/24/2019	TCL VOCs	Annually (1)
MW-79D-19	5/21/2019	TCL VOCs	Annually (1)
MW-79I-19	5/21/2019	TCL VOCs	Annually (1)
MW-80-12	8/28/2012	TCL VOCs	Annually (1)
MW-81-12	8/28/2012	TCL VOCs	Annually (1)
MW-85-12	5/28/2018	TCL VOCs	Annually (1)
MW-87-12	5/22/2019	TCL VOCs	Annually (1)
MW-92I-13	1/23/2013	TCL VOCs	Annually (1)
MW-92S-13	1/24/2013	TCL VOCs	Annually (1)
MW-93I-13	7/26/2013	TCL VOCs	Annually (1)
MW-74-22R	4/8/22	TCL VOCs	To be sampled quarterly for four events following install
MW-74D-22R	4/6/22	TCL VOCs	To be sampled quarterly for four events following install
MW-88-22R	4/11/22	TCL VOCs	To be sampled quarterly for four events following install
MW-90-22R	4/14/22	TCL VOCs	To be sampled quarterly for four events following install
MW-48-22R (2)	4/12/22	TCL VOCs	To be sampled quarterly for four events following install
MW-94-22R	4/8/22	TCL VOCs	To be sampled quarterly for four events following install

Notes:

(1) Annual sampling event will occur in Q2, the quarter with the most recent exceedance of Michigan EGLE Generic Groundwater Cleanup Criteria (Part 201).

(2) Proposed well MW-48-07R has replaced previously proposed MW-91-12.

Table 2

**Groundwater Elevation Summary
RACER PCC Validation
Pontiac, Michigan**

Sample Location	Date Installed	Current Ground Elevation (FT AMSL)	Current TOC	Current Screen Interval (FT BGS)			April 2022 Depth To Groundwater (FT TOC)	April 2023 Depth To Groundwater (FT TOC)	April 2022 Groundwater Elevation (FT AMSL)	April 2023 Groundwater Elevation (FT AMSL)	Change in Groundwater Elevation: april 2022 vs. april 2023 (FT)
MW-02-07	6/4/2018	936.15	935.63	11.40	-	16.40	11.54	10.79	924.09	924.84	0.75
MW-10-07	6/1/2018	943.34	943.09	12.55	-	17.55	12.64	11.66	930.45	931.43	0.98
MW-21-07	5/22/2019	950.67	950.37	11.00	-	16.00	15.59	15.60	934.78	934.77	-0.01
MW-33-07	5/31/2018	947.89	947.50	17.24	-	22.24	16.16	17.37	931.34	930.13	-1.21
MW-38-07	5/30/2018	948.99	948.50	12.20	-	17.20	14.64	16.08	933.86	932.42	-1.44
MW-64-08	5/29/2018	947.31	947.03	10.25	-	15.25	5.25	4.67	941.78	942.36	0.58
MW-68-08	5/24/2019	956.34	956.05	10.00	-	15.00	11.89	11.40	944.16	944.65	0.49
MW-79I-19	5/21/2019	936.43	936.13	17.00	-	22.00	11.98	11.48	924.15	924.65	0.50
MW-79D-19	5/21/2019	936.45	936.21	30.00	-	35.00	9.91	10.77	926.30	925.44	-0.86
MW-80-12	8/28/2012	930.14	929.72	7.00	-	12.00	5.2	4.69	924.52	925.03	0.51
MW-81-12	8/28/2012	932.16	931.54	14.00	-	19.00	6.95	6.68	924.59	924.86	0.27
MW-85-12	5/29/2018	948.00	947.72	3.20	-	8.20	2.73	2.14	944.99	945.58	0.59
MW-87-12	5/22/2019	951.29	950.99	10.00	-	15.00	7.63	7.47	943.36	943.52	0.16
MW-92S-13	1/24/2013	929.85	929.48	4.80	-	9.80	6.03	5.51	923.45	923.97	0.52
MW-92I-13	1/24/2013	929.80	929.22	12.00	-	17.00	5.82	5.42	923.40	923.80	0.40
MW-93I-13	7/26/2013	930.55	930.00	12.00	-	17.00	6.94	6.17	923.06	923.83	0.77
MW-48-22R	4/12/2022	960.32	959.88	12.5	-	18.5	3.38	2.68	956.50	957.20	0.70
MW-74-22R	4/8/2022	959.31	958.71	12.5	-	17.5	15.63	15.2	943.08	943.51	0.43
MW-74D-22R	4/6/2022	959.26	958.76	40	-	45	28.7	30.24	930.06	928.52	-1.54
MW-88-22R	4/11/2022	957.6	957.11	20	-	25	19.59	19.78	937.52	937.33	-0.19
MW-90-22R	4/14/2022	958.45	958.16	13.1	-	18.1	Dry	Dry	--	--	--
MW-94-22R	4/8/2022	958.77	958.35	16	-	21	Dry	Dry	--	--	--

Notes:

FT AMSL - Feet above mean sea level

FT BGS - Feet below ground surface

NA - No data available

Dry - No groundwater encountered

Table 3

**Sample Analysis Summary
RACER PCC- Validation
Pontiac, Michigan**

Matrix	Sample ID	Sample Location	Date	QA/QC	Analysis
July 2022 Groundwater Sampling Event					
Groundwater	GW-11223416-071322-SK-001	MW-88-22R	7/13/2022	NA	TCL VOCs
Groundwater	GW-11223416-071322-SK-002	MW-74D-22R	7/13/2022	NA	TCL VOCs
Groundwater	GW-11223416-071322-SK-003	MW-74D-22R	7/13/2022	Duplicate	TCL VOCs
Groundwater	GW-11223416-071322-SK-004	MW-74-22R	7/13/2022	NA	TCL VOCs
Groundwater	GW-11223416-071322-SK-005	MW-48-22R	7/13/2022	NA	TCL VOCs
October 2022 Groundwater Sampling Event					
Groundwater	GW-11223416-101022-SK-001	MW-74D-22R	10/10/2022	NA	TCL VOCs
Groundwater	GW-11223416-101022-SK-002	MW-74D-22R	10/10/2022	Duplicate	TCL VOCs
Groundwater	GW-11223416-101022-SK-003	MW-88-22R	10/10/2022	NA	TCL VOCs
Groundwater	GW-11223416-101022-SK-004	MW-48-22R	10/10/2022	NA	TCL VOCs
April 2023 Groundwater Sampling Event					
Groundwater	GW-11223416-041023-SK-001	MW-85-12	4/10/2023	NA	TCL VOCs
Groundwater	GW-11223416-041023-SK-002	MW-64-08	4/10/2023	NA	TCL VOCs
Groundwater	GW-11223416-041023-SK-003	MW-48-22R	4/10/2023	NA	TCL VOCs
Groundwater	GW-11223416-041023-SK-004	MW-68-08	4/10/2023	NA	TCL VOCs
Groundwater	GW-11223416-041023-SK-005	MW-87-12	4/10/2023	NA	TCL VOCs
Groundwater	GW-11223416-041123-SK-006	MW-79I-19	4/11/2023	NA	TCL VOCs
Groundwater	GW-11223416-041123-SK-007	MW-79D-19	4/11/2023	NA	TCL VOCs
Groundwater	GW-11223416-041123-SK-008	MW-74-22R	4/11/2023	MS/MSD	TCL VOCs
Groundwater	GW-11223416-041123-SK-009	MW-02-07	4/11/2023	NA	TCL VOCs
Groundwater	GW-11223416-041123-SK-010	MW-74D-22R	4/11/2023	NA	TCL VOCs
Groundwater	GW-11223416-041223-SK-011	MW-92S-13	4/12/2023	NA	TCL VOCs
Groundwater	GW-11223416-041223-SK-012	MW-92I-13	4/12/2023	NA	TCL VOCs
Groundwater	GW-11223416-041223-SK-013	MW-93I-13	4/12/2023	NA	TCL VOCs
Groundwater	GW-11223416-041223-SK-014	MW-21-07 ¹	4/12/2023	NA	TCL VOCs
Groundwater	GW-11223416-041223-SK-015	MW-38-07	4/12/2023	NA	Al, Pb, V (Total+Dissolved)
Groundwater	GW-11223416-041223-SK-016	MW-33-07	4/12/2023	NA	Al, Pb, V (Total+Dissolved)
Groundwater	GW-11223416-041323-SK-017	MW-81-12	4/13/2023	NA	TCL VOCs
Groundwater	GW-11223416-041323-SK-018	MW-80-12	4/13/2023	NA	TCL VOCs
Groundwater	GW-11223416-041323-SK-019	MW-10-07	4/13/2023	MS/MSD	Al, Pb, V (Total+Dissolved)
Oil	L-11223416-041423-SK-001	MW-88-22R	4/14/2023	NA	Quantitative Fingerprinting

Notes:

¹ Not enough water to collect metals sample

ft bgs - Feet below ground surface

MW - Monitoring well

NA - Not applicable

TCL VOCs - Target Compound List Volatile Organic Compounds

AL, PB, V - Aluminum, lead, and vanadium

Table 4
RACER PCC Validation
Groundwater Analytical Results - July 2022 through April 2023
Pontiac Michigan

Sample Location		EGLE Generic Groundwater Cleanup Criteria: Residential and Nonresidential ⁽¹⁾							EGLE ⁽²⁾		SSVIAC ⁽³⁾		MW-2-07	MW-10-07
Sample Identification		Residential	Non-Residential	Groundwater	Residential Groundwater	Non-Residential Groundwater	Water	Flammability and	Residential	Nonresidential	Table 1 - NonResidential	Table 2 - Residential	GW-11223416-041123-SK-009	GW-11223416-041323-SK-019
Sample Date		Drinking Water	Drinking Water	Surface Water	Volatilization to	Volatilization to	Solubility	Explosivity	Health-Based	Health-Based	Volatilization to Indoor Air	Volatilization to Indoor Air	04/11/2023	04/13/2023
Sample Type				Interface ⁽⁴⁾	Indoor Air Inhalation	Indoor Air Inhalation		Screening Levels	Drinking Water	Drinking Water	<50,000 ft², slab-on-grade	Basement		
		a	b	c	d	e	f	g	i	j	m	n		
Volatile Organic Compounds (VOCs)														
1,1,1-Trichloroethane	ug/L	200	200	89	660000	1300000	1330000	ID			190000 (EE) st	11000 (EE) st	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	ug/L	8.5	35	78	12000	77000	2970000	ID			1900 ca	59 ca	1.0 U	1.0 U
1,1,2-Trichloroethane	ug/L	5	5	330	17000	110000	4420000				190 nc	9.9 nc	1.0 U	1.0 U
1,1-Dichloroethane	ug/L	880	2500	740	1000000	2300000	5060000	380000			2500 ca	81 ca	1.0 U	1.0 U
1,1-Dichloroethene	ug/L	7	7	130	200	1300	2250000	97000			3900 nc	200 nc	1.0 U	1.0 U
1,2,4-Trichlorobenzene	ug/L	70	70	99	300000	300000	300000						1.0 U	1.0 U
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	0.2	0.2		220	1200							2.0 U	2.0 U
1,2-Dibromoethane (Ethylene dibromide)	ug/L	0.05	0.05	5.7	2400	15000	4200000	ID			120 ca	3.6 ca	1.0 U	1.0 U
1,2-Dichlorobenzene	ug/L	600	600	13	160000	160000	156000						1.0 U	1.0 U
1,2-Dichloroethane	ug/L	5	5	360	9600	59000	8520000	2500000			770 ca	25 ca	1.0 U	1.0 U
1,2-Dichloropropane	ug/L	5	5	230	16000	36000	2800000	550000					1.0 U	1.0 U
1,3-Dichlorobenzene	ug/L	6.6	19	28	18000	41000	111000	ID					1.0 U	1.0 U
1,4-Dichlorobenzene	ug/L	75	75	17	16000	74000	73800						1.0 U	1.0 U
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	13000	38000	2200	240000000	240000000	240000000	ID					10 U	10 U
2-Hexanone	ug/L	1000	2900	ID	4200000	8700000	16000000						10 U	10 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	1800	5200	ID	20000000	20000000	20000000	ID					10 U	10 U
Acetone	ug/L	730	2100	1700	1000000000	1000000000	1000000000	15000000					10 U	10 U
Benzene	ug/L	5	5	200	5600	35000	1750000	68000			520 ca	17 ca	1.0 U	1.0 U
Bromodichloromethane	ug/L	80	80	ID	4800	37000	6740000	ID					1.0 U	1.0 U
Bromoform	ug/L	80	80	ID	470000	3100000	3100000	ID					1.0 U	1.0 U
Bromomethane (Methyl bromide)	ug/L	10	29	5	4000	9000	14500000	ID					1.0 U	1.0 U
Carbon disulfide	ug/L	800	2300	ID	250000	550000	1190000	13000					1.0 U	1.0 U
Carbon tetrachloride	ug/L	5	5	38	370	2400	793000	ID					1.0 U	1.0 U
Chlorobenzene	ug/L	100	100	25	210000	470000	472000	160000			13000 nc	660 nc	1.0 U	1.0 U
Chloroethane	ug/L	430	1700	1100	5700000	5700000	5740000	110000			150000 nc	8000 nc	1.0 U	1.0 U
Chloroform (Trichloromethane)	ug/L	80	80	350	28000	180000	7920000	ID			280 ca	9.2 ca	1.0 U	1.0 U
Chloromethane (Methyl chloride)	ug/L	260	1100	ID	8600	45000	6340000	36000			3500 nc	180 nc	1.0 U	1.0 U
cis-1,2-Dichloroethene	ug/L	70	70	620	93000	210000	3500000	530000			1100 nc	58 nc	1.0 U	1.0 U
cis-1,3-Dichloropropene	ug/L												1.0 U	1.0 U
Cyclohexane	ug/L										25000 nc	1300 nc	1.0 U	1.0 U
Dibromochloromethane	ug/L	80	80	ID	14000	110000	2600000	ID					1.0 U	1.0 U
Dichlorodifluoromethane (CFC-12)	ug/L	1700	4800	ID	220000	300000	300000	ID					1.0 U	1.0 U
Ethylbenzene	ug/L	74	74	18	110000	170000	169000	43000	700	700	1700 ca	55 ca	1.0 U	1.0 U
Isopropyl benzene	ug/L	800	2300	28	56000	56000	56000	29000			380 ca	12 ca	1.0 U	1.0 U
Methyl acetate	ug/L												10 U	10 U
Methyl cyclohexane	ug/L												1.0 U	1.0 U
Methyl tert butyl ether (MTBE)	ug/L	40	40	7100	47000000	47000000	46800000	ID	240	690	150000 ca	4900 ca	1.0 U	1.0 U
Methylene chloride	ug/L	5	5	1500	220000	1400000	17000000	ID					5.0 U	5.0 U
Styrene	ug/L	100	100	80	170000	310000	310000	140000			21000 ca	680 ca	1.0 U	1.0 U
Tetrachloroethene	ug/L	5	5	60	25000	170000	200000	ID			1600 (EE) st	120 (EE) st	1.0 U	1.0 U
Toluene	ug/L	790	790	270	530000	530000	526000	61000	1000	1000	520000 (EE) st	28000 nc	1.0 U	1.0 U
trans-1,2-Dichloroethene	ug/L	100	100	1500	85000	200000	6300000	230000			4600 nc	240 nc	1.0 U	1.0 U
trans-1,3-Dichloropropene	ug/L												1.0 U	1.0 U
Trichloroethene	ug/L	5	5	200	2200	4900	1100000	ID			98 (DD) dev	7.5 (DD) dev	1.0 U	1.0 U
Trichlorofluoromethane (CFC-11)	ug/L	2600	7300		1100000	1100000	1100000	ID					1.0 U	1.0 U
Trifluorotrichloroethane (CFC-113)	ug/L	170000	170000	32	170000	170000	170000	ID					1.0 U	1.0 U
Vinyl chloride	ug/L	2	2	13	1100	13000	2760000	33000			120 ca	1.1 (MM) mut	1.0 U	1.0 U
Xylenes (total)	ug/L	280	280	49	190000	190000	186000	70000	10000	10000	28000 nc	1500 nc	2.0 U	2.0 U
Metals														
Aluminum	ug/L	50	50		NLV	NLV		ID	300	4100			--	180 ^{ab}
Aluminum (dissolved)	ug/L	50	50		NLV	NLV		ID	300	4100			--	190 ^{ab}
Lead	ug/L	4	4	58	NLV	NLV		ID	15	15			--	1.0 U
Lead (dissolved)	ug/L	4	4	58	NLV	NLV		ID	15	15			--	1.0 U
Vanadium	ug/L	4.5	62	27	NLV	NLV		ID					--	4.0 U
Vanadium (dissolved)	ug/L	4.5	62	27	NLV	NLV		ID					--	0.88 J
Field Parameters														
Conductivity, field	mS/cm												2.21	1.3
Dissolved oxygen (DO), field	ug/L												610	1450
Oxidation reduction potential (ORP), field	millivolts												-94.6	-59.9
pH, field	s.u.	6.5 - 8.5	6.5 - 8.5										6.96	7.86
Temperature, sample	Deg C												11.6	13.5
Turbidity, field	NTU												1.05	4.35

Table 4
RACER PCC Validation
Groundwater Analytical Results - July 2022 through April 2023
Pontiac Michigan

Sample Location		MW-21-07	MW-33-07	MW-38-07	MW-48-22R	MW-48-22R	MW-48-22R	MW-64-08	MW-68-08	MW-74-22R	MW-74-22R
Sample Identification		GW-11223416-041223-SK-014	GW-11223416-041223-SK-016	GW-11223416-041223-SK-015	GW-11223416-071322-SK-005	GW-11223416-101022-SK-004	GW-11223416-041023-SK-003	GW-11223416-041023-SK-002	GW-11223416-041023-SK-004	GW-11223416-071322-SK-004	GW-11223416-041123-SK-008
Sample Date		04/12/2023	04/12/2023	04/12/2023	07/13/2022	10/10/2022	04/10/2023	04/10/2023	04/10/2023	07/13/2022	04/11/2023
Sample Type											
Units											
Volatile Organic Compounds (VOCs)											
1,1,1-Trichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	16	14
1,1,2,2-Tetrachloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,2-Dibromoethane (Ethylene dibromide)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloropropane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Acetone	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromodichloromethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromoform	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (Methyl bromide)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon disulfide	ug/L	1.0 U	1.0 U	1.0 U	0.90 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon tetrachloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (Trichloromethane)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane (Methyl chloride)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,3-Dichloropropene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Cyclohexane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dibromochloromethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (CFC-12)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Isopropyl benzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methyl acetate	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methyl cyclohexane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methyl tert butyl ether (MTBE)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene chloride	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Styrene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	ug/L	0.46 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichlorofluoromethane (CFC-11)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trifluorotrichloroethane (CFC-113)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl chloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Xylenes (total)	ug/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Metals											
Aluminum	ug/L	--	50 U	47 J	--	--	--	--	--	--	--
Aluminum (dissolved)	ug/L	--	50 U	44 J	--	--	--	--	--	--	--
Lead	ug/L	--	1.0 U	1.0 U	--	--	--	--	--	--	--
Lead (dissolved)	ug/L	--	1.0 U	1.0 U	--	--	--	--	--	--	--
Vanadium	ug/L	--	4.0 U	4.0 U	--	--	--	--	--	--	--
Vanadium (dissolved)	ug/L	--	4.0 U	4.0 U	--	--	--	--	--	--	--
Field Parameters											
Conductivity, field	mS/cm	--	4.37	--	1.712	1.705	1.68	0.78	1.62	3.222	5.58
Dissolved oxygen (DO), field	ug/L	--	500	--	60	30	230	1080	450	2610	7960
Oxidation reduction potential (ORP), field	millivolts	--	-64.5	--	-173.7	-199.9	-116.4	-4.6	-33.2	92.6	-36.5
pH, field	s.u.	--	6.79	--	7.67	9.12 ^{ab}	7.45	7.01	6.97	7.25	7.07
Temperature, sample	Deg C	--	15.2	--	13.6	15.6	12.8	10	11.8	16.8	14
Turbidity, field	NTU	--	4.84	--	2.77	3.37	7.85	7.03	7.36	1.67	1.3

Table 4
RACER PCC Validation
Groundwater Analytical Results - July 2022 through April 2023
Pontiac Michigan

Sample Location		MW-74D-22R	MW-74D-22R	MW-74D-22R	MW-74D-22R	MW-74D-22R	MW-79D-19	MW-79I-19	MW-80-12	MW-81-12	MW-85-12
Sample Identification		GW-11223416-071322-SK-002	GW-11223416-071322-SK-003	GW-11223416-101022-SK-001	GW-11223416-101022-SK-002	GW-11223416-041123-SK-010	GW-11223416-041123-SK-007	GW-11223416-041123-SK-006	GW-11223416-041323-SK-018	GW-11223416-041323-SK-017	GW-11223416-041023-SK-001
Sample Date		07/13/2022	07/13/2022	10/10/2022	10/10/2022	04/11/2023	04/11/2023	04/11/2023	04/13/2023	04/13/2023	04/10/2023
Sample Type			Duplicate		Duplicate						
Units											
Volatile Organic Compounds (VOCs)											
1,1,1-Trichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,2-Dibromoethane (Ethylene dibromide)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloropropane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Acetone	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromodichloromethane	ug/L	0.62 J	0.48 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromoform	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (Methyl bromide)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon disulfide	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon tetrachloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (Trichloromethane)	ug/L	1.5	1.1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane (Methyl chloride)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,3-Dichloropropene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Cyclohexane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dibromochloromethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (CFC-12)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	ug/L	0.60 J	0.49 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Isopropyl benzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methyl acetate	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methyl cyclohexane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methyl tert butyl ether (MTBE)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene chloride	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Styrene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichlorofluoromethane (CFC-11)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trifluorotrichloroethane (CFC-113)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl chloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Xylenes (total)	ug/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Metals											
Aluminum	ug/L	--	--	--	--	--	--	--	--	--	--
Aluminum (dissolved)	ug/L	--	--	--	--	--	--	--	--	--	--
Lead	ug/L	--	--	--	--	--	--	--	--	--	--
Lead (dissolved)	ug/L	--	--	--	--	--	--	--	--	--	--
Vanadium	ug/L	--	--	--	--	--	--	--	--	--	--
Vanadium (dissolved)	ug/L	--	--	--	--	--	--	--	--	--	--
Field Parameters											
Conductivity, field	mS/cm	5.61	5.61	4.678	4.678	3.81	2.73	3.44	1.85	2.29	0.93
Dissolved oxygen (DO), field	ug/L	630	630	90	90	3760	400	630	590	400	1510
Oxidation reduction potential (ORP), field	millivolts	-70.6	-70.6	21.8	21.8	-83.7	-80.4	-56.6	-85.4	-70	-20.9
pH, field	s.u.	7.09	7.09	5.39 ^{ab}	5.39 ^{ab}	7.23	7.25	6.92	7.3	7.34	10.01 ^{ab}
Temperature, sample	Deg C	18.3	18.3	14.4	14.4	17.4	12.8	11.6	12.2	13.9	8.8
Turbidity, field	NTU	6.6	6.6	4.24	4.24	9.16	0.78	1.8	1.07	3.87	11.7

Table 4
RACER PCC Validation
Groundwater Analytical Results - July 2022 through April 2023
Pontiac Michigan

Sample Location		MW-87-12	MW-88-22R	MW-88-22R	MW-92I-13	MW-92S-13	MW-93I-13
Sample Identification		GW-11223416-041023-SK-005	GW-11223416-071322-SK-001	GW-11223416-101022-SK-003	GW-11223416-041223-SK-012	GW-11223416-041223-SK-011	GW-11223416-041223-SK-013
Sample Date		04/10/2023	07/13/2022	10/10/2022	04/12/2023	04/12/2023	04/12/2023
Sample Type							
Volatile Organic Compounds (VOCs)	Units						
1,1,1-Trichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,2-Dibromoethane (Ethylene dibromide)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloropropane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	1.5 J	10 U	10 U	10 U	10 U	10 U
2-Hexanone	ug/L	10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	1.2 J	10 U	10 U	10 U	10 U	10 U
Acetone	ug/L	10 U	10 U	10 U	10 U	10 U	10 U
Benzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromodichloromethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromoform	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (Methyl bromide)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon disulfide	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon tetrachloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (Trichloromethane)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane (Methyl chloride)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	0.62 J	1.0 U	1.0 U
cis-1,3-Dichloropropene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Cyclohexane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dibromochloromethane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (CFC-12)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Isopropyl benzene	ug/L	1.0 U	1.0 U	0.70 J	1.0 U	1.0 U	1.0 U
Methyl acetate	ug/L	10 U	10 U	10 U	10 U	10 U	10 U
Methyl cyclohexane	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methyl tert butyl ether (MTBE)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene chloride	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Styrene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichlorofluoromethane (CFC-11)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trifluorotrichloroethane (CFC-113)	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl chloride	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Xylenes (total)	ug/L	1.7 J	2.0 U	1.2 J	2.0 U	2.0 U	2.0 U
Metals							
Aluminum	ug/L	--	--	--	--	--	--
Aluminum (dissolved)	ug/L	--	--	--	--	--	--
Lead	ug/L	--	--	--	--	--	--
Lead (dissolved)	ug/L	--	--	--	--	--	--
Vanadium	ug/L	--	--	--	--	--	--
Vanadium (dissolved)	ug/L	--	--	--	--	--	--
Field Parameters							
Conductivity, field	mS/cm	1.02	2.392	2.387	1.56	1.6	2.15
Dissolved oxygen (DO), field	ug/L	280	220	220	750	630	700
Oxidation reduction potential (ORP), field	millivolts	-214	-75.2	-80.2	-54.2	-62	-62.3
pH, field	s.u.	10.58 ^{ab}	6.89	7.26	7.16	6.76	6.8
Temperature, sample	Deg C	10.7	16.1	16.1	13.3	10.4	13.1
Turbidity, field	NTU	3.05	9.65	22.6	2.09	2.62	0.64

Notes:
(1) EGLE - Michigan Department of Environment, Great Lakes and Energy (EGLE) Generic cleanup criteria for residential and nonresidential category, administrative rule R 299.44 effective December 30, 2013, pursuant to Part 201 of 1994 PA 451 as amended. Criteria table dated January 10, 2018; GSI Criteria updated June 25, 2018.
(2) EGLE R 299.49 Footnote for Generic Cleanup Criteria Tables, Footnote E
(3) EGLE Site-Specific Volatilization to Indoor Air Criteria (VIAC) for M1 Concourse Phase 4 - Building 16, March 2020.
(4) A hardness of 300 mg/L and pH of 7.4 was assumed, where required, to calculate Site-specific Groundwater Surface Water Interface (GSI) Criteria . Hardness and pH were approximated using EGLE's Water Chemistry Monitoring Program Report, dated November 2019. Calculated utilizing EGLE's "Footnote (G) GSI/GSIIPC Calculation" spreadsheet, dated June 25, 2018.

Acceptable Air Values (AAV) endpoint basis used for SSVIAC: (ca) = Carcinogenetic; (nc) = Non-Carcinogenetic; (dev) = Developmental; (mut) = Mutagenic cancer; (st) = Short-term (i.e., less than chronic exposure).

(DD) - Hazardous substance causes developmental effects. Residential SSVIAC are protective of both prenatal exposure using a pregnant female receptor and postnatal exposure using a child receptor. Nonresidential SSVIAC are protective of prenatal exposure using a pregnant female receptor. Prenatal developmental effects may occur after an acute (i.e. short-term) or full-term exposure.

(EE) - The acceptable air concentration (AAC) for the volatile hazardous substances is not derived using standard methods. The hazardous substance may cause adverse human health effects for less than chronic exposures (i.e. short-term or acute). The AAC for these hazardous substances is the acute or intermediate minimum risk level (MRL) developed by the Agency for Toxic Substances and Disease Registry (ATSDR), a United States Environmental

(MM) - Hazardous substance is a carcinogen with a mutagenic mode of action. The cancer potency values used in calculating health-based SSVIAC are modified using age-dependent adjustment factors for those carcinogenic chemicals identified as mutagenic.

U - Not detected at the associated reporting limit.
J - Estimated concentration.
NLV - means hazardous substance is not likely to volatilize under most conditions.
ID - means insufficient data to develop criterion.
- Indicates concentration exceeded criteria

Table 5

Historical Analytical Comparison
Abandoned Monitoring Well to Reinstalled Monitoring Wells
Racer PCC Validaton
Pontiac, Michigan

Sample Location: Sample ID: Sample Date:		MW-48-07 GW-17322-040808-CB-006 04/08/2008	MW-48-07 GW-17322-040808-CB-007 04/08/2008 Duplicate	MW-48-07 GW-17322-020113-DR-019 02/01/2013	MW-48-07 GW-17322-040615-DN-001 04/06/2015	MW-48-22R GW-11223416-042222-SK-023 04/22/2022	MW-48-22R GW-11223416-071322-SK-005 07/13/2022	MW-48-22R GW-11223416-101022-SK-004 10/10/2022	MW-48-22R GW-11223416-041023-SK-003 04/10/2023	MW-74-08 GW-17322-040708-CB-004 04/07/2008	MW-74-08 GW-17322-082812-DD-041 08/28/2012
Parameters	Units										
Benzo(a)pyrene	mg/L	0.0002 U	0.0002 U	0.001 U	-	-	-	-	-	0.0033	0.005 U
Benzo(b)fluoranthene	mg/L	0.0002 U	0.0002 U	0.001 U	-	-	-	-	-	0.0041	0.005 U
Benzo(g,h,i)perylene	mg/L	0.0002 U	0.0002 U	0.001 U	-	-	-	-	-	0.0022	0.005 U
Benzo(k)fluoranthene	mg/L	0.0002 U	0.0002 U	0.001 U	-	-	-	-	-	0.0017	0.005 U
Biphenyl (1,1-Biphenyl)	mg/L	0.001 U	0.001 U	0.005 U	-	-	-	-	-	0.0018 U	0.005 U
bis(2-Chloroethoxy)methane	mg/L	0.001 U	0.001 U	0.005 U	-	-	-	-	-	0.0018 U	0.005 U
bis(2-Chloroethyl)ether	mg/L	0.001 U	0.001 U	0.001 U	-	-	-	-	-	0.0018 U	0.005 U
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	0.001 U	0.001 U	0.005 U	-	-	-	-	-	0.0009 J	0.005 U
Butyl benzylphthalate (BBP)	mg/L	0.001 U	0.001 U	0.005 U	-	-	-	-	-	0.0018 U	0.005 U
Caprolactam	mg/L	0.005 UJ	0.005 UJ	0.01 U	-	-	-	-	-	0.009 UJ	0.01 U
Carbazole	mg/L	0.001 U	0.001 U	0.01 U	-	-	-	-	-	0.00097 J	0.01 U
Chrysene	mg/L	0.0002 U	0.0002 U	0.001 U	-	-	-	-	-	0.0033	0.005 U
Dibenz(a,h)anthracene	mg/L	0.0002 U	0.0002 U	0.002 U	-	-	-	-	-	0.00061	0.005 U
Dibenzofuran	mg/L	0.001 U	0.001 U	0.004 U	-	-	-	-	-	0.0018 U	0.005 U
Diethyl phthalate	mg/L	0.001 U	0.001 U	0.005 U	-	-	-	-	-	0.0018 U	0.02 U
Dimethyl phthalate	mg/L	0.001 U	0.001 U	0.005 U	-	-	-	-	-	0.0018 U	0.02 U
Di-n-butylphthalate (DBP)	mg/L	0.001 U	0.001 U	0.005 U	-	-	-	-	-	0.00073 J	0.005 U
Di-n-octyl phthalate (DnOP)	mg/L	0.001 U	0.001 U	0.005 U	-	-	-	-	-	0.0018 U	0.005 U
Fluoranthene	mg/L	0.00024	0.0002 U	0.001 U	-	-	-	-	-	0.0084	0.005 U
Fluorene	mg/L	0.0002 U	0.0002 U	0.005 U	-	-	-	-	-	0.00072	0.005 U
Hexachlorobenzene	mg/L	0.0002 U	0.0002 U	0.001 U	-	-	-	-	-	0.00036 U	0.005 U
Hexachlorobutadiene	mg/L	0.001 U	0.001 U	0.001 U	-	-	-	-	-	0.0018 U	0.005 U
Hexachlorocyclopentadiene	mg/L	0.005 U	0.005 U	0.005 U	-	-	-	-	-	0.009 U	0.02 U
Hexachloroethane	mg/L	0.001 U	0.001 U	0.005 U	-	-	-	-	-	0.0018 U	0.005 U
Indeno(1,2,3-cd)pyrene	mg/L	0.0002 U	0.0002 U	0.002 U	-	-	-	-	-	0.002	0.005 U
Isophorone	mg/L	0.001 U	0.001 U	0.005 U	-	-	-	-	-	0.0018 U	0.005 U
Naphthalene	mg/L	0.0002 U	0.0002 U	0.005 U	-	-	-	-	-	0.00036 U	0.005 U
Nitrobenzene	mg/L	0.001 U	0.001 U	0.003 U	-	-	-	-	-	0.0018 U	0.005 U
N-Nitrosodi-n-propylamine	mg/L	0.001 U	0.001 U	0.005 U	-	-	-	-	-	0.0018 U	0.005 U
N-Nitrosodiphenylamine	mg/L	0.001 U	0.001 U	0.005 U	-	-	-	-	-	0.0018 U	0.005 U
Pentachlorophenol	mg/L	0.005 U	0.005 U	0.001 U	-	-	-	-	-	0.009 U	0.02 U
Phenanthrene	mg/L	0.0002 U	0.0002 U	0.002 U	-	-	-	-	-	0.0058	0.005 U
Phenol	mg/L	0.001 U	0.001 U	0.005 U	-	-	-	-	-	0.0018 U	0.005 U
Pyrene	mg/L	0.0002 U	0.0002 U	0.005 U	-	-	-	-	-	0.0063	0.005 U
Pyridine	mg/L	0.001 U	0.001 U	-	-	-	-	-	-	0.0018 U	-
VOAs											
1,1,1-Trichloroethane	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	1	0.75
1,1,2,2-Tetrachloroethane	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.077 U	0.005 U
1,1,2-Trichloroethane	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.077 U	0.005 U
1,1-Dichloroethane	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.23	0.054
1,1-Dichloroethene	mg/L	0.00065 J	0.00065 J	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.057 J	0.018
1,2,4-Trichlorobenzene	mg/L	0.005 U	0.005 U	0.005 U	0.005 UJ	0.001 U	0.001 U	0.001 U	0.001 U	0.38 U	0.025 U
1,2,4-Trimethylbenzene	mg/L	0.001 U	0.001 U	-	-	-	-	-	-	0.077 U	-
1,2-Dibromo-3-chloropropane (DBCP)	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.002 U	0.002 U	0.002 U	0.002 U	0.077 U	0.005 U
1,2-Dibromoethane (Ethylene dibromide)	mg/L	0.001 U	0.001 U	0.001 U	0.001 UJ	0.001 U	0.001 U	0.001 U	0.001 U	0.077 U	0.005 U
1,2-Dichlorobenzene	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.077 U	0.005 U
1,2-Dichloroethane	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.077 U	0.005 U
1,2-Dichloropropane	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.077 U	0.005 U
1,3,5-Trimethylbenzene	mg/L	0.001 U	0.001 U	-	-	-	-	-	-	0.077 U	-
1,3-Dichlorobenzene	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.077 U	0.005 U
1,4-Dichlorobenzene	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.077 U	0.005 U
1,4-Dioxane	mg/L	-	-	-	-	-	-	-	-	-	-
2-Butanone (Methyl ethyl ketone) (MEK)	mg/L	0.025 U	0.00074 J	0.025 U	0.025 UJ	0.01 U	0.01 U	0.01 U	0.01 U	1.9 U	0.12 U
2-Hexanone	mg/L	0.05 U	0.05 U	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.01 U	3.8 U	0.25 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	mg/L	0.05 U	0.05 U	0.05 U	0.05 U	0.01 U	0.01 U	0.01 U	0.01 U	3.8 U	0.25 U
Acetone	mg/L	0.025 U	0.025 UJ	0.05 U	0.05 UJ	0.01 U	0.01 U	0.01 U	0.01 U	1.9 UJ	0.25 U
Benzene	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.077 U	0.005 U
Bromodichloromethane	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.077 U	0.005 U
Bromoform	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.077 U	0.005 U
Bromomethane (Methyl bromide)	mg/L	0.001 U	0.001 UJ	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.077 U	0.025 U
Carbon disulfide	mg/L	0.005 U	0.005 U	0.005 U	0.005 U	0.001 U	0.0009 J	0.001 U	0.001 U	0.38 U	0.025 U
Carbon tetrachloride	mg/L	0.001 U	0.001 U	0.001 UJ	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.077 U	0.005 U
Chlorobenzene	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.077 U	0.005 U
Chloroethane	mg/L	0.001 U	0.001 UJ	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.077 UJ	0.025 U
Chloroform (Trichloromethane)	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.017 J	0.0072
Chloromethane (Methyl chloride)	mg/L	0.001 U	0.001 U	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.077 UJ	0.025 U
cis-1,2-Dichloroethene	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.076 J	0.026
cis-1,3-Dichloropropene	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.077 UJ	0.005 U
Cyclohexane	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.077 U	0.005 U
Dibromochloromethane	mg/L	0.001 U	0.001 U	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.077 U	0.025 U
Dichlorodifluoromethane (CFC-12)	mg/L	0.001 U	0.001 U	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.077 U	0.025 U
Ethylbenzene	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.077 U	0.005 U
Isopropyl benzene	mg/L	0.005 U	0.005 U	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.38 U	0.025 U
Methyl acetate	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.77 U	0.05 U
Methyl cyclohexane	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.077 U	0.005 U
Methyl tert butyl ether (MTBE)	mg/L	0.005 U	0.005 U	0.005 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.38 U	0.025 U
Methylene chloride	mg/L	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.38 U	0.025 U
Styrene	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.077 U	0.005 U
Tetrachloroethene	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.077 UJ	0.005 U
Toluene	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.077 U	0.005 U
trans-1,2-Dichloroethene	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.077 U	0.005 U
trans-1,3-Dichloropropene	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.077 UJ	0.005 U
Trichloroethene	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	2.1	2.1

Table 5
Historical Analytical Comparison
Abandoned Monitoring Well to Reinstalled Monitoring Wells
Racer PCC Validaton
Pontiac, Michigan

Sample Location:	MW-48-07	MW-48-07	MW-48-07	MW-48-07	MW-48-22R	MW-48-22R	MW-48-22R	MW-48-22R	MW-74-08	MW-74-08
Sample ID:	GW-17322-040808-CB-006	GW-17322-040808-CB-007	GW-17322-020113-DR-019	GW-17322-040615-DN-001	GW-11223416-042222-SK-023	GW-11223416-071322-SK-005	GW-11223416-101022-SK-004	GW-11223416-041023-SK-003	GW-17322-040708-CB-004	GW-17322-082812-DD-041
Sample Date:	04/08/2008	04/08/2008 Duplicate	02/01/2013	04/06/2015	04/22/2022	07/13/2022	10/10/2022	04/10/2023	04/07/2008	08/28/2012
Parameters	Units									
Trichlorofluoromethane (CFC-11)	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.077 UJ	0.005 U
Trifluorotrichloroethane (CFC-113)	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.077 U	0.005 U
Vinyl chloride	mg/L	0.001 UJ	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.077 U	0.005 U
Xylenes (total)	mg/L	0.002 U	0.002 U	0.003 U	0.003 U	0.002 U	0.002 U	0.002 U	0.15 U	0.015 U
Wet										
Cyanide (amenable)	mg/L	0.0050 U	0.0050 U	-	-	-	-	-	0.014	-

Table 5

Historical Analytical Comparison
Abandoned Monitoring Well to Reinstalled Monitoring Wells
Racer PCC Validaton
Pontiac, Michigan

Sample Location: Sample ID: Sample Date:	MW-74-08 GW-17322-020113-DR-012 02/01/2013	MW-74-08 GW-17322-072914-DN-04 07/29/2014	MW-74-08 GW-17322-040615-DN-006 04/06/2015	MW-74-22R GW-11223416-042122-SK-018 04/21/2022	MW-74-22R GW-11223416-042122-SK-019 04/21/2022 Duplicate	MW-74-22R GW-11223416-071322-SK-004 07/13/2022	MW-74-22R GW-11223416-041123-SK-008 04/11/2023	MW-74D-15 GW-17322-040615-DN-005 04/06/2015	MW-74D-15 GW-17322-051315-EM-007 05/13/2015	MW-74D-22R GW-11223416-041522-SK-006 04/15/2022
Parameters	Units									
FPARAM										
Conductivity, field	mS/cm	-	-	-	-	3.222	5.58	-	-	-
Conductivity, field	umhos/cm	-	-	-	-	-	-	-	-	-
Dissolved oxygen (DO), field	mg/L	-	-	-	-	2.61	7.96	-	-	-
Oxidation reduction potential (ORP), field	millivolts	-	-	-	-	92.6	-36.5	-	-	-
pH, field	s.u.	-	-	-	-	7.25	7.07	-	-	-
Temperature, ambient	Deg F	-	-	-	-	-	-	-	-	-
Temperature, field	Deg C	-	-	-	-	-	-	-	-	-
Temperature, sample	Deg C	-	-	-	-	16.8	14	-	-	-
Turbidity, field	NTU	-	-	-	-	1.67	1.3	-	-	-
Metals										
Aluminum	mg/L	-	-	-	-	-	-	-	-	-
Antimony	mg/L	-	-	-	-	-	-	-	-	-
Arsenic	mg/L	-	-	-	-	-	-	-	-	-
Barium	mg/L	-	-	-	-	-	-	-	-	-
Beryllium	mg/L	-	-	-	-	-	-	-	-	-
Cadmium	mg/L	-	-	-	-	-	-	-	-	-
Calcium	mg/L	-	-	-	-	-	-	-	-	-
Chromium	mg/L	-	-	-	-	-	-	-	-	-
Chromium III (trivalent)	mg/L	-	-	-	-	-	-	-	-	-
Chromium VI (hexavalent)	mg/L	-	-	-	-	-	-	-	-	-
Cobalt	mg/L	-	-	-	-	-	-	-	-	-
Copper	mg/L	-	-	-	-	-	-	-	-	-
Iron	mg/L	-	-	-	-	-	-	-	-	-
Lead	mg/L	-	-	-	-	-	-	-	-	-
Magnesium	mg/L	-	-	-	-	-	-	-	-	-
Manganese	mg/L	-	-	-	-	-	-	-	-	-
Mercury	mg/L	-	-	-	-	-	-	-	-	-
Nickel	mg/L	-	-	-	-	-	-	-	-	-
Potassium	mg/L	-	-	-	-	-	-	-	-	-
Selenium	mg/L	-	-	-	-	-	-	-	-	-
Silver	mg/L	-	-	-	-	-	-	-	-	-
Sodium	mg/L	-	-	-	-	-	-	-	-	-
Thallium	mg/L	-	-	-	-	-	-	-	-	-
Vanadium	mg/L	-	-	-	-	-	-	-	-	-
Zinc	mg/L	-	-	-	-	-	-	-	-	-
PCBs										
Aroclor-1016 (PCB-1016)	mg/L	-	-	-	-	-	-	-	-	-
Aroclor-1221 (PCB-1221)	mg/L	-	-	-	-	-	-	-	-	-
Aroclor-1232 (PCB-1232)	mg/L	-	-	-	-	-	-	-	-	-
Aroclor-1242 (PCB-1242)	mg/L	-	-	-	-	-	-	-	-	-
Aroclor-1248 (PCB-1248)	mg/L	-	-	-	-	-	-	-	-	-
Aroclor-1254 (PCB-1254)	mg/L	-	-	-	-	-	-	-	-	-
Aroclor-1260 (PCB-1260)	mg/L	-	-	-	-	-	-	-	-	-
Total PCBs	mg/L	-	-	-	-	-	-	-	-	-
SVOAs										
1,4-Dioxane	mg/L	-	-	-	0.001 U	-	-	-	-	-
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	mg/L	0.005 U	-	-	-	-	-	-	-	-
2,4,5-Trichlorophenol	mg/L	0.005 U	-	-	-	-	-	-	-	-
2,4,6-Trichlorophenol	mg/L	0.004 U	-	-	-	-	-	-	-	-
2,4-Dichlorophenol	mg/L	0.01 U	-	-	-	-	-	-	-	-
2,4-Dimethylphenol	mg/L	0.005 U	-	-	-	-	-	-	-	-
2,4-Dinitrophenol	mg/L	0.005 U	-	-	-	-	-	-	-	-
2,4-Dinitrotoluene	mg/L	0.005 U	-	-	-	-	-	-	-	-
2,6-Dinitrotoluene	mg/L	0.005 U	-	-	-	-	-	-	-	-
2-Chloronaphthalene	mg/L	0.005 U	-	-	-	-	-	-	-	-
2-Chlorophenol	mg/L	0.005 U	-	-	-	-	-	-	-	-
2-Methylnaphthalene	mg/L	0.005 U	-	-	-	-	-	-	-	-
2-Methylphenol	mg/L	0.005 U	-	-	-	-	-	-	-	-
2-Nitroaniline	mg/L	0.02 U	-	-	-	-	-	-	-	-
2-Nitrophenol	mg/L	0.005 U	-	-	-	-	-	-	-	-
3,3'-Dichlorobenzidine	mg/L	0.001 U	-	-	-	-	-	-	-	-
3-Nitroaniline	mg/L	0.02 U	-	-	-	-	-	-	-	-
4,6-Dinitro-2-methylphenol	mg/L	0.02 U	-	-	-	-	-	-	-	-
4-Bromophenyl phenyl ether	mg/L	0.005 U	-	-	-	-	-	-	-	-
4-Chloro-3-methylphenol	mg/L	0.005 U	-	-	-	-	-	-	-	-
4-Chloroaniline	mg/L	0.01 U	-	-	-	-	-	-	-	-
4-Chlorophenyl phenyl ether	mg/L	0.005 U	-	-	-	-	-	-	-	-
4-Methylphenol	mg/L	0.005 U	-	-	-	-	-	-	-	-
4-Nitroaniline	mg/L	0.02 U	-	-	-	-	-	-	-	-
4-Nitrophenol	mg/L	0.02 U	-	-	-	-	-	-	-	-
Acenaphthene	mg/L	0.005 U	-	-	-	-	-	-	-	-
Acenaphthylene	mg/L	0.005 U	-	-	-	-	-	-	-	-
Acetophenone	mg/L	0.001 U	-	-	-	-	-	-	-	-
Anthracene	mg/L	0.005 U	-	-	-	-	-	-	-	-
Atrazine	mg/L	0.003 U	-	-	-	-	-	-	-	-
Benzaldehyde	mg/L	0.001 U	-	-	-	-	-	-	-	-
Benzo(a)anthracene	mg/L	0.001 U	-	-	-	-	-	-	-	-

Table 5

Historical Analytical Comparison
Abandoned Monitoring Well to Reinstalled Monitoring Wells
Racer PCC Validaton
Pontiac, Michigan

Sample Location: Sample ID: Sample Date:	MW-74-08 GW-17322-020113-DR-012 02/01/2013	MW-74-08 GW-17322-072914-DN-04 07/29/2014	MW-74-08 GW-17322-040615-DN-006 04/06/2015	MW-74-22R GW-11223416-042122-SK-018 04/21/2022	MW-74-22R GW-11223416-042122-SK-019 04/21/2022 Duplicate	MW-74-22R GW-11223416-071322-SK-004 07/13/2022	MW-74-22R GW-11223416-041123-SK-008 04/11/2023	MW-74D-15 GW-17322-040615-DN-005 04/06/2015	MW-74D-15 GW-17322-051315-EM-007 05/13/2015	MW-74D-22R GW-11223416-041522-SK-006 04/15/2022
Parameters	Units									
Benzo(a)pyrene	mg/L	0.001 U	-	-	-	-	-	-	-	-
Benzo(b)fluoranthene	mg/L	0.001 U	-	-	-	-	-	-	-	-
Benzo(g,h,i)perylene	mg/L	0.001 U	-	-	-	-	-	-	-	-
Benzo(k)fluoranthene	mg/L	0.001 U	-	-	-	-	-	-	-	-
Biphenyl (1,1-Biphenyl)	mg/L	0.005 U	-	-	-	-	-	-	-	-
bis(2-Chloroethoxy)methane	mg/L	0.005 U	-	-	-	-	-	-	-	-
bis(2-Chloroethyl)ether	mg/L	0.001 U	-	-	-	-	-	-	-	-
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	0.005 U	-	-	-	-	-	-	-	-
Butyl benzylphthalate (BBP)	mg/L	0.005 U	-	-	-	-	-	-	-	-
Caprolactam	mg/L	0.01 U	-	-	-	-	-	-	-	-
Carbazole	mg/L	0.01 U	-	-	-	-	-	-	-	-
Chrysene	mg/L	0.001 U	-	-	-	-	-	-	-	-
Dibenz(a,h)anthracene	mg/L	0.002 U	-	-	-	-	-	-	-	-
Dibenzofuran	mg/L	0.004 U	-	-	-	-	-	-	-	-
Diethyl phthalate	mg/L	0.005 U	-	-	-	-	-	-	-	-
Dimethyl phthalate	mg/L	0.005 U	-	-	-	-	-	-	-	-
Di-n-butylphthalate (DBP)	mg/L	0.005 U	-	-	-	-	-	-	-	-
Di-n-octyl phthalate (DnOP)	mg/L	0.005 U	-	-	-	-	-	-	-	-
Fluoranthene	mg/L	0.001 U	-	-	-	-	-	-	-	-
Fluorene	mg/L	0.005 U	-	-	-	-	-	-	-	-
Hexachlorobenzene	mg/L	0.001 U	-	-	-	-	-	-	-	-
Hexachlorobutadiene	mg/L	0.001 U	-	-	-	-	-	-	-	-
Hexachlorocyclopentadiene	mg/L	0.005 U	-	-	-	-	-	-	-	-
Hexachloroethane	mg/L	0.005 U	-	-	-	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	mg/L	0.002 U	-	-	-	-	-	-	-	-
Isophorone	mg/L	0.005 U	-	-	-	-	-	-	-	-
Naphthalene	mg/L	0.005 U	-	-	-	-	-	-	-	-
Nitrobenzene	mg/L	0.003 U	-	-	-	-	-	-	-	-
N-Nitrosodi-n-propylamine	mg/L	0.005 U	-	-	-	-	-	-	-	-
N-Nitrosodiphenylamine	mg/L	0.005 U	-	-	-	-	-	-	-	-
Pentachlorophenol	mg/L	0.001 U	-	-	-	-	-	-	-	-
Phenanthrene	mg/L	0.002 U	-	-	-	-	-	-	-	-
Phenol	mg/L	0.005 U	-	-	-	-	-	-	-	-
Pyrene	mg/L	0.005 U	-	-	-	-	-	-	-	-
Pyridine	mg/L	-	-	-	-	-	-	-	-	-
VOAs										
1,1,1-Trichloroethane	mg/L	0.25	0.11	0.32	0.015	0.011	0.016	0.014	0.001 U	0.001 U
1,1,2,2-Tetrachloroethane	mg/L	0.001 U	0.001 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1,2-Trichloroethane	mg/L	0.001 U	0.001 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1-Dichloroethane	mg/L	0.03 J	0.005	0.026	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,1-Dichloroethene	mg/L	0.017 J	0.0016	0.014	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2,4-Trichlorobenzene	mg/L	0.005 U	0.005 U	0.025 U	0.001 U	0.001 U	0.001 U	0.005 U	0.005 U	0.001 U
1,2,4-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	-	-
1,2-Dibromo-3-chloropropane (DBCP)	mg/L	0.001 U	0.001 U	0.005 U	0.002 U	0.002 U	0.002 U	0.001 U	0.001 U	0.002 U
1,2-Dibromoethane (Ethylene dibromide)	mg/L	0.001 U	0.001 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichlorobenzene	mg/L	0.001 U	0.001 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichloroethane	mg/L	0.001 U	0.001 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,2-Dichloropropane	mg/L	0.001 U	0.001 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,3,5-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	-	-
1,3-Dichlorobenzene	mg/L	0.001 U	0.001 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,4-Dichlorobenzene	mg/L	0.001 U	0.001 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
1,4-Dioxane	mg/L	-	0.12 UJ	-	-	-	-	-	-	-
2-Butanone (Methyl ethyl ketone) (MEK)	mg/L	0.025 U	0.025 UJ	0.12 U	0.01 U	0.01 U	0.01 U	0.01 U	0.025 UJ	0.025 U
2-Hexanone	mg/L	0.05 U	0.05 U	0.25 U	0.01 U	0.01 U	0.01 U	0.01 U	0.05 UJ	0.05 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	mg/L	0.05 U	0.05 U	0.25 U	0.01 U	0.01 U	0.01 U	0.01 U	0.05 U	0.01 U
Acetone	mg/L	0.05 U	0.05 U	0.25 U	0.01 U	0.01 U	0.01 U	0.01 U	0.05 UJ	0.05 U
Benzene	mg/L	0.001 U	0.001 U	0.0034 J	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Bromodichloromethane	mg/L	0.001 U	0.001 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Bromoform	mg/L	0.001 U	0.001 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Bromomethane (Methyl bromide)	mg/L	0.005 U	0.005 U	0.025 U	0.001 U	0.001 U	0.001 U	0.005 U	0.005 U	0.001 U
Carbon disulfide	mg/L	0.005 U	0.005 U	0.025 U	0.001 U	0.001 U	0.001 U	0.005 U	0.001 J	0.001 U
Carbon tetrachloride	mg/L	0.001 UJ	0.001 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chlorobenzene	mg/L	0.001 U	0.001 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chloroethane	mg/L	0.005 U	0.005 U	0.025 U	0.001 U	0.001 U	0.001 U	0.005 U	0.005 U	0.001 U
Chloroform (Trichloromethane)	mg/L	0.0055 J	0.0024	0.0044 J	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Chloromethane (Methyl chloride)	mg/L	0.005 U	0.005 U	0.025 U	0.001 U	0.001 U	0.001 U	0.005 U	0.005 U	0.001 U
cis-1,2-Dichloroethene	mg/L	0.013 J	0.0021	0.012	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
cis-1,3-Dichloropropene	mg/L	0.001 U	0.001 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Cyclohexane	mg/L	0.001 U	0.001 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Dibromochloromethane	mg/L	0.005 U	0.005 U	0.025 U	0.001 U	0.001 U	0.001 U	0.005 U	0.005 U	0.001 U
Dichlorodifluoromethane (CFC-12)	mg/L	0.005 U	0.005 U	0.025 U	0.001 U	0.001 U	0.001 U	0.005 U	0.005 U	0.001 U
Ethylbenzene	mg/L	0.001 U	0.001 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Isopropyl benzene	mg/L	0.005 U	0.005 U	0.025 U	0.001 U	0.005 U	0.001 U	0.005 U	0.005 U	0.001 U
Methyl acetate	mg/L	0.01 U	0.01 U	0.05 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Methyl cyclohexane	mg/L	0.001 U	0.001 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Methyl tert butyl ether (MTBE)	mg/L	0.005 U	0.005 U	0.025 U	0.001 U	0.001 U	0.001 U	0.005 U	0.005 U	0.001 U
Methylene chloride	mg/L	0.005 U	0.005 U	0.025 U	0.005 U	0.005 U	0.005 U	0.005 UJ	0.005 U	0.005 U
Styrene	mg/L	0.001 U	0.001 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Tetrachloroethene	mg/L	0.001 U	0.001 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Toluene	mg/L	0.001 U	0.001 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
trans-1,2-Dichloroethene	mg/L	0.001 U	0.001 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
trans-1,3-Dichloropropene	mg/L	0.001 U	0.001 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Trichloroethene	mg/L	0.75	0.3	1.1	0.044	0.034	0.044	0.04	0.001 U	0.00057 J

Table 5

Historical Analytical Comparison
Abandoned Monitoring Well to Reinstalled Monitoring Wells
Racer PCC Validaton
Pontiac, Michigan

Sample Location:	MW-74-08	MW-74-08	MW-74-08	MW-74-22R	MW-74-22R	MW-74-22R	MW-74-22R	MW-74D-15	MW-74D-15	MW-74D-22R
Sample ID:	GW-17322-020113-DR-012	GW-17322-072914-DN-04	GW-17322-040615-DN-006	GW-11223416-042122-SK-018	GW-11223416-042122-SK-019	GW-11223416-071322-SK-004	GW-11223416-041123-SK-008	GW-17322-040615-DN-005	GW-17322-051315-EM-007	GW-11223416-041522-SK-006
Sample Date:	02/01/2013	07/29/2014	04/06/2015	04/21/2022	04/21/2022 Duplicate	07/13/2022	04/11/2023	04/06/2015	05/13/2015	04/15/2022
Parameters	Units									
Trichlorofluoromethane (CFC-11)	mg/L	0.001 U	0.001 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Trifluorotrichloroethane (CFC-113)	mg/L	0.001 U	0.001 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Vinyl chloride	mg/L	0.001 U	0.001 U	0.005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U
Xylenes (total)	mg/L	0.003 U	0.003 U	0.015 U	0.002 U	0.002 U	0.002 U	0.003 U	0.003 U	0.002 U
Wet										
Cyanide (amenable)	mg/L	-	-	-	-	-	-	-	-	-

Table 5
Historical Analytical Comparison
Abandoned Monitoring Well to Reinstalled Monitoring Wells
Racer PCC Validaton
Pontiac, Michigan

Sample Location: Sample ID: Sample Date:		MW-74D-22R GW-11223416-071322-SK-002 07/13/2022	MW-74D-22R GW-11223416-071322-SK-003 07/13/2022 Duplicate	MW-74D-22R GW-11223416-101022-SK-001 10/10/2022	MW-74D-22R GW-11223416-101022-SK-002 10/10/2022 Duplicate	MW-74D-22R GW-11223416-041123-SK-010 04/11/2023	MW-88-12 GW-17322-082912-DD-044 08/29/2012	MW-88-12 GW-17322-020113-DR-015 02/01/2013	MW-88-12 GW-17322-040715-DN-023 04/07/2015	MW-88-22R GW-11223416-042222-SK-022 04/22/2022
Parameters	Units									
FPARAM										
Conductivity, field	mS/cm	5.61	5.61	4.678	4.678	3.81	-	-	-	-
Conductivity, field	umhos/cm	-	-	-	-	-	-	-	-	-
Dissolved oxygen (DO), field	mg/L	0.63	0.63	0.09	0.09	3.76	-	-	-	-
Oxidation reduction potential (ORP), field	millivolts	-70.6	-70.6	21.8	21.8	-83.7	-	-	-	-
pH, field	s.u.	7.09	7.09	5.39	5.39	7.23	-	-	-	-
Temperature, ambient	Deg F	-	-	-	-	-	-	-	-	-
Temperature, field	Deg C	-	-	-	-	-	-	-	-	-
Temperature, sample	Deg C	18.3	18.3	14.4	14.4	17.4	-	-	-	-
Turbidity, field	NTU	6.6	6.6	4.24	4.24	9.16	-	-	-	-
Metals										
Aluminum	mg/L	-	-	-	-	-	0.043	-	-	-
Antimony	mg/L	-	-	-	-	-	0.000098 J	-	-	-
Arsenic	mg/L	-	-	-	-	-	0.012	-	-	-
Barium	mg/L	-	-	-	-	-	0.085	-	-	-
Beryllium	mg/L	-	-	-	-	-	0.0020 U	-	-	-
Cadmium	mg/L	-	-	-	-	-	0.00011 J	-	-	-
Calcium	mg/L	-	-	-	-	-	-	-	-	-
Chromium	mg/L	-	-	-	-	-	0.0050 U	-	-	-
Chromium III (trivalent)	mg/L	-	-	-	-	-	-	-	-	-
Chromium VI (hexavalent)	mg/L	-	-	-	-	-	-	-	-	-
Cobalt	mg/L	-	-	-	-	-	0.0015 J	-	-	-
Copper	mg/L	-	-	-	-	-	0.0021 J	-	-	-
Iron	mg/L	-	-	-	-	-	2.6	-	-	-
Lead	mg/L	-	-	-	-	-	0.00011 J	-	-	-
Magnesium	mg/L	-	-	-	-	-	-	-	-	-
Manganese	mg/L	-	-	-	-	-	0.093	-	-	-
Mercury	mg/L	-	-	-	-	-	0.00020 U	-	-	-
Nickel	mg/L	-	-	-	-	-	0.011	-	-	-
Potassium	mg/L	-	-	-	-	-	-	-	-	-
Selenium	mg/L	-	-	-	-	-	0.0050 U	-	-	-
Silver	mg/L	-	-	-	-	-	0.0050 U	-	-	-
Sodium	mg/L	-	-	-	-	-	-	-	-	-
Thallium	mg/L	-	-	-	-	-	0.00036 J	-	-	-
Vanadium	mg/L	-	-	-	-	-	0.0050 U	-	-	-
Zinc	mg/L	-	-	-	-	-	0.010 U	-	-	-
PCBs										
Aroclor-1016 (PCB-1016)	mg/L	-	-	-	-	-	0.00025 U	0.0002 U	-	-
Aroclor-1221 (PCB-1221)	mg/L	-	-	-	-	-	0.00025 U	0.0002 U	-	-
Aroclor-1232 (PCB-1232)	mg/L	-	-	-	-	-	0.00025 U	0.0002 U	-	-
Aroclor-1242 (PCB-1242)	mg/L	-	-	-	-	-	0.00025 U	0.0002 U	-	-
Aroclor-1248 (PCB-1248)	mg/L	-	-	-	-	-	0.00025 U	0.0002 U	-	-
Aroclor-1254 (PCB-1254)	mg/L	-	-	-	-	-	0.00025 U	0.0002 U	-	-
Aroclor-1260 (PCB-1260)	mg/L	-	-	-	-	-	0.00025 U	0.0002 U	-	-
Total PCBs	mg/L	-	-	-	-	-	0.00025 U	0.0002 U	-	-
SVOAs										
1,4-Dioxane	mg/L	-	-	-	-	-	-	-	-	-
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	mg/L	-	-	-	-	-	0.005 U	0.005 U	-	-
2,4,5-Trichlorophenol	mg/L	-	-	-	-	-	0.005 U	0.005 U	-	-
2,4,6-Trichlorophenol	mg/L	-	-	-	-	-	0.005 U	0.004 U	-	-
2,4-Dichlorophenol	mg/L	-	-	-	-	-	0.01 U	0.01 U	-	-
2,4-Dimethylphenol	mg/L	-	-	-	-	-	0.005 U	0.005 U	-	-
2,4-Dinitrophenol	mg/L	-	-	-	-	-	0.005 U	0.005 U	-	-
2,4-Dinitrotoluene	mg/L	-	-	-	-	-	0.005 U	0.005 U	-	-
2,6-Dinitrotoluene	mg/L	-	-	-	-	-	0.005 U	0.005 U	-	-
2-Chloronaphthalene	mg/L	-	-	-	-	-	0.005 U	0.005 U	-	-
2-Chlorophenol	mg/L	-	-	-	-	-	0.005 U	0.005 U	-	-
2-Methylnaphthalene	mg/L	-	-	-	-	-	0.029	0.058	-	-
2-Methylphenol	mg/L	-	-	-	-	-	0.005 U	0.005 U	-	-
2-Nitroaniline	mg/L	-	-	-	-	-	0.02 U	0.02 U	-	-
2-Nitrophenol	mg/L	-	-	-	-	-	0.005 U	0.005 U	-	-
3,3'-Dichlorobenzidine	mg/L	-	-	-	-	-	0.005 U	0.001 U	-	-
3-Nitroaniline	mg/L	-	-	-	-	-	0.02 U	0.02 U	-	-
4,6-Dinitro-2-methylphenol	mg/L	-	-	-	-	-	0.02 U	0.02 U	-	-
4-Bromophenyl phenyl ether	mg/L	-	-	-	-	-	0.005 U	0.005 U	-	-
4-Chloro-3-methylphenol	mg/L	-	-	-	-	-	0.005 U	0.005 U	-	-
4-Chloroaniline	mg/L	-	-	-	-	-	0.02 U	0.01 U	-	-
4-Chlorophenyl phenyl ether	mg/L	-	-	-	-	-	0.005 U	0.005 U	-	-
4-Methylphenol	mg/L	-	-	-	-	-	0.005 U	0.005 U	-	-
4-Nitroaniline	mg/L	-	-	-	-	-	0.02 U	0.02 U	-	-
4-Nitrophenol	mg/L	-	-	-	-	-	0.02 U	0.02 U	-	-
Acenaphthene	mg/L	-	-	-	-	-	0.005 U	0.005 U	-	-
Acenaphthylene	mg/L	-	-	-	-	-	0.005 U	0.005 U	-	-
Acetophenone	mg/L	-	-	-	-	-	0.001 U	0.001 U	-	-
Anthracene	mg/L	-	-	-	-	-	0.005 U	0.005 U	-	-
Atrazine	mg/L	-	-	-	-	-	0.01 U	0.003 U	-	-
Benzaldehyde	mg/L	-	-	-	-	-	0.001 U	0.001 U	-	-
Benzo(a)anthracene	mg/L	-	-	-	-	-	0.005 U	0.001 U	-	-

Table 5
Historical Analytical Comparison
Abandoned Monitoring Well to Reinstalled Monitoring Wells
Racer PCC Validaton
Pontiac, Michigan

Sample Location: Sample ID: Sample Date:	MW-74D-22R GW-11223416-071322-SK-002 07/13/2022	MW-74D-22R GW-11223416-071322-SK-003 07/13/2022 Duplicate	MW-74D-22R GW-11223416-101022-SK-001 10/10/2022	MW-74D-22R GW-11223416-101022-SK-002 10/10/2022 Duplicate	MW-74D-22R GW-11223416-041123-SK-010 04/11/2023	MW-88-12 GW-17322-082912-DD-044 08/29/2012	MW-88-12 GW-17322-020113-DR-015 02/01/2013	MW-88-12 GW-17322-040715-DN-023 04/07/2015	MW-88-22R GW-11223416-042222-SK-022 04/22/2022
Parameters	Units								
Benzo(a)pyrene	mg/L	-	-	-	-	0.005 U	0.001 U	-	-
Benzo(b)fluoranthene	mg/L	-	-	-	-	0.005 U	0.001 U	-	-
Benzo(g,h,i)perylene	mg/L	-	-	-	-	0.005 U	0.001 U	-	-
Benzo(k)fluoranthene	mg/L	-	-	-	-	0.005 U	0.001 U	-	-
Biphenyl (1,1-Biphenyl)	mg/L	-	-	-	-	0.0022 J	0.0032 J	-	-
bis(2-Chloroethoxy)methane	mg/L	-	-	-	-	0.005 U	0.005 U	-	-
bis(2-Chloroethyl)ether	mg/L	-	-	-	-	0.005 U	0.001 U	-	-
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	-	-	-	-	0.005 U	0.005 U	-	-
Butyl benzylphthalate (BBP)	mg/L	-	-	-	-	0.005 U	0.005 U	-	-
Caprolactam	mg/L	-	-	-	-	0.01 U	0.01 U	-	-
Carbazole	mg/L	-	-	-	-	0.01 U	0.01 U	-	-
Chrysene	mg/L	-	-	-	-	0.005 U	0.001 U	-	-
Dibenz(a,h)anthracene	mg/L	-	-	-	-	0.005 U	0.002 U	-	-
Dibenzofuran	mg/L	-	-	-	-	0.005 U	0.004 U	-	-
Diethyl phthalate	mg/L	-	-	-	-	0.0014 J	0.005 U	-	-
Dimethyl phthalate	mg/L	-	-	-	-	0.02 U	0.005 U	-	-
Di-n-butylphthalate (DBP)	mg/L	-	-	-	-	0.005 U	0.005 U	-	-
Di-n-octyl phthalate (DnOP)	mg/L	-	-	-	-	0.005 U	0.005 U	-	-
Fluoranthene	mg/L	-	-	-	-	0.005 U	0.001 U	-	-
Fluorene	mg/L	-	-	-	-	0.005 U	0.005 U	-	-
Hexachlorobenzene	mg/L	-	-	-	-	0.005 U	0.001 U	-	-
Hexachlorobutadiene	mg/L	-	-	-	-	0.005 U	0.001 U	-	-
Hexachlorocyclopentadiene	mg/L	-	-	-	-	0.02 U	0.005 U	-	-
Hexachloroethane	mg/L	-	-	-	-	0.005 U	0.005 U	-	-
Indeno(1,2,3-cd)pyrene	mg/L	-	-	-	-	0.005 U	0.002 U	-	-
Isophorone	mg/L	-	-	-	-	0.005 U	0.005 U	-	-
Naphthalene	mg/L	-	-	-	-	0.024	0.058	-	-
Nitrobenzene	mg/L	-	-	-	-	0.005 U	0.003 U	-	-
N-Nitrosodi-n-propylamine	mg/L	-	-	-	-	0.005 U	0.005 U	-	-
N-Nitrosodiphenylamine	mg/L	-	-	-	-	0.005 U	0.005 U	-	-
Pentachlorophenol	mg/L	-	-	-	-	0.02 U	0.001 U	-	-
Phenanthrene	mg/L	-	-	-	-	0.005 U	0.002 U	-	-
Phenol	mg/L	-	-	-	-	0.005 U	0.005 U	-	-
Pyrene	mg/L	-	-	-	-	0.005 U	0.005 U	-	-
Pyridine	mg/L	-	-	-	-	-	-	-	-
VOAs									
1,1,1-Trichloroethane	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	-	0.001 U	0.001 U
1,1,2,2-Tetrachloroethane	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	-	0.001 U	0.001 U
1,1,2-Trichloroethane	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	-	0.001 U	0.001 U
1,1-Dichloroethane	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	-	0.001 U	0.001 U
1,1-Dichloroethene	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	-	0.001 U	0.001 U
1,2,4-Trichlorobenzene	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	-	0.005 U	0.001 U
1,2,4-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	-
1,2-Dibromo-3-chloropropane (DBCP)	mg/L	0.002 U	0.002 U	0.002 U	0.002 U	0.001 U	-	0.001 U	0.002 U
1,2-Dibromoethane (Ethylene dibromide)	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	-	0.001 U	0.001 U
1,2-Dichlorobenzene	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	-	0.001 U	0.001 U
1,2-Dichloroethane	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	-	0.001 U	0.001 U
1,2-Dichloropropane	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	-	0.001 U	0.001 U
1,3,5-Trimethylbenzene	mg/L	-	-	-	-	-	-	-	-
1,3-Dichlorobenzene	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	-	0.001 U	0.001 U
1,4-Dichlorobenzene	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	-	0.001 U	0.001 U
1,4-Dioxane	mg/L	-	-	-	-	-	-	-	-
2-Butanone (Methyl ethyl ketone) (MEK)	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.025 U	-	0.025 U	0.01 U
2-Hexanone	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.05 U	-	0.05 U	0.01 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.05 U	-	0.05 U	0.01 U
Acetone	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.05 U	-	0.05 U	0.0058 J
Benzene	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	-	0.00093 J	0.001 U
Bromodichloromethane	mg/L	0.00062 J	0.00048 J	0.001 U	0.001 U	0.001 U	-	0.001 U	0.001 U
Bromoform	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	-	0.001 U	0.001 U
Bromomethane (Methyl bromide)	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	-	0.005 U	0.001 U
Carbon disulfide	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	-	0.005 U	0.001 U
Carbon tetrachloride	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	-	0.001 U	0.001 U
Chlorobenzene	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	-	0.001 U	0.001 U
Chloroethane	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	-	0.005 U	0.001 U
Chloroform (Trichloromethane)	mg/L	0.0015	0.0011	0.001 U	0.001 U	0.001 U	-	0.001 U	0.001 U
Chloromethane (Methyl chloride)	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	-	0.005 U	0.001 U
cis-1,2-Dichloroethene	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	-	0.001 U	0.001 U
cis-1,3-Dichloropropene	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	-	0.001 U	0.001 U
Cyclohexane	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	-	0.0022	0.001 U
Dibromochloromethane	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	-	0.005 U	0.001 U
Dichlorodifluoromethane (CFC-12)	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	-	0.005 U	0.001 U
Ethylbenzene	mg/L	0.0006 J	0.00049 J	0.001 U	0.001 U	0.0039	-	0.0051	0.001 U
Isopropyl benzene	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.0039 J	-	0.006	0.001 U
Methyl acetate	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	-	0.01 U	0.01 U
Methyl cyclohexane	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	-	0.0029	0.001 U
Methyl tert butyl ether (MTBE)	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.005 U	-	0.005 U	0.001 U
Methylene chloride	mg/L	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	-	0.005 U	0.005 U
Styrene	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	-	0.001 U	0.001 U
Tetrachloroethene	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	-	0.001 U	0.001 U
Toluene	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	-	0.001 U	0.001 U
trans-1,2-Dichloroethene	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	-	0.001 U	0.001 U
trans-1,3-Dichloropropene	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	-	0.001 U	0.001 U
Trichloroethene	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	-	0.001 U	0.001 U

Table 5
Historical Analytical Comparison
Abandoned Monitoring Well to Reinstalled Monitoring Wells
Racer PCC Validaton
Pontiac, Michigan

Sample Location:	MW-74D-22R	MW-74D-22R	MW-74D-22R	MW-74D-22R	MW-74D-22R	MW-88-12	MW-88-12	MW-88-12	MW-88-22R
Sample ID:	GW-11223416-071322-SK-002	GW-11223416-071322-SK-003	GW-11223416-101022-SK-001	GW-11223416-101022-SK-002	GW-11223416-041123-SK-010	GW-17322-082912-DD-044	GW-17322-020113-DR-015	GW-17322-040715-DN-023	GW-11223416-042222-SK-022
Sample Date:	07/13/2022	07/13/2022 Duplicate	10/10/2022	10/10/2022 Duplicate	04/11/2023	08/29/2012	02/01/2013	04/07/2015	04/22/2022
Parameters	Units								
Trichlorofluoromethane (CFC-11)	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	-	0.001 U	0.001 U
Trifluorotrichloroethane (CFC-113)	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	-	0.001 U	0.001 U
Vinyl chloride	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	-	0.001 U	0.001 U
Xylenes (total)	mg/L	0.002 U	0.002 U	0.002 U	0.002 U	0.003 U	-	0.003 U	0.002 U
Wet									
Cyanide (amenable)	mg/L	-	-	-	-	-	-	-	-

Table 5

Historical Analytical Comparison
Abandoned Monitoring Well to Reinstalled Monitoring Wells
Racer PCC Validaton
Pontiac, Michigan

Sample Location: Sample ID: Sample Date:	MW-88-22R GW-11223416-071322-SK-001 07/13/2022	MW-88-22R GW-11223416-101022-SK-003 10/10/2022	MW-90-12 GW-17322-120712-CT-029 12/07/2012	MW-90-12 GW-17322-020113-DR-014 02/01/2013	MW-90-12 GW-17322-072914-DN-05 07/29/2014	MW-90-12 GW-17322-040715-DN-016 04/07/2015	MW-90-22R ¹ 4/15/2022	MW-94-22R ² 4/15/2022
Parameters	Units							
FPARAM								
Conductivity, field	mS/cm	2.392	2.387	-	-	-	-	-
Conductivity, field	umhos/cm	-	-	-	-	-	-	-
Dissolved oxygen (DO), field	mg/L	0.22	0.22	-	-	-	-	-
Oxidation reduction potential (ORP), field	millivolts	-75.2	-80.2	-	-	-	-	-
pH, field	s.u.	6.89	7.26	-	-	-	-	-
Temperature, ambient	Deg F	-	-	-	-	-	-	-
Temperature, field	Deg C	-	-	-	-	-	-	-
Temperature, sample	Deg C	16.1	16.1	-	-	-	-	-
Turbidity, field	NTU	9.65	22.6	-	-	-	-	-
Metals								
Aluminum	mg/L	-	-	-	-	-	-	-
Antimony	mg/L	-	-	-	-	-	-	-
Arsenic	mg/L	-	-	-	-	-	-	-
Barium	mg/L	-	-	-	-	-	-	-
Beryllium	mg/L	-	-	-	-	-	-	-
Cadmium	mg/L	-	-	-	-	-	-	-
Calcium	mg/L	-	-	-	-	-	-	-
Chromium	mg/L	-	-	-	-	-	-	-
Chromium III (trivalent)	mg/L	-	-	-	-	-	-	-
Chromium VI (hexavalent)	mg/L	-	-	-	-	-	-	-
Cobalt	mg/L	-	-	-	-	-	-	-
Copper	mg/L	-	-	-	-	-	-	-
Iron	mg/L	-	-	-	-	-	-	-
Lead	mg/L	-	-	-	-	-	-	-
Magnesium	mg/L	-	-	-	-	-	-	-
Manganese	mg/L	-	-	-	-	-	-	-
Mercury	mg/L	-	-	-	-	-	-	-
Nickel	mg/L	-	-	-	-	-	-	-
Potassium	mg/L	-	-	-	-	-	-	-
Selenium	mg/L	-	-	-	-	-	-	-
Silver	mg/L	-	-	-	-	-	-	-
Sodium	mg/L	-	-	-	-	-	-	-
Thallium	mg/L	-	-	-	-	-	-	-
Vanadium	mg/L	-	-	-	-	-	-	-
Zinc	mg/L	-	-	-	-	-	-	-
PCBs								
Aroclor-1016 (PCB-1016)	mg/L	-	-	-	-	-	-	-
Aroclor-1221 (PCB-1221)	mg/L	-	-	-	-	-	-	-
Aroclor-1232 (PCB-1232)	mg/L	-	-	-	-	-	-	-
Aroclor-1242 (PCB-1242)	mg/L	-	-	-	-	-	-	-
Aroclor-1248 (PCB-1248)	mg/L	-	-	-	-	-	-	-
Aroclor-1254 (PCB-1254)	mg/L	-	-	-	-	-	-	-
Aroclor-1260 (PCB-1260)	mg/L	-	-	-	-	-	-	-
Total PCBs	mg/L	-	-	-	-	-	-	-
SVOAs								
1,4-Dioxane	mg/L	-	-	-	-	-	-	-
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)	mg/L	-	-	-	0.005 U	-	-	-
2,4,5-Trichlorophenol	mg/L	-	-	-	0.005 U	-	-	-
2,4,6-Trichlorophenol	mg/L	-	-	-	0.004 U	-	-	-
2,4-Dichlorophenol	mg/L	-	-	-	0.01 U	-	-	-
2,4-Dimethylphenol	mg/L	-	-	-	0.005 U	-	-	-
2,4-Dinitrophenol	mg/L	-	-	-	0.005 U	-	-	-
2,4-Dinitrotoluene	mg/L	-	-	-	0.005 U	-	-	-
2,6-Dinitrotoluene	mg/L	-	-	-	0.005 U	-	-	-
2-Chloronaphthalene	mg/L	-	-	-	0.005 U	-	-	-
2-Chlorophenol	mg/L	-	-	-	0.005 U	-	-	-
2-Methylnaphthalene	mg/L	-	-	0.005 U	0.005 U	-	-	-
2-Methylphenol	mg/L	-	-	-	0.005 U	-	-	-
2-Nitroaniline	mg/L	-	-	-	0.02 U	-	-	-
2-Nitrophenol	mg/L	-	-	-	0.005 U	-	-	-
3,3'-Dichlorobenzidine	mg/L	-	-	-	0.001 U	-	-	-
3-Nitroaniline	mg/L	-	-	-	0.02 U	-	-	-
4,6-Dinitro-2-methylphenol	mg/L	-	-	-	0.02 U	-	-	-
4-Bromophenyl phenyl ether	mg/L	-	-	-	0.005 U	-	-	-
4-Chloro-3-methylphenol	mg/L	-	-	-	0.005 U	-	-	-
4-Chloroaniline	mg/L	-	-	-	0.01 U	-	-	-
4-Chlorophenyl phenyl ether	mg/L	-	-	-	0.005 U	-	-	-
4-Methylphenol	mg/L	-	-	-	0.005 U	-	-	-
4-Nitroaniline	mg/L	-	-	-	0.02 U	-	-	-
4-Nitrophenol	mg/L	-	-	-	0.02 U	-	-	-
Acenaphthene	mg/L	-	-	0.005 U	0.005 U	-	-	-
Acenaphthylene	mg/L	-	-	0.005 U	0.005 U	-	-	-
Acetophenone	mg/L	-	-	-	0.001 U	-	-	-
Anthracene	mg/L	-	-	0.005 U	0.005 U	-	-	-
Atrazine	mg/L	-	-	-	0.003 U	-	-	-
Benzaldehyde	mg/L	-	-	-	0.001 U	-	-	-
Benzo(a)anthracene	mg/L	-	-	0.001 U	0.001 U	-	-	-

Table 5

Historical Analytical Comparison
Abandoned Monitoring Well to Reinstalled Monitoring Wells
Racer PCC Validaton
Pontiac, Michigan

Sample Location: Sample ID: Sample Date:	MW-88-22R GW-11223416-071322-SK-001 07/13/2022	MW-88-22R GW-11223416-101022-SK-003 10/10/2022	MW-90-12 GW-17322-120712-CT-029 12/07/2012	MW-90-12 GW-17322-020113-DR-014 02/01/2013	MW-90-12 GW-17322-072914-DN-05 07/29/2014	MW-90-12 GW-17322-040715-DN-016 04/07/2015	MW-90-22R ¹ 4/15/2022	MW-94-22R ² 4/15/2022
Parameters	Units							
Benzo(a)pyrene	mg/L	-	-	0.00058 J	0.001 U	-	-	-
Benzo(b)fluoranthene	mg/L	-	-	0.00075 J	0.001 U	-	-	-
Benzo(g,h,i)perylene	mg/L	-	-	0.001 U	0.001 U	-	-	-
Benzo(k)fluoranthene	mg/L	-	-	0.001 U	0.001 U	-	-	-
Biphenyl (1,1-Biphenyl)	mg/L	-	-	-	0.005 U	-	-	-
bis(2-Chloroethoxy)methane	mg/L	-	-	-	0.005 U	-	-	-
bis(2-Chloroethyl)ether	mg/L	-	-	-	0.001 U	-	-	-
bis(2-Ethylhexyl)phthalate (DEHP)	mg/L	-	-	-	0.005 U	-	-	-
Butyl benzylphthalate (BBP)	mg/L	-	-	-	0.005 U	-	-	-
Caprolactam	mg/L	-	-	-	0.01 U	-	-	-
Carbazole	mg/L	-	-	-	0.01 U	-	-	-
Chrysene	mg/L	-	-	0.001 U	0.001 U	-	-	-
Dibenz(a,h)anthracene	mg/L	-	-	0.002 U	0.002 U	-	-	-
Dibenzofuran	mg/L	-	-	-	0.004 U	-	-	-
Diethyl phthalate	mg/L	-	-	-	0.005 U	-	-	-
Dimethyl phthalate	mg/L	-	-	-	0.005 U	-	-	-
Di-n-butylphthalate (DBP)	mg/L	-	-	-	0.005 U	-	-	-
Di-n-octyl phthalate (DnOP)	mg/L	-	-	-	0.005 U	-	-	-
Fluoranthene	mg/L	-	-	0.0012	0.001 U	-	-	-
Fluorene	mg/L	-	-	0.005 U	0.005 U	-	-	-
Hexachlorobenzene	mg/L	-	-	-	0.001 U	-	-	-
Hexachlorobutadiene	mg/L	-	-	-	0.001 U	-	-	-
Hexachlorocyclopentadiene	mg/L	-	-	-	0.005 U	-	-	-
Hexachloroethane	mg/L	-	-	-	0.005 U	-	-	-
Indeno(1,2,3-cd)pyrene	mg/L	-	-	0.005 U	0.002 U	-	-	-
Isophorone	mg/L	-	-	-	0.005 U	-	-	-
Naphthalene	mg/L	-	-	0.005 U	0.005 U	-	-	-
Nitrobenzene	mg/L	-	-	-	0.003 U	-	-	-
N-Nitrosodi-n-propylamine	mg/L	-	-	-	0.005 U	-	-	-
N-Nitrosodiphenylamine	mg/L	-	-	-	0.005 U	-	-	-
Pentachlorophenol	mg/L	-	-	-	0.001 U	-	-	-
Phenanthrene	mg/L	-	-	0.002 U	0.002 U	-	-	-
Phenol	mg/L	-	-	-	0.005 U	-	-	-
Pyrene	mg/L	-	-	0.0012 J	0.005 U	-	-	-
Pyridine	mg/L	-	-	-	-	-	-	-
VOAs								
1,1,1-Trichloroethane	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	Dry	Dry
1,1,2,2-Tetrachloroethane	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	Dry	Dry
1,1,2-Trichloroethane	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	Dry	Dry
1,1-Dichloroethane	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	Dry	Dry
1,1-Dichloroethene	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	Dry	Dry
1,2,4-Trichlorobenzene	mg/L	0.001 U	0.001 U	0.005 U	0.005 U	0.005 U	Dry	Dry
1,2,4-Trimethylbenzene	mg/L	-	-	-	-	-	Dry	Dry
1,2-Dibromo-3-chloropropane (DBCP)	mg/L	0.002 U	0.002 U	0.001 U	0.001 U	0.001 U	Dry	Dry
1,2-Dibromoethane (Ethylene dibromide)	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	Dry	Dry
1,2-Dichlorobenzene	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	Dry	Dry
1,2-Dichloroethane	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	Dry	Dry
1,2-Dichloropropane	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	Dry	Dry
1,3,5-Trimethylbenzene	mg/L	-	-	-	-	-	Dry	Dry
1,3-Dichlorobenzene	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	Dry	Dry
1,4-Dichlorobenzene	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	Dry	Dry
1,4-Dioxane	mg/L	-	-	-	-	-	Dry	Dry
2-Butanone (Methyl ethyl ketone) (MEK)	mg/L	0.01 U	0.01 U	0.025 U	0.025 U	0.025 UJ	Dry	Dry
2-Hexanone	mg/L	0.01 U	0.01 U	0.05 U	0.05 U	0.05 U	Dry	Dry
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	mg/L	0.01 U	0.01 U	0.05 U	0.05 U	0.05 U	Dry	Dry
Acetone	mg/L	0.01 U	0.01 U	0.05 U	0.05 U	0.05 U	Dry	Dry
Benzene	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	Dry	Dry
Bromodichloromethane	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	Dry	Dry
Bromoform	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	Dry	Dry
Bromomethane (Methyl bromide)	mg/L	0.001 U	0.001 U	0.005 U	0.005 U	0.005 U	Dry	Dry
Carbon disulfide	mg/L	0.001 U	0.001 U	0.005 U	0.005 U	0.005 U	Dry	Dry
Carbon tetrachloride	mg/L	0.001 U	0.001 U	0.001 U	0.001 UJ	0.001 U	Dry	Dry
Chlorobenzene	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	Dry	Dry
Chloroethane	mg/L	0.001 U	0.001 U	0.005 U	0.005 U	0.005 U	Dry	Dry
Chloroform (Trichloromethane)	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	Dry	Dry
Chloromethane (Methyl chloride)	mg/L	0.001 U	0.001 U	0.005 U	0.005 U	0.005 U	Dry	Dry
cis-1,2-Dichloroethene	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	Dry	Dry
cis-1,3-Dichloropropene	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	Dry	Dry
Cyclohexane	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	Dry	Dry
Dibromochloromethane	mg/L	0.001 U	0.001 U	0.005 U	0.005 U	0.005 U	Dry	Dry
Dichlorodifluoromethane (CFC-12)	mg/L	0.001 U	0.001 U	0.005 U	0.005 U	0.005 U	Dry	Dry
Ethylbenzene	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	Dry	Dry
Isopropyl benzene	mg/L	0.001 U	0.0007 J	0.005 U	0.005 U	0.005 U	Dry	Dry
Methyl acetate	mg/L	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	Dry	Dry
Methyl cyclohexane	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	Dry	Dry
Methyl tert butyl ether (MTBE)	mg/L	0.001 U	0.001 U	0.005 U	0.005 U	0.005 U	Dry	Dry
Methylene chloride	mg/L	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	Dry	Dry
Styrene	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	Dry	Dry
Tetrachloroethene	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	Dry	Dry
Toluene	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	Dry	Dry
trans-1,2-Dichloroethene	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	Dry	Dry
trans-1,3-Dichloropropene	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	Dry	Dry
Trichloroethene	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	Dry	Dry

Table 5
Historical Analytical Comparison
Abandoned Monitoring Well to Reinstalled Monitoring Wells
Racer PCC Validaton
Pontiac, Michigan

Sample Location:	MW-88-22R	MW-88-22R	MW-90-12	MW-90-12	MW-90-12	MW-90-12	MW-90-22R ¹	MW-94-22R ²
Sample ID:	GW-11223416-071322-SK-001	GW-11223416-101022-SK-003	GW-17322-120712-CT-029	GW-17322-020113-DR-014	GW-17322-072914-DN-05	GW-17322-040715-DN-016		
Sample Date:	07/13/2022	10/10/2022	12/07/2012	02/01/2013	07/29/2014	04/07/2015	4/15/2022	4/15/2022
Parameters	Units							
Trichlorofluoromethane (CFC-11)	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	Dry	Dry
Trifluorotrichloroethane (CFC-113)	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	Dry	Dry
Vinyl chloride	mg/L	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	Dry	Dry
Xylenes (total)	mg/L	0.002 U	0.0012 J	0.003 U	0.003 U	0.003 U	Dry	Dry
Wet								
Cyanide (amenable)	mg/L	-	-	-	-	-	-	-

Footnotes:
U - Not detected at the associated reporting limit.
J - Estimated concentration.
UJ - Not detected; associated reporting limit is estimated.
¹ Well Dry During This Event. Screened interval 945.35 to 940.35ft AMSL.
² Well Dry For Every Event. Screened interval 942.77 to 937.77 ft AMSL.

Appendices

Appendix A

Low-Flow Groundwater Sampling Field Forms

Project Data:

Date: 4-10-23

Personnel: S. Kippen

Monitoring Well Data:

Well No.: MW-85-12

Vapour PID (ppm):

Measurement Point: T.O.C.

Constructed Well Depth (m/ft):

Measured Well Depth (m/ft):

Depth of Sediment (m/ft):

Purge (start): 9:30 am

Saturated Screen Length (m/ft):

Depth to Pump Intake (m/ft)⁽¹⁾:

Well Diameter, D (cm/in):

Well Screen Volume, V_s (L)¹⁰¹:

Initial Depth to Water (m/ft):

Sample ID: GW-11223416-041023-SK-001

Sample Time: 10:25 am

Notes:

TCL - VOC's

- (1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
- (2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s = \pi \cdot (r^2) \cdot L$ in mL, where r ($r = D/2$) and L are in cm. For Imperial units, $V_s = \pi \cdot (r^2) \cdot L \cdot (2.54)^3$, where r and L are in inches
- (3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.
- (4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing). No. of Well Screen Volumes Purged = V_p/V_s .
- (5) For conductivity, the average value of three readings $< 1 \text{ mS/cm} \pm 0.005 \text{ mS/cm}$ or where conductivity $> 1 \text{ mS/cm} \pm 0.01 \text{ mS/cm}$.

Monitoring Well Record for Low-flow Purging
(Form SP-09)

Project Data:

Project Name: PCC Validation
Ref. No.: 11223416

Date: 4-10-23
Personnel: S. Kippen

Monitoring Well Data:

Well No.: MW 64-08
Vapour PID (ppm): _____
Measurement Point: T.O.C.
Constructed Well Depth (m/ft): _____
Measured Well Depth (m/ft): 15.06
Depth of Sediment (m/ft): _____

Purge (start): 10:14
Saturated Screen Length (m/ft): _____
Depth to Pump Intake (m/ft)⁽¹⁾: _____
Well Diameter, D (cm/in): 2" PVC - Flush Mt.
Well Screen Volume, V_s (L)⁽⁴⁾: _____
Initial Depth to Water (m/ft): 4.67

Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level ⁽³⁾ (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, V _p (L)	No. of Well Screen Volumes Purged ⁽⁴⁾
Precision Required ⁽⁵⁾ :				±3 %	±0.005 or 0.01 ⁽⁶⁾	±10 %	±10 %	±0.1 Units	±10 mV		
10:50	150 mL/min	8.80	↓	9.4	0.75	7.05	1.80	7.00	4.2		
10:55	↓	↓	↓	9.7	0.76	6.87	1.61	7.01	1.4		
11:00	↓	↓	↓	9.9	0.78	5.69	1.25	7.01	-1.2		
11:05	↓	↓	↓	10.0	0.78	7.54	1.08	7.01	-3.4		
11:10	↓	9.22		10.0	0.78	7.03	1.08	7.01	-4.6		
11:15	Sample Time (-002)										

Sample ID: GW-11223416-041023-SK-002

Sample Time: 11:15 am

Notes: TCL VOC's

- (1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
- (2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s = n \cdot (r^2) \cdot L$ in mL, where r ($r=D/2$) and L are in cm. For Imperial units, $V_s = n \cdot (r^2) \cdot L \cdot (2.54)^3$, where r and L are in inches
- (3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.
- (4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged = V_p/V_s .
- (5) For conductivity, the average value of three readings <1 mS/cm ± 0.005 mS/cm or where conductivity >1 mS/cm ± 0.01 mS/cm.

Monitoring Well Record for Low-Flow Purging
(Form SP-09)

Project Data:

Project Name: PCC Validation
Ref. No.: 11223416

Date: 4-10-23
Personnel: S. Kippen

Monitoring Well Data:

Well No.: MW-48-22R
Vapour PID (ppm): _____
Measurement Point: T.O.C.
Constructed Well Depth (m/ft): _____
Measured Well Depth (m/ft): 18.40
Depth of Sediment (m/ft): _____

Purge (start): 11:33 am
Saturated Screen Length (m/ft): _____
Depth to Pump Intake (m/ft)⁽¹⁾: _____
Well Diameter, D (cm/in): 2" PVC flush Mt.
Well Screen Volume, V_s (L)⁽⁴⁾: _____
Initial Depth to Water (m/ft): 2.68

Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level ⁽³⁾ (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, V _p (L)	No. of Well Screen Volumes Purged ⁽⁴⁾
Precision Required ⁽⁵⁾ :				±3 %	±0.005 or 0.01 ⁽⁶⁾	±10 %	±10 %	±0.1 Units	±10 mV		
12:10	150 mL/min	3.39		12.4	1.72	19.7	0.24	7.39	-106.1		
12:15				12.5	1.71	16.2	0.24	7.40	-107.7		
12:20				12.7	1.70	15.7	0.24	7.41	-110.3		
12:25				12.8	1.70	11.1	0.23	7.42	-113.8		
12:30				12.8	1.69	9.49	0.23	7.44	-117.3		
12:35	↓	3.45	0.	12.8	1.68	7.85	0.23	7.45	-116.4		
12:40	- Sample Time (-003)										

Sample ID: GW-11223416-041023-SK-003

Sample Time: 12:40

Notes:

TCL-VOC's

- (1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
- (2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s = \pi \cdot (r^2) \cdot L$ in mL, where $r = (D/2)$ and L are in cm.
For Imperial units, $V_s = \pi \cdot (r^2) \cdot L \cdot (2.54)^3$, where r and L are in inches
- (3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.
- (4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged = V_p/V_s .
- (5) For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

Monitoring Well Record for Low-Flow Purging
(Form SP-09)

Project Data:

Project Name: PCC Validation
Ref. No.: 11223416

Date: 4.10.23
Personnel: S. Kippen

Monitoring Well Data:

Well No.: MW-68-08
Vapour PID (ppm): _____
Measurement Point: T.O.C.
Constructed Well Depth (m/ft): _____
Measured Well Depth (m/ft): 15.17
Depth of Sediment (m/ft): _____

Purge (start): 13:15 pm
Saturated Screen Length (m/ft): _____
Depth to Pump Intake (m/ft)⁽¹⁾: _____
Well Diameter, D (cm/in): 2" PVC Flush Mt.
Well Screen Volume, V_s (L)⁽⁴⁾: _____
Initial Depth to Water (m/ft): 11.40



Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level ⁽³⁾ (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (L)	No. of Well Screen Volumes Purged ⁽⁴⁾
Precision Required ⁽⁵⁾ :				±3 %	±0.005 or 0.01 ⁽⁶⁾	±10 %	±10 %	±0.1 Units	±10 mV		
13:40	150 mL/min	11.43	↓	11.7	1.64	6.36	1.80	6.94	-28.5		
13:45	↓	↓	↓	11.7	1.64	6.90	0.90	6.96	-30.1		
13:50	↓	↓	↓	11.8	1.64	6.63	0.58	6.96	-31.8		
13:55	↓	11.40	~~11.00~~	11.8	1.62	7.36	0.45	6.97	-33.2		
14:00	Sample Time (+004)										

Sample ID: GW-11223416-D41023-SK-004

Sample Time: 14:00

Notes:

TCL-voc's

- (1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
- (2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s = \pi \cdot (r^2) \cdot L$ in mL, where r (r=D/2) and L are in cm.
For Imperial units, $V_s = \pi \cdot (r^2) \cdot L \cdot (2.54)^3$, where r and L are in inches
- (3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.
- (4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= Vp/Vs.
- (5) For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

Monitoring Well Record for Low-Flow Purging
(Form SP-09)

Project Data:

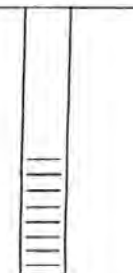
Project Name: PCC Validation
Ref. No.: 11223416

Date: 4-10-23
Personnel: S. Kippen

Monitoring Well Data:

Well No.: MW-87-12
Vapour PID (ppm): _____
Measurement Point: T.O.C.
Constructed Well Depth (m/ft): _____
Measured Well Depth (m/ft): 14.91
Depth of Sediment (m/ft): _____

Purge (start): 13:55
Saturated Screen Length (m/ft): _____
Depth to Pump Intake (m/ft)⁽¹⁾: _____
Well Diameter, D (cm/in): 2" PVC - Flush Mt.
Well Screen Volume, V_s (L)⁽⁴⁾: _____
Initial Depth to Water (m/ft): 7.47



Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level ⁽³⁾ (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (L)	No. of Well Screen Volumes Purged ⁽⁴⁾
Precision Required ⁽⁵⁾ :				±3 %	±0.005 or 0.01 ⁽⁶⁾	±10 %	±10 %	±0.1 Units	±10 mV		
14:25	150 mL/min	7.56	↓	10.8	1.01	4.45	0.28	10.57	-224.2		
14:30	↓	↓	↓	10.8	1.02	3.34	0.27	10.58	-221.4		
14:35	↓	↓	↓	10.6	1.02	3.24	0.28	10.60	-218.2		
14:40	↓	7.56	0.09	10.7	1.02	3.05	0.28	10.58	-214.0		
14:45	Sample Time (-005)										

Sample ID: GW-11223416-041023-SK-005

Sample Time: 14:45

Notes:

TCL VOC's

- (1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
- (2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s = \pi \cdot (r^2) \cdot L$ in mL, where r (r=D/2) and L are in cm.
For Imperial units, $V_s = \pi \cdot (r^2) \cdot L \cdot (2.54)^3$, where r and L are in inches
- (3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.
- (4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= Vp/Vs.
- (5) For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

Monitoring Well Record for Low-Flow Purging
(Form SP-09)

Project Data:

Project Name: PCC Validation
Ref. No.: 11223416

Date: 4-11-23
Personnel: S. Kippen

Monitoring Well Data:

Well No.: MW-791-19
Vapour PID (ppm): _____
Measurement Point: T.O.C.
Constructed Well Depth (m/ft): _____
Measured Well Depth (m/ft): 22.13
Depth of Sediment (m/ft): _____

Purge (start): 9:25
Saturated Screen Length (m/ft): _____
Depth to Pump Intake (m/ft)⁽¹⁾: _____
Well Diameter, D (cm/in): 2" PVC - flush Mt
Well Screen Volume, V_s (L)⁽⁴⁾: _____
Initial Depth to Water (m/ft): 11.48

Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level ⁽²⁾ (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (L)	No. of Well Screen Volumes Purged ⁽⁴⁾
Precision Required ⁽⁵⁾ :				±3 %	±0.005 or 0.01 ⁽⁶⁾	±10 %	±10 %	±0.1 Units	±10 mV		
10:00	150 mL/min	11.48		11.6	3.43	0.95	0.84	6.93	-51.1		
10:05				11.7	3.44	-	0.71	6.92	-53.9		
10:10				11.5	3.43	-	0.68	6.92	-56.2		
10:15		11.48	0.00	11.6	3.44	1.80	0.63	6.92	-56.6		
10:20	Sample Time		(-006)								

Sample ID: GW-11223416-041123-SK-006

Sample Time: 10:20

Notes:

TCL-VOCs

- The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
- The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s = \pi \cdot (r^2) \cdot L$ in mL, where r (r=D/2) and L are in cm.
For Imperial units, $V_s = \pi \cdot (r^2) \cdot L \cdot (2.54)^3$, where r and L are in inches
- The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.
- Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged = V_p/V_s .
- For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

GHC Form SP-09 - Revision 01 - March 17, 2017

Monitoring Well Record for Low-Flow Purging

(Form SP-09)

Project Data:

Project Name: PCC Validation
 Ref. No.: 11223416

Date: 4-11-23
 Personnel: S. Kippen

Monitoring Well Data:

Well No.: MW-74-22R
 Vapour PID (ppm): _____
 Measurement Point: T.O.C.
 Constructed Well Depth (m/ft): _____
 Measured Well Depth (m/ft): 17.08
 Depth of Sediment (m/ft): _____

Purge (start): 12:24 pm
 Saturated Screen Length (m/ft): _____
 Depth to Pump Intake (m/ft)⁽¹⁾: _____
 Well Diameter, D (cm/in): 2" PVC - flush Mt
 Well Screen Volume, V_s (L)⁽⁴⁾: _____
 Initial Depth to Water (m/ft): 15.20

Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level ⁽³⁾ (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, V _p (L)	No. of Well Screen Volumes Purged ⁽⁴⁾
Precision Required ⁽⁵⁾ :				±3 %	±0.005 or 0.01 ⁽⁶⁾	±10 %	±10 %	±0.1 Units	±10 mV		
13:00	150 mL/min	15.00		14.1	5.45	3.31	7.70	7.07	-34.9		
13:05				14.0	5.42	2.95	7.88	7.07	-35.2		
13:10				14.2	5.53	1.86	7.79	7.07	-35.9		
13:15				13.9	5.49	-	7.96	7.07	-36.0		
13:20	↓	15.02	-0.18	14.0	5.58	1.30	7.96	7.07	-36.5		
13:25	- Sample Time	(-008 ms/msd)									

Sample ID: GW-11223416-041123-SK-008Sample Time: 13:25

Notes:

TCL-VOC'sms/msdms/msd

- The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
- The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s = \pi \cdot (r^2) \cdot L$ in mL, where r (r=D/2) and L are in cm.
 For Imperial units, $V_s = \pi \cdot (r^2) \cdot L \cdot (2.54)^3$, where r and L are in inches
- The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.
- Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing). No. of Well Screen Volumes Purged = V_p/V_s .
- For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

Monitoring Well Record for Low-Flow Purging
(Form SP-09)

Project Data:

Project Name: PCC Validation
Ref. No.: 11223416

Date: 4-11-23
Personnel: S. Kippen

Monitoring Well Data:

Well No.: MW-02-07
Vapour PID (ppm): _____
Measurement Point: T.O.C.
Constructed Well Depth (m/ft): _____
Measured Well Depth (m/ft): 15.85
Depth of Sediment (m/ft): _____

Purge (start): 11:04
Saturated Screen Length (m/ft): _____
Depth to Pump Intake (m/ft)⁽¹⁾: _____
Well Diameter, D (cm/in): 2" PVC Flush Mt.
Well Screen Volume, V_s (L)⁽²⁾: _____
Initial Depth to Water (m/ft): 10.79

Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level ⁽³⁾ (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, V _p (L)	No. of Well Screen Volumes Purged ⁽⁴⁾
Precision Required ⁽⁵⁾ :				±3 %	±0.005 or 0.01 ⁽⁶⁾	±10 %	±10 %	±0.1 Units	±10 mV		
11:40	150 mL/min	12.02	↓	12.4	2.16	1.75	0.60	6.93	-90.3		
11:45	↓	↓	↓	12.6	2.17	—	0.58	6.94	-92.4		
11:50	↓	↓	↓	11.5	2.20	—	0.83	6.94	-89.6		
11:55	↓	↓	↓	11.5	2.20	—	0.72	6.96	-92.1		
12:00	↓	12.85	2.06	11.6	2.21	1.05	0.61	6.96	-94.6		
12:05	- Sample Time (-009)										

Sample ID: GW-11223416-041123-SK-009

Sample Time: 12:05

Notes:

TCL-VOC's

- (1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
- (2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s = \pi \cdot (r^2) \cdot L$ in mL, where r ($r=D/2$) and L are in cm.
For Imperial units, $V_s = \pi \cdot (r^2) \cdot L \cdot (2.54)^3$, where r and L are in inches
- (3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.
- (4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing). No. of Well Screen Volumes Purged = V_p/V_s .
- (5) For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

Monitoring Well Record for Low-flow Purging
(Form SP-09)

Project Data:

Project Name: PCC Validation
Ref. No.: 11223416

Date: 4-11-23
Personnel: S. Kippen

Monitoring Well Data:

Well No.: MW-74d-22R
Vapour PID (ppm): _____
Measurement Point: T.O.C.
Constructed Well Depth (m/ft): _____
Measured Well Depth (m/ft): 44.85
Depth of Sediment (m/ft): _____

Purge (start): 13:10
Saturated Screen Length (m/ft): _____
Depth to Pump Intake (m/ft)⁽¹⁾: _____
Well Diameter, D (cm/in): 2" PVC - Flush Mt
Well Screen Volume, V_s (L)⁽²⁾: _____
Initial Depth to Water (m/ft): 30.24

Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level ⁽³⁾ (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (L)	No. of Well Screen Volumes Purged ⁽⁴⁾
Precision Required ⁽⁵⁾ :				±3 %	±0.005 or 0.01 ⁽⁶⁾	±10 %	±10 %	±0.1 Units	±10 mV		
13:40	300 mL/min	↓	↓	17.7	3.78	8.05	3.66	7.24	-79.8		
13:45	↓	↓	↓	17.3	3.57	11.1	4.06	7.25	-82.8		
13:50	↓	↓	↓	17.2	3.76	9.30	3.29	7.21	-85.3		
13:55	↓	30.25	0.01	17.4	3.81	9.16	3.76	7.23	-83.7		
14:00	- Sample Time (-010)										

Sample ID: GW-11223416-041123-SK-010

Sample Time: 14:00

Notes:

TCL- VOC.

* Peristaltic Pump struggled to pull H₂O up from deeper well.

- (1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
- (2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s = \pi \cdot (r^2) \cdot L$ in mL, where r (r=D/2) and L are in cm.
For Imperial units, $V_s = \pi \cdot (r^2) \cdot L \cdot (2.54)^3$, where r and L are in inches
- (3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.
- (4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= Vp/Vs.
- (5) For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

Monitoring Well Record for Low-flow Purging
(Form SP-09)

Project Data:

Project Name: PCC Validation
Ref. No.: 11223416

Date: 4-12-23
Personnel: S. Kippen

Monitoring Well Data:

Well No.: MW-925-13
Vapour PID (ppm): _____
Measurement Point: T.O.C.
Constructed Well Depth (m/ft): _____
Measured Well Depth (m/ft): 9.70
Depth of Sediment (m/ft): _____

Purge (start): 8:51
Saturated Screen Length (m/ft): _____
Depth to Pump Intake (m/ft)⁽¹⁾: _____
Well Diameter, D (cm/in): 2" PVC - Flush Mt.
Well Screen Volume, V_s (L)⁽⁴⁾: _____
Initial Depth to Water (m/ft): 5.51

Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level ⁽³⁾ (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (L)	No. of Well Screen Volumes Purged ⁽⁴⁾
Precision Required ⁽⁵⁾ : ±3 % ±0.005 or 0.01 ⁽⁶⁾ ±10 % ±10 % ±0.1 Units ±10 mV											
9:30	150 mL/min	5.87	↓	10.3	1.67	2.91	0.76	6.75	-53.7		
9:35	↓	↓	↓	10.4	1.64	4.05	0.69	6.75	-57.6		
9:40	↓	↓	↓	10.3	1.62	2.76	0.69	6.76	-59.6		
9:45	↓	↓	↓	10.5	1.62	3.20	0.65	6.76	-60.8		
9:50	↓	6.03	0.52	10.4	1.60	2.62	0.63	6.76	-62.0		
9:55	Sample Time (-011)										

Sample ID: GW-11223416-041223-SK-011

Sample Time: 9:55am

Notes:

TCL-VOC's

- (1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
- (2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s = n \cdot (r^2) \cdot L$ in mL, where r (r=D/2) and L are in cm.
For Imperial units, $V_s = n \cdot (r^2) \cdot L \cdot (2.54)^3$, where r and L are in inches
- (3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.
- (4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= Vp/Vs.
- (5) For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

Monitoring Well Record for Low-Flow Purging
(Form SP-09)

Project Data:

Project Name: PCC Validation
Ref. No.: 11223416

Date: 4-12-23
Personnel: S. Kippen

Monitoring Well Data:

Well No.: MW-92i-13
Vapour PID (ppm): _____
Measurement Point: T.O.C.
Constructed Well Depth (m/ft): _____
Measured Well Depth (m/ft): 16.20
Depth of Sediment (m/ft): _____

Purge (start): 9:55
Saturated Screen Length (m/ft): _____
Depth to Pump Intake (m/ft)⁽¹⁾: _____
Well Diameter, D (cm/in): 2" PVC - Flush Mt.
Well Screen Volume, V_s (L)⁽⁴⁾: _____
Initial Depth to Water (m/ft): 5.42



Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level ⁽³⁾ (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, V _p (L)	No. of Well Screen Volumes Purged ⁽⁴⁾
Precision Required ⁽⁵⁾ :				±3 %	±0.005 or 0.01 ⁽⁶⁾	±10 %	±10 %	±0.1 Units	±10 mV		
10:25	150 mL/min	5.70		13.4	1.46	12.3	12.3	7.14	-47.5		
10:30				13.6	1.48	4.71	1.06	7.16	-49.7		
10:35				13.6	1.53	2.89	0.90	7.15	-51.9		
10:40				13.8	1.55	4.34	0.84	7.16	-53.0		
10:45	↓	5.73	0.31	13.3	1.56	2.09	0.75	7.16	-54.2		
10:50	- Sample Time (-012)										

Sample ID: GW-11223416-041223-SK-012

Sample Time: 10:50

Notes: TCL-VOCs

- (1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
- (2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s = \pi \cdot (r^2) \cdot L$ in mL, where r ($r = D/2$) and L are in cm.
For Imperial units, $V_s = \pi \cdot (r^2) \cdot L \cdot (2.54)^3$, where r and L are in inches
- (3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.
- (4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing). No. of Well Screen Volumes Purged = V_p/V_s .
- (5) For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

Project Data:

Date: 4-12-23
Personnel: S. Kippen

Monitoring Well Data:

Purge (start): 10:58 am

Saturated Screen Length (m/ft): _____
 Depth to Pump Intake (m/ft)⁽¹⁾: _____
 Well Diameter, D (cm/in): 2" PVC - Flush Mt
 Well Screen Volume, V_s (L)⁽²⁾: _____
 Initial Depth to Water (m/ft): 6.17

[illegible]

Sample Time: 11:50

Notes: TCL-VOL'S

- (1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
- (2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s = \pi \cdot (r^2) \cdot L$ in mL, where r ($r = D/2$) and L are in cm.
For Imperial units, $V_s = \pi \cdot (r^2) \cdot L \cdot (2.54)^3$, where r and L are in inches
- (3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.
- (4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged = V_p/V_s .
- (5) For conductivity, the average value of three readings $<1 \text{ mS/cm} \pm 0.005 \text{ mS/cm}$ or where conductivity $>1 \text{ mS/cm} \pm 0.01 \text{ mS/cm}$

Monitoring Well Record for Low-Flow Purging
(Form SP-09)

Project Data:

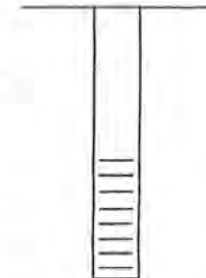
Project Name: PCC Validation
Ref. No.: 11223416

Date: 4-12-23
Personnel: S. Kippen

Monitoring Well Data:

Well No.: MW-21-07
Vapour PID (ppm): _____
Measurement Point: T.O.C.
Constructed Well Depth (m/ft): _____
Measured Well Depth (m/ft): 16.05
Depth of Sediment (m/ft): _____

Purge (start): 12:07
Saturated Screen Length (m/ft): _____
Depth to Pump Intake (m/ft)⁽¹⁾: _____
Well Diameter, D (cm/in): 2" PVC. Flush Mt.
Well Screen Volume, V_s (L)⁽²⁾: _____
Initial Depth to Water (m/ft): 15.60



Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level ⁽³⁾ (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, V _p (L)	No. of Well Screen Volumes Purged ⁽⁴⁾
Precision Required ⁽⁵⁾ :				±3 %	±0.005 or 0.01 ⁽⁶⁾	±10 %	±10 %	±0.1 Units	±10 mV		
12:08	100 mL/min	* NO	Field Readings	-	was	able	to	fill	three,	40 ml	HCL VOC's for TEL-VOCs
12:20	- Dry -									and 110 ml	of Metals before well went dry.
											will check well later in the day, definitely in the morning tomorrow for recharge.
<u>4-13-23</u>											
13:20	-										No Recharge in well after sitting 25 hrs. only VOC's were able to be collected / NO Metals samples.

Sample ID: GW-11223416-041223-SK-014

Sample Time: 12:10

Notes: TCL-VOC's / ~~As/Pb/V~~ + ~~FF~~ dissolved.

- (1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
- (2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s = \pi \cdot (r^2) \cdot L$ in mL, where r (r=D/2) and L are in cm.
For Imperial units, $V_s = \pi \cdot (r^2) \cdot L \cdot (2.54)^3$, where r and L are in inches
- (3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.
- (4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged = V_p/V_s .
- (5) For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

Monitoring Well Record for Low-Flow Purging
(Form SP-09)

Project Data:

Project Name: PCC Validation
Ref. No.: 11223416

Date: 4-12-23
Personnel: S. Kipper

Monitoring Well Data:

Well No.: MW-38-07
Vapour PID (ppm): _____
Measurement Point: T.O.C.
Constructed Well Depth (m/ft): _____
Measured Well Depth (m/ft): 16.78
Depth of Sediment (m/ft): _____

Purge (start): 12:39
Saturated Screen Length (m/ft): _____
Depth to Pump Intake (m/ft)⁽¹⁾: _____
Well Diameter, D (cm/in): 2" PVC - Flush Mt
Well Screen Volume, V_s (L)⁽⁴⁾: _____
Initial Depth to Water (m/ft): 16.08



Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level ⁽³⁾ (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, Vp (L)	No. of Well Screen Volumes Purged ⁽⁴⁾
Precision Required ⁽⁵⁾ :				±3 %	±0.005 or 0.01 ⁽⁶⁾	±10 %	±10 %	±0.1 Units	±10 mV		
12:40	100 mL/min	*	No Field	Readings - was able to fill three 40ml HCL Vols for TCL-VOCs and 265ml for metals before well went dry. will check well later in the day and tomorrow morning for recharge							
12:49	well dry										
<u>4-13-23</u>											
		DTW									
13:25	→	16.10	Recharged Back to measured level yesterday								
			Turbidity = 4.19 NTU								
			Try and Finish filling Metals Bottles. - Able to fill complete list of								

Sample ID: GW-11223416-041223-SK-015

Sample Time: 12:45

Notes: TCL-VOCs / Metals and dissolved metals.

- (1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
- (2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s = \pi \cdot (r^2) \cdot L$ in mL, where r ($r = D/2$) and L are in cm. For Imperial units, $V_s = \pi \cdot (r^2) \cdot L \cdot (2.54)^3$, where r and L are in inches.
- (3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.
- (4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing). No. of Well Screen Volumes Purged = V_p/V_s .
- (5) For conductivity, the average value of three readings < 1 mS/cm ± 0.005 mS/cm or where conductivity > 1 mS/cm ± 0.01 mS/cm.

Monitoring Well Record for Low-flow Purging
(Form SP-09)

Project Data:

Project Name: PCC Validation
Ref. No.: 11223416

Date: 4.12.23
Personnel: S. Kippen

Monitoring Well Data:

Well No.: MW-33-07
Vapour PID (ppm): _____
Measurement Point: T.O.C.
Constructed Well Depth (m/ft): _____
Measured Well Depth (m/ft): 21.86
Depth of Sediment (m/ft): _____

Purge (start): 13:08
Saturated Screen Length (m/ft): _____
Depth to Pump Intake (m/ft)⁽¹⁾: _____
Well Diameter, D (cm/in): 2" PVC. FINISH MT
Well Screen Volume, V_s (L)⁽⁴⁾: _____
Initial Depth to Water (m/ft): 17.37

Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level ⁽³⁾ (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, V _p (L)	No. of Well Screen Volumes Purged ⁽⁴⁾
Precision Required ⁽⁵⁾ :				±3 %	±0.005 or 0.01 ⁽⁶⁾	±10 %	±10 %	±0.1 Units	±10 mV		
13:30	150 mL/min	17.48	↓	15.3	4.34	7.12	0.65	6.79	-58.8		
13:35	↓	↓	↓	15.5	4.35	8.84	0.55	6.79	-60.4		
13:40	↓	↓	↓	15.5	4.36	4.46	0.51	6.79	-63.2		
13:45	↓	17.50	0.13	15.2	4.37	4.84	0.50	6.79	-64.5		
13:50	SAMPLE TIME (-016)										

Sample ID: GW-11223416-041223-SK-016

Sample Time: 13:50

Notes:

TCL-VOCs/AI/Pb/V with dissolved F.F.

- The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
- The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s = n \cdot (r^2) \cdot L$ in mL, where r ($r = D/2$) and L are in cm.
For Imperial units, $V_s = n \cdot (r^2) \cdot L \cdot (2.54)^3$, where r and L are in inches
- The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.
- Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing). No. of Well Screen Volumes Purged = V_p/V_s .
- For conductivity, the average value of three readings < 1 mS/cm ± 0.005 mS/cm or where conductivity > 1 mS/cm ± 0.01 mS/cm.

Monitoring Well Record for Low-Flow Purging
(Form SP-09)

Project Data:

Project Name: PCC Validation
Ref. No.: 11223416

Date: 4-13-23
Personnel: S. Kippen

Monitoring Well Data:

Well No.: MW 10-07
Vapour PID (ppm): _____
Measurement Point: T.O.C.
Constructed Well Depth (m/ft): _____
Measured Well Depth (m/ft): 17.52
Depth of Sediment (m/ft): _____

Purge (start): 12:00
Saturated Screen Length (m/ft): _____
Depth to Pump Intake (m/ft)⁽¹⁾: _____
Well Diameter, D (cm/in): 2" PVC - Flush Mt.
Well Screen Volume, V_s (L)⁽²⁾: _____
Initial Depth to Water (m/ft): 11.66

Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level ⁽³⁾ (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, V _p (L)	No. of Well Screen Volumes Purged ⁽⁴⁾
Precision Required ⁽⁵⁾ :				±3 %	±0.005 or 0.01 ⁽⁶⁾	±10 %	±10 %	±0.1 Units	±10 mV		
12:30	150 mL/min	13.64	↓	13.3	1.23	4.39	2.08	7.80	-58.6		
12:35	↓	↓	↓	13.6	1.23	4.33	1.84	7.83	-59.6		
12:40	↓	↓	↓	13.3	1.27	3.94	1.67	7.84	-60.0		
12:45	↓	14.15		13.5	1.30	4.35	1.45	7.86	-59.9		
12:50	Sample Time (-019 MS/MSD)										

Sample ID: GW-11223416-041323-SK-019

Sample Time: 12:50

Notes:

TCL VOC's & Metals

MS/MSD

MS/MSD

- The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
- The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s = \pi \cdot (r^2) \cdot L$ in mL, where r (r=D/2) and L are in cm.
For Imperial units, $V_s = \pi \cdot (r^2) \cdot L \cdot (2.54)^3$, where r and L are in inches
- The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.
- Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing). No. of Well Screen Volumes Purged = V_p/V_s .
- For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

Monitoring Well Record for Low-flow Purging
(Form SP-09)

Project Data:

Project Name: PCC Validation
Ref. No.: 11223416

Date: 4-12-23
Personnel: S. Kippen

Monitoring Well Data:

Well No.: MW-88-22a
Vapour PID (ppm): _____
Measurement Point: T.O.C.
Constructed Well Depth (m/ft): _____
Measured Well Depth (m/ft): _____
Depth of Sediment (m/ft): _____

Purge (start): _____
Saturated Screen Length (m/ft): _____
Depth to Pump Intake (m/ft)⁽¹⁾: _____
Well Diameter, D (cm/in): _____
Well Screen Volume, V_s (L)⁽²⁾: _____
Initial Depth to Water (m/ft): _____

Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level ⁽³⁾ (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, V _p (L)	No. of Well Screen Volumes Purged ⁽⁴⁾
Precision Required ⁽⁵⁾ :				±3 %	±0.005 or 0.01 ⁽⁶⁾	±10 %	±10 %	±0.1 Units	±10 mV		
—	150 mL/min										
4-12-23	* Did not groundwater sample										
	Collected sample of LNAPL to send to Lab in Lancaster, Eurofins-Pennsylvania.										
4-13-23	- DTP = 19.33' DTW: 19.78'										
recheck	NAPL still present next day.										

Sample ID: L-11223416-04/223-SK-001

Sample Time: 14:00

Notes:

- The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
- The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s = \pi(r^2)L$ in mL, where r ($r=D/2$) and L are in cm. For Imperial units, $V_s = \pi(r^2)L \cdot (2.54)^3$, where r and L are in inches.
- The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.
- Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged = V_p/V_s .
- For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

(Form SP-09)

Saturated Screen Length (m/ft): _____
 Depth to Pump Intake (m/ft): _____
 Well Diameter, D (cm/in): 2" PVC Flush Mt.
 Well Screen Volume, V_s (L): _____
 Initial Depth to Water (m/ft): 4.31

GHD Form SP-09 - Revision 01 - March 17, 2017

Project Data:

Date: 7-13-22
Personnel: S. Kippen

Monitoring Well Data:

Purge (start): 9:33 am

Well No.: MW 88-12R

Vapour PID (ppm): 150.00-12.8

Measurement Point: T.O.C.

Constructed Well Depth (m/ft): _____

Measured Well Depth (m/ft): 24.67

Depth of Sediment (m/ft): 2.5

Saturated Screen Length (m/ft):

Depth to Pump Intake (m/ft) ⁽¹⁾:

Well Diameter, D (cm/in): 3" PVC - (1.514)

Well Screen Volume, V_s (L)¹⁴: 2. PVC - Flush Mt.

Initial Depth to Water (m/tt): 19.63

Sample ID: GW-11223416-071322-SK-001

Sample Time: 10:25

Notes

$$TCL = VOC's$$

- (1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
- (2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s = \pi \cdot (r^2) \cdot L$ in mL, where $r = (D/2)$ and L are in cm. For Imperial units, $V_s = \pi \cdot (r^2) \cdot L \cdot (2.54)^3$, where r and L are in inches
- (3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.
- (4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be cleaning, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing). No. of Well Screen Volumes Purged = V_p/V_s .

Monitoring Well Record for Low-Flow Purging
(Form SP-09)

Project Data:

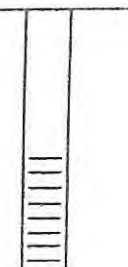
Project Name: PCC Validation
Ref. No.: 11223416

Date: 7-13-22
Personnel: S. Kippen

Monitoring Well Data:

Well No.: MW-74-08R
Vapour PID (ppm): _____
Measurement Point: T.O.C.
Constructed Well Depth (m/ft): _____
Measured Well Depth (m/ft): 17.10
Depth of Sediment (m/ft): _____

Purge (start): 11:28 am
Saturated Screen Length (m/ft): _____
Depth to Pump Intake (m/ft)⁽¹⁾: _____
Well Diameter, D (cm/in): 2" PVC flush Mt
Well Screen Volume, V_s (L)⁽⁴⁾: _____
Initial Depth to Water (m/ft): 16.06



Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level ⁽³⁾ (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, V _p (L)	No. of Well Screen Volumes Purged ⁽⁴⁾
Precision Required ⁽⁵⁾ :				±3 %	±0.005 or 0.01 ⁽⁶⁾	±10 %	±10 %	±0.1 Units	±10 mV		
12:15	150 mL/min			15.5	3.242	4.41	2.65	7.25	89.1		
12:20				15.4	3.228	4.13	3.10	7.25	89.9		
12:25				16.4	3.676	2.94	3.78	7.24	90.9		
12:30		↓	↓	16.5	3.364	2.35	2.55	7.26	90.7		
12:35	↓	16.45	0.39	16.8	3.222	1.67	2.61	7.25	92.6		
12:40	- Sample Time (-004)										

Sample ID: GW-11223416-071322-SK-004

Sample Time: 12:40

Notes:

TCL-VOCs

- (1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
- (2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s = \pi \cdot (r^2) \cdot L$ in mL, where r (r=D/2) and L are in cm. For Imperial units, $V_s = \pi \cdot (r^2) \cdot L \cdot (2.54)^3$, where r and L are in inches.
- (3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.
- (4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= V_p/V_s.

(Form SP-40)

Initial Depth to Water (m/ft): 29.07

Monitoring Well Record for Low-Flow Purging
(Form SP-09)

Project Data:

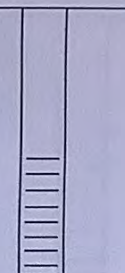
Project Name: Pcc validation
Ref. No.: 11223416

Date: 10-10-22
Personnel: S. Kippen

Monitoring Well Data:

Well No.: MW-74d-22R
Vapour PID (ppm): _____
Measurement Point: T.O.C.
Constructed Well Depth (m/ft): _____
Measured Well Depth (m/ft): -
Depth of Sediment (m/ft): _____

Purge (start): 9:13am
Saturated Screen Length (m/ft): _____
Depth to Pump Intake (m/ft)⁽¹⁾: _____
Well Diameter, D (cm/in): 2" PVC - flush Mt
Well Screen Volume, V_s (L)⁽²⁾: _____
Initial Depth to Water (m/ft): 29.79



Time	Pumping Rate (mL/min)	Depth to Water (m/ft)	Drawdown from Initial Water Level ⁽³⁾ (m/ft)	Temperature °C	Conductivity (mS/cm)	Turbidity NTU	DO (mg/L)	pH	ORP (mV)	Volume Purged, V _p (L)	No. of Well Screen Volumes Purged ⁽⁴⁾
Precision Required ⁽⁵⁾ :				±3 %	±0.005 or 0.01 ⁽⁶⁾	±10 %	±10 %	±0.1 Units	±10 mV		
10:20	150 mL/min	29.83		14.0	4.845	4.48	0.16	6.03	11.0		
10:25	↓	↓	↓	14.1	4.778	3.43	0.09	5.82	5.6		
10:30	↓	↓	↓	14.1	4.745	2.82	0.08	5.69	9.5		
10:35	↓	↓	↓	14.1	4.707	2.55	0.09	5.52	15.9		
10:40	↓	↓	0.04	14.4	4.678	4.24	0.09	5.39	21.8		
10:45	- Sample Time (-001)										
10:50	- " " (-002 dup)										

Sample ID: GW-11223416-101022-SK-001/-002 (dup)

Sample Time: 10:45 / 10:50 (dup)

Notes:

NOT sure if PH is reading correctly

TCL-VOCs

- (1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
- (2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s = \pi(r^2)L$ in mL, where r (r=D/2) and L are in cm.
For Imperial units, $V_s = \pi(r^2)L \cdot (2.54)^3$, where r and L are in inches
- (3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.
- (4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= V_p/V_s.
- (5) For conductivity, the average value of three readings <1 mS/cm ±0.005 mS/cm or where conductivity >1 mS/cm ±0.01 mS/cm.

Date: 10.10.22

Personnel: S. Kippen

Purge (start): 11:04

Monitoring Well Data:

Well No.: MW-88-22 R

Vapour PID (ppm): MW-08-22R

Measurement Point: T.O.C.

Constructed Well Depth (m/ft): _____

Measured Well Depth (m/ft): 34.63

Depth of Sediment (m/ft): 27.68

Saturated Screen Length (m/ft):

Depth to Pump Intake (m/ft)⁽¹⁾:

Well Diameter, D (cm/in):

Well Screen Volume, V_s (L)^(c):

Initial Depth to Water (m/ft):

Sample Time: 11:55

Notes: TLL-VOL's - Light oil sheen on top of purged groundwater

- (1) The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom.
- (2) The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V_s = \pi \cdot (r^2) \cdot L$ in mL, where r (r=D/2) and L are in cm.
For Imperial units, $V_s = \pi \cdot (r^2) \cdot L \cdot (2.54)^3$, where r and L are in inches
- (3) The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min.
- (4) Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged= V_p/V_s .
- (5) For conductivity, the average value of three readings $< 1 \text{ mS/cm} \pm 0.005 \text{ mS/cm}$ or where conductivity $> 1 \text{ mS/cm} \pm 0.01 \text{ mS/cm}$.

Project Data:

Date: 10-10-22

Personnel: S. Kippen

Purge (start): 10:25

Well No.: MW-74-22R

Vapour PID (ppm):

Measurement Point: T.O.C.

Constructed Well Depth (m/ft):

Measured Well Depth (m/ft):

Depth of Sediment (m/ft):

Saturated Screen Length (m/ft):

Depth to Pump Intake (m/ft)⁽¹⁾:

Well Diameter, D (cm/in):

Well Screen Volume, V_s (L)⁽⁴⁾:

Initial Depth to Water (m/ft):

Sample ID:

NO Sample.

Sample Time:

(1)

The pump intake will be placed at the well screen mid-point or at a minimum of 0.6 m (2 ft) above any sediment accumulated at the well bottom. The well screen volume will be based on a 1.52 metres (5-foot) screen length (L). For metric units, $V = \pi r^2 L$.

(2)

For Imperial units, $V_s = \pi \cdot (r^2) \cdot L \cdot (2.54)^3$, where r and L are in inches

(3)

The drawdown from the initial water level should not exceed 0.1 m (0.3 ft). The pumping rate should not exceed 600 mL/min. Purging will continue until stabilization is achieved or until 20 well screen volumes have been pumped.

(4)

Purging will continue until stabilization is achieved or until 20 well screen volumes have been purged (unless purge water remains visually turbid and appears to be clearing, or unless stabilization parameters are varying slightly outside of the stabilization criteria and appear to be stabilizing), No. of Well Screen Volumes Purged = V_p/V_s .

(5)

For conductivity, the average value of three readings $<1 \text{ mS/cm} \pm 0.005 \text{ mS/cm}$ or where conductivity $>1 \text{ mS/cm} \pm 0.01 \text{ mS/cm}$.

Appendix B

Data Validation Memorandum

Technical Memorandum

11 August 2022

To	Tom Kinney	Tel	248-893.3400
Copy to		Email	Tom.kinney@ghd.com
From	James Abston/jda/6	Ref. No.	11223416 (17322A)
Subject	Analytical Results and Full Validation Groundwater Sampling RACER PCC-Validation Pontiac, Michigan July 2022		

1. Introduction

This document details a reduced validation of analytical results for groundwater samples collected in support of the 2022 Groundwater Sampling at the RACER PCC-Validation site during July 2022. Groundwater samples were submitted to Eurofins Laboratories North Central located in Barberton, Ohio. A sample collection and analysis summary are presented in Table 1. The validated analytical results are summarized in Table 2. A summary of the analytical methodology is presented in Table 3.

Standard GHD report deliverables were submitted by the laboratory. The final results and supporting quality assurance/quality control (QA/QC) data were assessed. Evaluation of the data was based on information obtained from the chain of custody forms, finished report forms, method blank data, recovery data from surrogate spikes/laboratory control samples (LCS) and field QA/QC samples.

The QA/QC criteria by which these data have been assessed are outlined in the analytical methods referenced in Table 3 and applicable guidance from the documents entitled:

1. "Sampling and Analysis Plan and Fundamental Quality Assurance Project Plan (QAPP)", April 2012.
2. "USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review", USEPA 540-R-08-01, June 2008.

Item 2 will subsequently be referred to as the "Guidelines" in this Memorandum.

2. Sample Holding Time and Preservation

The sample holding time criterion for the analysis is summarized in Table 3. Sample chain of custody documents and analytical reports were used to determine sample holding times. All samples were analyzed within the required holding times.

All samples were properly preserved, delivered on ice, and stored by the laboratory at the required temperature (0-6°C).

3. Laboratory Method Blank Analyses

Method blanks are prepared from a purified matrix and analyzed with investigative samples to determine the existence and magnitude of sample contamination introduced during the analytical procedures.

For this study, laboratory method blanks were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per analytical batch.

All method blank results were non-detect, indicating that laboratory contamination was not a factor for this investigation.

4. Surrogate Spike Recoveries - Organic Analyses

In accordance with the methods employed, all samples, blanks, and QC samples analyzed for organics are spiked with surrogate compounds prior to sample analysis. Surrogate recoveries provide a means to evaluate the effects of laboratory performance on individual sample matrices.

All samples submitted for volatile organic compound determination was spiked with the appropriate number of surrogate compounds prior to sample analysis.

Surrogate recoveries were assessed against laboratory control limits. All surrogate recoveries were within the laboratory control limits.

5. Laboratory Control Sample Analyses

LCS are prepared and analyzed as samples to assess the analytical efficiencies of the methods employed, independent of sample matrix effects.

For this study, LCS were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per analytical batch.

The LCS contained all compounds of interest. All LCS recoveries were within the laboratory control limits, demonstrating acceptable analytical accuracy.

6. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analyses

To evaluate the effects of sample matrices on the preparation process, measurement procedures, and accuracy of a particular analysis, samples are spiked with a known concentration of the analyte of concern and analyzed as MS/MSD samples. The RPD between the MS and MSD is used to assess analytical precision.

MS/MSD analyses was performed on non-site-specific samples and therefore could not be used to evaluate this data.

7. Field QA/QC Samples

The field QA/QC consisted of one trip blank sample, and one field duplicate sample set.

Trip Blank Sample Analysis

To evaluate contamination from sample collection, transportation, storage, and analytical activities, one trip blank was submitted to the laboratory for VOC analysis. All results were non-detect for the compounds of interest.

Field Duplicate Sample Analysis

To assess the analytical and sampling protocol precision, one field duplicate sample set was collected and submitted "blind" to the laboratory, as specified in Table 1. The RPDs associated with these duplicate samples must be less than 50 percent for water samples. If the reported concentration in either the investigative sample or its duplicate is less than five times the reporting limit (RL), the evaluation criteria is one times the RL value for water samples.

All field duplicate results were within acceptable agreement, demonstrating acceptable sampling and analytical precision.

8. Analyte Reporting

The laboratory reported detected results down to the laboratory's method detection limit (MDL) for each analyte. Positive analyte detections less than the RL but greater than the MDL were reported as estimated (J) in Table 2 unless qualified otherwise in this memorandum. Non-detect results were presented as non-detect at the RL in Table 2.

9. Conclusion

Based on the assessment detailed in the foregoing, the data summarized in Table 2 are acceptable without qualification.

Regards



James Abston
Data Analytics Chemist

Table 1

**Sample Collection and Analysis Summary
Groundwater Sampling
RACER PCC-Validation
Pontiac, Michigan
July 2022**

Sample Identification	Location	Matrix	Collection Date	Collection Time	Analysis/Parameters		Comments
					Volatiles Organic Compounds		
			(mm/dd/yyyy)	(hr:min)			
GW-11223416-071322-SK-001	MW-88-22R	Groundwater	7/13/22	10:25	X		
GW-11223416-071322-SK-002	MW-74D-22R	Groundwater	7/13/22	11:40	X		
GW-11223416-071322-SK-003	MW-74D-22R	Groundwater	7/13/22	11:45	X		FD(GW-11223416-071322-SK-002)
GW-11223416-071322-SK-004	MW-74-22R	Groundwater	7/13/22	12:40	X		
GW-11223416-071322-SK-005	MW-48-22R	Groundwater	7/13/22	13:55	X		
TB-11223416-071322-SK	--	Groundwater Quality Control Matrix	7/13/22	--	X		Trip Blank

Notes:

FD - Field Duplicate sample of sample in parenthesis
 -- - Not applicable

Table 2
Validated Groundwater Sample Results Summary
RACER PCC-Validation
Pontiac, Michigan
July 2022

Location ID:	MW-48-22R	MW-74-22R	MW-74D-22R	MW-74D-22R	MW-88-22R
Sample Name:	GW-11223416-071322-SK-005	GW-11223416-071322-SK-004	GW-11223416-071322-SK-002	GW-11223416-071322-SK-003	GW-11223416-071322-SK-001
Sample Date:	07/13/2022	07/13/2022	07/13/2022	07/13/2022 Duplicate	07/13/2022
Parameters	Unit				
Volatile Organic Compounds					
1,1,1-Trichloroethane	µg/L	1.0 U	16	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	2.0 U	2.0 U	2.0 U	2.0 U
1,2-Dibromoethane (Ethylene dibromide)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloropropane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	10 U	10 U	10 U	10 U
2-Hexanone	µg/L	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	µg/L	10 U	10 U	10 U	10 U
Acetone	µg/L	10 U	10 U	10 U	10 U
Benzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Bromodichloromethane	µg/L	1.0 U	1.0 U	0.62 J	1.0 U
Bromoform	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (Methyl bromide)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Carbon disulfide	µg/L	0.90 J	1.0 U	1.0 U	1.0 U
Carbon tetrachloride	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Chloroethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (Trichloromethane)	µg/L	1.0 U	1.0 U	1.5	1.0 U
Chloromethane (Methyl chloride)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,3-Dichloropropene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Cyclohexane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Dibromochloromethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (CFC-12)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	µg/L	1.0 U	1.0 U	0.60 J	1.0 U
Isopropyl benzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Methyl acetate	µg/L	10 U	10 U	10 U	10 U
Methyl cyclohexane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Methyl tert butyl ether (MTBE)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Methylene chloride	µg/L	5.0 U	5.0 U	5.0 U	5.0 U
Styrene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	µg/L	1.0 U	44	1.0 U	1.0 U
Trichlorofluoromethane (CFC-11)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Trifluorotrichloroethane (CFC-113)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl chloride	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Xylenes (total)	µg/L	2.0 U	2.0 U	2.0 U	2.0 U

Notes:

U - Not detected

J - Estimated concentration

Table 3

Analytical Methods
Groundwater Sampling
RACER PCC-Validation
Pontiac, Michigan
July 2022

Parameter	Method	Matrix	Holding Time
			Collection or Extraction to Analysis (Days)
Volatile Organic Compounds (VOCs)	SW-846 8260B	Groundwater	14

Notes:

Method References:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, Third Edition, 1986, with subsequent revisions

Technical Memorandum

21 December 2022

To	Tom Kinney	Tel	248-893.3400
Copy to		Email	Tom.kinney@ghd.com
From	James Abston/tl/7	Ref. No.	11223416 (17322A)
Subject	Analytical Results and Full Validation Groundwater Sampling RACER PCC-Validation Pontiac, Michigan October 2022		

1. Introduction

This document details a reduced validation of analytical results for groundwater samples collected in support of the 2022 Groundwater Sampling at the RACER PCC-Validation site during October 2022. Groundwater samples were submitted to Eurofins Environmental Testing Laboratories North Central located in Barberton, Ohio. A sample collection and analysis summary are presented in Table 1. The validated analytical results are summarized in Table 2. A summary of the analytical methodology is presented in Table 3.

Standard GHD report deliverables were submitted by the laboratory. The final results and supporting quality assurance/quality control (QA/QC) data were assessed. Evaluation of the data was based on information obtained from the chain of custody forms, finished report forms, method blank data, recovery data from surrogate spikes/laboratory control samples (LCS) and field QA/QC samples.

The QA/QC criteria by which these data have been assessed are outlined in the analytical methods referenced in Table 3 and applicable guidance from the documents entitled:

1. "Sampling and Analysis Plan and Fundamental Quality Assurance Project Plan (QAPP)", April 2012.
2. "USEPA National Functional Guidelines for Superfund Organic Methods Data Review", USEPA 540-R-2016-002, September 2016.

Item 2 will subsequently be referred to as the "Guidelines" in this Memorandum.

2. Sample Holding Time and Preservation

The sample holding time criterion for the analysis is summarized in Table 3. Sample chain of custody documents and analytical reports were used to determine sample holding times. All samples were analyzed within the required holding times.

All samples were properly preserved, delivered on ice, and stored by the laboratory at the required temperature (0-6°C).

3. Laboratory Method Blank Analyses

Method blanks are prepared from a purified matrix and analyzed with investigative samples to determine the existence and magnitude of sample contamination introduced during the analytical procedures.

For this study, laboratory method blanks were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per analytical batch.

All method blank results were non-detect, indicating that laboratory contamination was not a factor for this investigation.

4. Surrogate Spike Recoveries

In accordance with the methods employed, all samples, blanks, and QC samples analyzed for organics are spiked with surrogate compounds prior to sample analysis. Surrogate recoveries provide a means to evaluate the effects of laboratory performance on individual sample matrices.

All samples submitted for volatile organic compound (VOC) determination was spiked with the appropriate number of surrogate compounds prior to sample analysis.

Surrogate recoveries were assessed against laboratory control limits. All surrogate recoveries were within the laboratory control limits.

5. Laboratory Control Sample Analyses

LCS are prepared and analyzed as samples to assess the analytical efficiencies of the methods employed, independent of sample matrix effects.

For this study, LCS were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per analytical batch.

The LCS contained all compounds of interest. All LCS recoveries were within the laboratory control limits, demonstrating acceptable analytical accuracy.

6. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analyses

To evaluate the effects of sample matrices on the preparation process, measurement procedures, and accuracy of a particular analysis, samples are spiked with a known concentration of the analyte of concern and analyzed as MS/MSD samples. The RPD between the MS and MSD is used to assess analytical precision.

MS/MSD analyses were performed as specified in Table 1.

The MS/MSD samples were spiked with all compounds of interest. All percent recoveries and RPD values were within the laboratory control limits, demonstrating acceptable analytical accuracy and precision.

7. Field QA/QC Samples

The field QA/QC consisted of one trip blank sample, and one field duplicate sample set.

Trip Blank Sample Analysis

To evaluate contamination from sample collection, transportation, storage, and analytical activities, one trip blank was submitted to the laboratory for VOC analysis. All results were non-detect for the compounds of interest.

Field Duplicate Sample Analysis

To assess the analytical and sampling protocol precision, one field duplicate sample set was collected and submitted "blind" to the laboratory, as specified in Table 1. The RPDs associated with these duplicate samples must be less than 50 percent for water samples. If the reported concentration in either the investigative sample or its duplicate is less than five times the reporting limit (RL), the evaluation criteria is one times the RL value for water samples.

All field duplicate results were within acceptable agreement, demonstrating acceptable sampling and analytical precision.

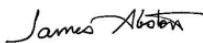
8. Analyte Reporting

The laboratory reported detected results down to the laboratory's method detection limit (MDL) for each analyte. Positive analyte detections less than the RL but greater than the MDL were reported as estimated (J) in Table 2 unless qualified otherwise in this memorandum. Non-detect results were presented as non-detect at the RL in Table 2.

9. Conclusion

Based on the assessment detailed in the foregoing, the data summarized in Table 2 are acceptable without qualification.

Regards



James Abston
Data Analytics Chemist

Table 1

**Sample Collection and Analysis Summary
Groundwater Sampling
RACER PCC-Validation
Pontiac, Michigan
October 2022**

Sample Identification	Location	Matrix	Collection Date	Collection Time	Analysis/Parameters	Comments
					Volatile Organic Compounds	
			(mm/dd/yyyy)	(hr:min)		
GW-11223416-101022-SK-001	MW-74D-22R	Groundwater	10/10/22	10:45	X	
GW-11223416-101022-SK-002	MW-74D-22R	Groundwater	10/10/22	10:50	X	
GW-11223416-101022-SK-003	MW-88-22R	Groundwater	10/10/22	11:55	X	FD(GW-11223416-101022-SK-002)
GW-11223416-101022-SK-004	MW-48-22R	Groundwater	10/10/22	13:25	X	MS/MSD
TB-11223416-101022-SK	Trip Blank	Water Quality Control Matrix	10/10/22	0:00	X	Trip Blank

Notes:

-- - Not applicable

FD - Field Duplicate sample of sample in parenthesis

MS/MSD - Matrix Spike/Matrix Spike Duplicate

Table 2

Validated Analytical Results Summary
Groundwater Sampling
RACER PCC-Validation
Pontiac, Michigan
October 2022

Location ID:	MW-48-22R		MW-74D-22R		MW-74D-22R		MW-88-22R	
Sample Name:	GW-11223416-101022-SK-004		GW-11223416-101022-SK-001		GW-11223416-101022-SK-002		GW-11223416-101022-SK-003	
Sample Date:	10/10/2022		10/10/2022		10/10/2022		10/10/2022	
								Duplicate
Parameters	Unit							
Volatile Organic Compounds								
1,1,1-Trichloroethane	µg/L	1.0 U		1.0 U		1.0 U		1.0 U
1,1,2,2-Tetrachloroethane	µg/L	1.0 U		1.0 U		1.0 U		1.0 U
1,1,2-Trichloroethane	µg/L	1.0 U		1.0 U		1.0 U		1.0 U
1,1-Dichloroethane	µg/L	1.0 U		1.0 U		1.0 U		1.0 U
1,1-Dichloroethene	µg/L	1.0 U		1.0 U		1.0 U		1.0 U
1,2,4-Trichlorobenzene	µg/L	1.0 U		1.0 U		1.0 U		1.0 U
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	2.0 U		2.0 U		2.0 U		2.0 U
1,2-Dibromoethane (Ethylene dibromide)	µg/L	1.0 U		1.0 U		1.0 U		1.0 U
1,2-Dichlorobenzene	µg/L	1.0 U		1.0 U		1.0 U		1.0 U
1,2-Dichloroethane	µg/L	1.0 U		1.0 U		1.0 U		1.0 U
1,2-Dichloropropane	µg/L	1.0 U		1.0 U		1.0 U		1.0 U
1,3-Dichlorobenzene	µg/L	1.0 U		1.0 U		1.0 U		1.0 U
1,4-Dichlorobenzene	µg/L	1.0 U		1.0 U		1.0 U		1.0 U
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	10 U		10 U		10 U		10 U
2-Hexanone	µg/L	10 U		10 U		10 U		10 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	µg/L	10 U		10 U		10 U		10 U
Acetone	µg/L	10 U		10 U		10 U		10 U
Benzene	µg/L	1.0 U		1.0 U		1.0 U		1.0 U
Bromodichloromethane	µg/L	1.0 U		1.0 U		1.0 U		1.0 U
Bromoform	µg/L	1.0 U		1.0 U		1.0 U		1.0 U
Bromomethane (Methyl bromide)	µg/L	1.0 U		1.0 U		1.0 U		1.0 U
Carbon disulfide	µg/L	1.0 U		1.0 U		1.0 U		1.0 U
Carbon tetrachloride	µg/L	1.0 U		1.0 U		1.0 U		1.0 U
Chlorobenzene	µg/L	1.0 U		1.0 U		1.0 U		1.0 U
Chloroethane	µg/L	1.0 U		1.0 U		1.0 U		1.0 U
Chloroform (Trichloromethane)	µg/L	1.0 U		1.0 U		1.0 U		1.0 U
Chloromethane (Methyl chloride)	µg/L	1.0 U		1.0 U		1.0 U		1.0 U
cis-1,2-Dichloroethene	µg/L	1.0 U		1.0 U		1.0 U		1.0 U
cis-1,3-Dichloropropene	µg/L	1.0 U		1.0 U		1.0 U		1.0 U
Cyclohexane	µg/L	1.0 U		1.0 U		1.0 U		1.0 U
Dibromochloromethane	µg/L	1.0 U		1.0 U		1.0 U		1.0 U
Dichlorodifluoromethane (CFC-12)	µg/L	1.0 U		1.0 U		1.0 U		1.0 U
Ethylbenzene	µg/L	1.0 U		1.0 U		1.0 U		1.0 U
Isopropyl benzene	µg/L	1.0 U		1.0 U		1.0 U		0.70 U
Methyl acetate	µg/L	10 U		10 U		10 U		10 U
Methyl cyclohexane	µg/L	1.0 U		1.0 U		1.0 U		1.0 U
Methyl tert butyl ether (MTBE)	µg/L	1.0 U		1.0 U		1.0 U		1.0 U
Methylene chloride	µg/L	5.0 U		5.0 U		5.0 U		5.0 U
Styrene	µg/L	1.0 U		1.0 U		1.0 U		1.0 U
Tetrachloroethene	µg/L	1.0 U		1.0 U		1.0 U		1.0 U
Toluene	µg/L	1.0 U		1.0 U		1.0 U		1.0 U
trans-1,2-Dichloroethene	µg/L	1.0 U		1.0 U		1.0 U		1.0 U
trans-1,3-Dichloropropene	µg/L	1.0 U		1.0 U		1.0 U		1.0 U

Table 2

**Validated Analytical Results Summary
Groundwater Sampling
RACER PCC-Validation
Pontiac, Michigan
October 2022**

Location ID:	MW-48-22R	MW-74D-22R	MW-74D-22R	MW-88-22R
Sample Name:	GW-11223416-101022-SK-004	GW-11223416-101022-SK-001	GW-11223416-101022-SK-002	GW-11223416-101022-SK-003
Sample Date:	10/10/2022	10/10/2022	10/10/2022	10/10/2022 Duplicate

Parameters	Unit				
Volatile Organic Compounds					
Trichloroethene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Trichlorofluoromethane (CFC-11)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Trifluorotrichloroethane (CFC-113)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl chloride	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Xylenes (total)	µg/L	2.0 U	2.0 U	2.0 U	1.2 J

Notes:

U - Not detected
J - Estimated Concentration

Table 3

Analytical Methods
Groundwater Sampling
RACER PCC-Validation
Pontiac, Michigan
October 2022

Parameter	Method	Matrix	Holding Time
			Collection to Analysis (Days)
Volatile Organic Compounds (VOCs)	SW-846 8260B	Groundwater	14

Notes:**Method References:**

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, Third Edition, 1986, with subsequent revisions

Data Verification Report

May 19, 2023

To	Tom Kinney, GHD	Project No..	11223416
Copy to	Juliann Luzwick, GHD	Email	Tom.kinney@ghd.com
From	James Abston/cs/9-NF	Contact No.	248-893-3381
Project Name	RACER PCC-Validation		
Subject	Analytical Results and Data Verification Groundwater Sampling RACER PCC-Validation Pontiac, Michigan April 2023		

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

1. Introduction

This document details a data verification of analytical results for water samples collected in support of the the 2022 Groundwater Sampling at the RACER PCC-Validation site during April 2023. Samples were submitted to Eurofins Environment Testing located in Barberton, Ohio. A sample collection and analysis summary is presented in Table 1. The validated analytical results are summarized in Table 2. A summary of the analytical methodology is presented in Table 3.

Standard GHD report deliverables were submitted by the laboratory. The final results and supporting quality assurance/quality control (QA/QC) data were assessed. Evaluation of the data was based on information obtained from the chain of custody forms, finished report forms, method blank data, recovery data from surrogate spikes/laboratory control samples (LCS)/matrix spikes (MS)/matrix spike duplicates (MSD) and field QA/QC samples.

The QA/QC criteria by which these data have been assessed are outlined in the analytical methods referenced in Table 3 and applicable guidance from the documents entitled:

1. "Sampling and Analysis Plan and Fundamental Quality Assurance Project Plan (QAPP)", April 2012.
2. "National Functional Guidelines for Organic Superfund Methods Data Review", USEPA 540-R-20-005, November 2020.

Item 2 will subsequently be referred to as the "Guidelines" in this report.

2. Sample Holding Time and Preservation

The sample holding time criteria for the analyses are summarized in Table 3. Sample chain of custody documents and analytical reports were used to determine sample holding times. All samples were analyzed within the required holding times.

All samples were properly preserved, delivered on ice, and stored by the laboratory at the required temperature (0-6°C).

3. Laboratory Method Blank Analyses

Method blanks are prepared from a purified matrix and analyzed with investigative samples to determine the existence and magnitude of sample contamination introduced during the analytical procedures.

For this study, laboratory method blanks were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per analytical batch.

All method blank results were non-detect, indicating that laboratory contamination was not a factor for this investigation.

4. Surrogate Spike Recoveries

In accordance with the methods employed, all samples, blanks, and QC samples analyzed for organics are spiked with surrogate compounds prior to sample analysis. Surrogate recoveries provide a means to evaluate the effects of laboratory performance on individual sample matrices.

All samples submitted for volatile organic compound (VOC) and semi-volatile organic compound (SVOC) determinations were spiked with the appropriate number of surrogate compounds prior to sample analysis.

Each individual surrogate compound is expected to meet the laboratory control limits. For SVOC analyses, it is generally acceptable for there to be one outlying surrogate in the base/neutral or acid fraction provided that the recovery is at least 10 percent.

Surrogate recoveries were assessed against laboratory control limits. All surrogate recoveries were within the laboratory control limits.

5. Laboratory Control Sample Analyses

LCS are prepared and analyzed as samples to assess the analytical efficiencies of the methods employed, independent of sample matrix effects.

For this study, LCS were analyzed at a minimum frequency of 1 per 20 investigative samples and/or 1 per analytical batch.

The LCS contained all compounds of interest. All LCS recoveries were within the laboratory control limits, demonstrating acceptable analytical accuracy.

6. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analyses

To evaluate the effects of sample matrices on the preparation process, measurement procedures, and accuracy of a particular analysis, samples are spiked with a known concentration of the analyte of concern and analyzed as MS/MSD samples. The RPD between the MS and MSD is used to assess analytical precision.

MS/MSD analyses were performed as specified in Table 1.

The MS/MSD samples were spiked with all compounds of interest. All percent recoveries and RPD values were within the laboratory control limits, demonstrating acceptable analytical accuracy and precision except for high RPDs for acetone and methyl acetate. The associated sample results were non-detect and therefore required no qualification.

7. Field QA/QC Samples

The field QA/QC consisted of two trip blank samples.

Trip Blank Sample Analysis

To evaluate contamination from sample collection, transportation, storage, and analytical activities, two trip blanks were submitted to the laboratory for VOC analysis. All results were non-detect for the compounds of interest.

8. Analyte Reporting

The laboratory reported detected results down to the laboratory's sample-specific method detection limit (MDL) for each analyte. Positive analyte detections less than the RL but greater than the sample-specific MDL were qualified as estimated (J) in Table 2 unless qualified otherwise in this report. No positive analyte detections less than the RL but greater than the sample-specific MDL were reported. Non-detect results were presented as non-detect at the RL in Table 2.

9. Conclusion

Based on the assessment detailed in the foregoing, the data summarized in Table 2 are acceptable without qualification.

Regards,

James Abston
Project Chemist

Table 1

Sample Collection and Analysis Summary
Groundwater Sampling
RACER PCC-Validation
Pontiac, Michigan
April 2023

Sample Identification	Location	Matrix	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	Analysis/Parameters		Comments
					Volatile Organic Compounds	Metals	
GW-11223416-041023-SK-001	MW-85-12	Groundwater	4/10/23	10:25	X	--	
GW-11223416-041023-SK-002	MW-64-08	Groundwater	4/10/23	11:15	X	--	
GW-11223416-041023-SK-003	MW-48-22R	Groundwater	4/10/23	12:40	X	--	
GW-11223416-041023-SK-004	MW-68-08	Groundwater	4/10/23	14:00	X	--	
GW-11223416-041023-SK-005	MW-87-12	Groundwater	4/10/23	14:25	X	--	
GW-11223416-041123-SK-006	MW-79I-19	Groundwater	4/11/23	10:20	X	--	
GW-11223416-041123-SK-007	MW-79D-19	Groundwater	4/11/23	11:15	X	--	
GW-11223416-041123-SK-008	MW-74-22R	Groundwater	4/11/23	13:25	X	--	MS/MSD
GW-11223416-041123-SK-009	MW-2-07	Groundwater	4/11/23	12:05	X	--	
GW-11223416-041123-SK-010	MW-74D-22R	Groundwater	4/11/23	14:00	X	--	
GW-11223416-041223-SK-011	MW-92S-13	Groundwater	4/12/23	9:55	X	--	
GW-11223416-041223-SK-012	MW-92I-13	Groundwater	4/12/23	10:50	X	--	
GW-11223416-041223-SK-013	MW-93I-13	Groundwater	4/12/23	11:50	X	--	
GW-11223416-041223-SK-014	MW-21-07	Groundwater	4/12/23	12:10	X	--	
GW-11223416-041223-SK-015	MW-38-07	Groundwater	4/12/23	12:45	X	X	
GW-11223416-041223-SK-016	MW-33-07	Groundwater	4/12/23	13:50	X	X	
GW-11223416-041323-SK-017	MW-81-12	Groundwater	4/13/23	10:25	X	--	
GW-11223416-041323-SK-018	MW-80-12	Groundwater	4/13/23	11:35	X	--	
GW-11223416-041323-SK-019	MW-10-07	Groundwater	4/13/23	12:50	X	X	
TB-11223416-041223-SK	-	Groundwater Quality Control Matrix	4/12/23	--	X	--	Trip Blank
TB-11223416-041323-SK	-	Groundwater Quality Control Matrix	4/13/23	--	X	--	Trip Blank

Notes:

MS/MSD - Matrix Spike/Matrix Spike Duplicate

-- - Not applicable

Table 2

Validated Analytical Results Summary
Groundwater Sampling
RACER PCC-Validation
Pontiac, Michigan
April 2023

Location ID:	MW-2-07	MW-10-07	MW-21-07	MW-33-07
Sample Name:	GW-11223416-041123-SK-009	GW-11223416-041323-SK-019	GW-11223416-041223-SK-014	GW-11223416-041223-SK-016
Sample Date:	04/11/2023	04/13/2023	04/12/2023	04/12/2023

Parameters	Unit				
Volatile Organic Compounds					
1,1,1-Trichloroethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	2.0 U	2.0 U	2.0 U	2.0 U
1,2-Dibromoethane (Ethylene dibromide)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloropropane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	10 U	10 U	10 U	10 U
2-Hexanone	µg/L	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	µg/L	10 U	10 U	10 U	10 U
Acetone	µg/L	10 U	10 U	10 U	10 U
Benzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Bromodichloromethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Bromoform	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (Methyl bromide)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Carbon disulfide	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Carbon tetrachloride	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Chloroethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (Trichloromethane)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane (Methyl chloride)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U

Table 2

Validated Analytical Results Summary
Groundwater Sampling
RACER PCC-Validation
Pontiac, Michigan
April 2023

Location ID:	MW-2-07	MW-10-07	MW-21-07	MW-33-07
Sample Name:	GW-11223416-041123-SK-009	GW-11223416-041323-SK-019	GW-11223416-041223-SK-014	GW-11223416-041223-SK-016
Sample Date:	04/11/2023	04/13/2023	04/12/2023	04/12/2023

Parameters	Unit				
cis-1,3-Dichloropropene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Cyclohexane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Dibromochloromethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (CFC-12)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Isopropyl benzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Methyl acetate	µg/L	10 U	10 U	10 U	10 U
Methyl cyclohexane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Methyl tert butyl ether (MTBE)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Methylene chloride	µg/L	5.0 U	5.0 U	5.0 U	5.0 U
Styrene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	µg/L	1.0 U	1.0 U	0.46 J	1.0 U
Trichlorofluoromethane (CFC-11)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Trifluorotrichloroethane (CFC-113)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl chloride	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Xylenes (total)	µg/L	2.0 U	2.0 U	2.0 U	2.0 U

Table 2

Validated Analytical Results Summary
Groundwater Sampling
RACER PCC-Validation
Pontiac, Michigan
April 2023

Location ID:	MW-2-07	MW-10-07	MW-21-07	MW-33-07
Sample Name:	GW-11223416-041123-SK-009	GW-11223416-041323-SK-019	GW-11223416-041223-SK-014	GW-11223416-041223-SK-016
Sample Date:	04/11/2023	04/13/2023	04/12/2023	04/12/2023

Parameters**Unit****Metals**

Aluminum	µg/L	--	180	--	50 U
Aluminum (dissolved)	µg/L	--	190	--	50 U
Lead	µg/L	--	1.0 U	--	1.0 U
Lead (dissolved)	µg/L	--	1.0 U	--	1.0 U
Vanadium	µg/L	--	4.0 U	--	4.0 U
Vanadium (dissolved)	µg/L	--	0.88 J	--	4.0 U

Table 2

Validated Analytical Results Summary
Groundwater Sampling
RACER PCC-Validation
Pontiac, Michigan
April 2023

Location ID:	MW-38-07	MW-48-22R	MW-64-08	MW-68-08
Sample Name:	GW-11223416-041223-SK-015	GW-11223416-041023-SK-003	GW-11223416-041023-SK-002	GW-11223416-041023-SK-004
Sample Date:	04/12/2023	04/10/2023	04/10/2023	04/10/2023

Parameters**Unit****Volatile Organic Compounds**

1,1,1-Trichloroethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	2.0 U	2.0 U	2.0 U	2.0 U
1,2-Dibromoethane (Ethylene dibromide)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloropropane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	10 U	10 U	10 U	10 U
2-Hexanone	µg/L	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	µg/L	10 U	10 U	10 U	10 U
Acetone	µg/L	10 U	10 U	10 U	10 U
Benzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Bromodichloromethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Bromoform	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (Methyl bromide)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Carbon disulfide	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Carbon tetrachloride	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Chloroethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (Trichloromethane)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane (Methyl chloride)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U

Table 2

Validated Analytical Results Summary
Groundwater Sampling
RACER PCC-Validation
Pontiac, Michigan
April 2023

Location ID:	MW-38-07	MW-48-22R	MW-64-08	MW-68-08
Sample Name:	GW-11223416-041223-SK-015	GW-11223416-041023-SK-003	GW-11223416-041023-SK-002	GW-11223416-041023-SK-004
Sample Date:	04/12/2023	04/10/2023	04/10/2023	04/10/2023

Parameters	Unit				
cis-1,3-Dichloropropene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Cyclohexane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Dibromochloromethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (CFC-12)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Isopropyl benzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Methyl acetate	µg/L	10 U	10 U	10 U	10 U
Methyl cyclohexane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Methyl tert butyl ether (MTBE)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Methylene chloride	µg/L	5.0 U	5.0 U	5.0 U	5.0 U
Styrene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Trichlorofluoromethane (CFC-11)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Trifluorotrichloroethane (CFC-113)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl chloride	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Xylenes (total)	µg/L	2.0 U	2.0 U	2.0 U	2.0 U

Table 2

Validated Analytical Results Summary
Groundwater Sampling
RACER PCC-Validation
Pontiac, Michigan
April 2023

Location ID:	MW-38-07	MW-48-22R	MW-64-08	MW-68-08
Sample Name:	GW-11223416-041223-SK-015	GW-11223416-041023-SK-003	GW-11223416-041023-SK-002	GW-11223416-041023-SK-004
Sample Date:	04/12/2023	04/10/2023	04/10/2023	04/10/2023

Parameters**Unit****Metals**

Aluminum	µg/L	47 J	--	--	--
Aluminum (dissolved)	µg/L	44 J	--	--	--
Lead	µg/L	1.0 U	--	--	--
Lead (dissolved)	µg/L	1.0 U	--	--	--
Vanadium	µg/L	4.0 U	--	--	--
Vanadium (dissolved)	µg/L	4.0 U	--	--	--

Table 2

Validated Analytical Results Summary
Groundwater Sampling
RACER PCC-Validation
Pontiac, Michigan
April 2023

Location ID:	MW-74-22R	MW-74D-22R	MW-79D-19	MW-79I-19
Sample Name:	GW-11223416-041123-SK-008	GW-11223416-041123-SK-010	GW-11223416-041123-SK-007	GW-11223416-041123-SK-006
Sample Date:	04/11/2023	04/11/2023	04/11/2023	04/11/2023

Parameters**Unit****Volatile Organic Compounds**

1,1,1-Trichloroethane	µg/L	14	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	2.0 U	2.0 U	2.0 U	2.0 U
1,2-Dibromoethane (Ethylene dibromide)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloropropane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	10 U	10 U	10 U	10 U
2-Hexanone	µg/L	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	µg/L	10 U	10 U	10 U	10 U
Acetone	µg/L	10 U	10 U	10 U	10 U
Benzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Bromodichloromethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Bromoform	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (Methyl bromide)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Carbon disulfide	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Carbon tetrachloride	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Chloroethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (Trichloromethane)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane (Methyl chloride)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U

Table 2

Validated Analytical Results Summary
Groundwater Sampling
RACER PCC-Validation
Pontiac, Michigan
April 2023

Location ID:	MW-74-22R	MW-74D-22R	MW-79D-19	MW-79I-19
Sample Name:	GW-11223416-041123-SK-008	GW-11223416-041123-SK-010	GW-11223416-041123-SK-007	GW-11223416-041123-SK-006
Sample Date:	04/11/2023	04/11/2023	04/11/2023	04/11/2023

Parameters	Unit				
cis-1,3-Dichloropropene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Cyclohexane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Dibromochloromethane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (CFC-12)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Isopropyl benzene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Methyl acetate	µg/L	10 U	10 U	10 U	10 U
Methyl cyclohexane	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Methyl tert butyl ether (MTBE)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Methylene chloride	µg/L	5.0 U	5.0 U	5.0 U	5.0 U
Styrene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	µg/L	40	1.0 U	1.0 U	1.0 U
Trichlorofluoromethane (CFC-11)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Trifluorotrichloroethane (CFC-113)	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl chloride	µg/L	1.0 U	1.0 U	1.0 U	1.0 U
Xylenes (total)	µg/L	2.0 U	2.0 U	2.0 U	2.0 U

Table 2

Validated Analytical Results Summary
Groundwater Sampling
RACER PCC-Validation
Pontiac, Michigan
April 2023

Location ID:	MW-74-22R	MW-74D-22R	MW-79D-19	MW-79I-19
Sample Name:	GW-11223416-041123-SK-008	GW-11223416-041123-SK-010	GW-11223416-041123-SK-007	GW-11223416-041123-SK-006
Sample Date:	04/11/2023	04/11/2023	04/11/2023	04/11/2023

Parameters**Unit****Metals**

Aluminum	µg/L	--	--	--	--
Aluminum (dissolved)	µg/L	--	--	--	--
Lead	µg/L	--	--	--	--
Lead (dissolved)	µg/L	--	--	--	--
Vanadium	µg/L	--	--	--	--
Vanadium (dissolved)	µg/L	--	--	--	--

Table 2

Validated Analytical Results Summary
Groundwater Sampling
RACER PCC-Validation
Pontiac, Michigan
April 2023

Location ID:		MW-80-12	MW-81-12	MW-85-12
Sample Name:		GW-11223416-041323-SK-018	GW-11223416-041323-SK-017	GW-11223416-041023-SK-001
Sample Date:		04/13/2023	04/13/2023	04/10/2023
Parameters	Unit			
Volatile Organic Compounds				
1,1,1-Trichloroethane	µg/L	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	µg/L	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	µg/L	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	µg/L	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	µg/L	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	2.0 U	2.0 U	2.0 U
1,2-Dibromoethane (Ethylene dibromide)	µg/L	1.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	µg/L	1.0 U	1.0 U	1.0 U
1,2-Dichloropropane	µg/L	1.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	10 U	10 U	10 U
2-Hexanone	µg/L	10 U	10 U	10 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	µg/L	10 U	10 U	10 U
Acetone	µg/L	10 U	10 U	10 U
Benzene	µg/L	1.0 U	1.0 U	1.0 U
Bromodichloromethane	µg/L	1.0 U	1.0 U	1.0 U
Bromoform	µg/L	1.0 U	1.0 U	1.0 U
Bromomethane (Methyl bromide)	µg/L	1.0 U	1.0 U	1.0 U
Carbon disulfide	µg/L	1.0 U	1.0 U	1.0 U
Carbon tetrachloride	µg/L	1.0 U	1.0 U	1.0 U
Chlorobenzene	µg/L	1.0 U	1.0 U	1.0 U
Chloroethane	µg/L	1.0 U	1.0 U	1.0 U
Chloroform (Trichloromethane)	µg/L	1.0 U	1.0 U	1.0 U
Chloromethane (Methyl chloride)	µg/L	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	µg/L	1.0 U	1.0 U	1.0 U

Table 2

Validated Analytical Results Summary
Groundwater Sampling
RACER PCC-Validation
Pontiac, Michigan
April 2023

Location ID:		MW-80-12	MW-81-12	MW-85-12
Sample Name:		GW-11223416-041323-SK-018	GW-11223416-041323-SK-017	GW-11223416-041023-SK-001
Sample Date:		04/13/2023	04/13/2023	04/10/2023
Parameters	Unit			
cis-1,3-Dichloropropene	µg/L	1.0 U	1.0 U	1.0 U
Cyclohexane	µg/L	1.0 U	1.0 U	1.0 U
Dibromochloromethane	µg/L	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (CFC-12)	µg/L	1.0 U	1.0 U	1.0 U
Ethylbenzene	µg/L	1.0 U	1.0 U	1.0 U
Isopropyl benzene	µg/L	1.0 U	1.0 U	1.0 U
Methyl acetate	µg/L	10 U	10 U	10 U
Methyl cyclohexane	µg/L	1.0 U	1.0 U	1.0 U
Methyl tert butyl ether (MTBE)	µg/L	1.0 U	1.0 U	1.0 U
Methylene chloride	µg/L	5.0 U	5.0 U	5.0 U
Styrene	µg/L	1.0 U	1.0 U	1.0 U
Tetrachloroethene	µg/L	1.0 U	1.0 U	1.0 U
Toluene	µg/L	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	µg/L	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	µg/L	1.0 U	1.0 U	1.0 U
Trichloroethene	µg/L	1.0 U	1.0 U	1.0 U
Trichlorofluoromethane (CFC-11)	µg/L	1.0 U	1.0 U	1.0 U
Trifluorotrichloroethane (CFC-113)	µg/L	1.0 U	1.0 U	1.0 U
Vinyl chloride	µg/L	1.0 U	1.0 U	1.0 U
Xylenes (total)	µg/L	2.0 U	2.0 U	2.0 U

Table 2

Validated Analytical Results Summary
Groundwater Sampling
RACER PCC-Validation
Pontiac, Michigan
April 2023

Location ID:	MW-80-12	MW-81-12	MW-85-12
Sample Name:	GW-11223416-041323-SK-018	GW-11223416-041323-SK-017	GW-11223416-041023-SK-001
Sample Date:	04/13/2023	04/13/2023	04/10/2023

Parameters**Unit****Metals**

Aluminum	µg/L	--	--	--
Aluminum (dissolved)	µg/L	--	--	--
Lead	µg/L	--	--	--
Lead (dissolved)	µg/L	--	--	--
Vanadium	µg/L	--	--	--
Vanadium (dissolved)	µg/L	--	--	--

Table 2

Validated Analytical Results Summary
Groundwater Sampling
RACER PCC-Validation
Pontiac, Michigan
April 2023

Location ID:		MW-87-12	MW-92I-13	MW-92S-13
Sample Name:		GW-11223416-041023-SK-005	GW-11223416-041223-SK-012	GW-11223416-041223-SK-011
Sample Date:		04/10/2023	04/12/2023	04/12/2023
Parameters	Unit			
Volatile Organic Compounds				
1,1,1-Trichloroethane	µg/L	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	µg/L	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	µg/L	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	µg/L	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	µg/L	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	2.0 U	2.0 U	2.0 U
1,2-Dibromoethane (Ethylene dibromide)	µg/L	1.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	µg/L	1.0 U	1.0 U	1.0 U
1,2-Dichloropropane	µg/L	1.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	1.5 J	10 U	10 U
2-Hexanone	µg/L	10 U	10 U	10 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	µg/L	1.2 J	10 U	10 U
Acetone	µg/L	10 U	10 U	10 U
Benzene	µg/L	1.0 U	1.0 U	1.0 U
Bromodichloromethane	µg/L	1.0 U	1.0 U	1.0 U
Bromoform	µg/L	1.0 U	1.0 U	1.0 U
Bromomethane (Methyl bromide)	µg/L	1.0 U	1.0 U	1.0 U
Carbon disulfide	µg/L	1.0 U	1.0 U	1.0 U
Carbon tetrachloride	µg/L	1.0 U	1.0 U	1.0 U
Chlorobenzene	µg/L	1.0 U	1.0 U	1.0 U
Chloroethane	µg/L	1.0 U	1.0 U	1.0 U
Chloroform (Trichloromethane)	µg/L	1.0 U	1.0 U	1.0 U
Chloromethane (Methyl chloride)	µg/L	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	µg/L	1.0 U	0.62 J	1.0 U

Table 2

Validated Analytical Results Summary
Groundwater Sampling
RACER PCC-Validation
Pontiac, Michigan
April 2023

Location ID:		MW-87-12	MW-92I-13	MW-92S-13
Sample Name:		GW-11223416-041023-SK-005	GW-11223416-041223-SK-012	GW-11223416-041223-SK-011
Sample Date:		04/10/2023	04/12/2023	04/12/2023
Parameters	Unit			
cis-1,3-Dichloropropene	µg/L	1.0 U	1.0 U	1.0 U
Cyclohexane	µg/L	1.0 U	1.0 U	1.0 U
Dibromochloromethane	µg/L	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (CFC-12)	µg/L	1.0 U	1.0 U	1.0 U
Ethylbenzene	µg/L	1.0 U	1.0 U	1.0 U
Isopropyl benzene	µg/L	1.0 U	1.0 U	1.0 U
Methyl acetate	µg/L	10 U	10 U	10 U
Methyl cyclohexane	µg/L	1.0 U	1.0 U	1.0 U
Methyl tert butyl ether (MTBE)	µg/L	1.0 U	1.0 U	1.0 U
Methylene chloride	µg/L	5.0 U	5.0 U	5.0 U
Styrene	µg/L	1.0 U	1.0 U	1.0 U
Tetrachloroethene	µg/L	1.0 U	1.0 U	1.0 U
Toluene	µg/L	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	µg/L	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	µg/L	1.0 U	1.0 U	1.0 U
Trichloroethene	µg/L	1.0 U	1.0 U	1.0 U
Trichlorofluoromethane (CFC-11)	µg/L	1.0 U	1.0 U	1.0 U
Trifluorotrichloroethane (CFC-113)	µg/L	1.0 U	1.0 U	1.0 U
Vinyl chloride	µg/L	1.0 U	1.0 U	1.0 U
Xylenes (total)	µg/L	1.7 J	2.0 U	2.0 U

Table 2

Validated Analytical Results Summary
Groundwater Sampling
RACER PCC-Validation
Pontiac, Michigan
April 2023

Location ID:	MW-87-12	MW-92I-13	MW-92S-13
Sample Name:	GW-11223416-041023-SK-005	GW-11223416-041223-SK-012	GW-11223416-041223-SK-011
Sample Date:	04/10/2023	04/12/2023	04/12/2023

Parameters**Unit****Metals**

Aluminum	µg/L	--	--	--
Aluminum (dissolved)	µg/L	--	--	--
Lead	µg/L	--	--	--
Lead (dissolved)	µg/L	--	--	--
Vanadium	µg/L	--	--	--
Vanadium (dissolved)	µg/L	--	--	--

Table 2

Validated Analytical Results Summary
Groundwater Sampling
RACER PCC-Validation
Pontiac, Michigan
April 2023

Location ID:		MW-93I-13	Trip Blank	Trip Blank
Sample Name:		GW-11223416-041223-SK-013	TB-11223416-041223-SK	TB-11223416-041323-SK
Sample Date:		04/12/2023	04/12/2023	04/13/2023
Parameters	Unit			
Volatile Organic Compounds				
1,1,1-Trichloroethane	µg/L	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	µg/L	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	µg/L	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	µg/L	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	µg/L	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U
1,2-Dibromo-3-chloropropane (DBCP)	µg/L	2.0 U	2.0 U	2.0 U
1,2-Dibromoethane (Ethylene dibromide)	µg/L	1.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	µg/L	1.0 U	1.0 U	1.0 U
1,2-Dichloropropane	µg/L	1.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	µg/L	1.0 U	1.0 U	1.0 U
2-Butanone (Methyl ethyl ketone) (MEK)	µg/L	10 U	10 U	10 U
2-Hexanone	µg/L	10 U	10 U	10 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	µg/L	10 U	10 U	10 U
Acetone	µg/L	10 U	10 U	10 U
Benzene	µg/L	1.0 U	1.0 U	1.0 U
Bromodichloromethane	µg/L	1.0 U	1.0 U	1.0 U
Bromoform	µg/L	1.0 U	1.0 U	1.0 U
Bromomethane (Methyl bromide)	µg/L	1.0 U	1.0 U	1.0 U
Carbon disulfide	µg/L	1.0 U	1.0 U	1.0 U
Carbon tetrachloride	µg/L	1.0 U	1.0 U	1.0 U
Chlorobenzene	µg/L	1.0 U	1.0 U	1.0 U
Chloroethane	µg/L	1.0 U	1.0 U	1.0 U
Chloroform (Trichloromethane)	µg/L	1.0 U	1.0 U	1.0 U
Chloromethane (Methyl chloride)	µg/L	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	µg/L	1.0 U	1.0 U	1.0 U

Table 2

Validated Analytical Results Summary
Groundwater Sampling
RACER PCC-Validation
Pontiac, Michigan
April 2023

Location ID:		MW-93I-13	Trip Blank	Trip Blank
Sample Name:		GW-11223416-041223-SK-013	TB-11223416-041223-SK	TB-11223416-041323-SK
Sample Date:		04/12/2023	04/12/2023	04/13/2023
Parameters	Unit			
cis-1,3-Dichloropropene	µg/L	1.0 U	1.0 U	1.0 U
Cyclohexane	µg/L	1.0 U	1.0 U	1.0 U
Dibromochloromethane	µg/L	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (CFC-12)	µg/L	1.0 U	1.0 U	1.0 U
Ethylbenzene	µg/L	1.0 U	1.0 U	1.0 U
Isopropyl benzene	µg/L	1.0 U	1.0 U	1.0 U
Methyl acetate	µg/L	10 U	10 U	10 U
Methyl cyclohexane	µg/L	1.0 U	1.0 U	1.0 U
Methyl tert butyl ether (MTBE)	µg/L	1.0 U	1.0 U	1.0 U
Methylene chloride	µg/L	5.0 U	5.0 U	5.0 U
Styrene	µg/L	1.0 U	1.0 U	1.0 U
Tetrachloroethene	µg/L	1.0 U	1.0 U	1.0 U
Toluene	µg/L	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	µg/L	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	µg/L	1.0 U	1.0 U	1.0 U
Trichloroethene	µg/L	1.0 U	1.0 U	1.0 U
Trichlorofluoromethane (CFC-11)	µg/L	1.0 U	1.0 U	1.0 U
Trifluorotrichloroethane (CFC-113)	µg/L	1.0 U	1.0 U	1.0 U
Vinyl chloride	µg/L	1.0 U	1.0 U	1.0 U
Xylenes (total)	µg/L	2.0 U	2.0 U	2.0 U

Table 2

Validated Analytical Results Summary
Groundwater Sampling
RACER PCC-Validation
Pontiac, Michigan
April 2023

Location ID:	MW-93I-13	Trip Blank	Trip Blank
Sample Name:	GW-11223416-041223-SK-013	TB-11223416-041223-SK	TB-11223416-041323-SK
Sample Date:	04/12/2023	04/12/2023	04/13/2023

Parameters**Unit****Metals**

Aluminum	µg/L	--	--	--
Aluminum (dissolved)	µg/L	--	--	--
Lead	µg/L	--	--	--
Lead (dissolved)	µg/L	--	--	--
Vanadium	µg/L	--	--	--
Vanadium (dissolved)	µg/L	--	--	--

Notes:

U - Not detected

J - Estimated concentration

-- - Not applicable

Table 3

**Analytical Methods
Groundwater Sampling
RACER PCC-Validation
Pontiac, Michigan
April 2023**

Parameter	Method	Matrix	Holding Time
			Collection or Extraction to Analysis (Days)
Metals	SW-846 6020/6010B	Groundwater	180
Volatile Organic Compounds (VOCs)	SW-846 8260B	Groundwater	14

Notes:

Method References:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, Third Edition, 1986, with subsequent revisions

Appendix C

Laboratory Analytical Reports



ANALYTICAL REPORT

PREPARED FOR

Attn: James Abston
GHD Services Inc.
26850 Haggerty Rd.
Farmington Hills MI 48331

Generated 5/25/2023 4:25 PM

JOB DESCRIPTION

PCC Validation

JOB NUMBER

410-123046-1

Eurofins Lancaster Laboratories Environment Testing, LLC

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Authorization



Generated
5/25/2023 4:25 PM

Authorized for release by
Megan Moeller, Client Services Manager
Megan.Moeller@et.eurofinsus.com
717 556-7261

Eurofins Lancaster Laboratories Environment Testing, LLC

Compliance Statement

Analytical test results meet all requirements of the associated regulatory program (e.g., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis. Data qualifiers are applied to note exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

- QC results that exceed the upper limits and are associated with non-detect samples are qualified but further narration is not required since the bias is high and does not change a non-detect result. Further narration is also not required with QC blank detection when the associated sample concentration is non-detect or more than ten times the level in the blank.

- Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD is performed, unless otherwise specified in the method.

- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Measurement uncertainty values, as applicable, are available upon request.

Test results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" and tested in the laboratory are not performed within 15 minutes of collection.

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WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. The foregoing express warranty is exclusive and is given in lieu of all other warranties, expressed or implied, except as otherwise agreed. We disclaim any other warranties, expressed or implied, including a warranty of fitness for particular purpose and warranty of merchantability. In no event shall Eurofins Lancaster Laboratories Environmental, LLC be liable for indirect, special, consequential, or incidental damages including, but not limited to, damages for loss of profit or goodwill regardless of (A) the negligence (either sole or concurrent) of Eurofins Lancaster Laboratories Environmental and (B) whether Eurofins Lancaster Laboratories Environmental has been informed of the possibility of such damages. We accept no legal responsibility for the purposes for which the client uses the test results. Except as otherwise agreed, no purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.



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Definitions/Glossary

Client: GHD Services Inc.
Project/Site: PCC Validation

Job ID: 410-123046-1

Qualifiers

GC Semi VOA

Qualifier	Qualifier Description
cn	Refer to Case Narrative for further detail

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Job Narrative
410-123046-1

Receipt

The sample was received on 4/15/2023 10:10 AM. Unless otherwise noted below, the sample arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 5.6°C

Receipt Exceptions

The Field Sampler was not listed on the Chain of Custody.

Sample container was received by the laboratory without a label. L-11223416-041223-SK-001 (410-123046-1)

GC Semi VOA

Method 8015C_ID: The GC fingerprint for sample L-11223416-041223-SK-001 (410-123046-1) indicates the presence of two products. The first product elutes early in the C8-C40 normal hydrocarbon range and is most similar to our Kerosene/Jet fuel reference standard. For the purposes of this analysis, the laboratory considers kerosene and jet fuel to be the same product. The FID is a non-selective detector that cannot discern the small differences between the two products. The second product in the sample elutes late in the C8-C40 normal hydrocarbon range and is most similar to our motor oil composite reference standard. The % by weight result represents the total of both products eluting in the C8-C40 normal hydrocarbon range.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Detection Summary

Client: GHD Services Inc.
Project/Site: PCC Validation

Job ID: 410-123046-1

Client Sample ID: L-11223416-041223-SK-001 Lab Sample ID: 410-123046-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Qualitative Method	82	cn			% by Wt			10	8015C	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: GHD Services Inc.
Project/Site: PCC Validation

Job ID: 410-123046-1

Client Sample ID: L-11223416-041223-SK-001

Lab Sample ID: 410-123046-1

Date Collected: 04/12/23 14:00

Matrix: Waste

Date Received: 04/15/23 10:10

Method: SW846 8015C - Hydrocarbon Product Identification (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Qualitative Method	82	cn			% by Wt		04/19/23 18:55	04/20/23 00:09	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Chlorobenzene (Surr)	106	cn	50 - 150	04/19/23 18:55	04/20/23 00:09	10
o- terphenyl (Surr)	108	cn	50 - 150	04/19/23 18:55	04/20/23 00:09	10

Surrogate Summary

Client: GHD Services Inc.
Project/Site: PCC Validation

Job ID: 410-123046-1

Method: 8015C - Hydrocarbon Product Identification (GC)

Matrix: Waste

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
Lab Sample ID	Client Sample ID	CBNZ (50-150)	OTP (50-150)		
410-123046-1	L-11223416-041223-SK-001	106 cn	108 cn		
MB 410-366280/1-A	Method Blank	106	108		
Surrogate Legend					
CBNZ = Chlorobenzene (Surr)					
OTP = o- terphenyl (Surr)					

QC Sample Results

Client: GHD Services Inc.
Project/Site: PCC Validation

Job ID: 410-123046-1

Method: 8015C - Hydrocarbon Product Identification (GC)

Lab Sample ID: MB 410-366280/1-A

Matrix: Waste

Analysis Batch: 366286

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 366280

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Qualitative Method	0.000				% by Wt		04/19/23 18:55	04/19/23 23:21	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Chlorobenzene (Surr)	106		50 - 150	04/19/23 18:55	04/19/23 23:21	1
o- terphenyl (Surr)	108		50 - 150	04/19/23 18:55	04/19/23 23:21	1

QC Association Summary

Client: GHD Services Inc.
Project/Site: PCC Validation

Job ID: 410-123046-1

GC Semi VOA

Prep Batch: 366280

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-123046-1	L-11223416-041223-SK-001	Total/NA	Waste	3580A	
MB 410-366280/1-A	Method Blank	Total/NA	Waste	3580A	

Analysis Batch: 366286

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-123046-1	L-11223416-041223-SK-001	Total/NA	Waste	8015C	366280
MB 410-366280/1-A	Method Blank	Total/NA	Waste	8015C	366280

Lab Chronicle

Client: GHD Services Inc.
Project/Site: PCC Validation

Job ID: 410-123046-1

Client Sample ID: L-11223416-041223-SK-001

Lab Sample ID: 410-123046-1

Date Collected: 04/12/23 14:00

Matrix: Waste

Date Received: 04/15/23 10:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3580A			366280	UHEW	ELLE	04/19/23 18:55
Total/NA	Analysis	8015C		10	366286	UHEW	ELLE	04/20/23 00:09

Laboratory References:
ELLE = Eurofins Lancaster Laboratories Environment Testing, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

Accreditation/Certification Summary

Client: GHD Services Inc.
Project/Site: PCC Validation

Job ID: 410-123046-1

Laboratory: Eurofins Lancaster Laboratories Environment Testing, LLC

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Michigan	State	9930	01-31-24

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
8015C	3580A	Waste	Qualitative Method

Method Summary

Client: GHD Services Inc.
Project/Site: PCC Validation

Job ID: 410-123046-1

Method	Method Description	Protocol	Laboratory
8015C	Hydrocarbon Product Identification (GC)	SW846	ELLE
3580A	Waste Dilution	SW846	ELLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

ELLE = Eurofins Lancaster Laboratories Environment Testing, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

Sample Summary

Client: GHD Services Inc.
Project/Site: PCC Validation

Job ID: 410-123046-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
410-123046-1	L-11223416-041223-SK-001	Waste	04/12/23 14:00	04/15/23 10:10

GC SEMI VOA MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins Lancaster Laborator Job No.: 410-123046-1

SDG No.: _____

Instrument ID: 10254-A Analysis Batch Number: 366286Lab Sample ID: 410-123046-1 Client Sample ID: L-11223416-041223-SK-001Date Analyzed: 04/20/23 00:09 Lab File ID: ABTPH_22241047.0007.d GC Column: ZB-5 ID: _____

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Qualitative Method	18.78	Baseline Smoothing	UHEW	04/24/23 22:11

REAGENT TRACEABILITY SUMMARY

Lab Name: Eurofins Lancaster Laboratories Env Job No.: 410-123046-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
EPH_GCFP_SS_00007	08/22/23	02/21/23	mecl2, Lot 225458	10 mL	EPH_CHLBSURR_00001	0.12 mL	Chlorobenzene (Surr)	120.378 ppm
.EPH_CHLBSURR_00001	03/31/25		Restek, Lot A0183299		EPH_OTERPSS_00005	0.12 mL	o- terphenyl (Surr)	120.007 ppm
.EPH_OTERPSS_00005	05/31/25		Restek, Lot A0177896		(Purchased Reagent)		Chlorobenzene (Surr)	10031.5 ug/mL
					(Purchased Reagent)		o- terphenyl (Surr)	10000.6 ug/mL
EPH_TPH_3_00009	01/31/23	08/25/22	MeCl2, Lot 219045	50 mL	EPH_OTERPSS_00005	0.08 mL	o- terphenyl (Surr)	16.001 ppm
					GCS_CHLBSURR_00002	0.08 mL	Chlorobenzene (Surr)	16.1496 ppm
.EPH_OTERPSS_00005	05/31/25		Restek, Lot A0177896		(Purchased Reagent)		o- terphenyl (Surr)	10000.6 ug/mL
.GCS_CHLBSURR_00002	01/31/23		Restek, Lot A0157160		(Purchased Reagent)		Chlorobenzene (Surr)	10093.5 ug/mL
EPH_TPH_3_00014	09/16/23	03/16/23	MeCl2, Lot 225458	50 mL	EPH_CHLBSURR_00001	0.08 mL	Chlorobenzene (Surr)	16.0504 ppm
					EPH_OTERPSS_00006	0.08 mL	o- terphenyl (Surr)	16.061 ppm
.EPH_CHLBSURR_00001	03/31/25		Restek, Lot A0183299		(Purchased Reagent)		Chlorobenzene (Surr)	10031.5 ug/mL
.EPH_OTERPSS_00006	03/31/26		Restek, Lot A0188827		(Purchased Reagent)		o- terphenyl (Surr)	10038.1 ug/mL
EPH_TPH_3_00014	09/16/23	03/16/23	MeCl2, Lot 225458	50 mL	EPH_TRPHCRV_00013	1.6 mL	C8-C40	289.085 ppm
.EPH_TRPHCRV_00013	08/31/28		Restek, Lot A0174814		(Purchased Reagent)		C8-C40	9033.9 ug/mL
EPH_TPHC_00002	01/31/23	08/25/22	MeCl2, Lot 219045	10 mL	EPH_OTERPSS_00005	0.016 mL	o- terphenyl (Surr)	16.001 ppm
					GCS_CHLBSURR_00002	0.016 mL	Chlorobenzene (Surr)	16.1496 ppm
.EPH_OTERPSS_00005	05/31/25		Restek, Lot A0177896		(Purchased Reagent)		o- terphenyl (Surr)	10000.6 ug/mL
.GCS_CHLBSURR_00002	01/31/23		Restek, Lot A0157160		(Purchased Reagent)		Chlorobenzene (Surr)	10093.5 ug/mL

Reagent

EPH_CHLBSURR_00001



CERTIFIED REFERENCE MATERIAL

110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

Certificate of Analysis



ISO 17034 Accredited
Reference Material Producer
Certificate #3222.01



ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.



410-3431758

Catalog No.: 558353 Lot No.: A0183299
Description: Custom Chlorobenzene Standard
Custom Chlorobenzene Standard 10,000µg/mL, Methylene chloride,
1mL/ampul
Container Size: 2 mL Pkg Amt: > 1 mL
Expiration Date: March 31, 2025 Storage: 10°C or colder
Ship: Ambient

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)
1	Chlorobenzene CAS # 108-90-7 Purity 99% (Lot SHBL8110)	10,031.5 µg/mL	 +/- 58.7366 µg/mL Gravimetric +/- 562.4992 µg/mL Unstressed +/- 575.6590 µg/mL Stressed

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

Reagent

EPH_OTERPSS_00005



CERTIFIED REFERENCE MATERIAL

110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

Certificate of Analysis



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.



2185961

ID: EPH_OTERPSS_00005
Exp: 05/1/25 Prep: UNHEW
o-Terphenyl Surrogate sto

Catalog No.: 31097 Lot No.: A0177896
Description: o-Terphenyl Standard
o-Terphenyl Standard 10,000 µg/mL, Methylene Chloride, 1mL/ampul
Container Size: 2 mL Pkg Amt: > 1 mL
Expiration Date: May 31, 2025 Storage: 10°C or colder
Handling: Sonicate prior to use. Ship: Ambient

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)
1	o-Terphenyl CAS # 84-15-1 (Lot MKCH4487) Purity 99%	10,000.6 µg/mL	+/- 58.1413 µg/mL Gravimetric +/- 450.4326 µg/mL Unstressed +/- 499.8107 µg/mL Stressed

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

Reagent

EPH_OTERPSS_00006



CERTIFIED REFERENCE MATERIAL

110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

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Certificate of Analysis



ISO 17034 Accredited
Reference Material Producer
Certificate #3222.01



ISO/IEC 17025 Accredited
Testing Laboratory
Certificate #3222.02

FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.



410-3441232

Catalog No.: 31097 Lot No.: A0188827
Description: o-Terphenyl Standard
o-Terphenyl Standard 10,000 µg/mL, Methylene Chloride, 1mL/ampul
Container Size: 2 mL Pkg Amt: > 1 mL
Expiration Date: March 31, 2026 Storage: 10°C or colder
Handling: Sonicate prior to use. Ship: Ambient



3441232
ID: EPH_OTERPSS_00006
Exp: 03/31/26 Pppl: UNEW
o-Terphenyl Surrogate sto

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)
1	o-Terphenyl CAS # 84-15-1 Purity 99% (Lot MKCH4487)	10,038.1 µg/mL	+/- 58.3625 µg/mL Gravimetric +/- 452.1232 µg/mL Unstressed +/- 501.6865 µg/mL Stressed

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

Reagent

EPH_TRPHCRV_00013



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.



410-2445609

Catalog No. : 554128 **Lot No.:** A0174814

Description : Custom Florida TRPH Standard
Custom Florida TRPH Standard 500µg/mL, Hexane, 1mL/ampul

Container Size : 2 mL **Pkg Amt:** > 1 mL

Expiration Date : August 31, 2028 **Storage:** 25°C nominal
Ship: Ambient

2445609
ID: EPH_TRPHCRV_00013
Exp: 08/31/28 Ppdt: UHEW
Custom TRPH Calibration S

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)			
1	n-Octane (C8) CAS # 111-65-9 (Lot SHBM4827) Purity 99%	502.5 µg/mL	+/- 2.9847	µg/mL	Gravimetric	
			+/- 12.4844	µg/mL	Unstressed	
			+/- 14.9646	µg/mL	Stressed	
2	n-Nonane (C9) CAS # 111-84-2 (Lot SHBK7143) Purity 99%	500.0 µg/mL	+/- 2.9698	µg/mL	Gravimetric	
			+/- 12.4222	µg/mL	Unstressed	
			+/- 14.8901	µg/mL	Stressed	
3	n-Decane (C10) CAS # 124-18-5 (Lot SHBJ9898) Purity 99%	502.0 µg/mL	+/- 2.9817	µg/mL	Gravimetric	
			+/- 12.4719	µg/mL	Unstressed	
			+/- 14.9497	µg/mL	Stressed	
4	n-Dodecane (C12) CAS # 112-40-3 (Lot SHBK0925) Purity 99%	502.5 µg/mL	+/- 2.9847	µg/mL	Gravimetric	
			+/- 12.4844	µg/mL	Unstressed	
			+/- 14.9646	µg/mL	Stressed	
5	n-Tetradecane (C14) CAS # 629-59-4 (Lot STBJ7343) Purity 99%	503.0 µg/mL	+/- 2.9877	µg/mL	Gravimetric	
			+/- 12.4968	µg/mL	Unstressed	
			+/- 14.9795	µg/mL	Stressed	
6	n-Hexadecane (C16) CAS # 544-76-3 (Lot SHBM4146) Purity 98%	503.2 µg/mL	+/- 2.9890	µg/mL	Gravimetric	
			+/- 12.5025	µg/mL	Unstressed	
			+/- 14.9863	µg/mL	Stressed	
7	n-Octadecane (C18) CAS # 593-45-3 (Lot VZKOJ) Purity 97%	499.6 µg/mL	+/- 2.9672	µg/mL	Gravimetric	
			+/- 12.4111	µg/mL	Unstressed	
			+/- 14.8767	µg/mL	Stressed	

8	n-Eicosane (C20) CAS # 112-95-8 Purity 99%	(Lot MKCF7888)	501.0 µg/mL	+/- 2.9758 +/- 12.4471 +/- 14.9199	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
9	n-Docosane (C22) CAS # 629-97-0 Purity 99%	(Lot MKCL8918)	501.5 µg/mL	+/- 2.9788 +/- 12.4595 +/- 14.9348	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
10	n-Tetracosane (C24) CAS # 646-31-1 Purity 99%	(Lot MKCJ8741)	501.0 µg/mL	+/- 2.9758 +/- 12.4471 +/- 14.9199	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
11	n-Hexacosane (C26) CAS # 630-01-3 Purity 99%	(Lot MKCD4540)	505.0 µg/mL	+/- 2.9995 +/- 12.5465 +/- 15.0390	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
12	n-Octacosane (C28) CAS # 630-02-4 Purity 99%	(Lot BCCB6836)	503.0 µg/mL	+/- 2.9877 +/- 12.4968 +/- 14.9795	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
13	n-Triacontane (C30) CAS # 638-68-6 Purity 98%	(Lot MKCJ4572)	500.3 µg/mL	+/- 2.9716 +/- 12.4294 +/- 14.8988	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
14	n-Dotriacontane (C32) CAS # 544-85-4 Purity 99%	(Lot BCBW0661)	500.5 µg/mL	+/- 2.9728 +/- 12.4347 +/- 14.9050	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
15	n-Tetratriacontane (C34) CAS # 14167-59-0 Purity 99%	(Lot OML4N)	503.0 µg/mL	+/- 2.9877 +/- 12.4968 +/- 14.9795	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
16	n-Hexatriacontane (C36) CAS # 630-06-8 Purity 99%	(Lot MKCK2834)	502.5 µg/mL	+/- 2.9847 +/- 12.4844 +/- 14.9646	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
17	n-Octatriacontane (C38) CAS # 7194-85-6 Purity 99%	(Lot 0000074006)	503.5 µg/mL	+/- 2.9906 +/- 12.5092 +/- 14.9944	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
18	n-Tetracontane (C40) CAS # 4181-95-7 Purity 98%	(Lot 4LJYN)	499.8 µg/mL	+/- 2.9687 +/- 12.4173 +/- 14.8842	µg/mL µg/mL µg/mL	Gravimetric Unstressed Stressed
Solvent: Hexane CAS # 110-54-3 Purity 99%						

Reagent

GCS_CHLBSURR_00002

GLS-CHLOROBENZENE-000002



110 Benner Circle
Bellefonte, PA 16823-8812
Tel: (800)356-1688
Fax: (814)353-1309

www.restek.com

CERTIFIED REFERENCE MATERIAL

Certificate of Analysis



FOR LABORATORY USE ONLY-READ SDS PRIOR TO USE.

This Reference Material is intended for Laboratory Use Only as a standard for the qualitative and/or quantitative determination of the analyte(s) listed.



410-228855

Catalog No. : 558353 Lot No.: A0157160
Description : Custom Chlorobenzene Standard
Custom Chlorobenzene Standard 10,000µg/mL, Methylene chloride,
1mL/ampul
Container Size : 2 mL Pkg Amt: > 1 mL
Expiration Date : January 31, 2023 Storage: 10°C or colder

CERTIFIED VALUES

Elution Order	Compound	Grav. Conc. (weight/volume)	Expanded Uncertainty (95% C.L.; K=2)
1	Chlorobenzene CAS # 108-90-7 Purity 99% (Lot SHBJ0839)	10,093.5 µg/mL	+/- 59.0997 µg/mL Gravimetric +/- 565.9757 µg/mL Unstressed +/- 579.2168 µg/mL Stressed

Solvent: Methylene chloride
CAS # 75-09-2
Purity 99%

8015C_ID

Hydrocarbon Product Identification
(GC)

FORM II
GC SEMI VOA SURROGATE RECOVERY

Lab Name: Eurofins Lancaster Laboratories Job No.: 410-123046-1

SDG No.: _____

Matrix: Waste Level: Low

GC Column (1): ZB-5 ID: _____

Client Sample ID	Lab Sample ID	CBNZ #	OTP #
L-11223416-041223-SK-001	410-123046-1	106 cn	108 cn
	MB 410-366280/1-A	106	108

CBNZ = Chlorobenzene (Surr)
OTP = o- terphenyl (Surr)

QC LIMITS
50-150
50-150

Column to be used to flag recovery values

FORM IV

Lab Name: Eurofins Lancaster Laboratories
Environment Testing, LLC

Job No.: 410-123046-1

SDG No.:

Lab File ID: ABTPH 22241047.0006.d

Lab Sample ID: MB 410-366280/1-A

Matrix: Waste

Date Extracted: 04/19/2023 18:55

Instrument ID: 10254-A

Date Analyzed: 04/19/2023 23:21

Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
L-11223416-041223-SK-001	410-123046-1	ABTPH_22241 047.0007.d	04/20/2023 00:09

FORM VIII
GC SEMI VOA ANALYTICAL SEQUENCE

Lab Name: Eurofins Lancaster Laboratories Job No.: 410-123046-1
Environment Testing, LLC

SDG No.: _____

Sample No.: ICRT 410-290775/8 Date Analyzed: 08/29/2022 23:14

Instrument ID: 10254-A GC Column: ZB-5 ID: _____

Lab File ID (Standard): ABTPH_22241001.0008 Heated Purge: (Y/N) N

Calibration ID: 41948

THE ANALYTICAL SEQUENCE OF BLANKS, SAMPLES, STANDARDS, MS/MSDs AND LCSs IS GIVEN BELOW:

				CBNZ	OTP	
				RT #	RT #	
INITIAL CALIBRATION SURROGATE				2.18	18.24	
UPPER LIMIT						
LOWER LIMIT						
LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	LAB FILE ID			
ICRT 410-290775/8		08/29/2022 23:14	ABTPH_22241001.0008.d	2.18	18.24	
ICV 410-290775/30		08/30/2022 16:59	ABTPH_22241001.0030.d	2.17	18.24	
CCVRT 410-366286/5		04/19/2023 22:33	ABTPH_22241047.0005.d	2.16	18.20	

Column used to flag values outside QC limits

FORM I

Lab Name: Eurofins Lancaster Laboratories
Environment Testing, LLC

Job No.: 410-123046-1

SDG No.:

Client Sample ID: L-11223416-041223-SK-001

Lab Sample ID: 410-123046-1

Matrix: Waste

Lab File ID: ABTPH 22241047.0007.d

Analysis Method: 8015C

Date Collected: 04/12/2023 14:00

Extraction Method: 3580A

Date Extracted: 04/19/2023 18:55

Sample wt/vol: 0.1089(g)

Date Analyzed: 04/20/2023 00:09

Con. Extract Vol.: 10 (mL)

Dilution Factor: 10

Injection Volume: 1 (uL)

GC Column: ZB-5 ID:

ID:

% Moisture: % Solids:

% Solids:

GPC Cleanup: (Y/N) N

Cleanup Factor:

Analysis Batch No.: 366286

Units: % by Wt

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
STL00945	Qualitative Method	82	cn		

Lab Name: Eurofins Lancaster Laboratories Environment Testing, LLC	Job No.: 410-123046-1
SDG No.:	
Client Sample ID: L-11223416-041223-SK-001	Lab Sample ID: 410-123046-1
Matrix: Waste	Lab File ID: ABTPH_22241047.0007.d
Analysis Method: 8015C	Date Collected: 04/12/2023 14:00
Extraction Method: 3580A	Date Extracted: 04/19/2023 18:55
Sample wt/vol: 0.1089(g)	Date Analyzed: 04/20/2023 00:09
Con. Extract Vol.: 10 (mL)	Dilution Factor: 10
Injection Volume: 1 (uL)	GC Column: ZB-5 ID:
% Moisture: % Solids:	GPC Cleanup: (Y/N) N
Cleanup Factor:	
Analysis Batch No.: 366286	Units: ug/mL

CAS NO.	SURROGATE	%REC	Q	LIMITS
108-90-7	Chlorobenzene (Surr)	106	cn	50-150
84-15-1	o- terphenyl (Surr)	108	cn	50-150

Eurofins Lancaster Laboratories Environment Testing, LLC
Target Compound Quantitation Report

Data File: \\chromfs\Lancaster\ChromData\10254\20230419-81893.b\ABTPH_22241047.0007.d
 Lims ID: 410-123046-A-1-A
 Client ID: L-11223416-2021-TO3-007
 Sample Type: Client
 Inject. Date: 20-Apr-2023 00:09:00 ALS Bottle#: 0 Worklist Smp#: 7
 Injection Vol: 1.0 ul Dil. Factor: 10.0000
 Sample Info: 410-123046-A-1-A
 Misc. Info.: 410-0081893-007
 Operator ID: Instrument ID: 10254-A
 Method: \\chromfs\Lancaster\ChromData\10254\20230419-81893.b\Fuels_10254A.m
 Limit Group: GCV - 8015C_D_ID
 Last Update: 24-Apr-2023 22:11:39 Calib Date: 30-Aug-2022 12:57:00
 Integrator: Genie
 Quant Method: External Standard Quant By: Initial Calibration
 Last ICal File: \\chromfs\Lancaster\ChromData\10254\20220829-65214.b\ABTPH_22241001.0025.d
 Column 1 : ZB-5 (0.00 mm) Det: ABTPH_19123049B.012
 Process Host: CTX1653

First Level Reviewer: UHEW

Date: 24-Apr-2023 22:11:15

RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	OnCol Amt ug/ml	Flags

\$ 2 Chlorobenzene (Surr)

2.170	2.159	0.011	1016017885	12.7

\$ 13 o- terphenyl (Surr)

18.207	18.200	0.007	1582925835	12.9

A 14 Qualitative Method

18.777	(1.519-36.010)	98269409476	893.2	M

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

EPH_GCFP_SS_00007

Amount Added: 0.10

Units: mL

Report Date: 24-Apr-2023 22:11:43

Chrom Revision: 2.3 20-Apr-2023 08:27:48

Eurofins Lancaster Laboratories Environment Testing, LLC

Data File: \\chromfs\Lancaster\ChromData\10254\20230419-81893.b\ABTPH_22241047.0007.d

Injection Date: 20-Apr-2023 00:09:00

Instrument ID: 10254-A

Operator ID:

Lims ID: 410-123046-A-1-A

Lab Sample ID: 410-123046-1

Worklist Smp#: 7

Client ID: L-11223416-2021-TO3-007

Injection Vol: 1.0 ul

Dil. Factor: 10.0000

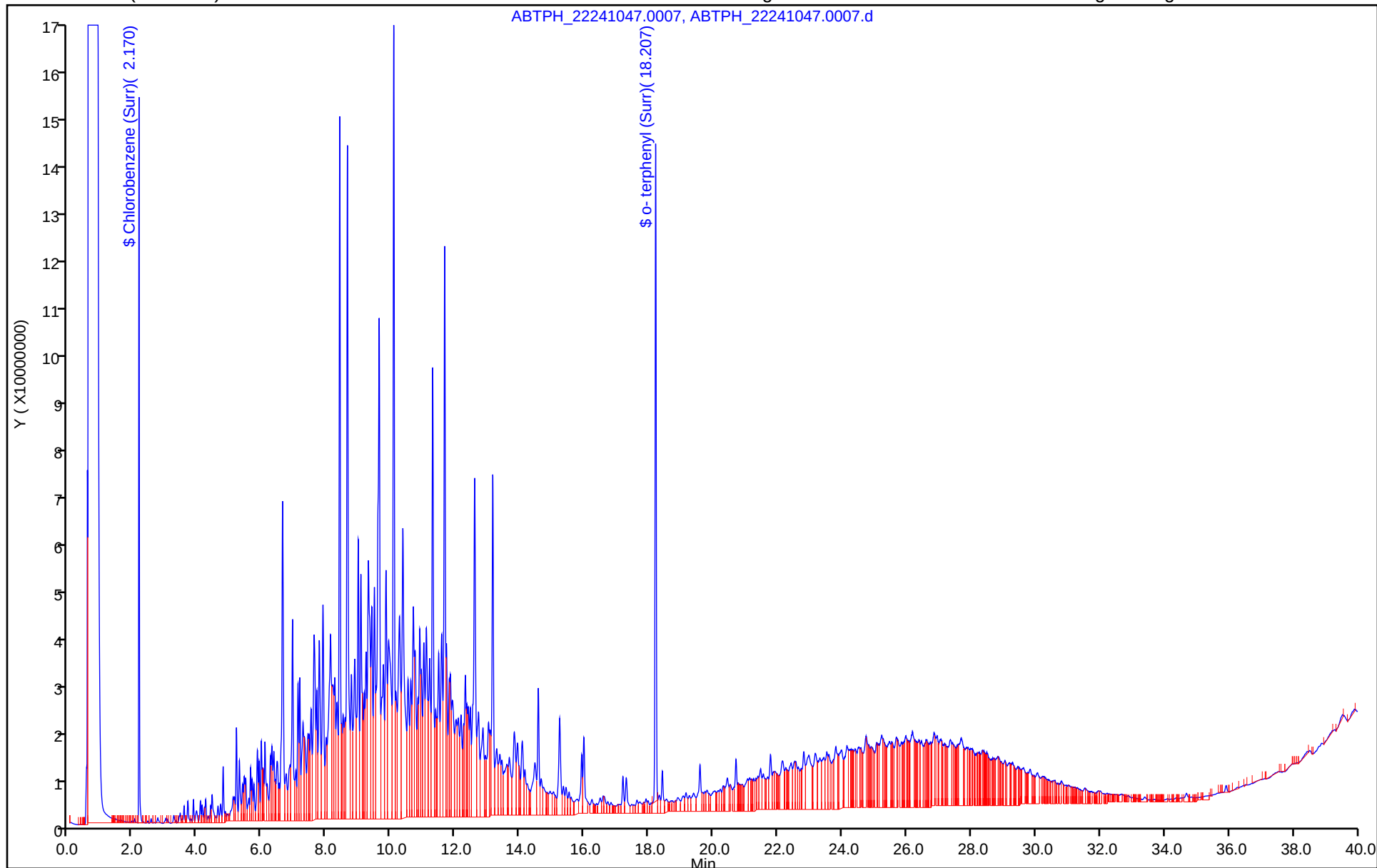
ALS Bottle#: 0

Method: Fuels_10254A

Limit Group: GCV - 8015C_D_ID

Column: ZB-5 (0.00 mm)

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



Eurofins Lancaster Laboratories Environment Testing, LLC
Recovery Report

Data File: \\chromfs\Lancaster\ChromData\10254\20230419-81893.b\ABTPH_22241047.0007.d
Lims ID: 410-123046-A-1-A
Client ID: L-11223416-2021-TO3-007
Sample Type: Client
Inject. Date: 20-Apr-2023 00:09:00 ALS Bottle#: 0 Worklist Smp#: 7
Injection Vol: 1.0 ul Dil. Factor: 10.0000
Sample Info: 410-123046-A-1-A
Misc. Info.: 410-0081893-007
Operator ID: Instrument ID: 10254-A
Method: \\chromfs\Lancaster\ChromData\10254\20230419-81893.b\Fuels_10254A.m
Limit Group: GCV - 8015C_D_ID
Last Update: 24-Apr-2023 22:11:39 Calib Date: 30-Aug-2022 12:57:00
Integrator: Genie
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\chromfs\Lancaster\ChromData\10254\20220829-65214.b\ABTPH_22241001.0025.d
Column 1 : ZB-5 (0.00 mm) Det: ABTPH_19123049B.012
Process Host: CTX1653

First Level Reviewer: UHEW

Date: 24-Apr-2023 22:11:15

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 Chlorobenzene (Surr)	12.0	12.7	105.78
\$ 13 o- terphenyl (Surr)	12.0	12.9	107.53

Report Date: 24-Apr-2023 22:11:43

Chrom Revision: 2.3 20-Apr-2023 08:27:48

Eurofins Lancaster Laboratories Environment Testing, LLC

Data File: \\chromfs\Lancaster\ChromData\10254\20230419-81893.b\ABTPH_22241047.0007.d

Injection Date: 20-Apr-2023 00:09:00

Instrument ID: 10254-A

Lims ID: 410-123046-A-1-A

Lab Sample ID: 410-123046-1

Client ID: L-11223416-2021-TO3-007

Operator ID:

ALS Bottle#:

0

Worklist Smp#:

7

Injection Vol: 1.0 ul

Dil. Factor:

10.0000

Method: Fuels_10254A

Limit Group:

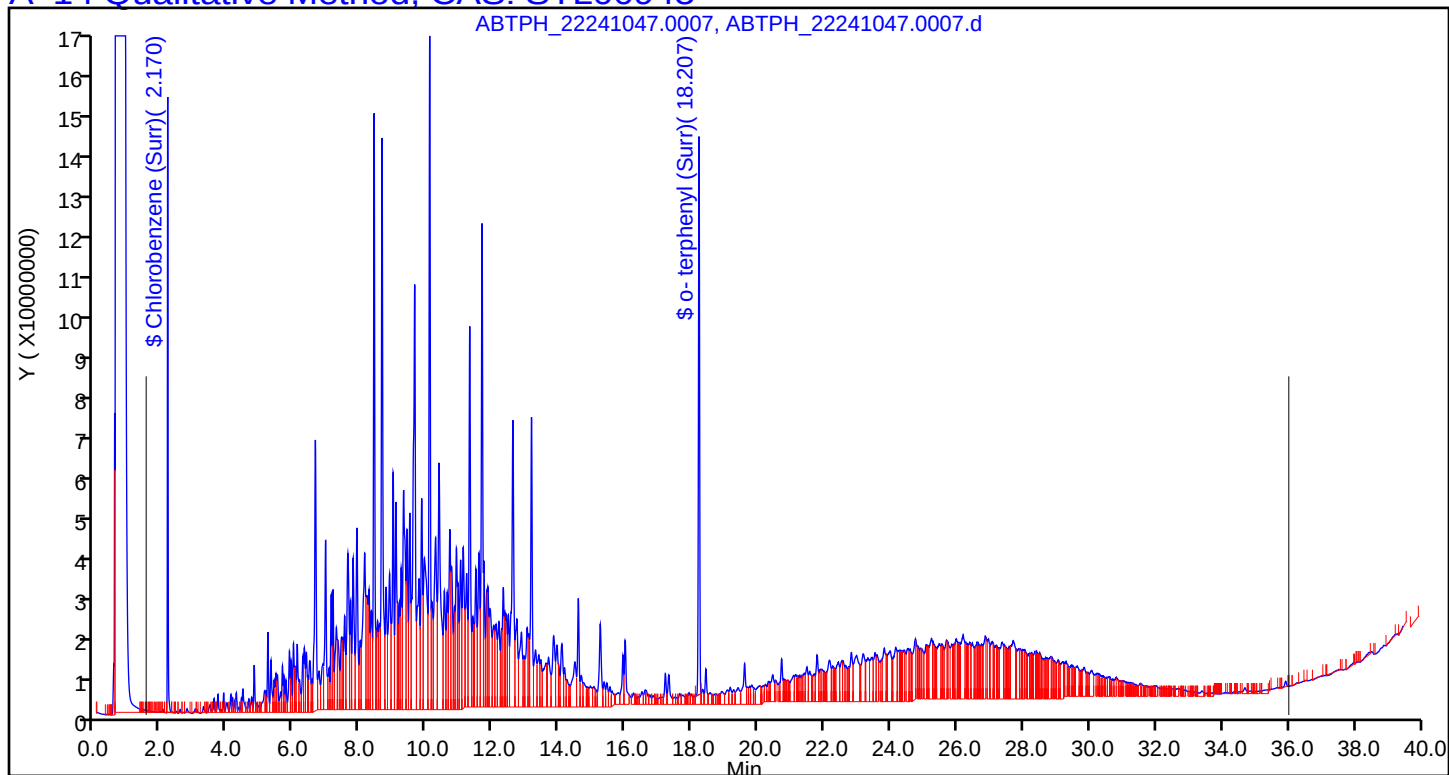
GCV - 8015C_D_ID

Column: ZB-5 (0.00 mm)

Detector

ABTPH_19123049B.012

A 14 Qualitative Method, CAS: STL00945



Eurofins Lancaster Laboratories Environment Testing, LLC

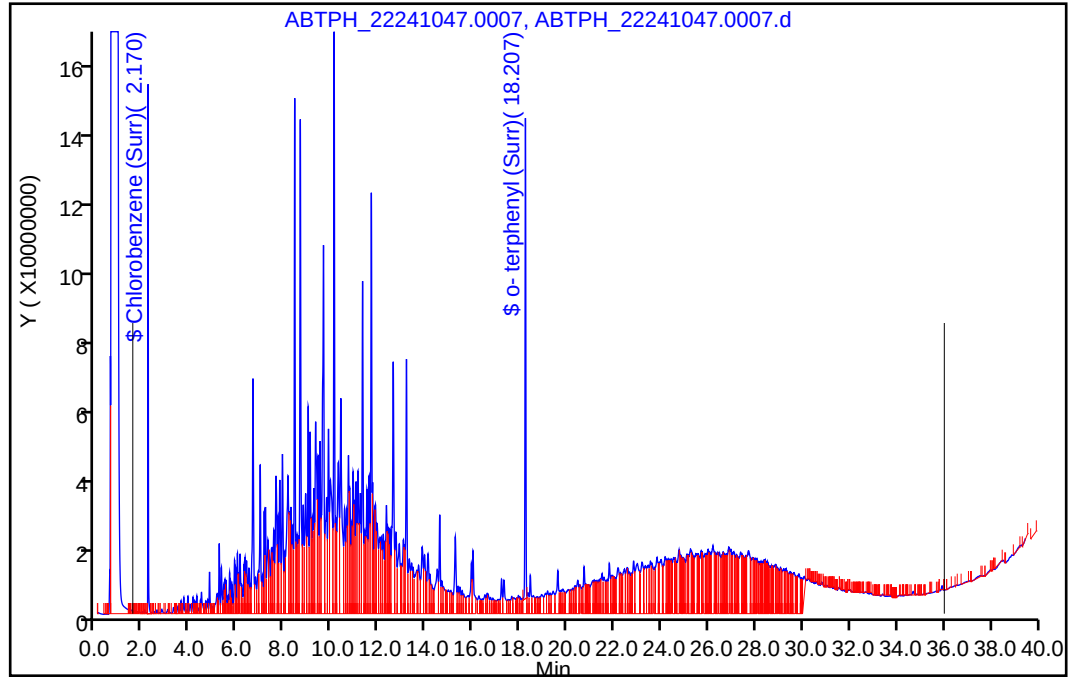
Data File: \\chromfs\Lancaster\ChromData\10254\20230419-81893.b\ABTPH_22241047.0007.d
Injection Date: 20-Apr-2023 00:09:00 Instrument ID: 10254-A
Lims ID: 410-123046-A-1-A Lab Sample ID: 410-123046-1
Client ID: L-11223416-2021-TO3-007
Operator ID: ALS Bottle#: 0 Worklist Smp#: 7
Injection Vol: 1.0 ul Dil. Factor: 10.0000
Method: Fuels_10254A Limit Group: GCV - 8015C_D_ID
Column: ZB-5 (0.00 mm) Detector: ABTPH_19123049B.012

A 14 Qualitative Method, RT: 18.764, CAS: STL00945

Signal: 1

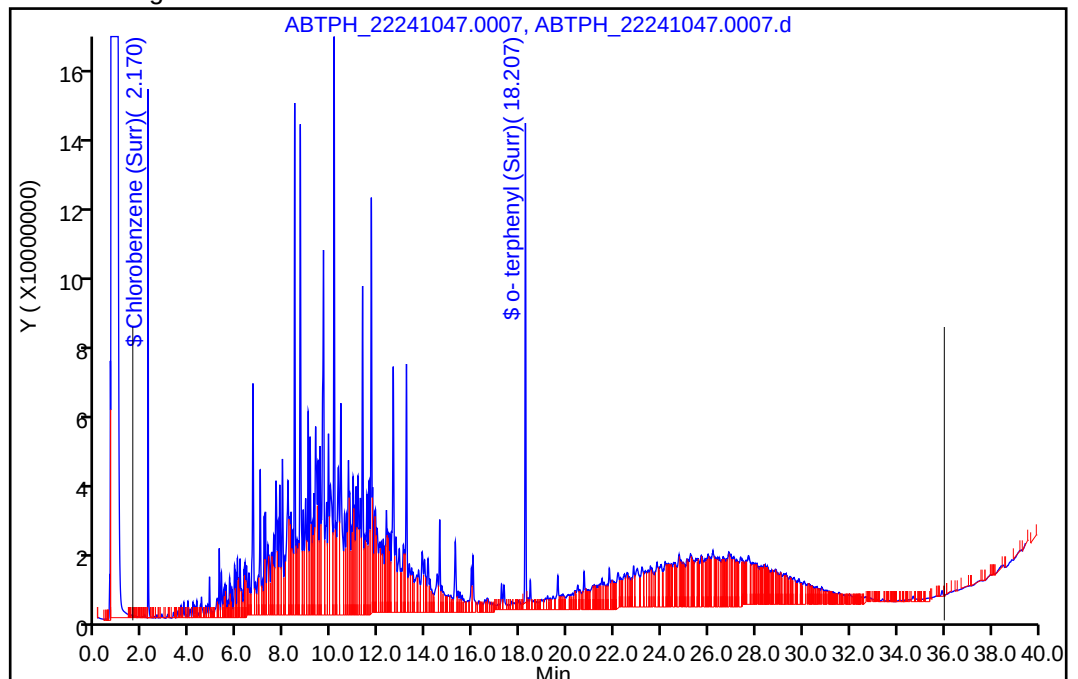
RT: 18.78
Response: 106138357057
Amount: 964.7707

Processing Integration Results



RT: 18.78
Response: 98269409476
Amount: 893.2440

Manual Integration Results



Reviewer: UHEW, 24-Apr-2023 22:11:11

Audit Action: Assigned New Baseline

Audit Reason: Baseline Smoothing

FORM VII
GC SEMI VOA CONTINUING CALIBRATION DATA

Lab Name: Eurofins Lancaster Laboratories Envi Job No.: 410-123046-1
 SDG No.: _____
 Lab Sample ID: ICV 410-290775/30 Calibration Date: 08/30/2022 16:59
 Instrument ID: 10254-A Calib Start Date: 08/29/2022 21:37
 GC Column: ZB-5 ID: _____ Calib End Date: 08/30/2022 00:51
 Lab File ID: ABTPH_22241001.0030.d Conc. Units: ug/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
n-Octane	Ave	100591442	102314388		16.3	16.0	1.7	
n-Decane	Ave	105174724	105111479		16.1	16.1	-0.0	
Dodecane	Ave	106955917	107826310		16.2	16.0	0.8	
n-Tetradecane	Ave	108395498	109805106		16.3	16.0	1.3	
Hexadecane	Ave	112275355	110779470		15.8	16.0	-1.3	
n-Octadecane	Ave	113780432	111925732		15.8	16.1	-1.6	
icosane	Ave	112490786	112701567		16.1	16.0	0.2	
n-Docosane	Ave	113376940	114026351		16.1	16.1	0.6	
n-Tetracosane	Ave	114434126	114611854		16.1	16.0	0.2	
n-Hexacosane	Ave	115216063	115001578		16.0	16.1	-0.2	
n-Octacosane	Ave	115968745	116021556		16.1	16.0	0.0	
Triacontane	Ave	116797674	116601209		16.0	16.0	-0.2	
Dotriacontane	Ave	114724352	116249807		16.3	16.0	1.3	
Tetratriacontane	Ave	115932099	119394611		16.5	16.1	3.0	
n-Hexatriacontane	Ave	113939077	115929282		16.3	16.1	1.7	
C38	Ave	110432597	112151462		16.3	16.0	1.6	
C40	Ave	113015898	115611573		16.4	16.0	2.3	
Chlorobenzene (Surr)	Ave	79790568	77319664		15.6	16.1	-3.1	
o- terphenyl (Surr)	Ave	122668097	117334023		15.3	16.0	-4.3	

FORM VII
GC SEMI VOA CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: Eurofins Lancaster Laboratories Envi Job No.: 410-123046-1
 SDG No.: _____
 Lab Sample ID: ICV 410-290775/30 Calibration Date: 08/30/2022 16:59
 Instrument ID: 10254-A Calib Start Date: 08/29/2022 21:37
 GC Column: ZB-5 ID: _____ Calib End Date: 08/30/2022 00:51
 Lab File ID: ABTPH_22241001.0030.d

Analyte	RT	RT WINDOW	
		FROM	TO
n-Octane	1.63	1.59	1.69
n-Decane	4.80	4.75	4.85
Dodecane	8.42	8.37	8.47
n-Tetradecane	11.68	11.64	11.74
Hexadecane	14.60	14.55	14.65
n-Octadecane	17.23	17.18	17.28
icosane	19.62	19.57	19.67
n-Docosane	21.82	21.77	21.87
n-Tetracosane	23.84	23.79	23.89
n-Hexacosane	25.72	25.66	25.76
n-Octacosane	27.46	27.41	27.51
Triacontane	29.10	29.05	29.15
Dotriacontane	30.63	30.58	30.68
Tetratriacontane	32.08	32.03	32.13
n-Hexatriacontane	33.45	33.40	33.50
C38	34.74	34.69	34.79
C40	35.98	35.93	36.03
Chlorobenzene (Surr)	2.17	2.13	2.23
o- terphenyl (Surr)	18.24	18.19	18.29

Eurofins Lancaster Laboratories Environment Testing, LLC
Target Compound Quantitation Report

Data File: \\chromfs\Lancaster\ChromData\10254\20220829-65214.b\ABTPH_22241001.0030.d
 Lims ID: ICV TPH
 Client ID:
 Sample Type: ICV
 Inject. Date: 30-Aug-2022 16:59:00 ALS Bottle#: 0 Worklist Smp#: 30
 Injection Vol: 1.0 ul Dil. Factor: 1.0000
 Sample Info: ICV TPH
 Misc. Info.: 410-0065078-030
 Operator ID: Instrument ID: 10254-A
 Sublist:
 Method: \\chromfs\Lancaster\ChromData\10254\20220829-65214.b\Fuels_10254A.m
 Limit Group: GCV - 8015C_D_ID
 Last Update: 06-Sep-2022 14:41:55 Calib Date: 30-Aug-2022 12:57:00
 Integrator: Genie
 Quant Method: External Standard Quant By: Initial Calibration
 Last ICal File: \\chromfs\Lancaster\ChromData\10254\20220829-65214.b\ABTPH_22241001.0025.d
 Column 1 : ZB-5 (0.00 mm) Det: ABTPH_19123049B.012
 Process Host: CTX1638

First Level Reviewer: UHEW

Date: 30-Aug-2022 18:32:05

RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags

1 n-Octane
 1.632 1.640 -0.008 1640631675 16.0 16.3
 \$ 2 Chlorobenzene (Surr)
 2.174 2.182 -0.008 1248681652 16.1 15.6
 4 n-Decane
 4.797 4.802 -0.005 1688510799 16.1 16.1
 5 Dodecane
 8.421 8.424 -0.003 1730396620 16.0 16.2
 7 n-Tetradecane
 11.683 11.685 -0.002 1761449582 16.0 16.3
 8 Hexadecane
 14.597 14.598 -0.001 1777788927 16.0 15.8
 12 n-Octadecane
 17.227 17.229 -0.002 1796542310 16.1 15.8
 \$ 13 o- terphenyl (Surr)
 18.241 18.243 -0.002 1877457009 16.0 15.3
 A 22 C8-C40
 18.808 (1.540-36.076) 31296460560 272.8 284.5
 24 icosane
 19.621 19.621 0.000 1806470882 16.0 16.1
 25 n-Docosane
 21.815 21.815 0.000 1830989530 16.1 16.1
 A 26 C12-C40
 22.200 (8.324-36.076) 27823790092 NC NC
 27 n-Tetracosane
 23.839 23.839 0.000 1837457238 16.0 16.1
 29 n-Hexacosane
 25.715 25.714 0.001 1846649333 16.1 16.0

RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags

30 n-Octacosane						
27.461	27.462	-0.001	1861913927	16.0	16.1	
31 Triacontane						
29.097	29.097	0.000	1871216201	16.0	16.0	
33 Dotriacontane						
30.634	30.631	0.003	1865576898	16.0	16.3	
34 Tetratriacontane						
32.080	32.078	0.002	1916426782	16.1	16.5	
35 n-Hexatriacontane						
33.448	33.446	0.002	1860804096	16.1	16.3	
36 C38						
34.744	34.743	0.001	1799088891	16.0	16.3	
37 C40						
35.979	35.976	0.003	1854594606	16.0	16.4	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

EPH_TPHC_00002

Amount Added: 1.00

Units: mL

Report Date: 06-Sep-2022 14:42:46

Chrom Revision: 2.3 30-Aug-2022 19:06:20

Eurofins Lancaster Laboratories Environment Testing, LLC

Data File: \\chromfs\Lancaster\ChromData\10254\20220829-65214.b\ABTPH_22241001.0030.d

Injection Date: 30-Aug-2022 16:59:00

Instrument ID: 10254-A

Operator ID:

Lims ID: ICV TPH

Worklist Smp#: 30

Client ID:

Injection Vol: 1.0 ul

Dil. Factor: 1.0000

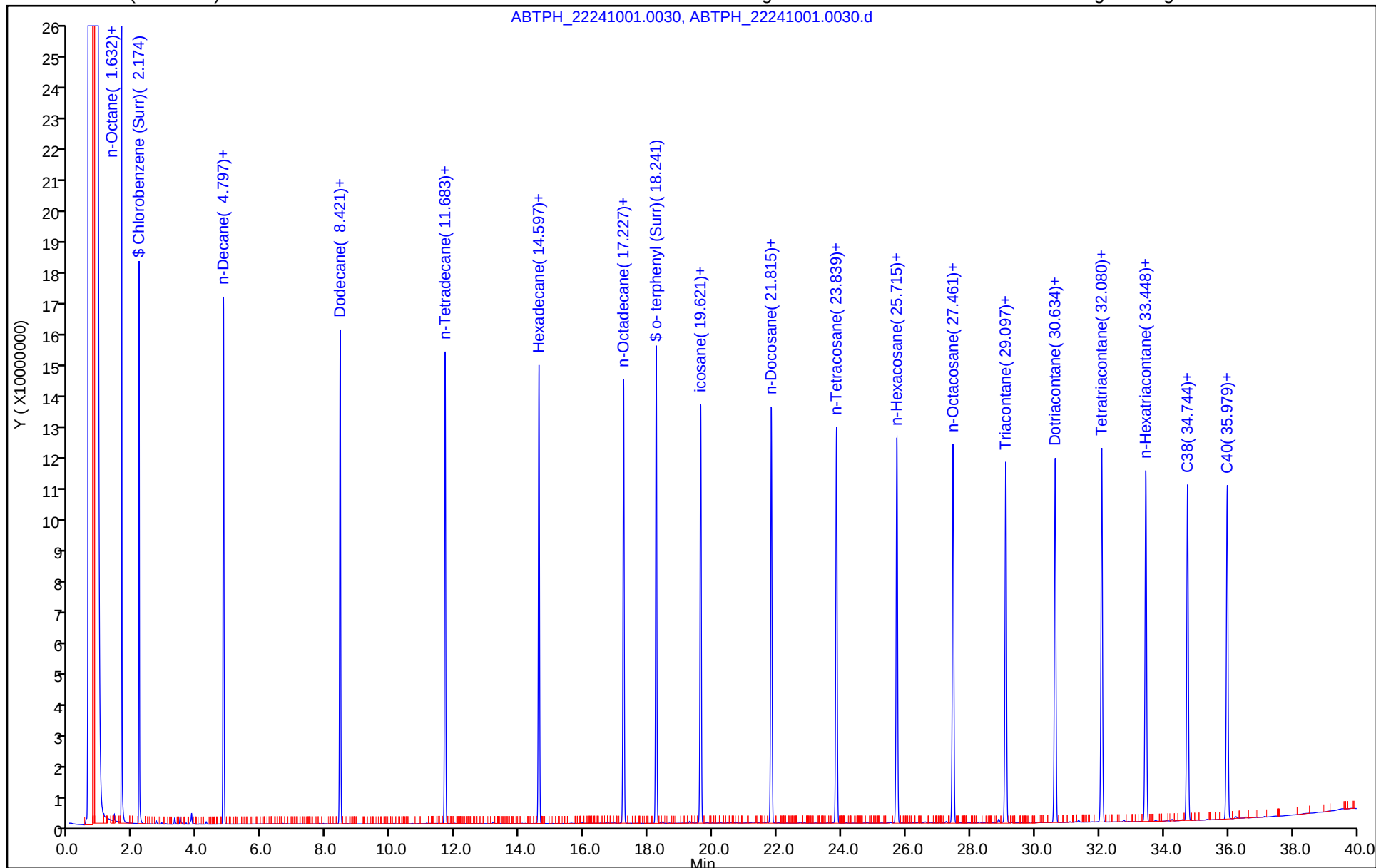
ALS Bottle#: 0

Method: Fuels_10254A

Limit Group: GCV - 8015C_D_ID

Column: ZB-5 (0.00 mm)

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



FORM VII
GC SEMI VOA CONTINUING CALIBRATION DATA

Lab Name: Eurofins Lancaster Laboratories Envi Job No.: 410-123046-1
SDG No.: _____
Lab Sample ID: ICV 410-290775/30 Calibration Date: 08/30/2022 16:59
Instrument ID: 10254-A Calib Start Date: 08/30/2022 01:40
GC Column: ZB-5 ID: _____ Calib End Date: 08/30/2022 04:53
Lab File ID: ABTPH_22241001.0030.d Conc. Units: ug/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
C8-C40	Ave	110014073	114725787		284	273	4.3	20.0

FORM VII
GC SEMI VOA CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: Eurofins Lancaster Laboratories Envi Job No.: 410-123046-1
SDG No.: _____
Lab Sample ID: ICV 410-290775/30 Calibration Date: 08/30/2022 16:59
Instrument ID: 10254-A Calib Start Date: 08/30/2022 01:40
GC Column: ZB-5 ID: _____ Calib End Date: 08/30/2022 04:53
Lab File ID: ABTPH_22241001.0030.d

Analyte	RT	RT WINDOW	
		FROM	TO
C8-C40	18.81	1.54	36.08

Eurofins Lancaster Laboratories Environment Testing, LLC
Target Compound Quantitation Report

Data File: \\chromfs\Lancaster\ChromData\10254\20220829-65214.b\ABTPH_22241001.0030.d
 Lims ID: ICV TPH
 Client ID:
 Sample Type: ICV
 Inject. Date: 30-Aug-2022 16:59:00 ALS Bottle#: 0 Worklist Smp#: 30
 Injection Vol: 1.0 ul Dil. Factor: 1.0000
 Sample Info: ICV TPH
 Misc. Info.: 410-0065078-030
 Operator ID: Instrument ID: 10254-A
 Sublist:
 Method: \\chromfs\Lancaster\ChromData\10254\20220829-65214.b\Fuels_10254A.m
 Limit Group: GCV - 8015C_D_ID
 Last Update: 06-Sep-2022 14:41:55 Calib Date: 30-Aug-2022 12:57:00
 Integrator: Genie
 Quant Method: External Standard Quant By: Initial Calibration
 Last ICal File: \\chromfs\Lancaster\ChromData\10254\20220829-65214.b\ABTPH_22241001.0025.d
 Column 1 : ZB-5 (0.00 mm) Det: ABTPH_19123049B.012
 Process Host: CTX1638

First Level Reviewer: UHEW

Date: 30-Aug-2022 18:32:05

RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags

1 n-Octane
 1.632 1.640 -0.008 1640631675 16.0 16.3
 \$ 2 Chlorobenzene (Surr)
 2.174 2.182 -0.008 1248681652 16.1 15.6
 4 n-Decane
 4.797 4.802 -0.005 1688510799 16.1 16.1
 5 Dodecane
 8.421 8.424 -0.003 1730396620 16.0 16.2
 7 n-Tetradecane
 11.683 11.685 -0.002 1761449582 16.0 16.3
 8 Hexadecane
 14.597 14.598 -0.001 1777788927 16.0 15.8
 12 n-Octadecane
 17.227 17.229 -0.002 1796542310 16.1 15.8
 \$ 13 o- terphenyl (Surr)
 18.241 18.243 -0.002 1877457009 16.0 15.3
 A 22 C8-C40
 18.808 (1.540-36.076) 31296460560 272.8 284.5
 24 icosane
 19.621 19.621 0.000 1806470882 16.0 16.1
 25 n-Docosane
 21.815 21.815 0.000 1830989530 16.1 16.1
 A 26 C12-C40
 22.200 (8.324-36.076) 27823790092 NC NC
 27 n-Tetracosane
 23.839 23.839 0.000 1837457238 16.0 16.1
 29 n-Hexacosane
 25.715 25.714 0.001 1846649333 16.1 16.0

RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags

30 n-Octacosane						
27.461	27.462	-0.001	1861913927	16.0	16.1	
31 Triacontane						
29.097	29.097	0.000	1871216201	16.0	16.0	
33 Dotriacontane						
30.634	30.631	0.003	1865576898	16.0	16.3	
34 Tetratriacontane						
32.080	32.078	0.002	1916426782	16.1	16.5	
35 n-Hexatriacontane						
33.448	33.446	0.002	1860804096	16.1	16.3	
36 C38						
34.744	34.743	0.001	1799088891	16.0	16.3	
37 C40						
35.979	35.976	0.003	1854594606	16.0	16.4	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

EPH_TPHC_00002

Amount Added: 1.00

Units: mL

Report Date: 06-Sep-2022 14:42:46

Chrom Revision: 2.3 30-Aug-2022 19:06:20

Eurofins Lancaster Laboratories Environment Testing, LLC

Data File: \\chromfs\Lancaster\ChromData\10254\20220829-65214.b\ABTPH_22241001.0030.d

Injection Date: 30-Aug-2022 16:59:00

Instrument ID: 10254-A

Operator ID:

Lims ID: ICV TPH

Worklist Smp#: 30

Client ID:

Injection Vol: 1.0 ul

Dil. Factor: 1.0000

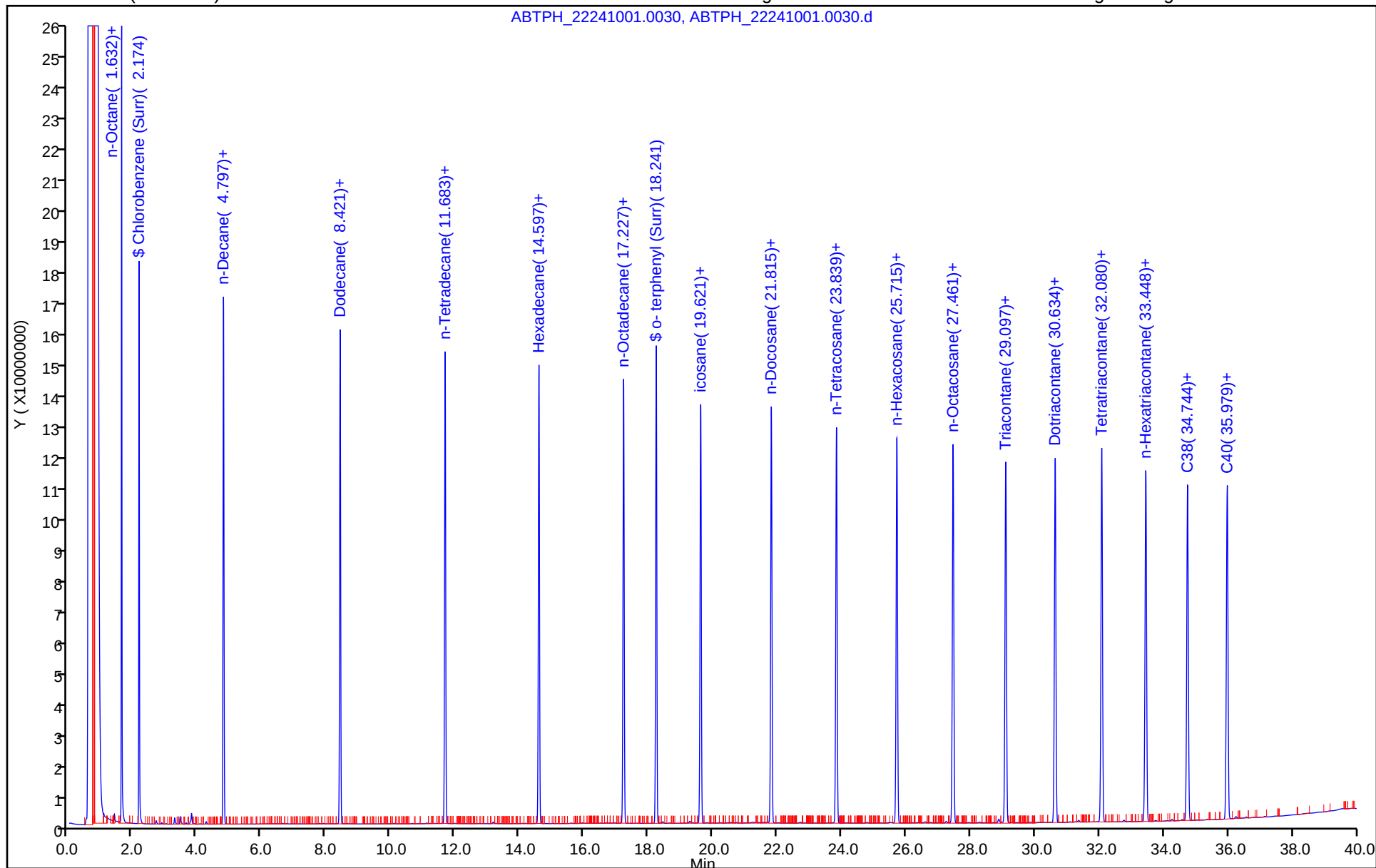
ALS Bottle#: 0

Method: Fuels_10254A

Limit Group: GCV - 8015C_D_ID

Column: ZB-5 (0.00 mm)

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



Report Date: 06-Sep-2022 14:42:46

Chrom Revision: 2.3 30-Aug-2022 19:06:20

Eurofins Lancaster Laboratories Environment Testing, LLC

Data File: \\chromfs\Lancaster\ChromData\10254\20220829-65214.b\ABTPH_22241001.0030.d

Injection Date: 30-Aug-2022 16:59:00

Instrument ID: 10254-A

Lims ID: ICV TPH

Client ID:

Operator ID:

ALS Bottle#:

0

Worklist Smp#:

30

Injection Vol: 1.0 ul

Dil. Factor:

1.0000

Method: Fuels_10254A

Limit Group:

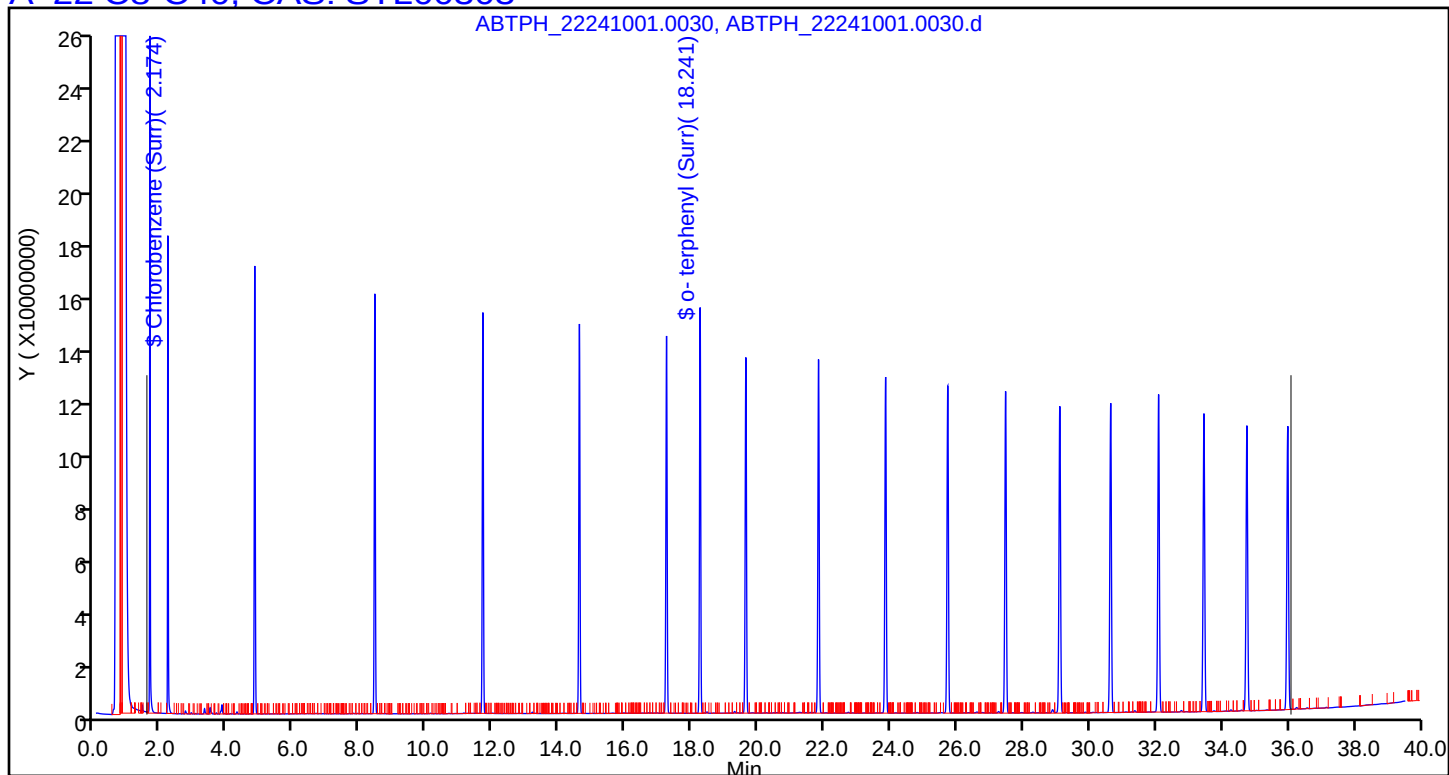
GCV - 8015C_D_ID

Column: ZB-5 (0.00 mm)

Detector

ABTPH_19123049B.012

A 22 C8-C40, CAS: STL00303



FORM VII
GC SEMI VOA CONTINUING CALIBRATION DATA

Lab Name: Eurofins Lancaster Laboratories Envi Job No.: 410-123046-1
 SDG No.: _____
 Lab Sample ID: CCVRT 410-366286/5 Calibration Date: 04/19/2023 22:33
 Instrument ID: 10254-A Calib Start Date: 08/29/2022 21:37
 GC Column: ZB-5 ID: _____ Calib End Date: 08/30/2022 00:51
 Lab File ID: ABTPH_22241047.0005.d Conc. Units: ug/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
n-Octane	Ave	100591442	100008733		16.0	16.1	-0.6	
n-Nonane	Ave	102322807	101313516		15.8	16.0	-1.0	
n-Decane	Ave	105174724	102501049		15.7	16.1	-2.5	
Dodecane	Ave	106955917	103838983		15.6	16.1	-2.9	
n-Tetradecane	Ave	108395498	105065279		15.6	16.1	-3.1	
Hexadecane	Ave	112275355	109237551		15.7	16.1	-2.7	
n-Octadecane	Ave	113780432	111119631		15.6	16.0	-2.3	
icosane	Ave	112490786	109627253		15.6	16.0	-2.5	
n-Docosane	Ave	113376940	111927655		15.8	16.0	-1.3	
n-Tetracosane	Ave	114434126	111459136		15.6	16.0	-2.6	
n-Hexacosane	Ave	115216063	111322855		15.6	16.2	-3.4	
n-Octacosane	Ave	115968745	113381804		15.7	16.1	-2.2	
Triacontane	Ave	116797674	113466735		15.6	16.0	-2.9	
Dotriacontane	Ave	114724352	107235603		15.0	16.0	-6.5	
Tetratriacontane	Ave	115932099	107085095		14.9	16.1	-7.6	
n-Hexatriacontane	Ave	113939077	101331035		14.3	16.1	-11.1	
C38	Ave	110432597	91107335		13.3	16.1	-17.5	
C40	Ave	113015898	83180670		11.8	16.0	-26.4	
Chlorobenzene (Surr)	Ave	79790568	79922347		16.1	16.1	0.2	
o- terphenyl (Surr)	Ave	122668097	120562515		15.8	16.1	-1.7	

FORM VII
GC SEMI VOA CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: Eurofins Lancaster Laboratories Envi Job No.: 410-123046-1
 SDG No.: _____
 Lab Sample ID: CCVRT 410-366286/5 Calibration Date: 04/19/2023 22:33
 Instrument ID: 10254-A Calib Start Date: 08/29/2022 21:37
 GC Column: ZB-5 ID: _____ Calib End Date: 08/30/2022 00:51
 Lab File ID: ABTPH_22241047.0005.d

Analyte	RT	RT WINDOW	
		FROM	TO
n-Octane	1.62	1.57	1.67
n-Nonane	2.99	2.94	3.04
n-Decane	4.77	4.72	4.82
Dodecane	8.39	8.34	8.44
n-Tetradecane	11.65	11.60	11.70
Hexadecane	14.56	14.51	14.61
n-Octadecane	17.19	17.14	17.24
icosane	19.58	19.53	19.63
n-Docosane	21.77	21.72	21.82
n-Tetracosane	23.79	23.74	23.84
n-Hexacosane	25.66	25.61	25.71
n-Octacosane	27.41	27.36	27.46
Triacontane	29.04	28.99	29.09
Dotriacontane	30.57	30.52	30.62
Tetratriacontane	32.02	31.97	32.07
n-Hexatriacontane	33.39	33.34	33.44
C38	34.68	34.63	34.73
C40	35.91	35.86	35.96
Chlorobenzene (Surr)	2.16	2.11	2.21
o- terphenyl (Surr)	18.20	18.15	18.25

Eurofins Lancaster Laboratories Environment Testing, LLC
Target Compound Quantitation Report

Data File: \\chromfs\Lancaster\ChromData\10254\20230419-81893.b\ABTPH_22241047.0005.d
 Lims ID: CCVRT TPH
 Client ID:
 Sample Type: CCVRT
 Inject. Date: 19-Apr-2023 22:33:00 ALS Bottle#: 0 Worklist Smp#: 5
 Injection Vol: 1.0 ul Dil. Factor: 1.0000
 Sample Info: CCVRT TPH
 Misc. Info.: 410-0081893-005
 Operator ID: Instrument ID: 10254-A
 Sublist: chrom-Fuels_10254A*sub6
 Method: \\chromfs\Lancaster\ChromData\10254\20230419-81893.b\Fuels_10254A.m
 Limit Group: GCV - 8015C_D_ID
 Last Update: 24-Apr-2023 22:11:39 Calib Date: 30-Aug-2022 12:57:00
 Integrator: Genie
 Quant Method: External Standard Quant By: Initial Calibration
 Last ICal File: \\chromfs\Lancaster\ChromData\10254\20220829-65214.b\ABTPH_22241001.0025.d
 Column 1 : ZB-5 (0.00 mm) Det: ABTPH_19123049B.012
 Process Host: CTX1653

First Level Reviewer: UHEW

Date: 24-Apr-2023 22:10:48

RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags

1 n-Octane
 1.619 1.619 0.000 1608140419 16.1 16.0
 \$ 2 Chlorobenzene (Surr)
 2.159 2.159 0.000 1282785632 16.1 16.1
 3 n-Nonane
 2.988 2.988 0.000 1621016254 16.0 15.8
 4 n-Decane
 4.770 4.770 0.000 1646576856 16.1 15.7
 5 Dodecane
 8.390 8.390 0.000 1669730849 16.1 15.6
 7 n-Tetradecane
 11.649 11.649 0.000 1691130725 16.1 15.6
 8 Hexadecane
 14.560 14.560 0.000 1758986744 16.1 15.7
 12 n-Octadecane
 17.187 17.187 0.000 1776491758 16.0 15.6
 \$ 13 o- terphenyl (Surr)
 18.200 18.200 0.000 1936349725 16.1 15.8
 A 22 C8-C40
 18.765 (1.519-36.010) 32323704825 289.1 293.8
 24 icosane
 19.577 19.577 0.000 1757544116 16.0 15.6
 25 n-Docosane
 21.769 21.769 0.000 1796215007 16.0 15.8
 A 26 C12-C40
 22.150 (8.290-36.010) 27413236521 NC NC
 27 n-Tetracosane
 23.791 23.791 0.000 1786912864 16.0 15.6

RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags

29 n-Hexacosane						
25.663	25.663	0.000	1798977329	16.2	15.6	
30 n-Octacosane						
27.408	27.408	0.000	1824993510	16.1	15.7	
31 Triacontane						
29.042	29.042	0.000	1816557036	16.0	15.6	
33 Dotriacontane						
30.574	30.574	0.000	1717485421	16.0	15.0	
34 Tetratriacontane						
32.020	32.020	0.000	1723641690	16.1	14.9	
35 n-Hexatriacontane						
33.385	33.385	0.000	1629403042	16.1	14.3	
36 C38						
34.680	34.680	0.000	1467921380	16.1	13.3	
37 C40						
35.910	35.910	0.000	1330358358	16.0	11.8	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

EPH_TPH_3_00014

Amount Added: 1.00

Units: mL

Report Date: 24-Apr-2023 22:11:39

Chrom Revision: 2.3 20-Apr-2023 08:27:48

Eurofins Lancaster Laboratories Environment Testing, LLC

Data File: \\chromfs\Lancaster\ChromData\10254\20230419-81893.b\ABTPH_22241047.0005.d

Injection Date: 19-Apr-2023 22:33:00

Instrument ID: 10254-A

Operator ID:

Lims ID: CCVRT TPH

Worklist Smp#: 5

Client ID:

Injection Vol: 1.0 ul

Dil. Factor: 1.0000

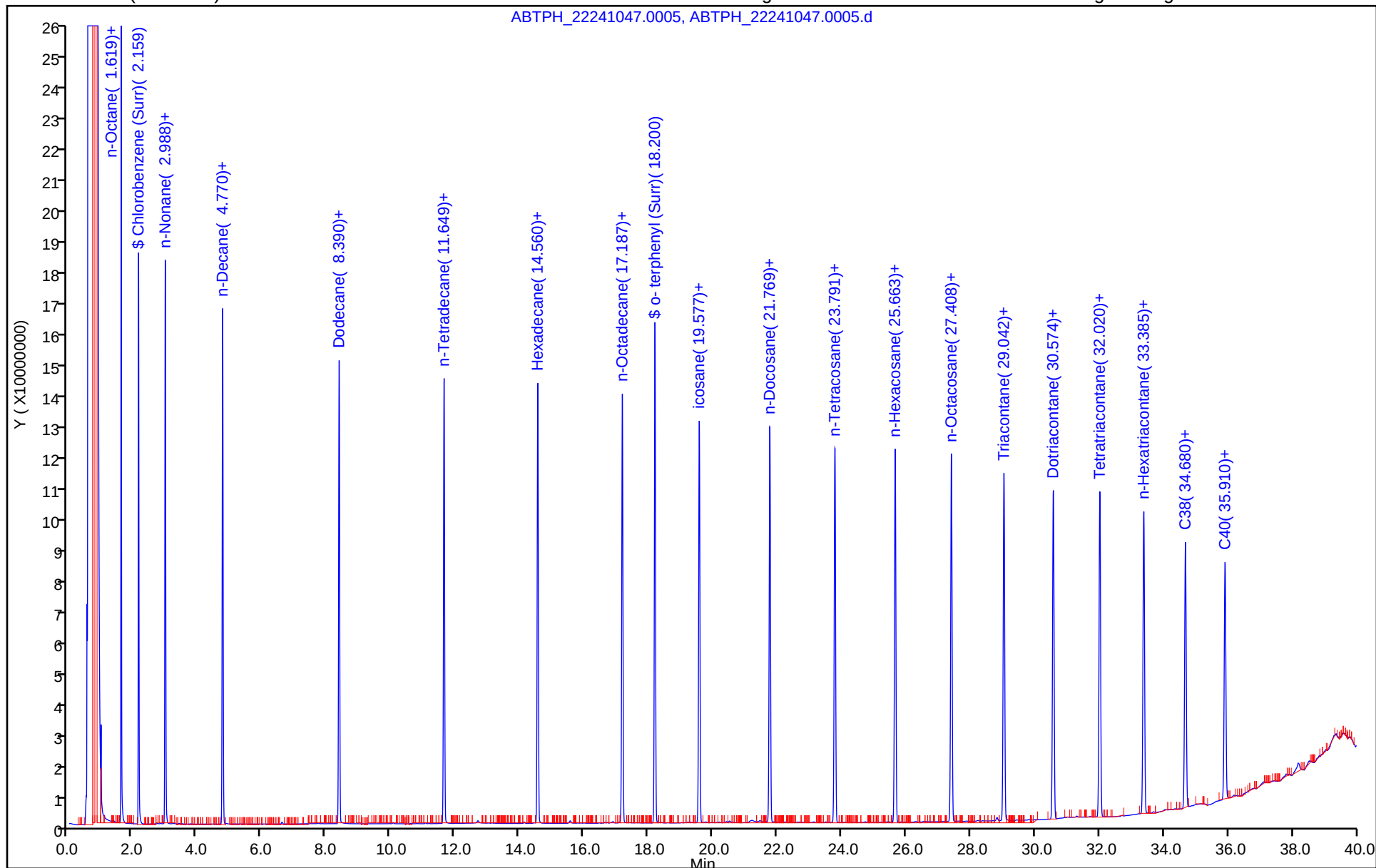
ALS Bottle#: 0

Method: Fuels_10254A

Limit Group: GCV - 8015C_D_ID

Column: ZB-5 (0.00 mm)

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



FORM VII
GC SEMI VOA CONTINUING CALIBRATION DATA

Lab Name: Eurofins Lancaster Laboratories Envi Job No.: 410-123046-1
SDG No.: _____
Lab Sample ID: CCVRT 410-366286/5 Calibration Date: 04/19/2023 22:33
Instrument ID: 10254-A Calib Start Date: 08/30/2022 01:40
GC Column: ZB-5 ID: _____ Calib End Date: 08/30/2022 04:53
Lab File ID: ABTPH_22241047.0005.d Conc. Units: ug/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
C8-C40	Ave	110014073	111813920		294	289	1.6	20.0

FORM VII
GC SEMI VOA CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: Eurofins Lancaster Laboratories Envi Job No.: 410-123046-1
SDG No.: _____
Lab Sample ID: CCVRT 410-366286/5 Calibration Date: 04/19/2023 22:33
Instrument ID: 10254-A Calib Start Date: 08/30/2022 01:40
GC Column: ZB-5 ID: _____ Calib End Date: 08/30/2022 04:53
Lab File ID: ABTPH_22241047.0005.d

Analyte	RT	RT WINDOW	
		FROM	TO
C8-C40	18.77	1.52	36.01

Eurofins Lancaster Laboratories Environment Testing, LLC
Target Compound Quantitation Report

Data File: \\chromfs\Lancaster\ChromData\10254\20230419-81893.b\ABTPH_22241047.0005.d
 Lims ID: CCVRT TPH
 Client ID:
 Sample Type: CCVRT
 Inject. Date: 19-Apr-2023 22:33:00 ALS Bottle#: 0 Worklist Smp#: 5
 Injection Vol: 1.0 ul Dil. Factor: 1.0000
 Sample Info: CCVRT TPH
 Misc. Info.: 410-0081893-005
 Operator ID: Instrument ID: 10254-A
 Sublist: chrom-Fuels_10254A*sub6
 Method: \\chromfs\Lancaster\ChromData\10254\20230419-81893.b\Fuels_10254A.m
 Limit Group: GCV - 8015C_D_ID
 Last Update: 24-Apr-2023 22:11:39 Calib Date: 30-Aug-2022 12:57:00
 Integrator: Genie
 Quant Method: External Standard Quant By: Initial Calibration
 Last ICal File: \\chromfs\Lancaster\ChromData\10254\20220829-65214.b\ABTPH_22241001.0025.d
 Column 1 : ZB-5 (0.00 mm) Det: ABTPH_19123049B.012
 Process Host: CTX1653

First Level Reviewer: UHEW

Date: 24-Apr-2023 22:10:48

RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags

1 n-Octane						
1.619	1.619	0.000	1608140419	16.1	16.0	
\$ 2 Chlorobenzene (Surr)						
2.159	2.159	0.000	1282785632	16.1	16.1	
3 n-Nonane						
2.988	2.988	0.000	1621016254	16.0	15.8	
4 n-Decane						
4.770	4.770	0.000	1646576856	16.1	15.7	
5 Dodecane						
8.390	8.390	0.000	1669730849	16.1	15.6	
7 n-Tetradecane						
11.649	11.649	0.000	1691130725	16.1	15.6	
8 Hexadecane						
14.560	14.560	0.000	1758986744	16.1	15.7	
12 n-Octadecane						
17.187	17.187	0.000	1776491758	16.0	15.6	
\$ 13 o- terphenyl (Surr)						
18.200	18.200	0.000	1936349725	16.1	15.8	
A 22 C8-C40						
18.765 (1.519-36.010)			32323704825	289.1	293.8	
24 icosane						
19.577	19.577	0.000	1757544116	16.0	15.6	
25 n-Docosane						
21.769	21.769	0.000	1796215007	16.0	15.8	
A 26 C12-C40						
22.150 (8.290-36.010)			27413236521	NC	NC	
27 n-Tetracosane						
23.791	23.791	0.000	1786912864	16.0	15.6	

RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags

29 n-Hexacosane						
25.663	25.663	0.000	1798977329	16.2	15.6	
30 n-Octacosane						
27.408	27.408	0.000	1824993510	16.1	15.7	
31 Triacontane						
29.042	29.042	0.000	1816557036	16.0	15.6	
33 Dotriacontane						
30.574	30.574	0.000	1717485421	16.0	15.0	
34 Tetratriacontane						
32.020	32.020	0.000	1723641690	16.1	14.9	
35 n-Hexatriacontane						
33.385	33.385	0.000	1629403042	16.1	14.3	
36 C38						
34.680	34.680	0.000	1467921380	16.1	13.3	
37 C40						
35.910	35.910	0.000	1330358358	16.0	11.8	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

EPH_TPH_3_00014

Amount Added: 1.00

Units: mL

Report Date: 24-Apr-2023 22:11:39

Chrom Revision: 2.3 20-Apr-2023 08:27:48

Eurofins Lancaster Laboratories Environment Testing, LLC

Data File: \\chromfs\Lancaster\ChromData\10254\20230419-81893.b\ABTPH_22241047.0005.d

Injection Date: 19-Apr-2023 22:33:00

Instrument ID: 10254-A

Operator ID:

Lims ID: CCVRT TPH

Worklist Smp#: 5

Client ID:

Injection Vol: 1.0 ul

Dil. Factor: 1.0000

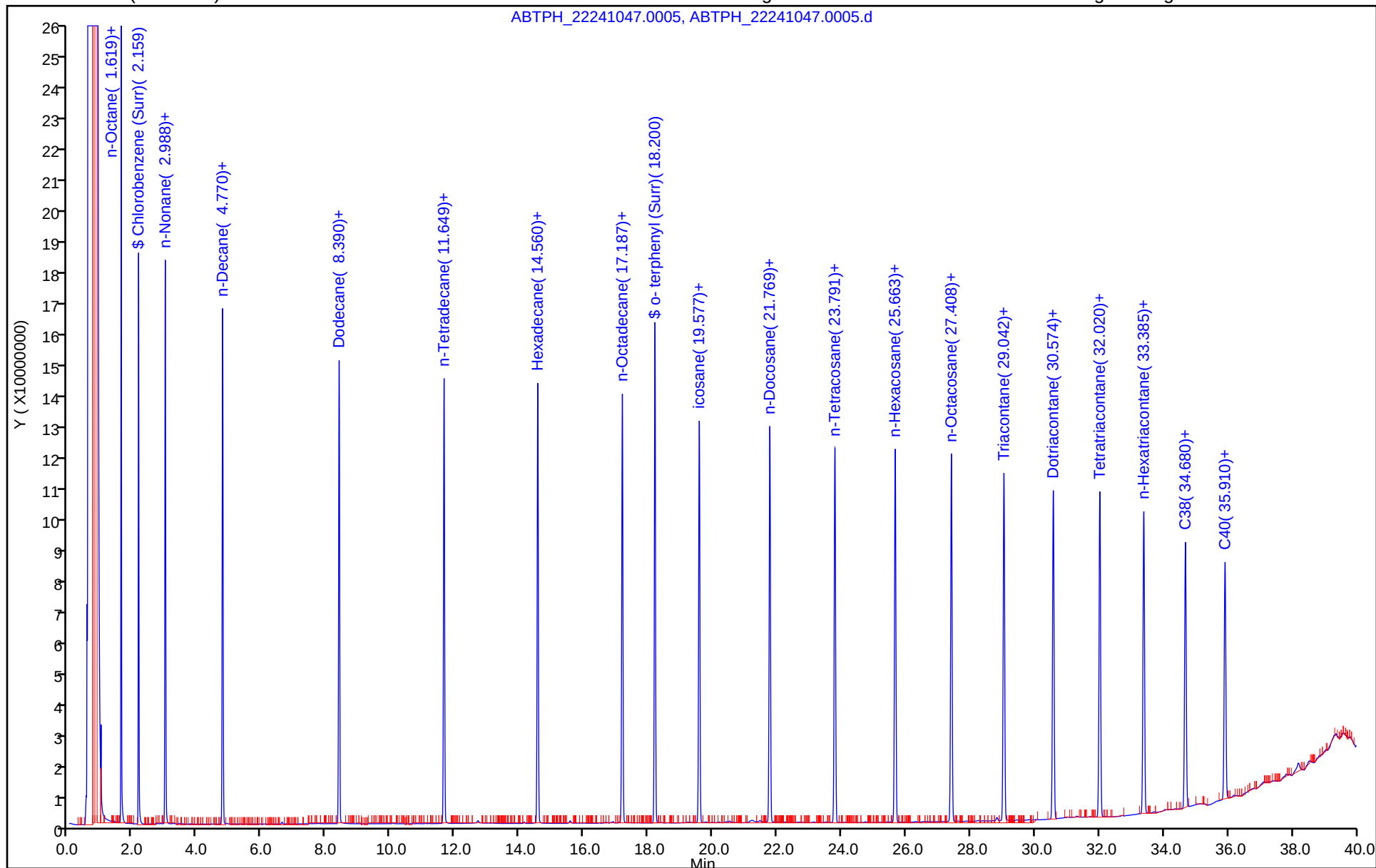
ALS Bottle#: 0

Method: Fuels_10254A

Limit Group: GCV - 8015C_D_ID

Column: ZB-5 (0.00 mm)

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



Report Date: 24-Apr-2023 22:11:39

Chrom Revision: 2.3 20-Apr-2023 08:27:48

Eurofins Lancaster Laboratories Environment Testing, LLC

Data File: \\chromfs\Lancaster\ChromData\10254\20230419-81893.b\ABTPH_22241047.0005.d

Injection Date: 19-Apr-2023 22:33:00

Instrument ID: 10254-A

Lims ID: CCVRT TPH

Client ID:

Operator ID:

ALS Bottle#:

Worklist Smp#: 5

Injection Vol: 1.0 ul

Dil. Factor: 1.0000

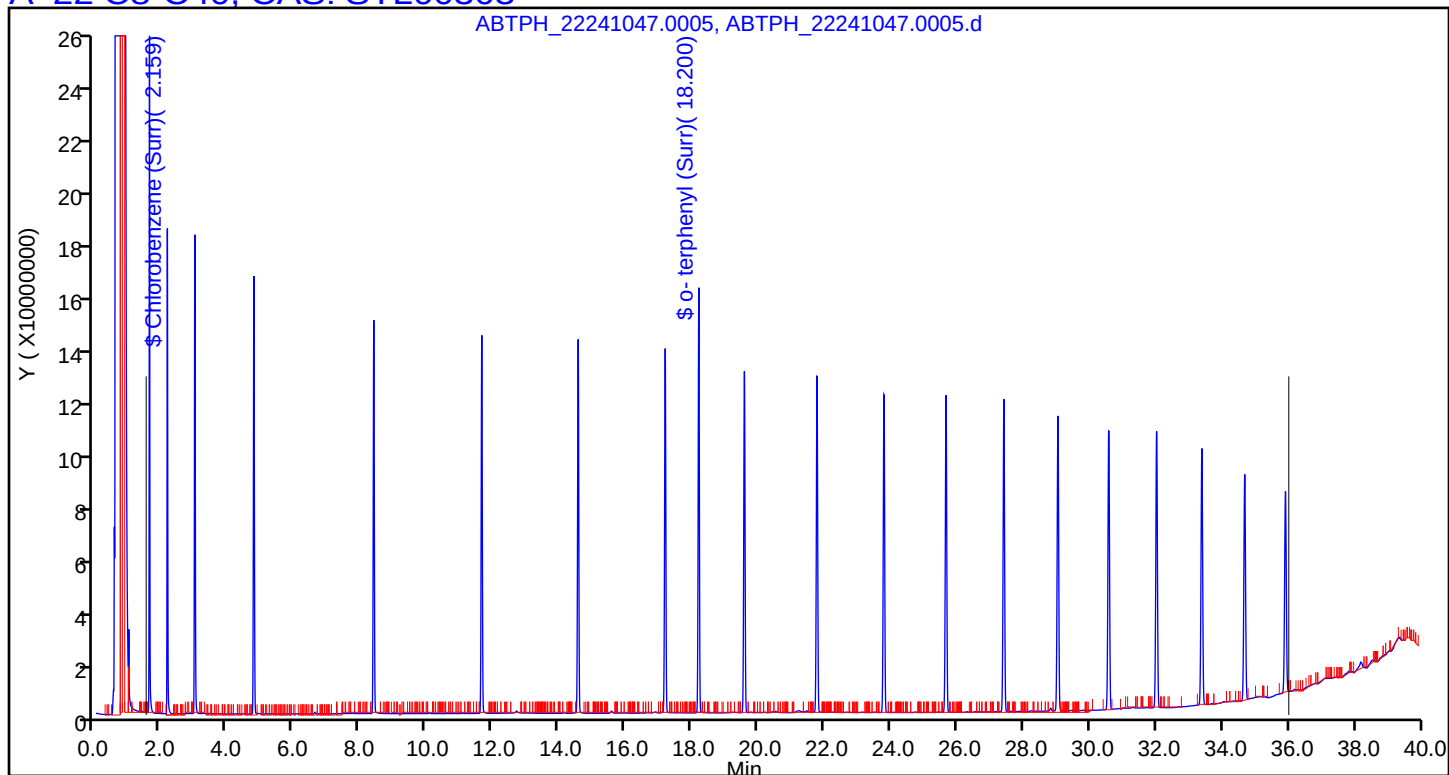
Method: Fuels_10254A

Limit Group: GCV - 8015C_D_ID

Column: ZB-5 (0.00 mm)

Detector ABTPH_19123049B.012

A 22 C8-C40, CAS: STL00303



FORM VII
GC SEMI VOA CONTINUING CALIBRATION DATA

Lab Name: Eurofins Lancaster Laboratories Envi Job No.: 410-123046-1
 SDG No.: _____
 Lab Sample ID: CCV 410-366286/8 Calibration Date: 04/20/2023 00:57
 Instrument ID: 10254-A Calib Start Date: 08/29/2022 21:37
 GC Column: ZB-5 ID: _____ Calib End Date: 08/30/2022 00:51
 Lab File ID: ABTPH_22241047.0008.d Conc. Units: ug/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
n-Octane	Ave	100591442	100482888		16.1	16.1	-0.1	
n-Nonane	Ave	102322807	100962540		15.8	16.0	-1.3	
n-Decane	Ave	105174724	103339100		15.8	16.1	-1.7	
Dodecane	Ave	106955917	105105072		15.8	16.1	-1.7	
n-Tetradecane	Ave	108395498	105748789		15.7	16.1	-2.4	
Hexadecane	Ave	112275355	110062075		15.8	16.1	-2.0	
n-Octadecane	Ave	113780432	111015936		15.6	16.0	-2.4	
icosane	Ave	112490786	110364116		15.7	16.0	-1.9	
n-Docosane	Ave	113376940	110829716		15.7	16.0	-2.2	
n-Tetracosane	Ave	114434126	112166825		15.7	16.0	-2.0	
n-Hexacosane	Ave	115216063	111974578		15.7	16.2	-2.8	
n-Octacosane	Ave	115968745	112672106		15.6	16.1	-2.8	
Triacontane	Ave	116797674	112974215		15.5	16.0	-3.3	
Dotriacontane	Ave	114724352	108514029		15.1	16.0	-5.4	
Tetratriacontane	Ave	115932099	107076370		14.9	16.1	-7.6	
n-Hexatriacontane	Ave	113939077	101713143		14.4	16.1	-10.7	
C38	Ave	110432597	91421513		13.3	16.1	-17.2	
C40	Ave	113015898	82183856		11.6	16.0	-27.3	
Chlorobenzene (Surr)	Ave	79790568	80414059		16.2	16.1	0.8	
o- terphenyl (Surr)	Ave	122668097	121078152		15.9	16.1	-1.3	

FORM VII
GC SEMI VOA CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: Eurofins Lancaster Laboratories Envi Job No.: 410-123046-1
 SDG No.: _____
 Lab Sample ID: CCV 410-366286/8 Calibration Date: 04/20/2023 00:57
 Instrument ID: 10254-A Calib Start Date: 08/29/2022 21:37
 GC Column: ZB-5 ID: _____ Calib End Date: 08/30/2022 00:51
 Lab File ID: ABTPH_22241047.0008.d

Analyte	RT	RT WINDOW	
		FROM	TO
n-Octane	1.62	1.57	1.67
n-Nonane	2.99	2.94	3.04
n-Decane	4.77	4.72	4.82
Dodecane	8.39	8.34	8.44
n-Tetradecane	11.65	11.60	11.70
Hexadecane	14.56	14.51	14.61
n-Octadecane	17.19	17.14	17.24
icosane	19.58	19.53	19.63
n-Docosane	21.77	21.72	21.82
n-Tetracosane	23.79	23.74	23.84
n-Hexacosane	25.66	25.61	25.71
n-Octacosane	27.41	27.36	27.46
Triacontane	29.04	28.99	29.09
Dotriacontane	30.58	30.52	30.62
Tetratriacontane	32.02	31.97	32.07
n-Hexatriacontane	33.38	33.34	33.44
C38	34.68	34.63	34.73
C40	35.91	35.86	35.96
Chlorobenzene (Surr)	2.16	2.11	2.21
o- terphenyl (Surr)	18.20	18.15	18.25

Eurofins Lancaster Laboratories Environment Testing, LLC
Target Compound Quantitation Report

Data File: \\chromfs\Lancaster\ChromData\10254\20230419-81893.b\ABTPH_22241047.0008.d
 Lims ID: CCV TPH
 Client ID:
 Sample Type: CCV
 Inject. Date: 20-Apr-2023 00:57:00 ALS Bottle#: 0 Worklist Smp#: 8
 Injection Vol: 1.0 ul Dil. Factor: 1.0000
 Sample Info: CCV TPH
 Misc. Info.: 410-0081893-008
 Operator ID: Instrument ID: 10254-A
 Sublist: chrom-Fuels_10254A*sub6
 Method: \\chromfs\Lancaster\ChromData\10254\20230419-81893.b\Fuels_10254A.m
 Limit Group: GCV - 8015C_D_ID
 Last Update: 24-Apr-2023 22:11:43 Calib Date: 30-Aug-2022 12:57:00
 Integrator: Genie
 Quant Method: External Standard Quant By: Initial Calibration
 Last ICal File: \\chromfs\Lancaster\ChromData\10254\20220829-65214.b\ABTPH_22241001.0025.d
 Column 1 : ZB-5 (0.00 mm) Det: ABTPH_19123049B.012
 Process Host: CTX1653

RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags

1 n-Octane	1.621	1.619	0.002	1615764837	16.1	16.1
\$ 2 Chlorobenzene (Surr)	2.161	2.159	0.002	1290677820	16.1	16.2
3 n-Nonane	2.990	2.988	0.002	1615400640	16.0	15.8
4 n-Decane	4.772	4.770	0.002	1660039299	16.1	15.8
5 Dodecane	8.391	8.390	0.001	1690089554	16.1	15.8
7 n-Tetradecane	11.650	11.649	0.001	1702132500	16.1	15.7
8 Hexadecane	14.560	14.560	0.000	1772263554	16.1	15.8
12 n-Octadecane	17.188	17.187	0.001	1774833976	16.0	15.6
\$ 13 o- terphenyl (Surr)	18.200	18.200	0.000	1944631360	16.1	15.9
A 22 C8-C40	18.772	(1.519-36.010)		31936401123	289.1	290.3
24 icosane	19.578	19.577	0.001	1769357500	16.0	15.7
25 n-Docosane	21.769	21.769	0.000	1778595288	16.0	15.7
A 26 C12-C40	22.157	(8.290-36.010)		27009955876	NC	NC
27 n-Tetracosane	23.790	23.791	-0.001	1798258544	16.0	15.7

RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags

29 n-Hexacosane						
25.664	25.663	0.001	1809509188	16.2	15.7	
30 n-Octacosane						
27.410	27.408	0.002	1813570218	16.1	15.6	
31 Triacontane						
29.040	29.042	-0.002	1808671986	16.0	15.5	
33 Dotriacontane						
30.575	30.574	0.001	1737960682	16.0	15.1	
34 Tetratriacontane						
32.019	32.020	-0.001	1723501257	16.1	14.9	
35 n-Hexatriacontane						
33.384	33.385	-0.001	1635547347	16.1	14.4	
36 C38						
34.679	34.680	-0.001	1472983418	16.1	13.3	
37 C40						
35.909	35.910	-0.001	1314415727	16.0	11.6	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

EPH_TPH_3_00014

Amount Added: 1.00

Units: mL

Report Date: 24-Apr-2023 22:11:44

Chrom Revision: 2.3 20-Apr-2023 08:27:48

Eurofins Lancaster Laboratories Environment Testing, LLC

Data File: \\chromfs\Lancaster\ChromData\10254\20230419-81893.b\ABTPH_22241047.0008.d

Injection Date: 20-Apr-2023 00:57:00

Instrument ID: 10254-A

Operator ID:

Lims ID: CCV TPH

Worklist Smp#: 8

Client ID:

Injection Vol: 1.0 ul

Dil. Factor: 1.0000

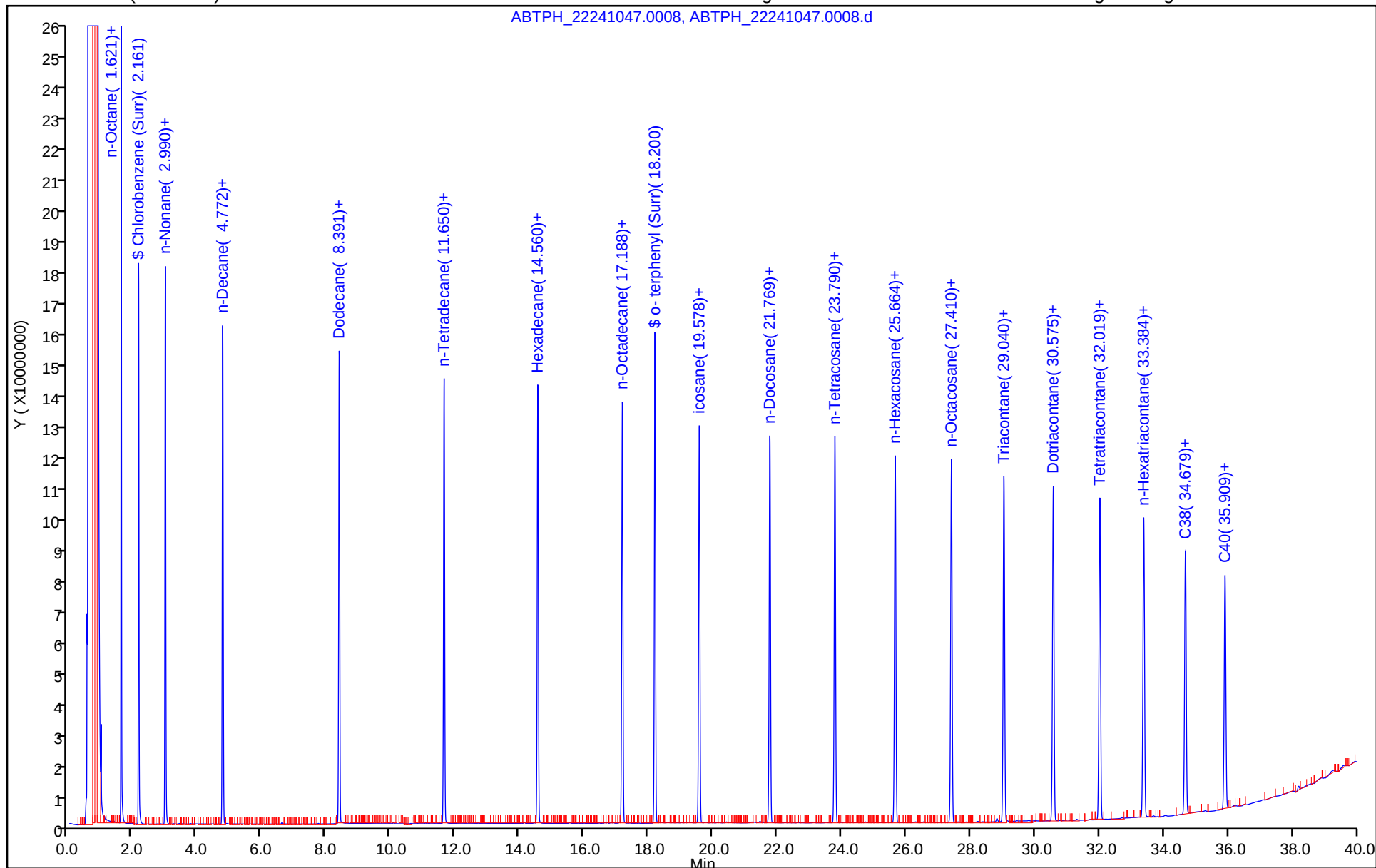
ALS Bottle#: 0

Method: Fuels_10254A

Limit Group: GCV - 8015C_D_ID

Column: ZB-5 (0.00 mm)

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



FORM VII
GC SEMI VOA CONTINUING CALIBRATION DATA

Lab Name: Eurofins Lancaster Laboratories Envi Job No.: 410-123046-1
SDG No.: _____
Lab Sample ID: CCV 410-366286/8 Calibration Date: 04/20/2023 00:57
Instrument ID: 10254-A Calib Start Date: 08/30/2022 01:40
GC Column: ZB-5 ID: _____ Calib End Date: 08/30/2022 04:53
Lab File ID: ABTPH_22241047.0008.d Conc. Units: ug/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
C8-C40	Ave	110014073	110474162		290	289	0.4	20.0

FORM VII
GC SEMI VOA CONTINUING CALIBRATION RETENTION TIME SUMMARY

Lab Name: Eurofins Lancaster Laboratories Envi Job No.: 410-123046-1
SDG No.: _____
Lab Sample ID: CCV 410-366286/8 Calibration Date: 04/20/2023 00:57
Instrument ID: 10254-A Calib Start Date: 08/30/2022 01:40
GC Column: ZB-5 ID: _____ Calib End Date: 08/30/2022 04:53
Lab File ID: ABTPH_22241047.0008.d

Analyte	RT	RT WINDOW	
		FROM	TO
C8-C40	18.77	1.52	36.01

Eurofins Lancaster Laboratories Environment Testing, LLC
Target Compound Quantitation Report

Data File: \\chromfs\Lancaster\ChromData\10254\20230419-81893.b\ABTPH_22241047.0008.d
 Lims ID: CCV TPH
 Client ID:
 Sample Type: CCV
 Inject. Date: 20-Apr-2023 00:57:00 ALS Bottle#: 0 Worklist Smp#: 8
 Injection Vol: 1.0 ul Dil. Factor: 1.0000
 Sample Info: CCV TPH
 Misc. Info.: 410-0081893-008
 Operator ID: Instrument ID: 10254-A
 Sublist: chrom-Fuels_10254A*sub6
 Method: \\chromfs\Lancaster\ChromData\10254\20230419-81893.b\Fuels_10254A.m
 Limit Group: GCV - 8015C_D_ID
 Last Update: 24-Apr-2023 22:11:43 Calib Date: 30-Aug-2022 12:57:00
 Integrator: Genie
 Quant Method: External Standard Quant By: Initial Calibration
 Last ICal File: \\chromfs\Lancaster\ChromData\10254\20220829-65214.b\ABTPH_22241001.0025.d
 Column 1 : ZB-5 (0.00 mm) Det: ABTPH_19123049B.012
 Process Host: CTX1653

RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags

1 n-Octane	1.621	1.619	0.002	1615764837	16.1	16.1
\$ 2 Chlorobenzene (Surr)	2.161	2.159	0.002	1290677820	16.1	16.2
3 n-Nonane	2.990	2.988	0.002	1615400640	16.0	15.8
4 n-Decane	4.772	4.770	0.002	1660039299	16.1	15.8
5 Dodecane	8.391	8.390	0.001	1690089554	16.1	15.8
7 n-Tetradecane	11.650	11.649	0.001	1702132500	16.1	15.7
8 Hexadecane	14.560	14.560	0.000	1772263554	16.1	15.8
12 n-Octadecane	17.188	17.187	0.001	1774833976	16.0	15.6
\$ 13 o- terphenyl (Surr)	18.200	18.200	0.000	1944631360	16.1	15.9
A 22 C8-C40	18.772	(1.519-36.010)		31936401123	289.1	290.3
24 icosane	19.578	19.577	0.001	1769357500	16.0	15.7
25 n-Docosane	21.769	21.769	0.000	1778595288	16.0	15.7
A 26 C12-C40	22.157	(8.290-36.010)		27009955876	NC	NC
27 n-Tetracosane	23.790	23.791	-0.001	1798258544	16.0	15.7

RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags

29 n-Hexacosane						
25.664	25.663	0.001	1809509188	16.2	15.7	
30 n-Octacosane						
27.410	27.408	0.002	1813570218	16.1	15.6	
31 Triacontane						
29.040	29.042	-0.002	1808671986	16.0	15.5	
33 Dotriacontane						
30.575	30.574	0.001	1737960682	16.0	15.1	
34 Tetratriacontane						
32.019	32.020	-0.001	1723501257	16.1	14.9	
35 n-Hexatriacontane						
33.384	33.385	-0.001	1635547347	16.1	14.4	
36 C38						
34.679	34.680	-0.001	1472983418	16.1	13.3	
37 C40						
35.909	35.910	-0.001	1314415727	16.0	11.6	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

EPH_TPH_3_00014

Amount Added: 1.00

Units: mL

Report Date: 24-Apr-2023 22:11:44

Chrom Revision: 2.3 20-Apr-2023 08:27:48

Eurofins Lancaster Laboratories Environment Testing, LLC

Data File: \\chromfs\Lancaster\ChromData\10254\20230419-81893.b\ABTPH_22241047.0008.d

Injection Date: 20-Apr-2023 00:57:00

Instrument ID: 10254-A

Operator ID:

Lims ID: CCV TPH

Worklist Smp#: 8

Client ID:

Injection Vol: 1.0 ul

Dil. Factor: 1.0000

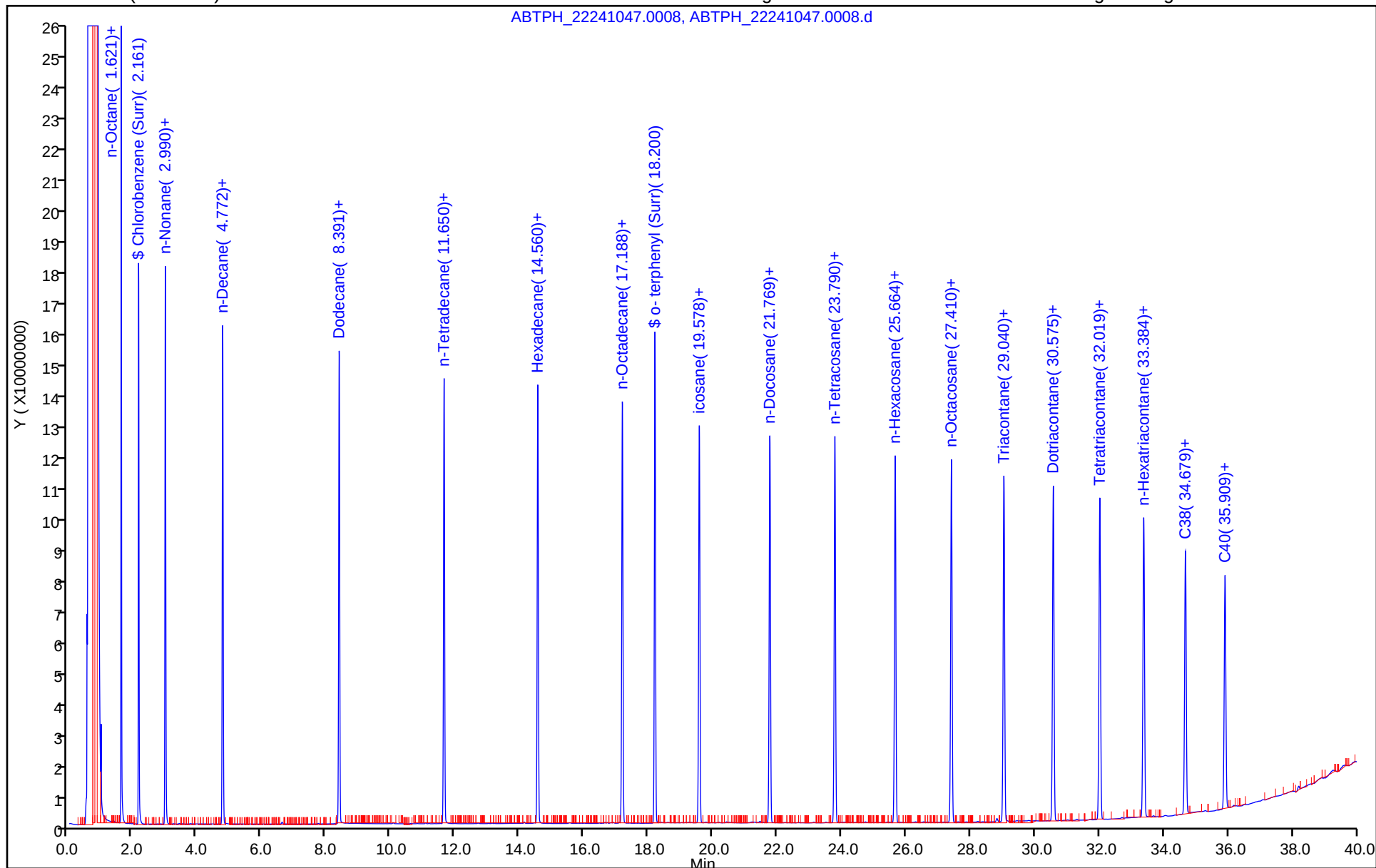
ALS Bottle#: 0

Method: Fuels_10254A

Limit Group: GCV - 8015C_D_ID

Column: ZB-5 (0.00 mm)

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



Report Date: 24-Apr-2023 22:11:44

Chrom Revision: 2.3 20-Apr-2023 08:27:48

Eurofins Lancaster Laboratories Environment Testing, LLC

Data File: \\chromfs\Lancaster\ChromData\10254\20230419-81893.b\ABTPH_22241047.0008.d

Injection Date: 20-Apr-2023 00:57:00

Instrument ID: 10254-A

Lims ID: CCV TPH

Client ID:

Operator ID:

ALS Bottle#:

Worklist Smp#: 8

Injection Vol: 1.0 ul

Dil. Factor: 1.0000

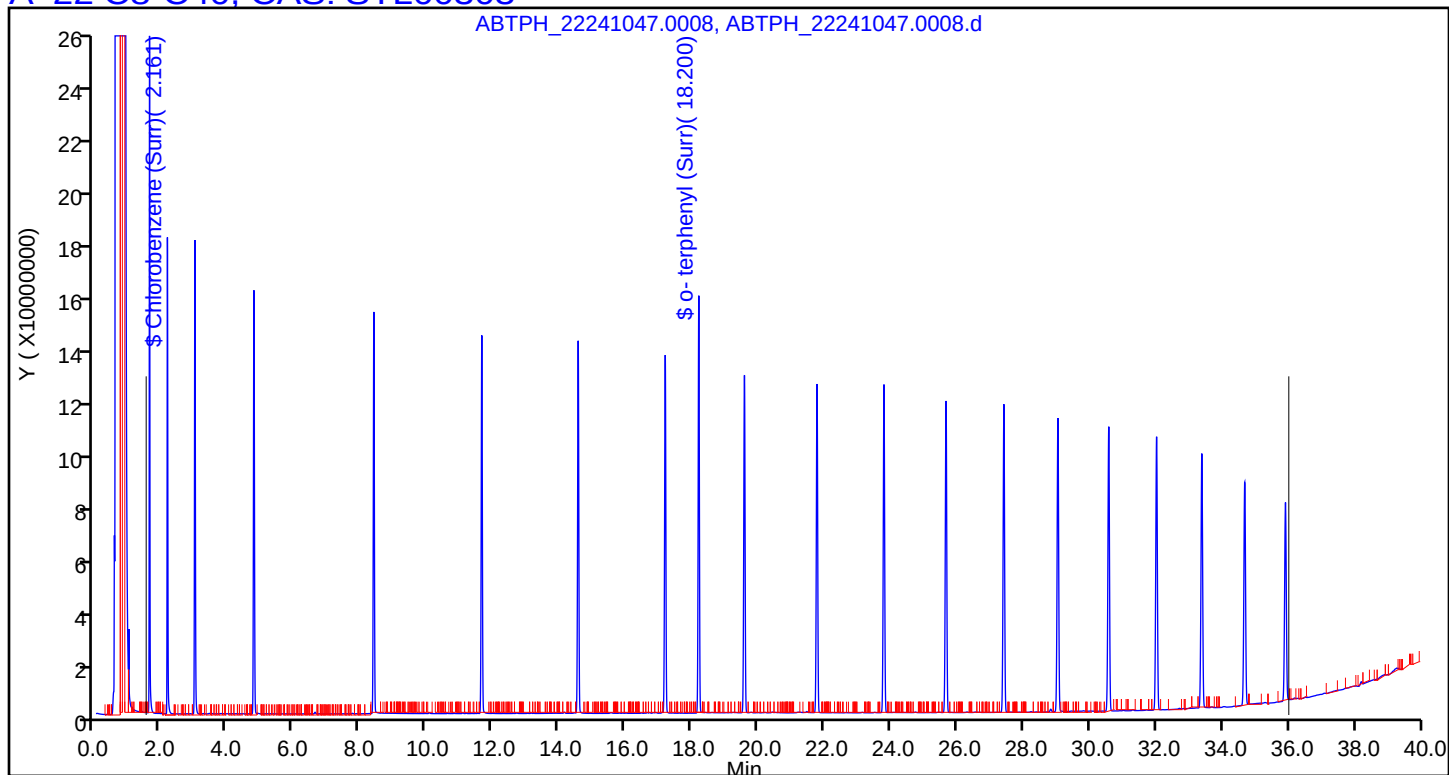
Method: Fuels_10254A

Limit Group: GCV - 8015C_D_ID

Column: ZB-5 (0.00 mm)

Detector ABTPH_19123049B.012

A 22 C8-C40, CAS: STL00303



FORM I

Job No.: 410-123046-1

Client Sample ID:

Lab Sample ID: MB 410-366280/1-A

Lab File ID: ABTPH 22241047.0006.d

Date Collected:

Date Extracted: 04/19/2023 18:55

Date Analyzed: 04/19/2023 23:21

Dilution Factor: 1

GC Column: ZB-5

GPC Cleanup: (Y/N) N

Analysis Batch No.: 366286

Units: % by Wt

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
STL00945	Qualitative Method	0.000			

Lab Name: Eurofins Lancaster Laboratories Environment Testing, LLC	Job No.: 410-123046-1
SDG No.: _____	
Client Sample ID: _____	Lab Sample ID: MB 410-366280/1-A
Matrix: Waste	Lab File ID: ABTPH_22241047.0006.d
Analysis Method: 8015C	Date Collected: _____
Extraction Method: 3580A	Date Extracted: 04/19/2023 18:55
Sample wt/vol: 1(mL)	Date Analyzed: 04/19/2023 23:21
Con. Extract Vol.: 1(mL)	Dilution Factor: 1
Injection Volume: 1(uL)	GC Column: ZB-5 ID: _____
% Moisture: _____ % Solids: _____	GPC Cleanup: (Y/N) N
Cleanup Factor: _____	
Analysis Batch No.: 366286	Units: ug/mL

CAS NO.	SURROGATE	%REC	Q	LIMITS
108-90-7	Chlorobenzene (Surr)	106		50-150
84-15-1	o- terphenyl (Surr)	108		50-150

Eurofins Lancaster Laboratories Environment Testing, LLC
Target Compound Quantitation Report

Data File: \\chromfs\Lancaster\ChromData\10254\20230419-81893.b\ABTPH_22241047.0006.d
 Lims ID: MB 410-366280/1-A
 Client ID:
 Sample Type: MB
 Inject. Date: 19-Apr-2023 23:21:00 ALS Bottle#: 0 Worklist Smp#: 6
 Injection Vol: 1.0 ul Dil. Factor: 1.0000
 Sample Info: MB 410-366280/1-A
 Misc. Info.: 410-0081893-006
 Operator ID: Instrument ID: 10254-A
 Method: \\chromfs\Lancaster\ChromData\10254\20230419-81893.b\Fuels_10254A.m
 Limit Group: GCV - 8015C_D_ID
 Last Update: 24-Apr-2023 22:11:39 Calib Date: 30-Aug-2022 12:57:00
 Integrator: Genie
 Quant Method: External Standard Quant By: Initial Calibration
 Last ICal File: \\chromfs\Lancaster\ChromData\10254\20220829-65214.b\ABTPH_22241001.0025.d
 Column 1 : ZB-5 (0.00 mm) Det: ABTPH_19123049B.012
 Process Host: CTX1653

RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags

1 n-Octane
 1.633 1.619 0.014 691093 0.006870
 \$ 2 Chlorobenzene (Surr)
 2.169 2.159 0.010 1019411038 12.0 12.8
 3 n-Nonane
 3.002 2.988 0.014 249543 0.002439
 4 n-Decane
 4.815 4.770 0.045 64282 0.000611
 5 Dodecane
 8.398 8.390 0.008 77341 0.000723
 A 6 C8-C18
 9.418 (1.519-17.287) 108766679 NC
 7 n-Tetradecane
 11.665 11.649 0.016 182199 0.001681
 8 Hexadecane
 14.567 14.560 0.007 3746723 0.0334
 A 11 Diesel Fuel 2-FID
 16.070 (4.670-27.508) 947280841 9.25
 A 9 Diesel
 16.102 (8.290-23.891) 562872464 6.77
 A 10 C12-C24
 16.102 (8.290-23.891) 562872464 0
 12 n-Octadecane
 17.192 17.187 0.005 2798357 0.0246
 \$ 13 o- terphenyl (Surr)
 18.207 18.200 0.007 1583639054 12.0 12.9
 A 17 #2 Diesel Fuel
 18.780 (1.519-36.010) 1603729110 14.6
 A 20 Gasoline
 18.780 (1.519-36.010) 1603729110

RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags

A 23 Fuel Oil #6						
18.780	(1.519-36.010)		1603729110		14.6	
A 18 Fuel Oil #4						
18.780	(1.519-36.010)		1603729110		14.6	
A 16 Creosote						
18.780	(1.519-36.010)		1603729110		14.6	
A 15 Mineral Spirits						
18.780	(1.519-36.010)		1603729110		14.6	
A 21 Kerosene						
18.780	(1.519-36.010)		1603729110		14.6	
A 19 Motor Oil						
18.780	(1.519-36.010)		1603729110		14.6	
A 22 C8-C40						
18.780	(1.519-36.010)		1603729110		14.6	
A 14 Qualitative Method						
18.780	(1.519-36.010)		1603729110		14.6	
24 icosane						
19.591	19.577	0.014	13165032		0.1170	
25 n-Docosane						
21.777	21.769	0.008	11735645		0.1035	
A 26 C12-C40						
22.162	(8.290-36.010)		1580844319		NC	
27 n-Tetracosane						
23.801	23.791	0.010	22464597		0.1963	
A 28 C16-C36						
23.972	(14.460-33.485)		1447115831		18.5	
29 n-Hexacosane						
25.669	25.663	0.006	13762437		0.1194	
30 n-Octacosane						
27.415	27.408	0.007	24561879		0.2118	
31 Triacontane						
29.049	29.042	0.007	66085549		0.5658	
A 32 C24-C40						
29.960	(23.891-36.010)		1017971855		0	
33 Dotriacontane						
30.580	30.574	0.006	6827591		0.0595	
34 Tetratriacontane						
32.023	32.020	0.003	14894537		0.1285	
35 n-Hexatriacontane						
33.390	33.385	0.005	9019666		0.0792	
36 C38						
34.683	34.680	0.003	33952511		0.3075	
37 C40						
35.913	35.910	0.003	70393909		0.6229	

[QC Flag Legend](#)

Processing Flags

NC - Not Calibrated

Report Date: 24-Apr-2023 22:11:41

Chrom Revision: 2.3 20-Apr-2023 08:27:48

Eurofins Lancaster Laboratories Environment Testing, LLC

Data File: \\chromfs\Lancaster\ChromData\10254\20230419-81893.b\ABTPH_22241047.0006.d

Injection Date: 19-Apr-2023 23:21:00

Instrument ID: 10254-A

Operator ID:

Lims ID: MB 410-366280/1-A

Worklist Smp#: 6

Client ID:

Injection Vol: 1.0 ul

Dil. Factor: 1.0000

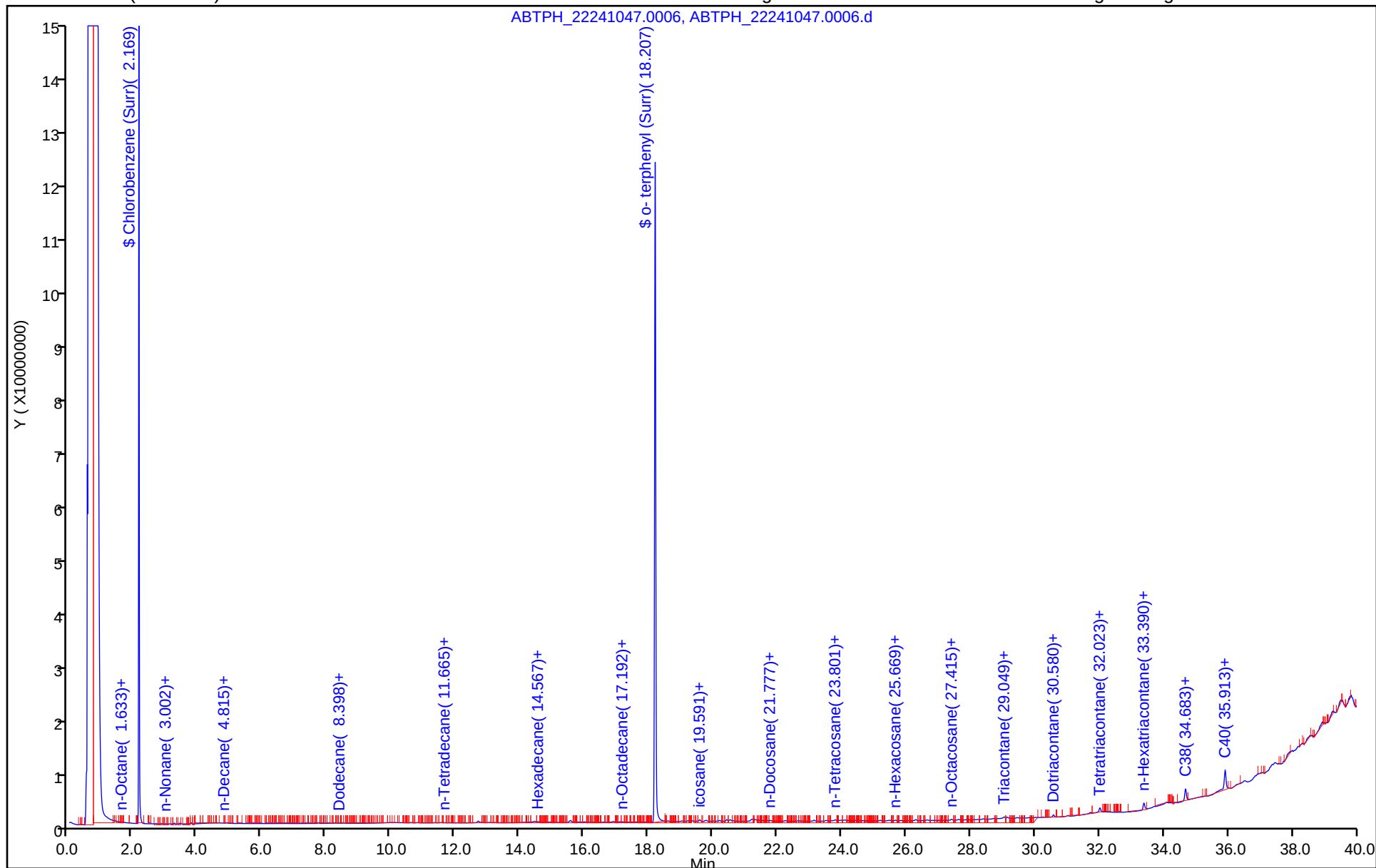
ALS Bottle#: 0

Method: Fuels_10254A

Limit Group: GCV - 8015C_D_ID

Column: ZB-5 (0.00 mm)

Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



Eurofins Lancaster Laboratories Environment Testing, LLC
Recovery Report

Data File: \\chromfs\Lancaster\ChromData\10254\20230419-81893.b\ABTPH_22241047.0006.d
Lims ID: MB 410-366280/1-A
Client ID:
Sample Type: MB
Inject. Date: 19-Apr-2023 23:21:00 ALS Bottle#: 0 Worklist Smp#: 6
Injection Vol: 1.0 ul Dil. Factor: 1.0000
Sample Info: MB 410-366280/1-A
Misc. Info.: 410-0081893-006
Operator ID: Instrument ID: 10254-A
Method: \\chromfs\Lancaster\ChromData\10254\20230419-81893.b\Fuels_10254A.m
Limit Group: GCV - 8015C_D_ID
Last Update: 24-Apr-2023 22:11:39 Calib Date: 30-Aug-2022 12:57:00
Integrator: Genie
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\chromfs\Lancaster\ChromData\10254\20220829-65214.b\ABTPH_22241001.0025.d
Column 1 : ZB-5 (0.00 mm) Det: ABTPH_19123049B.012
Process Host: CTX1653

Compound	Amount Added	Amount Recovered	% Rec.
\$ 2 Chlorobenzene (Surr)	12.0	12.8	106.13
\$ 13 o- terphenyl (Surr)	12.0	12.9	107.58

Report Date: 24-Apr-2023 22:11:41

Chrom Revision: 2.3 20-Apr-2023 08:27:48

Eurofins Lancaster Laboratories Environment Testing, LLC

Data File: \\chromfs\Lancaster\ChromData\10254\20230419-81893.b\ABTPH_22241047.0006.d

Injection Date: 19-Apr-2023 23:21:00

Instrument ID: 10254-A

Lims ID: MB 410-366280/1-A

Client ID:

Operator ID:

ALS Bottle#:

0

Worklist Smp#:

6

Injection Vol: 1.0 ul

Dil. Factor:

1.0000

Method: Fuels_10254A

Limit Group:

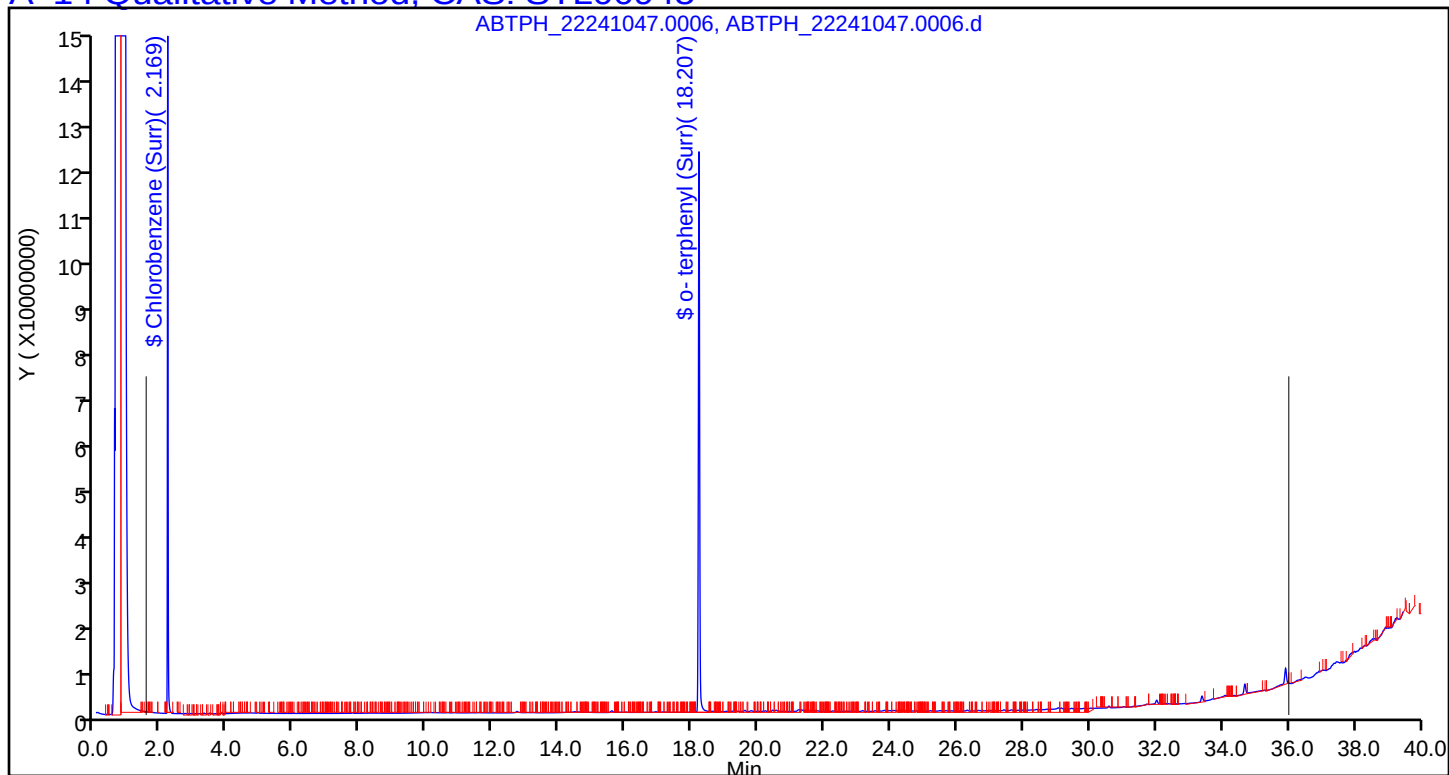
GCV - 8015C_D_ID

Column: ZB-5 (0.00 mm)

Detector

ABTPH_19123049B.012

A 14 Qualitative Method, CAS: STL00945



GC SEMI VOA ANALYSIS RUN LOG

Lab Name: Eurofins Lancaster Laboratories Envi Job No.: 410-123046-1

SDG No.: _____

Instrument ID: 10254-AStart Date: 08/29/2022 20:49Analysis Batch Number: 290775End Date: 08/30/2022 17:48

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
PIBLK 410-290775/5		08/29/2022 20:49	1		ZB-5
IC 410-290775/6		08/29/2022 21:37	1		ZB-5
IC 410-290775/7		08/29/2022 22:26	1		ZB-5
ICRT 410-290775/8		08/29/2022 23:14	1	ABTPH_22241001. 0008.d	ZB-5
IC 410-290775/9		08/30/2022 00:03	1		ZB-5
IC 410-290775/10		08/30/2022 00:51	1		ZB-5
IC 410-290775/11		08/30/2022 01:40	1		ZB-5
IC 410-290775/12		08/30/2022 02:28	1		ZB-5
IC 410-290775/13		08/30/2022 03:17	1		ZB-5
IC 410-290775/14		08/30/2022 04:05	1		ZB-5
IC 410-290775/15		08/30/2022 04:53	1		ZB-5
ICVL 410-290775/27		08/30/2022 14:34	1		ZB-5
ICVL 410-290775/28		08/30/2022 15:22	1		ZB-5
ICV 410-290775/30		08/30/2022 16:59	1	ABTPH_22241001. 0030.d	ZB-5
ICV 410-290775/31		08/30/2022 17:48	1		ZB-5

GC SEMI VOA ANALYSIS RUN LOG

Lab Name: Eurofins Lancaster Laboratories Envi Job No.: 410-123046-1

SDG No.: _____

Instrument ID: 10254-A Start Date: 04/19/2023 22:33Analysis Batch Number: 366286 End Date: 04/20/2023 00:57

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCVRT 410-366286/5		04/19/2023 22:33	1	ABTPH_22241047. 0005.d	ZB-5
MB 410-366280/1-A		04/19/2023 23:21	1	ABTPH_22241047. 0006.d	ZB-5
410-123046-1	L-11223416-041223-SK- 001	04/20/2023 00:09	10	ABTPH_22241047. 0007.d	ZB-5
CCV 410-366286/8		04/20/2023 00:57	1	ABTPH_22241047. 0008.d	ZB-5

GC SEMI VOA BATCH WORKSHEET

Lab Name: Eurofins Lancaster Laboratorie Job No.: 410-123046-1

SDG No.: _____

Batch Number: 290775 Batch Start Date: 08/29/22 20:49 Batch Analyst: Williams, Heather EBatch Method: 8015C Batch End Date: _____

Lab Sample ID	Client Sample ID	Method Chain	Basis	FinalAmount	EPH_TPH_3 00009	EPH_TPHC 00002			
ICRT 410-290775/8		8015C		1 mL	1 mL				
ICV 410-290775/30		8015C		1 mL		1 mL			

Batch Notes	

Basis	Basis Description

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GC SEMI VOA BATCH WORKSHEET

Lab Name: Eurofins Lancaster Laboratorie Job No.: 410-123046-1

SDG No.: _____

Batch Number: 366280 Batch Start Date: 04/19/23 18:55 Batch Analyst: Williams, Heather EBatch Method: 3580A Batch End Date: 04/19/23 19:10

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	EPH_GCFP_SS 00007	AnalysisComment		
MB 410-366280/1		3580A, 8015C		1 mL	1 mL	0.1 mL	MECL2		
410-123046-A-1	L-11223416-04122 3-SK-001	3580A, 8015C	T	0.1089 g	10 mL		yellow oil layer		

Batch Notes	
Balance ID	7880
Analyst ID - Extraction	HEW02027
Blank Matrix ID	Solvent
Analyst ID - Spike Analyst	HEW02027
Prep Solvent ID	MeCl2 LOT# 225458
Vial Lot Number	21116173

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

Shipping and Receiving Documents

TestAmerica Michigan
10448 Citation Drive
Suite 200
Brighton, MI 48116
Phone: 810.229.2763 Fax:

MICHIGAN
190



410-123046 Chain of Custody

ord

287558

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.

TAL-8210 (0713)

Client Contact		Project Manager: <u>Tom Kinney</u>		Site Contact: <u>J. Nippen</u>		Date: <u>4-14-23</u>		COC No:		
Company Name: <u>GHD</u>		Tel/Fax: <u>(248) 893-3410</u>		Lab Contact: <u>D. Heckler</u>		Carrier: <u>FEDEX</u>		<u>1</u> of <u>1</u> COCs		
Address: <u>26850 Haggerty Rd</u>		Analysis Turnaround Time		Filtered Sample (Y/N) Perform MS / MSD (Y/N) <u>Quantitative Fingerprint</u>				Sampler:		
City/State/Zip: <u>Farmington Hills, M.I.</u>		☐ CALENDAR DAYS ☒ WORKING DAYS						For Lab Use Only:		
Phone: <u>248 893-3400</u> <u>48331</u>		TAT if different from Below						Walk-in Client:		
Fax: <u>chemdet@ghd.com</u>		☒ 2 weeks						Lab Sampling:		
Project Name: <u>PCC Validation</u>		☐ 1 week						Job / SDG No.:		
Site: <u>Pontiac, M.I.</u>		☐ 2 days								
P O # <u>SSOW 11223416-2021-T03-007</u>		☐ 1 day								
Sample Identification		Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Sample Specific Notes:			
<u>L-11223416-041223-SK-001</u>		<u>4-12-23</u>	<u>14:00</u>	<u>G</u>	<u>L</u>	<u>1</u>	<u>SK</u>			
Preservation Used: 1=Ice, 2=HCl, 3=H2SO4, 4=HNO3, 5=NaOH, 6=Other										
Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.						Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)				
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown						☐ Return to Client ☒ Disposal by Lab ☐ Archive for _____ Months				
Special Instructions/QC Requirements & Comments: <u>"L" = Liquid</u>										
Custody Seals Intact: ☐ Yes ☐ No		Custody Seal No.:		Cooler Temp. (°C): Obs'd: <u>5.8</u> Cor'd: <u>5.6</u>		Therm ID No.: <u>80 W3</u>				
Relinquished by: <u>[Signature]</u>		Company: <u>GHD</u>		Date/Time: <u>16:00 4-14-23</u>		Received by: <u>[Signature]</u>		Company: <u>[Signature]</u>		
Relinquished by: <u>[Signature]</u>		Company: <u>[Signature]</u>		Date/Time: <u>[Signature]</u>		Received by: <u>[Signature]</u>		Company: <u>[Signature]</u>		
Relinquished by: <u>[Signature]</u>		Company: <u>[Signature]</u>		Date/Time: <u>[Signature]</u>		Received in Laboratory by: <u>[Signature]</u>		Company: <u>EHE</u>		
								Date/Time: <u>4-15-23 1010</u>		

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 410-123046-1

Login Number: 123046
List Number: 1
Creator: Burkholder, Conrad

List Source: Eurofins Lancaster Laboratories Environment Testing, LLC

Question	Answer	Comment
The cooler's custody seal is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable ($\leq 6^{\circ}\text{C}$, not frozen).	True	
Cooler Temperature is recorded.	True	
WV: Container Temperature is acceptable ($\leq 6^{\circ}\text{C}$, not frozen).	N/A	
WV: Container Temperature is recorded.	N/A	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the containers received and the COC.	True	
Sample containers have legible labels.	False	Refer to Job Narrative for details.
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses.	True	
Is the Field Sampler's name present on COC?	False	Refer to Job Narrative for details.
Sample custody seals are intact.	N/A	
VOA sample vials do not have headspace $>6\text{mm}$ in diameter (none, if from WV)?	N/A	

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-169764-1

Client Project/Site: 11223416, PCC Validation

For:

GHD Services Inc.
26850 Haggerty Rd.
Farmington Hills, Michigan 48331

Attn: Mr. James Abston



Authorized for release by:

7/22/2022 8:36:26 AM

Denise Heckler, Project Manager II
(330)966-9477

Denise.Heckler@et.eurofinsus.com

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Case Narrative

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-169764-1

Job ID: 240-169764-1

Laboratory: Eurofins Canton

Narrative

Job Narrative 240-169764-1

Comments

No additional comments.

Receipt

The samples were received on 7/14/2022 9:50 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 4.2° C.

GC/MS VOA

Method 8260C: The continuing calibration verification (CCV) analyzed in batch 240-535277 was outside the method criteria for the following analyte(s): Bromomethane and Chloroethane. An MRL standard at or below the reporting limit (RL) was analyzed with the affected samples: GW-11223416-071322-SK-001 (240-169764-1), GW-11223416-071322-SK-002 (240-169764-2), GW-11223416-071322-SK-003 (240-169764-3), (CCV 240-535277/4), (CCVIS 240-535277/3), (LCS 240-535277/5), (MB 240-535277/7), (240-169763-C-3), (240-169763-D-3 MS) and (240-169763-I-3 MSD) and found to be acceptable. As indicated in the reference method, sample analysis may proceed; however, any detection for the affected analyte(s) is considered estimated.

Method 8260C: The continuing calibration verification (CCV) associated with batch 240-535277 recovered above the upper control limit for Bromoform and Vinyl Acetate. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: GW-11223416-071322-SK-001 (240-169764-1), GW-11223416-071322-SK-002 (240-169764-2), GW-11223416-071322-SK-003 (240-169764-3), (CCV 240-535277/4), (CCVIS 240-535277/3), (LCS 240-535277/5), (MB 240-535277/7), (240-169763-C-3), (240-169763-D-3 MS) and (240-169763-I-3 MSD).

Method 8260C: The continuing calibration verification (CCV) analyzed in batch 240-535485 was outside the method criteria for the following analyte(s): Bromomethane. An MRL standard at or below the reporting limit (RL) was analyzed with the affected samples: GW-11223416-071322-SK-004 (240-169764-4), GW-11223416-071322-SK-005 (240-169764-5), TB-11223416-071322-SK (240-169764-6), (CCV 240-535485/4), (CCVIS 240-535485/3), (LCS 240-535485/5), (MB 240-535485/7), (240-169763-B-3), (240-169763-B-3 MS) and (240-169763-B-3 MSD) and found to be acceptable. As indicated in the reference method, sample analysis may proceed; however, any detection for the affected analyte(s) is considered estimated.

Method 8260C: The continuing calibration verification (CCV) associated with batch 240-535485 recovered above the upper control limit for Bromoform and Vinyl Acetate. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: GW-11223416-071322-SK-004 (240-169764-4), GW-11223416-071322-SK-005 (240-169764-5), TB-11223416-071322-SK (240-169764-6), (CCV 240-535485/4), (CCVIS 240-535485/3), (LCS 240-535485/5), (MB 240-535485/7), (240-169763-B-3), (240-169763-B-3 MS) and (240-169763-B-3 MSD).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Definitions/Glossary

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-169764-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Sample Summary

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-169764-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-169764-1	GW-11223416-071322-SK-001	Water	07/13/22 10:25	07/14/22 09:50
240-169764-2	GW-11223416-071322-SK-002	Water	07/13/22 11:40	07/14/22 09:50
240-169764-3	GW-11223416-071322-SK-003	Water	07/13/22 11:45	07/14/22 09:50
240-169764-4	GW-11223416-071322-SK-004	Water	07/13/22 12:40	07/14/22 09:50
240-169764-5	GW-11223416-071322-SK-005	Water	07/13/22 13:55	07/14/22 09:50
240-169764-6	TB-11223416-071322-SK	Water	07/13/22 00:00	07/14/22 09:50

Detection Summary

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-169764-1

Client Sample ID: GW-11223416-071322-SK-001

Lab Sample ID: 240-169764-1

No Detections.

Client Sample ID: GW-11223416-071322-SK-002

Lab Sample ID: 240-169764-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Dichlorobromomethane	0.62	J	1.0	0.17	ug/L	1		8260C	Total/NA
Chloroform	1.5		1.0	0.47	ug/L	1		8260C	Total/NA
Ethylbenzene	0.60	J	1.0	0.42	ug/L	1		8260C	Total/NA

Client Sample ID: GW-11223416-071322-SK-003

Lab Sample ID: 240-169764-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Dichlorobromomethane	0.48	J	1.0	0.17	ug/L	1		8260C	Total/NA
Chloroform	1.1		1.0	0.47	ug/L	1		8260C	Total/NA
Ethylbenzene	0.49	J	1.0	0.42	ug/L	1		8260C	Total/NA

Client Sample ID: GW-11223416-071322-SK-004

Lab Sample ID: 240-169764-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1,1-Trichloroethane	16		1.0	0.48	ug/L	1		8260C	Total/NA
Trichloroethene	44		1.0	0.44	ug/L	1		8260C	Total/NA

Client Sample ID: GW-11223416-071322-SK-005

Lab Sample ID: 240-169764-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Carbon disulfide	0.90	J	1.0	0.59	ug/L	1		8260C	Total/NA

Client Sample ID: TB-11223416-071322-SK

Lab Sample ID: 240-169764-6

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins Canton

Method Summary

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-169764-1

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds by GC/MS	SW846	TAL CAN
5030C	Purge and Trap	SW846	TAL CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-169764-1

Method: 8260C - Volatile Organic Compounds by GC/MS

Client Sample ID: GW-11223416-071322-SK-001

Date Collected: 07/13/22 10:25

Date Received: 07/14/22 09:50

Lab Sample ID: 240-169764-1

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	0.48	ug/L			07/19/22 17:31	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.60	ug/L			07/19/22 17:31	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			07/19/22 17:31	1
1,1,2-Trichloroethane	1.0	U	1.0	0.48	ug/L			07/19/22 17:31	1
1,1-Dichloroethane	1.0	U	1.0	0.47	ug/L			07/19/22 17:31	1
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			07/19/22 17:31	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.77	ug/L			07/19/22 17:31	1
1,2-Dibromo-3-Chloropropane	2.0	U	2.0	0.91	ug/L			07/19/22 17:31	1
Ethylene Dibromide	1.0	U	1.0	0.41	ug/L			07/19/22 17:31	1
1,2-Dichlorobenzene	1.0	U	1.0	0.48	ug/L			07/19/22 17:31	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			07/19/22 17:31	1
1,2-Dichloropropane	1.0	U	1.0	0.47	ug/L			07/19/22 17:31	1
1,3-Dichlorobenzene	1.0	U	1.0	0.45	ug/L			07/19/22 17:31	1
1,4-Dichlorobenzene	1.0	U	1.0	0.41	ug/L			07/19/22 17:31	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			07/19/22 17:31	1
2-Hexanone	10	U	10	1.1	ug/L			07/19/22 17:31	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.99	ug/L			07/19/22 17:31	1
Acetone	10	U	10	5.4	ug/L			07/19/22 17:31	1
Benzene	1.0	U	1.0	0.42	ug/L			07/19/22 17:31	1
Dichlorobromomethane	1.0	U	1.0	0.17	ug/L			07/19/22 17:31	1
Bromoform	1.0	U	1.0	0.76	ug/L			07/19/22 17:31	1
Bromomethane	1.0	U	1.0	0.42	ug/L			07/19/22 17:31	1
Carbon disulfide	1.0	U	1.0	0.59	ug/L			07/19/22 17:31	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			07/19/22 17:31	1
Chlorobenzene	1.0	U	1.0	0.38	ug/L			07/19/22 17:31	1
Chloroethane	1.0	U	1.0	0.83	ug/L			07/19/22 17:31	1
Chloroform	1.0	U	1.0	0.47	ug/L			07/19/22 17:31	1
Chloromethane	1.0	U	1.0	0.63	ug/L			07/19/22 17:31	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			07/19/22 17:31	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			07/19/22 17:31	1
Cyclohexane	1.0	U	1.0	0.48	ug/L			07/19/22 17:31	1
Chlorodibromomethane	1.0	U	1.0	0.39	ug/L			07/19/22 17:31	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			07/19/22 17:31	1
Ethylbenzene	1.0	U	1.0	0.42	ug/L			07/19/22 17:31	1
Isopropylbenzene	1.0	U	1.0	0.49	ug/L			07/19/22 17:31	1
Methyl acetate	10	U	10	1.7	ug/L			07/19/22 17:31	1
Methyl tert-butyl ether	1.0	U	1.0	0.47	ug/L			07/19/22 17:31	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			07/19/22 17:31	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			07/19/22 17:31	1
Styrene	1.0	U	1.0	0.45	ug/L			07/19/22 17:31	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			07/19/22 17:31	1
Toluene	1.0	U	1.0	0.44	ug/L			07/19/22 17:31	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			07/19/22 17:31	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			07/19/22 17:31	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			07/19/22 17:31	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			07/19/22 17:31	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			07/19/22 17:31	1
Xylenes, Total	2.0	U	2.0	0.42	ug/L			07/19/22 17:31	1

Eurofins Canton

Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-169764-1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Toluene-d8 (Surr)</i>	105		78 - 122		07/19/22 17:31	1
<i>Dibromofluoromethane (Surr)</i>	114		73 - 120		07/19/22 17:31	1
<i>4-Bromofluorobenzene (Surr)</i>	101		56 - 136		07/19/22 17:31	1
<i>1,2-Dichloroethane-d4 (Surr)</i>	109		62 - 137		07/19/22 17:31	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-169764-1

Method: 8260C - Volatile Organic Compounds by GC/MS

Client Sample ID: GW-11223416-071322-SK-002

Date Collected: 07/13/22 11:40

Date Received: 07/14/22 09:50

Lab Sample ID: 240-169764-2

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	0.48	ug/L			07/19/22 17:55	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.60	ug/L			07/19/22 17:55	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			07/19/22 17:55	1
1,1,2-Trichloroethane	1.0	U	1.0	0.48	ug/L			07/19/22 17:55	1
1,1-Dichloroethane	1.0	U	1.0	0.47	ug/L			07/19/22 17:55	1
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			07/19/22 17:55	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.77	ug/L			07/19/22 17:55	1
1,2-Dibromo-3-Chloropropane	2.0	U	2.0	0.91	ug/L			07/19/22 17:55	1
Ethylene Dibromide	1.0	U	1.0	0.41	ug/L			07/19/22 17:55	1
1,2-Dichlorobenzene	1.0	U	1.0	0.48	ug/L			07/19/22 17:55	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			07/19/22 17:55	1
1,2-Dichloropropane	1.0	U	1.0	0.47	ug/L			07/19/22 17:55	1
1,3-Dichlorobenzene	1.0	U	1.0	0.45	ug/L			07/19/22 17:55	1
1,4-Dichlorobenzene	1.0	U	1.0	0.41	ug/L			07/19/22 17:55	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			07/19/22 17:55	1
2-Hexanone	10	U	10	1.1	ug/L			07/19/22 17:55	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.99	ug/L			07/19/22 17:55	1
Acetone	10	U	10	5.4	ug/L			07/19/22 17:55	1
Benzene	1.0	U	1.0	0.42	ug/L			07/19/22 17:55	1
Dichlorobromomethane	0.62	J	1.0	0.17	ug/L			07/19/22 17:55	1
Bromoform	1.0	U	1.0	0.76	ug/L			07/19/22 17:55	1
Bromomethane	1.0	U	1.0	0.42	ug/L			07/19/22 17:55	1
Carbon disulfide	1.0	U	1.0	0.59	ug/L			07/19/22 17:55	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			07/19/22 17:55	1
Chlorobenzene	1.0	U	1.0	0.38	ug/L			07/19/22 17:55	1
Chloroethane	1.0	U	1.0	0.83	ug/L			07/19/22 17:55	1
Chloroform	1.5		1.0	0.47	ug/L			07/19/22 17:55	1
Chloromethane	1.0	U	1.0	0.63	ug/L			07/19/22 17:55	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			07/19/22 17:55	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			07/19/22 17:55	1
Cyclohexane	1.0	U	1.0	0.48	ug/L			07/19/22 17:55	1
Chlorodibromomethane	1.0	U	1.0	0.39	ug/L			07/19/22 17:55	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			07/19/22 17:55	1
Ethylbenzene	0.60	J	1.0	0.42	ug/L			07/19/22 17:55	1
Isopropylbenzene	1.0	U	1.0	0.49	ug/L			07/19/22 17:55	1
Methyl acetate	10	U	10	1.7	ug/L			07/19/22 17:55	1
Methyl tert-butyl ether	1.0	U	1.0	0.47	ug/L			07/19/22 17:55	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			07/19/22 17:55	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			07/19/22 17:55	1
Styrene	1.0	U	1.0	0.45	ug/L			07/19/22 17:55	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			07/19/22 17:55	1
Toluene	1.0	U	1.0	0.44	ug/L			07/19/22 17:55	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			07/19/22 17:55	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			07/19/22 17:55	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			07/19/22 17:55	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			07/19/22 17:55	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			07/19/22 17:55	1
Xylenes, Total	2.0	U	2.0	0.42	ug/L			07/19/22 17:55	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-169764-1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>Toluene-d8 (Surr)</i>	103		78 - 122		07/19/22 17:55	1
<i>Dibromofluoromethane (Surr)</i>	111		73 - 120		07/19/22 17:55	1
<i>4-Bromofluorobenzene (Surr)</i>	100		56 - 136		07/19/22 17:55	1
<i>1,2-Dichloroethane-d4 (Surr)</i>	107		62 - 137		07/19/22 17:55	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-169764-1

Method: 8260C - Volatile Organic Compounds by GC/MS

Client Sample ID: GW-11223416-071322-SK-003

Date Collected: 07/13/22 11:45

Date Received: 07/14/22 09:50

Lab Sample ID: 240-169764-3

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	0.48	ug/L			07/19/22 18:19	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.60	ug/L			07/19/22 18:19	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			07/19/22 18:19	1
1,1,2-Trichloroethane	1.0	U	1.0	0.48	ug/L			07/19/22 18:19	1
1,1-Dichloroethane	1.0	U	1.0	0.47	ug/L			07/19/22 18:19	1
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			07/19/22 18:19	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.77	ug/L			07/19/22 18:19	1
1,2-Dibromo-3-Chloropropane	2.0	U	2.0	0.91	ug/L			07/19/22 18:19	1
Ethylene Dibromide	1.0	U	1.0	0.41	ug/L			07/19/22 18:19	1
1,2-Dichlorobenzene	1.0	U	1.0	0.48	ug/L			07/19/22 18:19	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			07/19/22 18:19	1
1,2-Dichloropropane	1.0	U	1.0	0.47	ug/L			07/19/22 18:19	1
1,3-Dichlorobenzene	1.0	U	1.0	0.45	ug/L			07/19/22 18:19	1
1,4-Dichlorobenzene	1.0	U	1.0	0.41	ug/L			07/19/22 18:19	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			07/19/22 18:19	1
2-Hexanone	10	U	10	1.1	ug/L			07/19/22 18:19	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.99	ug/L			07/19/22 18:19	1
Acetone	10	U	10	5.4	ug/L			07/19/22 18:19	1
Benzene	1.0	U	1.0	0.42	ug/L			07/19/22 18:19	1
Dichlorobromomethane	0.48	J	1.0	0.17	ug/L			07/19/22 18:19	1
Bromoform	1.0	U	1.0	0.76	ug/L			07/19/22 18:19	1
Bromomethane	1.0	U	1.0	0.42	ug/L			07/19/22 18:19	1
Carbon disulfide	1.0	U	1.0	0.59	ug/L			07/19/22 18:19	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			07/19/22 18:19	1
Chlorobenzene	1.0	U	1.0	0.38	ug/L			07/19/22 18:19	1
Chloroethane	1.0	U	1.0	0.83	ug/L			07/19/22 18:19	1
Chloroform	1.1		1.0	0.47	ug/L			07/19/22 18:19	1
Chloromethane	1.0	U	1.0	0.63	ug/L			07/19/22 18:19	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			07/19/22 18:19	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			07/19/22 18:19	1
Cyclohexane	1.0	U	1.0	0.48	ug/L			07/19/22 18:19	1
Chlorodibromomethane	1.0	U	1.0	0.39	ug/L			07/19/22 18:19	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			07/19/22 18:19	1
Ethylbenzene	0.49	J	1.0	0.42	ug/L			07/19/22 18:19	1
Isopropylbenzene	1.0	U	1.0	0.49	ug/L			07/19/22 18:19	1
Methyl acetate	10	U	10	1.7	ug/L			07/19/22 18:19	1
Methyl tert-butyl ether	1.0	U	1.0	0.47	ug/L			07/19/22 18:19	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			07/19/22 18:19	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			07/19/22 18:19	1
Styrene	1.0	U	1.0	0.45	ug/L			07/19/22 18:19	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			07/19/22 18:19	1
Toluene	1.0	U	1.0	0.44	ug/L			07/19/22 18:19	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			07/19/22 18:19	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			07/19/22 18:19	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			07/19/22 18:19	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			07/19/22 18:19	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			07/19/22 18:19	1
Xylenes, Total	2.0	U	2.0	0.42	ug/L			07/19/22 18:19	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-169764-1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Toluene-d8 (Surr)</i>	104		78 - 122		07/19/22 18:19	1
<i>Dibromofluoromethane (Surr)</i>	111		73 - 120		07/19/22 18:19	1
<i>4-Bromofluorobenzene (Surr)</i>	101		56 - 136		07/19/22 18:19	1
<i>1,2-Dichloroethane-d4 (Surr)</i>	108		62 - 137		07/19/22 18:19	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-169764-1

Method: 8260C - Volatile Organic Compounds by GC/MS

Client Sample ID: GW-11223416-071322-SK-004

Date Collected: 07/13/22 12:40

Date Received: 07/14/22 09:50

Lab Sample ID: 240-169764-4

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	16		1.0	0.48	ug/L			07/20/22 14:40	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.60	ug/L			07/20/22 14:40	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			07/20/22 14:40	1
1,1,2-Trichloroethane	1.0	U	1.0	0.48	ug/L			07/20/22 14:40	1
1,1-Dichloroethane	1.0	U	1.0	0.47	ug/L			07/20/22 14:40	1
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			07/20/22 14:40	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.77	ug/L			07/20/22 14:40	1
1,2-Dibromo-3-Chloropropane	2.0	U	2.0	0.91	ug/L			07/20/22 14:40	1
Ethylene Dibromide	1.0	U	1.0	0.41	ug/L			07/20/22 14:40	1
1,2-Dichlorobenzene	1.0	U	1.0	0.48	ug/L			07/20/22 14:40	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			07/20/22 14:40	1
1,2-Dichloropropane	1.0	U	1.0	0.47	ug/L			07/20/22 14:40	1
1,3-Dichlorobenzene	1.0	U	1.0	0.45	ug/L			07/20/22 14:40	1
1,4-Dichlorobenzene	1.0	U	1.0	0.41	ug/L			07/20/22 14:40	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			07/20/22 14:40	1
2-Hexanone	10	U	10	1.1	ug/L			07/20/22 14:40	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.99	ug/L			07/20/22 14:40	1
Acetone	10	U	10	5.4	ug/L			07/20/22 14:40	1
Benzene	1.0	U	1.0	0.42	ug/L			07/20/22 14:40	1
Dichlorobromomethane	1.0	U	1.0	0.17	ug/L			07/20/22 14:40	1
Bromoform	1.0	U	1.0	0.76	ug/L			07/20/22 14:40	1
Bromomethane	1.0	U	1.0	0.42	ug/L			07/20/22 14:40	1
Carbon disulfide	1.0	U	1.0	0.59	ug/L			07/20/22 14:40	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			07/20/22 14:40	1
Chlorobenzene	1.0	U	1.0	0.38	ug/L			07/20/22 14:40	1
Chloroethane	1.0	U	1.0	0.83	ug/L			07/20/22 14:40	1
Chloroform	1.0	U	1.0	0.47	ug/L			07/20/22 14:40	1
Chloromethane	1.0	U	1.0	0.63	ug/L			07/20/22 14:40	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			07/20/22 14:40	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			07/20/22 14:40	1
Cyclohexane	1.0	U	1.0	0.48	ug/L			07/20/22 14:40	1
Chlorodibromomethane	1.0	U	1.0	0.39	ug/L			07/20/22 14:40	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			07/20/22 14:40	1
Ethylbenzene	1.0	U	1.0	0.42	ug/L			07/20/22 14:40	1
Isopropylbenzene	1.0	U	1.0	0.49	ug/L			07/20/22 14:40	1
Methyl acetate	10	U	10	1.7	ug/L			07/20/22 14:40	1
Methyl tert-butyl ether	1.0	U	1.0	0.47	ug/L			07/20/22 14:40	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			07/20/22 14:40	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			07/20/22 14:40	1
Styrene	1.0	U	1.0	0.45	ug/L			07/20/22 14:40	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			07/20/22 14:40	1
Toluene	1.0	U	1.0	0.44	ug/L			07/20/22 14:40	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			07/20/22 14:40	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			07/20/22 14:40	1
Trichloroethene	44		1.0	0.44	ug/L			07/20/22 14:40	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			07/20/22 14:40	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			07/20/22 14:40	1
Xylenes, Total	2.0	U	2.0	0.42	ug/L			07/20/22 14:40	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-169764-1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>Toluene-d8 (Surr)</i>	105		78 - 122		07/20/22 14:40	1
<i>Dibromofluoromethane (Surr)</i>	111		73 - 120		07/20/22 14:40	1
<i>4-Bromofluorobenzene (Surr)</i>	99		56 - 136		07/20/22 14:40	1
<i>1,2-Dichloroethane-d4 (Surr)</i>	104		62 - 137		07/20/22 14:40	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-169764-1

Method: 8260C - Volatile Organic Compounds by GC/MS

Client Sample ID: GW-11223416-071322-SK-005

Date Collected: 07/13/22 13:55

Date Received: 07/14/22 09:50

Lab Sample ID: 240-169764-5

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	0.48	ug/L			07/20/22 15:04	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.60	ug/L			07/20/22 15:04	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			07/20/22 15:04	1
1,1,2-Trichloroethane	1.0	U	1.0	0.48	ug/L			07/20/22 15:04	1
1,1-Dichloroethane	1.0	U	1.0	0.47	ug/L			07/20/22 15:04	1
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			07/20/22 15:04	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.77	ug/L			07/20/22 15:04	1
1,2-Dibromo-3-Chloropropane	2.0	U	2.0	0.91	ug/L			07/20/22 15:04	1
Ethylene Dibromide	1.0	U	1.0	0.41	ug/L			07/20/22 15:04	1
1,2-Dichlorobenzene	1.0	U	1.0	0.48	ug/L			07/20/22 15:04	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			07/20/22 15:04	1
1,2-Dichloropropane	1.0	U	1.0	0.47	ug/L			07/20/22 15:04	1
1,3-Dichlorobenzene	1.0	U	1.0	0.45	ug/L			07/20/22 15:04	1
1,4-Dichlorobenzene	1.0	U	1.0	0.41	ug/L			07/20/22 15:04	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			07/20/22 15:04	1
2-Hexanone	10	U	10	1.1	ug/L			07/20/22 15:04	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.99	ug/L			07/20/22 15:04	1
Acetone	10	U	10	5.4	ug/L			07/20/22 15:04	1
Benzene	1.0	U	1.0	0.42	ug/L			07/20/22 15:04	1
Dichlorobromomethane	1.0	U	1.0	0.17	ug/L			07/20/22 15:04	1
Bromoform	1.0	U	1.0	0.76	ug/L			07/20/22 15:04	1
Bromomethane	1.0	U	1.0	0.42	ug/L			07/20/22 15:04	1
Carbon disulfide	0.90	J	1.0	0.59	ug/L			07/20/22 15:04	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			07/20/22 15:04	1
Chlorobenzene	1.0	U	1.0	0.38	ug/L			07/20/22 15:04	1
Chloroethane	1.0	U	1.0	0.83	ug/L			07/20/22 15:04	1
Chloroform	1.0	U	1.0	0.47	ug/L			07/20/22 15:04	1
Chloromethane	1.0	U	1.0	0.63	ug/L			07/20/22 15:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			07/20/22 15:04	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			07/20/22 15:04	1
Cyclohexane	1.0	U	1.0	0.48	ug/L			07/20/22 15:04	1
Chlorodibromomethane	1.0	U	1.0	0.39	ug/L			07/20/22 15:04	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			07/20/22 15:04	1
Ethylbenzene	1.0	U	1.0	0.42	ug/L			07/20/22 15:04	1
Isopropylbenzene	1.0	U	1.0	0.49	ug/L			07/20/22 15:04	1
Methyl acetate	10	U	10	1.7	ug/L			07/20/22 15:04	1
Methyl tert-butyl ether	1.0	U	1.0	0.47	ug/L			07/20/22 15:04	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			07/20/22 15:04	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			07/20/22 15:04	1
Styrene	1.0	U	1.0	0.45	ug/L			07/20/22 15:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			07/20/22 15:04	1
Toluene	1.0	U	1.0	0.44	ug/L			07/20/22 15:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			07/20/22 15:04	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			07/20/22 15:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			07/20/22 15:04	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			07/20/22 15:04	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			07/20/22 15:04	1
Xylenes, Total	2.0	U	2.0	0.42	ug/L			07/20/22 15:04	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-169764-1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>Toluene-d8 (Surr)</i>	104		78 - 122		07/20/22 15:04	1
<i>Dibromofluoromethane (Surr)</i>	111		73 - 120		07/20/22 15:04	1
<i>4-Bromofluorobenzene (Surr)</i>	99		56 - 136		07/20/22 15:04	1
<i>1,2-Dichloroethane-d4 (Surr)</i>	109		62 - 137		07/20/22 15:04	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-169764-1

Method: 8260C - Volatile Organic Compounds by GC/MS

Client Sample ID: TB-11223416-071322-SK

Date Collected: 07/13/22 00:00

Date Received: 07/14/22 09:50

Lab Sample ID: 240-169764-6

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	0.48	ug/L			07/20/22 14:16	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.60	ug/L			07/20/22 14:16	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			07/20/22 14:16	1
1,1,2-Trichloroethane	1.0	U	1.0	0.48	ug/L			07/20/22 14:16	1
1,1-Dichloroethane	1.0	U	1.0	0.47	ug/L			07/20/22 14:16	1
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			07/20/22 14:16	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.77	ug/L			07/20/22 14:16	1
1,2-Dibromo-3-Chloropropane	2.0	U	2.0	0.91	ug/L			07/20/22 14:16	1
Ethylene Dibromide	1.0	U	1.0	0.41	ug/L			07/20/22 14:16	1
1,2-Dichlorobenzene	1.0	U	1.0	0.48	ug/L			07/20/22 14:16	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			07/20/22 14:16	1
1,2-Dichloropropane	1.0	U	1.0	0.47	ug/L			07/20/22 14:16	1
1,3-Dichlorobenzene	1.0	U	1.0	0.45	ug/L			07/20/22 14:16	1
1,4-Dichlorobenzene	1.0	U	1.0	0.41	ug/L			07/20/22 14:16	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			07/20/22 14:16	1
2-Hexanone	10	U	10	1.1	ug/L			07/20/22 14:16	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.99	ug/L			07/20/22 14:16	1
Acetone	10	U	10	5.4	ug/L			07/20/22 14:16	1
Benzene	1.0	U	1.0	0.42	ug/L			07/20/22 14:16	1
Dichlorobromomethane	1.0	U	1.0	0.17	ug/L			07/20/22 14:16	1
Bromoform	1.0	U	1.0	0.76	ug/L			07/20/22 14:16	1
Bromomethane	1.0	U	1.0	0.42	ug/L			07/20/22 14:16	1
Carbon disulfide	1.0	U	1.0	0.59	ug/L			07/20/22 14:16	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			07/20/22 14:16	1
Chlorobenzene	1.0	U	1.0	0.38	ug/L			07/20/22 14:16	1
Chloroethane	1.0	U	1.0	0.83	ug/L			07/20/22 14:16	1
Chloroform	1.0	U	1.0	0.47	ug/L			07/20/22 14:16	1
Chloromethane	1.0	U	1.0	0.63	ug/L			07/20/22 14:16	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			07/20/22 14:16	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			07/20/22 14:16	1
Cyclohexane	1.0	U	1.0	0.48	ug/L			07/20/22 14:16	1
Chlorodibromomethane	1.0	U	1.0	0.39	ug/L			07/20/22 14:16	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			07/20/22 14:16	1
Ethylbenzene	1.0	U	1.0	0.42	ug/L			07/20/22 14:16	1
Isopropylbenzene	1.0	U	1.0	0.49	ug/L			07/20/22 14:16	1
Methyl acetate	10	U	10	1.7	ug/L			07/20/22 14:16	1
Methyl tert-butyl ether	1.0	U	1.0	0.47	ug/L			07/20/22 14:16	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			07/20/22 14:16	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			07/20/22 14:16	1
Styrene	1.0	U	1.0	0.45	ug/L			07/20/22 14:16	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			07/20/22 14:16	1
Toluene	1.0	U	1.0	0.44	ug/L			07/20/22 14:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			07/20/22 14:16	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			07/20/22 14:16	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			07/20/22 14:16	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			07/20/22 14:16	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			07/20/22 14:16	1
Xylenes, Total	2.0	U	2.0	0.42	ug/L			07/20/22 14:16	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-169764-1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Toluene-d8 (Surr)</i>	107		78 - 122		07/20/22 14:16	1
<i>Dibromofluoromethane (Surr)</i>	112		73 - 120		07/20/22 14:16	1
<i>4-Bromofluorobenzene (Surr)</i>	102		56 - 136		07/20/22 14:16	1
<i>1,2-Dichloroethane-d4 (Surr)</i>	106		62 - 137		07/20/22 14:16	1

QC Association Summary

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-169764-1

GC/MS VOA

Analysis Batch: 535277

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-169764-1	GW-11223416-071322-SK-001	Total/NA	Water	8260C	
240-169764-2	GW-11223416-071322-SK-002	Total/NA	Water	8260C	
240-169764-3	GW-11223416-071322-SK-003	Total/NA	Water	8260C	
MB 240-535277/7	Method Blank	Total/NA	Water	8260C	
LCS 240-535277/5	Lab Control Sample	Total/NA	Water	8260C	

Analysis Batch: 535485

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-169764-4	GW-11223416-071322-SK-004	Total/NA	Water	8260C	
240-169764-5	GW-11223416-071322-SK-005	Total/NA	Water	8260C	
240-169764-6	TB-11223416-071322-SK	Total/NA	Water	8260C	
MB 240-535485/7	Method Blank	Total/NA	Water	8260C	
LCS 240-535485/5	Lab Control Sample	Total/NA	Water	8260C	

QC Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-169764-1

Method: 8260C - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-535277/7

Matrix: Water

Analysis Batch: 535277

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,1,1-Trichloroethane	1.0	U	1.0	0.48	ug/L			07/19/22 13:58	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.60	ug/L			07/19/22 13:58	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			07/19/22 13:58	1
1,1,2-Trichloroethane	1.0	U	1.0	0.48	ug/L			07/19/22 13:58	1
1,1-Dichloroethane	1.0	U	1.0	0.47	ug/L			07/19/22 13:58	1
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			07/19/22 13:58	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.77	ug/L			07/19/22 13:58	1
1,2-Dibromo-3-Chloropropane	2.0	U	2.0	0.91	ug/L			07/19/22 13:58	1
Ethylene Dibromide	1.0	U	1.0	0.41	ug/L			07/19/22 13:58	1
1,2-Dichlorobenzene	1.0	U	1.0	0.48	ug/L			07/19/22 13:58	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			07/19/22 13:58	1
1,2-Dichloropropane	1.0	U	1.0	0.47	ug/L			07/19/22 13:58	1
1,3-Dichlorobenzene	1.0	U	1.0	0.45	ug/L			07/19/22 13:58	1
1,4-Dichlorobenzene	1.0	U	1.0	0.41	ug/L			07/19/22 13:58	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			07/19/22 13:58	1
2-Hexanone	10	U	10	1.1	ug/L			07/19/22 13:58	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.99	ug/L			07/19/22 13:58	1
Acetone	10	U	10	5.4	ug/L			07/19/22 13:58	1
Benzene	1.0	U	1.0	0.42	ug/L			07/19/22 13:58	1
Dichlorobromomethane	1.0	U	1.0	0.17	ug/L			07/19/22 13:58	1
Bromoform	1.0	U	1.0	0.76	ug/L			07/19/22 13:58	1
Bromomethane	1.0	U	1.0	0.42	ug/L			07/19/22 13:58	1
Carbon disulfide	1.0	U	1.0	0.59	ug/L			07/19/22 13:58	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			07/19/22 13:58	1
Chlorobenzene	1.0	U	1.0	0.38	ug/L			07/19/22 13:58	1
Chloroethane	1.0	U	1.0	0.83	ug/L			07/19/22 13:58	1
Chloroform	1.0	U	1.0	0.47	ug/L			07/19/22 13:58	1
Chloromethane	1.0	U	1.0	0.63	ug/L			07/19/22 13:58	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			07/19/22 13:58	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			07/19/22 13:58	1
Cyclohexane	1.0	U	1.0	0.48	ug/L			07/19/22 13:58	1
Chlorodibromomethane	1.0	U	1.0	0.39	ug/L			07/19/22 13:58	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			07/19/22 13:58	1
Ethylbenzene	1.0	U	1.0	0.42	ug/L			07/19/22 13:58	1
Isopropylbenzene	1.0	U	1.0	0.49	ug/L			07/19/22 13:58	1
Methyl acetate	10	U	10	1.7	ug/L			07/19/22 13:58	1
Methyl tert-butyl ether	1.0	U	1.0	0.47	ug/L			07/19/22 13:58	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			07/19/22 13:58	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			07/19/22 13:58	1
Styrene	1.0	U	1.0	0.45	ug/L			07/19/22 13:58	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			07/19/22 13:58	1
Toluene	1.0	U	1.0	0.44	ug/L			07/19/22 13:58	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			07/19/22 13:58	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			07/19/22 13:58	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			07/19/22 13:58	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			07/19/22 13:58	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			07/19/22 13:58	1
Xylenes, Total	2.0	U	2.0	0.42	ug/L			07/19/22 13:58	1

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QC Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-169764-1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 240-535277/7

Matrix: Water

Analysis Batch: 535277

Client Sample ID: Method Blank

Prep Type: Total/NA

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	105		78 - 122		07/19/22 13:58	1
Dibromofluoromethane (Surr)	110		73 - 120		07/19/22 13:58	1
4-Bromofluorobenzene (Surr)	100		56 - 136		07/19/22 13:58	1
1,2-Dichloroethane-d4 (Surr)	104		62 - 137		07/19/22 13:58	1

Lab Sample ID: LCS 240-535277/5

Matrix: Water

Analysis Batch: 535277

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,1-Trichloroethane	25.0	24.7		ug/L		99	64 - 131
1,1,1,2-Tetrachloroethane	25.0	25.6		ug/L		102	58 - 157
1,1,2-Trichloro-1,2,2-trifluoroethane	25.0	26.2		ug/L		105	51 - 146
1,1,2-Trichloroethane	25.0	26.2		ug/L		105	70 - 138
1,1-Dichloroethane	25.0	23.9		ug/L		96	72 - 127
1,1-Dichloroethene	25.0	25.5		ug/L		102	63 - 134
1,2,4-Trichlorobenzene	25.0	26.5		ug/L		106	44 - 147
1,2-Dibromo-3-Chloropropane	25.0	27.0		ug/L		108	53 - 135
Ethylene Dibromide	25.0	26.0		ug/L		104	71 - 134
1,2-Dichlorobenzene	25.0	25.9		ug/L		104	78 - 120
1,2-Dichloroethane	25.0	23.5		ug/L		94	66 - 128
1,2-Dichloropropane	25.0	24.5		ug/L		98	75 - 133
1,3-Dichlorobenzene	25.0	26.3		ug/L		105	80 - 120
1,4-Dichlorobenzene	25.0	26.2		ug/L		105	80 - 120
2-Butanone (MEK)	50.0	50.3		ug/L		101	54 - 156
2-Hexanone	50.0	51.1		ug/L		102	43 - 167
4-Methyl-2-pentanone (MIBK)	50.0	49.3		ug/L		99	46 - 158
Acetone	50.0	49.2		ug/L		98	50 - 149
Benzene	25.0	24.8		ug/L		99	77 - 123
Dichlorobromomethane	25.0	24.2		ug/L		97	69 - 126
Bromoform	25.0	31.7		ug/L		127	57 - 129
Bromomethane	25.0	16.6		ug/L		66	36 - 142
Carbon disulfide	25.0	24.3		ug/L		97	43 - 140
Carbon tetrachloride	25.0	28.1		ug/L		112	55 - 137
Chlorobenzene	25.0	26.0		ug/L		104	80 - 121
Chloroethane	25.0	18.1		ug/L		73	38 - 152
Chloroform	25.0	23.6		ug/L		94	74 - 122
Chloromethane	25.0	22.7		ug/L		91	47 - 143
cis-1,2-Dichloroethene	25.0	24.3		ug/L		97	77 - 123
cis-1,3-Dichloropropene	25.0	24.7		ug/L		99	64 - 130
Cyclohexane	25.0	24.7		ug/L		99	58 - 146
Chlorodibromomethane	25.0	27.6		ug/L		110	70 - 124
Dichlorodifluoromethane	25.0	27.0		ug/L		108	34 - 153
Ethylbenzene	25.0	25.1		ug/L		101	80 - 121
Isopropylbenzene	25.0	25.3		ug/L		101	74 - 128
Methyl acetate	50.0	47.9		ug/L		96	42 - 169
Methyl tert-butyl ether	25.0	23.9		ug/L		96	65 - 126
Methylcyclohexane	25.0	24.3		ug/L		97	62 - 136

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QC Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-169764-1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-535277/5

Matrix: Water

Analysis Batch: 535277

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Methylene Chloride	25.0	24.1		ug/L		96	71 - 125
Styrene	25.0	25.6		ug/L		102	80 - 135
Tetrachloroethene	25.0	29.1		ug/L		116	76 - 123
Toluene	25.0	24.8		ug/L		99	80 - 123
trans-1,2-Dichloroethene	25.0	24.6		ug/L		98	75 - 124
trans-1,3-Dichloropropene	25.0	25.7		ug/L		103	57 - 129
Trichloroethene	25.0	26.9		ug/L		107	70 - 122
Trichlorofluoromethane	25.0	23.0		ug/L		92	30 - 170
Vinyl chloride	25.0	23.2		ug/L		93	60 - 144
Xylenes, Total	50.0	50.9		ug/L		102	80 - 121
m-Xylene & p-Xylene	25.0	25.6		ug/L		103	80 - 120
o-Xylene	25.0	25.3		ug/L		101	80 - 123

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Toluene-d8 (Surr)	108		78 - 122
Dibromofluoromethane (Surr)	105		73 - 120
4-Bromofluorobenzene (Surr)	103		56 - 136
1,2-Dichloroethane-d4 (Surr)	100		62 - 137

Lab Sample ID: MB 240-535485/7

Matrix: Water

Analysis Batch: 535485

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	0.48	ug/L			07/20/22 13:53	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.60	ug/L			07/20/22 13:53	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			07/20/22 13:53	1
1,1,2-Trichloroethane	1.0	U	1.0	0.48	ug/L			07/20/22 13:53	1
1,1-Dichloroethane	1.0	U	1.0	0.47	ug/L			07/20/22 13:53	1
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			07/20/22 13:53	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.77	ug/L			07/20/22 13:53	1
1,2-Dibromo-3-Chloropropane	2.0	U	2.0	0.91	ug/L			07/20/22 13:53	1
Ethylene Dibromide	1.0	U	1.0	0.41	ug/L			07/20/22 13:53	1
1,2-Dichlorobenzene	1.0	U	1.0	0.48	ug/L			07/20/22 13:53	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			07/20/22 13:53	1
1,2-Dichloropropane	1.0	U	1.0	0.47	ug/L			07/20/22 13:53	1
1,3-Dichlorobenzene	1.0	U	1.0	0.45	ug/L			07/20/22 13:53	1
1,4-Dichlorobenzene	1.0	U	1.0	0.41	ug/L			07/20/22 13:53	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			07/20/22 13:53	1
2-Hexanone	10	U	10	1.1	ug/L			07/20/22 13:53	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.99	ug/L			07/20/22 13:53	1
Acetone	10	U	10	5.4	ug/L			07/20/22 13:53	1
Benzene	1.0	U	1.0	0.42	ug/L			07/20/22 13:53	1
Dichlorobromomethane	1.0	U	1.0	0.17	ug/L			07/20/22 13:53	1
Bromoform	1.0	U	1.0	0.76	ug/L			07/20/22 13:53	1
Bromomethane	1.0	U	1.0	0.42	ug/L			07/20/22 13:53	1
Carbon disulfide	1.0	U	1.0	0.59	ug/L			07/20/22 13:53	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			07/20/22 13:53	1

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QC Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-169764-1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 240-535485/7

Matrix: Water

Analysis Batch: 535485

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlorobenzene	1.0	U	1.0	0.38	ug/L			07/20/22 13:53	1
Chloroethane	1.0	U	1.0	0.83	ug/L			07/20/22 13:53	1
Chloroform	1.0	U	1.0	0.47	ug/L			07/20/22 13:53	1
Chloromethane	1.0	U	1.0	0.63	ug/L			07/20/22 13:53	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			07/20/22 13:53	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			07/20/22 13:53	1
Cyclohexane	1.0	U	1.0	0.48	ug/L			07/20/22 13:53	1
Chlorodibromomethane	1.0	U	1.0	0.39	ug/L			07/20/22 13:53	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			07/20/22 13:53	1
Ethylbenzene	1.0	U	1.0	0.42	ug/L			07/20/22 13:53	1
Isopropylbenzene	1.0	U	1.0	0.49	ug/L			07/20/22 13:53	1
Methyl acetate	10	U	10	1.7	ug/L			07/20/22 13:53	1
Methyl tert-butyl ether	1.0	U	1.0	0.47	ug/L			07/20/22 13:53	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			07/20/22 13:53	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			07/20/22 13:53	1
Styrene	1.0	U	1.0	0.45	ug/L			07/20/22 13:53	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			07/20/22 13:53	1
Toluene	1.0	U	1.0	0.44	ug/L			07/20/22 13:53	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			07/20/22 13:53	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			07/20/22 13:53	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			07/20/22 13:53	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			07/20/22 13:53	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			07/20/22 13:53	1
Xylenes, Total	2.0	U	2.0	0.42	ug/L			07/20/22 13:53	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	106		78 - 122		07/20/22 13:53	1
Dibromofluoromethane (Surr)	112		73 - 120		07/20/22 13:53	1
4-Bromofluorobenzene (Surr)	102		56 - 136		07/20/22 13:53	1
1,2-Dichloroethane-d4 (Surr)	110		62 - 137		07/20/22 13:53	1

Lab Sample ID: LCS 240-535485/5

Matrix: Water

Analysis Batch: 535485

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,1-Trichloroethane	25.0	23.8		ug/L		95	64 - 131
1,1,2,2-Tetrachloroethane	25.0	25.4		ug/L		102	58 - 157
1,1,2-Trichloro-1,2,2-trifluoroethane	25.0	25.8		ug/L		103	51 - 146
1,1,2-Trichloroethane	25.0	25.9		ug/L		103	70 - 138
1,1-Dichloroethane	25.0	23.4		ug/L		93	72 - 127
1,1-Dichloroethene	25.0	24.7		ug/L		99	63 - 134
1,2,4-Trichlorobenzene	25.0	25.6		ug/L		103	44 - 147
1,2-Dibromo-3-Chloropropane	25.0	26.5		ug/L		106	53 - 135
Ethylene Dibromide	25.0	25.7		ug/L		103	71 - 134
1,2-Dichlorobenzene	25.0	25.5		ug/L		102	78 - 120
1,2-Dichloroethane	25.0	23.1		ug/L		92	66 - 128
1,2-Dichloropropane	25.0	24.0		ug/L		96	75 - 133

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QC Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-169764-1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-535485/5

Matrix: Water

Analysis Batch: 535485

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,3-Dichlorobenzene	25.0	26.1		ug/L		104	80 - 120
1,4-Dichlorobenzene	25.0	25.9		ug/L		104	80 - 120
2-Butanone (MEK)	50.0	49.8		ug/L		100	54 - 156
2-Hexanone	50.0	50.8		ug/L		102	43 - 167
4-Methyl-2-pentanone (MIBK)	50.0	48.6		ug/L		97	46 - 158
Acetone	50.0	47.9		ug/L		96	50 - 149
Benzene	25.0	24.1		ug/L		97	77 - 123
Dichlorobromomethane	25.0	23.8		ug/L		95	69 - 126
Bromoform	25.0	31.1		ug/L		124	57 - 129
Bromomethane	25.0	16.2		ug/L		65	36 - 142
Carbon disulfide	25.0	23.5		ug/L		94	43 - 140
Carbon tetrachloride	25.0	27.1		ug/L		108	55 - 137
Chlorobenzene	25.0	25.8		ug/L		103	80 - 121
Chloroethane	25.0	17.6		ug/L		71	38 - 152
Chloroform	25.0	23.2		ug/L		93	74 - 122
Chloromethane	25.0	22.4		ug/L		90	47 - 143
cis-1,2-Dichloroethene	25.0	23.7		ug/L		95	77 - 123
cis-1,3-Dichloropropene	25.0	24.1		ug/L		96	64 - 130
Cyclohexane	25.0	24.6		ug/L		98	58 - 146
Chlorodibromomethane	25.0	27.3		ug/L		109	70 - 124
Dichlorodifluoromethane	25.0	26.5		ug/L		106	34 - 153
Ethylbenzene	25.0	25.0		ug/L		100	80 - 121
Isopropylbenzene	25.0	24.9		ug/L		99	74 - 128
Methyl acetate	50.0	46.9		ug/L		94	42 - 169
Methyl tert-butyl ether	25.0	23.4		ug/L		94	65 - 126
Methylcyclohexane	25.0	23.9		ug/L		96	62 - 136
Methylene Chloride	25.0	24.0		ug/L		96	71 - 125
Styrene	25.0	25.0		ug/L		100	80 - 135
Tetrachloroethene	25.0	28.8		ug/L		115	76 - 123
Toluene	25.0	24.7		ug/L		99	80 - 123
trans-1,2-Dichloroethene	25.0	23.9		ug/L		96	75 - 124
trans-1,3-Dichloropropene	25.0	25.9		ug/L		104	57 - 129
Trichloroethene	25.0	26.3		ug/L		105	70 - 122
Trichlorofluoromethane	25.0	22.6		ug/L		90	30 - 170
Vinyl chloride	25.0	22.8		ug/L		91	60 - 144
Xylenes, Total	50.0	50.3		ug/L		101	80 - 121
m-Xylene & p-Xylene	25.0	25.2		ug/L		101	80 - 120
o-Xylene	25.0	25.1		ug/L		101	80 - 123

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Toluene-d8 (Surr)	108		78 - 122
Dibromofluoromethane (Surr)	105		73 - 120
4-Bromofluorobenzene (Surr)	105		56 - 136
1,2-Dichloroethane-d4 (Surr)	103		62 - 137

Surrogate Summary

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-169764-1

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		TOL (78-122)	DBFM (73-120)	BFB (56-136)	DCA (62-137)
240-169764-1	GW-11223416-071322-SK-001	105	114	101	109
240-169764-2	GW-11223416-071322-SK-002	103	111	100	107
240-169764-3	GW-11223416-071322-SK-003	104	111	101	108
240-169764-4	GW-11223416-071322-SK-004	105	111	99	104
240-169764-5	GW-11223416-071322-SK-005	104	111	99	109
240-169764-6	TB-11223416-071322-SK	107	112	102	106
LCS 240-535277/5	Lab Control Sample	108	105	103	100
LCS 240-535485/5	Lab Control Sample	108	105	105	103
MB 240-535277/7	Method Blank	105	110	100	104
MB 240-535485/7	Method Blank	106	112	102	110

Surrogate Legend

TOL = Toluene-d8 (Surr)

DBFM = Dibromofluoromethane (Surr)

BFB = 4-Bromofluorobenzene (Surr)

DCA = 1,2-Dichloroethane-d4 (Surr)

Lab Chronicle

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-169764-1

Client Sample ID: GW-11223416-071322-SK-001

Lab Sample ID: 240-169764-1

Date Collected: 07/13/22 10:25

Matrix: Water

Date Received: 07/14/22 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	535277	07/19/22 17:31	SAM	TAL CAN

Client Sample ID: GW-11223416-071322-SK-002

Lab Sample ID: 240-169764-2

Date Collected: 07/13/22 11:40

Matrix: Water

Date Received: 07/14/22 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	535277	07/19/22 17:55	SAM	TAL CAN

Client Sample ID: GW-11223416-071322-SK-003

Lab Sample ID: 240-169764-3

Date Collected: 07/13/22 11:45

Matrix: Water

Date Received: 07/14/22 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	535277	07/19/22 18:19	SAM	TAL CAN

Client Sample ID: GW-11223416-071322-SK-004

Lab Sample ID: 240-169764-4

Date Collected: 07/13/22 12:40

Matrix: Water

Date Received: 07/14/22 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	535485	07/20/22 14:40	SAM	TAL CAN

Client Sample ID: GW-11223416-071322-SK-005

Lab Sample ID: 240-169764-5

Date Collected: 07/13/22 13:55

Matrix: Water

Date Received: 07/14/22 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	535485	07/20/22 15:04	SAM	TAL CAN

Client Sample ID: TB-11223416-071322-SK

Lab Sample ID: 240-169764-6

Date Collected: 07/13/22 00:00

Matrix: Water

Date Received: 07/14/22 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	535485	07/20/22 14:16	SAM	TAL CAN

Laboratory References:

TAL CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-169764-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-22
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-23-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-22
Virginia	NELAP	11570	09-14-22
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

4.2/4.2

Chain of Custody Record

MICHIGAN
190



Client Information		Sampler: <u>Scott Kipper</u>		Lab PM: <u>Heckler, Denise D</u>	Carrier Tracking No(s): <u>240-97257-31485.1</u>
Client Contact: <u>Mr. James Abston</u>		Phone: <u>248 756-7687</u>		E-Mail: <u>Denise Heckler@eurofins.com</u>	Page: <u>Page 1 of 1</u>
Company: <u>GHD Services Inc.</u>		Address: <u>26850 Haggerty Rd</u>		Job #: <u>Michigan</u>	
City: <u>Farmington Hills</u>		State: <u>MI</u>		ZIP: <u>48331</u>	
Phone: <u>248-893-3381(Tel)</u>		PO #: <u>11223416</u>		Purchase Order Requested: <u>Yes</u>	
Email: <u>james.abston@ghd.com</u>		WO #: <u>11223416</u>		Project #: <u>24020174</u>	
Project Name: <u>Pontiac, M.I.</u>		SSOV#: <u>pending?</u>		Due Date Requested: <u>2 week Standard</u>	
Site: <u>Pontiac, M.I.</u>		TAT Requested (days): <u>2 week Standard</u>		Compliance Project: <u>Yes</u>	
Sample Identification		Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=wastewater, BI=tissue, A=air)
Gw-11223416-071322-SK-001	7-13-22	10:25	G	Water	
↓ -002		11:40		Water	
↓ -003		11:45		Water	
↓ -004		12:40		Water	
↓ -005		13:55		Water	
TB-11223416-071322-SK	↓	-	TB	Water	
Possible Hazard Identification		Poison B ☒ Unknown ☐ Radiological		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)	
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant		Deliverable Requested: I, II, III, IV, Other (specify)		☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months	
Empty Kit Relinquished by		Date: _____		Special Instructions/QC Requirements	
Relinquished by: <u>R. Scott Kipper</u>		Date/Time: <u>7-13-22 16:00</u>		Received by: <u>Heckler, Denise D</u>	
Relinquished by:		Date/Time:		Received by:	
Relinquished by:		Date/Time:		Received by:	
Custody Seals Intact: <u>Yes</u>		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks	
Analysis Requested		Analysis Requested		Analysis Requested	
Preservation Codes:		Preservation Codes:		Preservation Codes:	
A - HCL		A - HCL		A - HCL	
B - NaOH		B - NaOH		B - NaOH	
C - Zn Acetate		C - Zn Acetate		C - Zn Acetate	
D - Nitric Acid		D - Nitric Acid		D - Nitric Acid	
E - NaHSO4		E - NaHSO4		E - NaHSO4	
F - MeOH		F - MeOH		F - MeOH	
G - Arachlor		G - Arachlor		G - Arachlor	
H - Ascorbic Acid		H - Ascorbic Acid		H - Ascorbic Acid	
I - Ice		I - Ice		I - Ice	
J - DI Water		J - DI Water		J - DI Water	
K - EDTA		K - EDTA		K - EDTA	
L - EDA		L - EDA		L - EDA	
Other:		Other:		Other:	
M - Hexane		M - Hexane		M - Hexane	
N - None		N - None		N - None	
O - AsNaO2		O - AsNaO2		O - AsNaO2	
P - Na2O4S		P - Na2O4S		P - Na2O4S	
Q - Na2SO3		Q - Na2SO3		Q - Na2SO3	
R - Na2S2O3		R - Na2S2O3		R - Na2S2O3	
S - H2SO4		S - H2SO4		S - H2SO4	
T - TSP Dodecahydrate		T - TSP Dodecahydrate		T - TSP Dodecahydrate	
U - Acetone		U - Acetone		U - Acetone	
V - MCAA		V - MCAA		V - MCAA	
W - pH 4-5		W - pH 4-5		W - pH 4-5	
Y - Trizma		Y - Trizma		Y - Trizma	
Z - other (specify)		Z - other (specify)		Z - other (specify)	
Total Number of containers		Total Number of containers		Total Number of containers	
Special Instructions/Note:		Special Instructions/Note:		Special Instructions/Note:	
Barcode: 240-169764 Chain of Custody		Barcode: 240-169764 Chain of Custody		Barcode: 240-169764 Chain of Custody	

ANALYTICAL REPORT

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Tel: (330)497-9396

Laboratory Job ID: 240-174430-1

Client Project/Site: 11223416, PCC Validation

For:

GHD Services Inc.
26850 Haggerty Rd.
Farmington Hills, Michigan 48331

Attn: Mr. James Abston



Authorized for release by:

10/23/2022 9:48:44 AM

Denise Heckler, Project Manager II
(330)966-9477

Denise.Heckler@et.eurofinsus.com

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Case Narrative

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-174430-1

Job ID: 240-174430-1

Laboratory: Eurofins Canton

Narrative

Job Narrative 240-174430-1

Comments

No additional comments.

Receipt

The samples were received on 10/11/2022 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.7° C.

GC/MS VOA

Method 8260: The pH of sample GW-11223416-101022-SK-001 (240-174430-1) was greater than 2. The sample was analyzed within the 7 day holding time; however, experimental evidence suggests that some aromatic compounds in wastewater samples notably, Benzene, Toluene, and Ethylbenzene are susceptible to biological degradation if samples are not preserved to a pH of :

Method 8260: The continuing calibration verification (CCV) analyzed in batch 240-547096 was outside the method criteria for the following analyte(s): Vinyl Chloride, Chloroethane and Bromomethane. A CCV standard at or below the reporting limit (RL) was analyzed with the affected samples and found to be acceptable. As indicated in the reference method, sample analysis may proceed; however, any detection for the affected analyte(s) is considered estimated.

Method 8260: The continuing calibration verification (CCV) analyzed in batch 240-547696 was outside the method criteria for the following analyte(s): Dichlorodifluoromethane, Carbon Disulfide, and Bromomethane. An MRL standard at or below the reporting limit (RL) was analyzed with the affected samples: GW-11223416-101022-SK-002 (240-174430-2), GW-11223416-101022-SK-C (240-174430-3), GW-11223416-101022-SK-004 (240-174430-4), GW-11223416-101022-SK-004 (240-174430-4[MS]), GW-11223416-101022-SK-004 (240-174430-4[MSD]), TB-11223416-101022-SK (240-174430-5), (CCVIS 240-547696/3), (LCS 240-547696/4) and (MB 240-547696/7) and found to be acceptable. As indicated in the reference method, sample analysis may proceed; however, any detection for the affected analyte(s) is considered estimated.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Definitions/Glossary

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-174430-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Sample Summary

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-174430-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-174430-1	GW-11223416-101022-SK-001	Water	10/10/22 10:45	10/11/22 09:30
240-174430-2	GW-11223416-101022-SK-002	Water	10/10/22 10:50	10/11/22 09:30
240-174430-3	GW-11223416-101022-SK-003	Water	10/10/22 11:55	10/11/22 09:30
240-174430-4	GW-11223416-101022-SK-004	Water	10/10/22 13:25	10/11/22 09:30
240-174430-5	TB-11223416-101022-SK	Water	10/10/22 00:00	10/11/22 09:30

Detection Summary

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-174430-1

Client Sample ID: GW-11223416-101022-SK-001

Lab Sample ID: 240-174430-1

No Detections.

Client Sample ID: GW-11223416-101022-SK-002

Lab Sample ID: 240-174430-2

No Detections.

Client Sample ID: GW-11223416-101022-SK-003

Lab Sample ID: 240-174430-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Isopropylbenzene	0.70	J	1.0	0.49	ug/L	1		8260C	Total/NA
Xylenes, Total	1.2	J	2.0	0.42	ug/L	1		8260C	Total/NA

Client Sample ID: GW-11223416-101022-SK-004

Lab Sample ID: 240-174430-4

No Detections.

Client Sample ID: TB-11223416-101022-SK

Lab Sample ID: 240-174430-5

No Detections.

This Detection Summary does not include radiochemical test results.

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Method Summary

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-174430-1

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds by GC/MS	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-174430-1

Method: SW846 8260C - Volatile Organic Compounds by GC/MS

Client Sample ID: GW-11223416-101022-SK-001

Date Collected: 10/10/22 10:45

Date Received: 10/11/22 09:30

Lab Sample ID: 240-174430-1

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	0.48	ug/L			10/14/22 20:36	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.60	ug/L			10/14/22 20:36	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			10/14/22 20:36	1
1,1,2-Trichloroethane	1.0	U	1.0	0.48	ug/L			10/14/22 20:36	1
1,1-Dichloroethane	1.0	U	1.0	0.47	ug/L			10/14/22 20:36	1
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			10/14/22 20:36	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.77	ug/L			10/14/22 20:36	1
1,2-Dibromo-3-Chloropropane	2.0	U	2.0	0.91	ug/L			10/14/22 20:36	1
Ethylene Dibromide	1.0	U	1.0	0.41	ug/L			10/14/22 20:36	1
1,2-Dichlorobenzene	1.0	U	1.0	0.48	ug/L			10/14/22 20:36	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			10/14/22 20:36	1
1,2-Dichloropropane	1.0	U	1.0	0.47	ug/L			10/14/22 20:36	1
1,3-Dichlorobenzene	1.0	U	1.0	0.45	ug/L			10/14/22 20:36	1
1,4-Dichlorobenzene	1.0	U	1.0	0.41	ug/L			10/14/22 20:36	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			10/14/22 20:36	1
2-Hexanone	10	U	10	1.1	ug/L			10/14/22 20:36	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.99	ug/L			10/14/22 20:36	1
Acetone	10	U	10	5.4	ug/L			10/14/22 20:36	1
Benzene	1.0	U	1.0	0.42	ug/L			10/14/22 20:36	1
Dichlorobromomethane	1.0	U	1.0	0.17	ug/L			10/14/22 20:36	1
Bromoform	1.0	U	1.0	0.76	ug/L			10/14/22 20:36	1
Bromomethane	1.0	U	1.0	0.42	ug/L			10/14/22 20:36	1
Carbon disulfide	1.0	U	1.0	0.59	ug/L			10/14/22 20:36	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			10/14/22 20:36	1
Chlorobenzene	1.0	U	1.0	0.38	ug/L			10/14/22 20:36	1
Chloroethane	1.0	U	1.0	0.83	ug/L			10/14/22 20:36	1
Chloroform	1.0	U	1.0	0.47	ug/L			10/14/22 20:36	1
Chloromethane	1.0	U	1.0	0.63	ug/L			10/14/22 20:36	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			10/14/22 20:36	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			10/14/22 20:36	1
Cyclohexane	1.0	U	1.0	0.48	ug/L			10/14/22 20:36	1
Chlorodibromomethane	1.0	U	1.0	0.39	ug/L			10/14/22 20:36	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			10/14/22 20:36	1
Ethylbenzene	1.0	U	1.0	0.42	ug/L			10/14/22 20:36	1
Isopropylbenzene	1.0	U	1.0	0.49	ug/L			10/14/22 20:36	1
Methyl acetate	10	U	10	1.7	ug/L			10/14/22 20:36	1
Methyl tert-butyl ether	1.0	U	1.0	0.47	ug/L			10/14/22 20:36	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			10/14/22 20:36	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			10/14/22 20:36	1
Styrene	1.0	U	1.0	0.45	ug/L			10/14/22 20:36	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			10/14/22 20:36	1
Toluene	1.0	U	1.0	0.44	ug/L			10/14/22 20:36	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			10/14/22 20:36	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			10/14/22 20:36	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			10/14/22 20:36	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			10/14/22 20:36	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			10/14/22 20:36	1
Xylenes, Total	2.0	U	2.0	0.42	ug/L			10/14/22 20:36	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-174430-1

Method: SW846 8260C - Volatile Organic Compounds by GC/MS (Continued)

<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Toluene-d8 (Surr)</i>	100		78 - 122		10/14/22 20:36	1
<i>Dibromofluoromethane (Surr)</i>	108		73 - 120		10/14/22 20:36	1
<i>4-Bromofluorobenzene (Surr)</i>	89		56 - 136		10/14/22 20:36	1
<i>1,2-Dichloroethane-d4 (Surr)</i>	101		62 - 137		10/14/22 20:36	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-174430-1

Method: SW846 8260C - Volatile Organic Compounds by GC/MS

Client Sample ID: GW-11223416-101022-SK-002

Date Collected: 10/10/22 10:50

Date Received: 10/11/22 09:30

Lab Sample ID: 240-174430-2

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	0.48	ug/L			10/19/22 14:25	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.60	ug/L			10/19/22 14:25	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			10/19/22 14:25	1
1,1,2-Trichloroethane	1.0	U	1.0	0.48	ug/L			10/19/22 14:25	1
1,1-Dichloroethane	1.0	U	1.0	0.47	ug/L			10/19/22 14:25	1
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			10/19/22 14:25	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.77	ug/L			10/19/22 14:25	1
1,2-Dibromo-3-Chloropropane	2.0	U	2.0	0.91	ug/L			10/19/22 14:25	1
Ethylene Dibromide	1.0	U	1.0	0.41	ug/L			10/19/22 14:25	1
1,2-Dichlorobenzene	1.0	U	1.0	0.48	ug/L			10/19/22 14:25	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			10/19/22 14:25	1
1,2-Dichloropropane	1.0	U	1.0	0.47	ug/L			10/19/22 14:25	1
1,3-Dichlorobenzene	1.0	U	1.0	0.45	ug/L			10/19/22 14:25	1
1,4-Dichlorobenzene	1.0	U	1.0	0.41	ug/L			10/19/22 14:25	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			10/19/22 14:25	1
2-Hexanone	10	U	10	1.1	ug/L			10/19/22 14:25	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.99	ug/L			10/19/22 14:25	1
Acetone	10	U	10	5.4	ug/L			10/19/22 14:25	1
Benzene	1.0	U	1.0	0.42	ug/L			10/19/22 14:25	1
Dichlorobromomethane	1.0	U	1.0	0.17	ug/L			10/19/22 14:25	1
Bromoform	1.0	U	1.0	0.76	ug/L			10/19/22 14:25	1
Bromomethane	1.0	U	1.0	0.42	ug/L			10/19/22 14:25	1
Carbon disulfide	1.0	U	1.0	0.59	ug/L			10/19/22 14:25	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			10/19/22 14:25	1
Chlorobenzene	1.0	U	1.0	0.38	ug/L			10/19/22 14:25	1
Chloroethane	1.0	U	1.0	0.83	ug/L			10/19/22 14:25	1
Chloroform	1.0	U	1.0	0.47	ug/L			10/19/22 14:25	1
Chloromethane	1.0	U	1.0	0.63	ug/L			10/19/22 14:25	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			10/19/22 14:25	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			10/19/22 14:25	1
Cyclohexane	1.0	U	1.0	0.48	ug/L			10/19/22 14:25	1
Chlorodibromomethane	1.0	U	1.0	0.39	ug/L			10/19/22 14:25	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			10/19/22 14:25	1
Ethylbenzene	1.0	U	1.0	0.42	ug/L			10/19/22 14:25	1
Isopropylbenzene	1.0	U	1.0	0.49	ug/L			10/19/22 14:25	1
Methyl acetate	10	U	10	1.7	ug/L			10/19/22 14:25	1
Methyl tert-butyl ether	1.0	U	1.0	0.47	ug/L			10/19/22 14:25	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			10/19/22 14:25	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			10/19/22 14:25	1
Styrene	1.0	U	1.0	0.45	ug/L			10/19/22 14:25	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			10/19/22 14:25	1
Toluene	1.0	U	1.0	0.44	ug/L			10/19/22 14:25	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			10/19/22 14:25	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			10/19/22 14:25	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			10/19/22 14:25	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			10/19/22 14:25	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			10/19/22 14:25	1
Xylenes, Total	2.0	U	2.0	0.42	ug/L			10/19/22 14:25	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-174430-1

Method: SW846 8260C - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>Toluene-d8 (Surr)</i>	105		78 - 122		10/19/22 14:25	1
<i>Dibromofluoromethane (Surr)</i>	93		73 - 120		10/19/22 14:25	1
<i>4-Bromofluorobenzene (Surr)</i>	83		56 - 136		10/19/22 14:25	1
<i>1,2-Dichloroethane-d4 (Surr)</i>	97		62 - 137		10/19/22 14:25	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-174430-1

Method: SW846 8260C - Volatile Organic Compounds by GC/MS

Client Sample ID: GW-11223416-101022-SK-003

Date Collected: 10/10/22 11:55

Date Received: 10/11/22 09:30

Lab Sample ID: 240-174430-3

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	0.48	ug/L			10/19/22 14:50	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.60	ug/L			10/19/22 14:50	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			10/19/22 14:50	1
1,1,2-Trichloroethane	1.0	U	1.0	0.48	ug/L			10/19/22 14:50	1
1,1-Dichloroethane	1.0	U	1.0	0.47	ug/L			10/19/22 14:50	1
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			10/19/22 14:50	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.77	ug/L			10/19/22 14:50	1
1,2-Dibromo-3-Chloropropane	2.0	U	2.0	0.91	ug/L			10/19/22 14:50	1
Ethylene Dibromide	1.0	U	1.0	0.41	ug/L			10/19/22 14:50	1
1,2-Dichlorobenzene	1.0	U	1.0	0.48	ug/L			10/19/22 14:50	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			10/19/22 14:50	1
1,2-Dichloropropane	1.0	U	1.0	0.47	ug/L			10/19/22 14:50	1
1,3-Dichlorobenzene	1.0	U	1.0	0.45	ug/L			10/19/22 14:50	1
1,4-Dichlorobenzene	1.0	U	1.0	0.41	ug/L			10/19/22 14:50	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			10/19/22 14:50	1
2-Hexanone	10	U	10	1.1	ug/L			10/19/22 14:50	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.99	ug/L			10/19/22 14:50	1
Acetone	10	U	10	5.4	ug/L			10/19/22 14:50	1
Benzene	1.0	U	1.0	0.42	ug/L			10/19/22 14:50	1
Dichlorobromomethane	1.0	U	1.0	0.17	ug/L			10/19/22 14:50	1
Bromoform	1.0	U	1.0	0.76	ug/L			10/19/22 14:50	1
Bromomethane	1.0	U	1.0	0.42	ug/L			10/19/22 14:50	1
Carbon disulfide	1.0	U	1.0	0.59	ug/L			10/19/22 14:50	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			10/19/22 14:50	1
Chlorobenzene	1.0	U	1.0	0.38	ug/L			10/19/22 14:50	1
Chloroethane	1.0	U	1.0	0.83	ug/L			10/19/22 14:50	1
Chloroform	1.0	U	1.0	0.47	ug/L			10/19/22 14:50	1
Chloromethane	1.0	U	1.0	0.63	ug/L			10/19/22 14:50	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			10/19/22 14:50	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			10/19/22 14:50	1
Cyclohexane	1.0	U	1.0	0.48	ug/L			10/19/22 14:50	1
Chlorodibromomethane	1.0	U	1.0	0.39	ug/L			10/19/22 14:50	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			10/19/22 14:50	1
Ethylbenzene	1.0	U	1.0	0.42	ug/L			10/19/22 14:50	1
Isopropylbenzene	0.70	J	1.0	0.49	ug/L			10/19/22 14:50	1
Methyl acetate	10	U	10	1.7	ug/L			10/19/22 14:50	1
Methyl tert-butyl ether	1.0	U	1.0	0.47	ug/L			10/19/22 14:50	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			10/19/22 14:50	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			10/19/22 14:50	1
Styrene	1.0	U	1.0	0.45	ug/L			10/19/22 14:50	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			10/19/22 14:50	1
Toluene	1.0	U	1.0	0.44	ug/L			10/19/22 14:50	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			10/19/22 14:50	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			10/19/22 14:50	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			10/19/22 14:50	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			10/19/22 14:50	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			10/19/22 14:50	1
Xylenes, Total	1.2	J	2.0	0.42	ug/L			10/19/22 14:50	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-174430-1

Method: SW846 8260C - Volatile Organic Compounds by GC/MS (Continued)

<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Toluene-d8 (Surr)</i>	104		78 - 122		10/19/22 14:50	1
<i>Dibromofluoromethane (Surr)</i>	92		73 - 120		10/19/22 14:50	1
<i>4-Bromofluorobenzene (Surr)</i>	91		56 - 136		10/19/22 14:50	1
<i>1,2-Dichloroethane-d4 (Surr)</i>	96		62 - 137		10/19/22 14:50	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-174430-1

Method: SW846 8260C - Volatile Organic Compounds by GC/MS

Client Sample ID: GW-11223416-101022-SK-004

Date Collected: 10/10/22 13:25

Date Received: 10/11/22 09:30

Lab Sample ID: 240-174430-4

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	0.48	ug/L			10/19/22 15:15	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.60	ug/L			10/19/22 15:15	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			10/19/22 15:15	1
1,1,2-Trichloroethane	1.0	U	1.0	0.48	ug/L			10/19/22 15:15	1
1,1-Dichloroethane	1.0	U	1.0	0.47	ug/L			10/19/22 15:15	1
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			10/19/22 15:15	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.77	ug/L			10/19/22 15:15	1
1,2-Dibromo-3-Chloropropane	2.0	U	2.0	0.91	ug/L			10/19/22 15:15	1
Ethylene Dibromide	1.0	U	1.0	0.41	ug/L			10/19/22 15:15	1
1,2-Dichlorobenzene	1.0	U	1.0	0.48	ug/L			10/19/22 15:15	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			10/19/22 15:15	1
1,2-Dichloropropane	1.0	U	1.0	0.47	ug/L			10/19/22 15:15	1
1,3-Dichlorobenzene	1.0	U	1.0	0.45	ug/L			10/19/22 15:15	1
1,4-Dichlorobenzene	1.0	U	1.0	0.41	ug/L			10/19/22 15:15	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			10/19/22 15:15	1
2-Hexanone	10	U	10	1.1	ug/L			10/19/22 15:15	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.99	ug/L			10/19/22 15:15	1
Acetone	10	U	10	5.4	ug/L			10/19/22 15:15	1
Benzene	1.0	U	1.0	0.42	ug/L			10/19/22 15:15	1
Dichlorobromomethane	1.0	U	1.0	0.17	ug/L			10/19/22 15:15	1
Bromoform	1.0	U	1.0	0.76	ug/L			10/19/22 15:15	1
Bromomethane	1.0	U	1.0	0.42	ug/L			10/19/22 15:15	1
Carbon disulfide	1.0	U	1.0	0.59	ug/L			10/19/22 15:15	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			10/19/22 15:15	1
Chlorobenzene	1.0	U	1.0	0.38	ug/L			10/19/22 15:15	1
Chloroethane	1.0	U	1.0	0.83	ug/L			10/19/22 15:15	1
Chloroform	1.0	U	1.0	0.47	ug/L			10/19/22 15:15	1
Chloromethane	1.0	U	1.0	0.63	ug/L			10/19/22 15:15	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			10/19/22 15:15	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			10/19/22 15:15	1
Cyclohexane	1.0	U	1.0	0.48	ug/L			10/19/22 15:15	1
Chlorodibromomethane	1.0	U	1.0	0.39	ug/L			10/19/22 15:15	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			10/19/22 15:15	1
Ethylbenzene	1.0	U	1.0	0.42	ug/L			10/19/22 15:15	1
Isopropylbenzene	1.0	U	1.0	0.49	ug/L			10/19/22 15:15	1
Methyl acetate	10	U	10	1.7	ug/L			10/19/22 15:15	1
Methyl tert-butyl ether	1.0	U	1.0	0.47	ug/L			10/19/22 15:15	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			10/19/22 15:15	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			10/19/22 15:15	1
Styrene	1.0	U	1.0	0.45	ug/L			10/19/22 15:15	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			10/19/22 15:15	1
Toluene	1.0	U	1.0	0.44	ug/L			10/19/22 15:15	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			10/19/22 15:15	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			10/19/22 15:15	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			10/19/22 15:15	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			10/19/22 15:15	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			10/19/22 15:15	1
Xylenes, Total	2.0	U	2.0	0.42	ug/L			10/19/22 15:15	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-174430-1

Method: SW846 8260C - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>Toluene-d8 (Surr)</i>	106		78 - 122		10/19/22 15:15	1
<i>Dibromofluoromethane (Surr)</i>	91		73 - 120		10/19/22 15:15	1
<i>4-Bromofluorobenzene (Surr)</i>	86		56 - 136		10/19/22 15:15	1
<i>1,2-Dichloroethane-d4 (Surr)</i>	97		62 - 137		10/19/22 15:15	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-174430-1

Method: SW846 8260C - Volatile Organic Compounds by GC/MS

Client Sample ID: TB-11223416-101022-SK

Date Collected: 10/10/22 00:00

Date Received: 10/11/22 09:30

Lab Sample ID: 240-174430-5

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	0.48	ug/L			10/19/22 13:36	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.60	ug/L			10/19/22 13:36	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			10/19/22 13:36	1
1,1,2-Trichloroethane	1.0	U	1.0	0.48	ug/L			10/19/22 13:36	1
1,1-Dichloroethane	1.0	U	1.0	0.47	ug/L			10/19/22 13:36	1
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			10/19/22 13:36	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.77	ug/L			10/19/22 13:36	1
1,2-Dibromo-3-Chloropropane	2.0	U	2.0	0.91	ug/L			10/19/22 13:36	1
Ethylene Dibromide	1.0	U	1.0	0.41	ug/L			10/19/22 13:36	1
1,2-Dichlorobenzene	1.0	U	1.0	0.48	ug/L			10/19/22 13:36	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			10/19/22 13:36	1
1,2-Dichloropropane	1.0	U	1.0	0.47	ug/L			10/19/22 13:36	1
1,3-Dichlorobenzene	1.0	U	1.0	0.45	ug/L			10/19/22 13:36	1
1,4-Dichlorobenzene	1.0	U	1.0	0.41	ug/L			10/19/22 13:36	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			10/19/22 13:36	1
2-Hexanone	10	U	10	1.1	ug/L			10/19/22 13:36	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.99	ug/L			10/19/22 13:36	1
Acetone	10	U	10	5.4	ug/L			10/19/22 13:36	1
Benzene	1.0	U	1.0	0.42	ug/L			10/19/22 13:36	1
Dichlorobromomethane	1.0	U	1.0	0.17	ug/L			10/19/22 13:36	1
Bromoform	1.0	U	1.0	0.76	ug/L			10/19/22 13:36	1
Bromomethane	1.0	U	1.0	0.42	ug/L			10/19/22 13:36	1
Carbon disulfide	1.0	U	1.0	0.59	ug/L			10/19/22 13:36	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			10/19/22 13:36	1
Chlorobenzene	1.0	U	1.0	0.38	ug/L			10/19/22 13:36	1
Chloroethane	1.0	U	1.0	0.83	ug/L			10/19/22 13:36	1
Chloroform	1.0	U	1.0	0.47	ug/L			10/19/22 13:36	1
Chloromethane	1.0	U	1.0	0.63	ug/L			10/19/22 13:36	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			10/19/22 13:36	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			10/19/22 13:36	1
Cyclohexane	1.0	U	1.0	0.48	ug/L			10/19/22 13:36	1
Chlorodibromomethane	1.0	U	1.0	0.39	ug/L			10/19/22 13:36	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			10/19/22 13:36	1
Ethylbenzene	1.0	U	1.0	0.42	ug/L			10/19/22 13:36	1
Isopropylbenzene	1.0	U	1.0	0.49	ug/L			10/19/22 13:36	1
Methyl acetate	10	U	10	1.7	ug/L			10/19/22 13:36	1
Methyl tert-butyl ether	1.0	U	1.0	0.47	ug/L			10/19/22 13:36	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			10/19/22 13:36	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			10/19/22 13:36	1
Styrene	1.0	U	1.0	0.45	ug/L			10/19/22 13:36	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			10/19/22 13:36	1
Toluene	1.0	U	1.0	0.44	ug/L			10/19/22 13:36	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			10/19/22 13:36	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			10/19/22 13:36	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			10/19/22 13:36	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			10/19/22 13:36	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			10/19/22 13:36	1
Xylenes, Total	2.0	U	2.0	0.42	ug/L			10/19/22 13:36	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-174430-1

Method: SW846 8260C - Volatile Organic Compounds by GC/MS (Continued)

<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Toluene-d8 (Surr)</i>	103		78 - 122		10/19/22 13:36	1
<i>Dibromofluoromethane (Surr)</i>	93		73 - 120		10/19/22 13:36	1
<i>4-Bromofluorobenzene (Surr)</i>	82		56 - 136		10/19/22 13:36	1
<i>1,2-Dichloroethane-d4 (Surr)</i>	95		62 - 137		10/19/22 13:36	1

QC Association Summary

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-174430-1

GC/MS VOA

Analysis Batch: 547096

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-174430-1	GW-11223416-101022-SK-001	Total/NA	Water	8260C	
MB 240-547096/9	Method Blank	Total/NA	Water	8260C	
LCS 240-547096/5	Lab Control Sample	Total/NA	Water	8260C	

Analysis Batch: 547696

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-174430-2	GW-11223416-101022-SK-002	Total/NA	Water	8260C	
240-174430-3	GW-11223416-101022-SK-003	Total/NA	Water	8260C	
240-174430-4	GW-11223416-101022-SK-004	Total/NA	Water	8260C	
240-174430-5	TB-11223416-101022-SK	Total/NA	Water	8260C	
MB 240-547696/7	Method Blank	Total/NA	Water	8260C	
LCS 240-547696/4	Lab Control Sample	Total/NA	Water	8260C	
240-174430-4 MS	GW-11223416-101022-SK-004	Total/NA	Water	8260C	
240-174430-4 MSD	GW-11223416-101022-SK-004	Total/NA	Water	8260C	

QC Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-174430-1

Method: 8260C - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-547096/9

Matrix: Water

Analysis Batch: 547096

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,1,1-Trichloroethane	1.0	U	1.0	0.48	ug/L			10/14/22 14:02	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.60	ug/L			10/14/22 14:02	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			10/14/22 14:02	1
1,1,2-Trichloroethane	1.0	U	1.0	0.48	ug/L			10/14/22 14:02	1
1,1-Dichloroethane	1.0	U	1.0	0.47	ug/L			10/14/22 14:02	1
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			10/14/22 14:02	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.77	ug/L			10/14/22 14:02	1
1,2-Dibromo-3-Chloropropane	2.0	U	2.0	0.91	ug/L			10/14/22 14:02	1
Ethylene Dibromide	1.0	U	1.0	0.41	ug/L			10/14/22 14:02	1
1,2-Dichlorobenzene	1.0	U	1.0	0.48	ug/L			10/14/22 14:02	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			10/14/22 14:02	1
1,2-Dichloropropane	1.0	U	1.0	0.47	ug/L			10/14/22 14:02	1
1,3-Dichlorobenzene	1.0	U	1.0	0.45	ug/L			10/14/22 14:02	1
1,4-Dichlorobenzene	1.0	U	1.0	0.41	ug/L			10/14/22 14:02	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			10/14/22 14:02	1
2-Hexanone	10	U	10	1.1	ug/L			10/14/22 14:02	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.99	ug/L			10/14/22 14:02	1
Acetone	10	U	10	5.4	ug/L			10/14/22 14:02	1
Benzene	1.0	U	1.0	0.42	ug/L			10/14/22 14:02	1
Dichlorobromomethane	1.0	U	1.0	0.17	ug/L			10/14/22 14:02	1
Bromoform	1.0	U	1.0	0.76	ug/L			10/14/22 14:02	1
Bromomethane	1.0	U	1.0	0.42	ug/L			10/14/22 14:02	1
Carbon disulfide	1.0	U	1.0	0.59	ug/L			10/14/22 14:02	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			10/14/22 14:02	1
Chlorobenzene	1.0	U	1.0	0.38	ug/L			10/14/22 14:02	1
Chloroethane	1.0	U	1.0	0.83	ug/L			10/14/22 14:02	1
Chloroform	1.0	U	1.0	0.47	ug/L			10/14/22 14:02	1
Chloromethane	1.0	U	1.0	0.63	ug/L			10/14/22 14:02	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			10/14/22 14:02	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			10/14/22 14:02	1
Cyclohexane	1.0	U	1.0	0.48	ug/L			10/14/22 14:02	1
Chlorodibromomethane	1.0	U	1.0	0.39	ug/L			10/14/22 14:02	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			10/14/22 14:02	1
Ethylbenzene	1.0	U	1.0	0.42	ug/L			10/14/22 14:02	1
Isopropylbenzene	1.0	U	1.0	0.49	ug/L			10/14/22 14:02	1
Methyl acetate	10	U	10	1.7	ug/L			10/14/22 14:02	1
Methyl tert-butyl ether	1.0	U	1.0	0.47	ug/L			10/14/22 14:02	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			10/14/22 14:02	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			10/14/22 14:02	1
Styrene	1.0	U	1.0	0.45	ug/L			10/14/22 14:02	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			10/14/22 14:02	1
Toluene	1.0	U	1.0	0.44	ug/L			10/14/22 14:02	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			10/14/22 14:02	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			10/14/22 14:02	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			10/14/22 14:02	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			10/14/22 14:02	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			10/14/22 14:02	1
Xylenes, Total	2.0	U	2.0	0.42	ug/L			10/14/22 14:02	1

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QC Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-174430-1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 240-547096/9

Matrix: Water

Analysis Batch: 547096

Client Sample ID: Method Blank

Prep Type: Total/NA

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	92		78 - 122		10/14/22 14:02	1
Dibromofluoromethane (Surr)	96		73 - 120		10/14/22 14:02	1
4-Bromofluorobenzene (Surr)	82		56 - 136		10/14/22 14:02	1
1,2-Dichloroethane-d4 (Surr)	93		62 - 137		10/14/22 14:02	1

Lab Sample ID: LCS 240-547096/5

Matrix: Water

Analysis Batch: 547096

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,1-Trichloroethane	20.0	17.3		ug/L		87	64 - 131
1,1,1,2-Tetrachloroethane	20.0	18.8		ug/L		94	58 - 157
1,1,2-Trichloro-1,2,2-trifluoroethane	20.0	22.2		ug/L		111	51 - 146
1,1,2-Trichloroethane	20.0	19.3		ug/L		96	70 - 138
1,1-Dichloroethane	20.0	17.2		ug/L		86	72 - 127
1,1-Dichloroethene	20.0	19.1		ug/L		96	63 - 134
1,2,4-Trichlorobenzene	20.0	22.0		ug/L		110	44 - 147
1,2-Dibromo-3-Chloropropane	20.0	17.5		ug/L		87	53 - 135
Ethylene Dibromide	20.0	17.8		ug/L		89	71 - 134
1,2-Dichlorobenzene	20.0	19.5		ug/L		98	78 - 120
1,2-Dichloroethane	20.0	16.7		ug/L		84	66 - 128
1,2-Dichloropropane	20.0	18.3		ug/L		91	75 - 133
1,3-Dichlorobenzene	20.0	19.2		ug/L		96	80 - 120
1,4-Dichlorobenzene	20.0	18.8		ug/L		94	80 - 120
2-Butanone (MEK)	40.0	38.8		ug/L		97	54 - 156
2-Hexanone	40.0	33.9		ug/L		85	43 - 167
4-Methyl-2-pentanone (MIBK)	40.0	33.9		ug/L		85	46 - 158
Acetone	40.0	45.2		ug/L		113	50 - 149
Benzene	20.0	18.2		ug/L		91	77 - 123
Dichlorobromomethane	20.0	17.0		ug/L		85	69 - 126
Bromoform	20.0	18.6		ug/L		93	57 - 129
Bromomethane	20.0	15.4		ug/L		77	36 - 142
Carbon disulfide	20.0	19.5		ug/L		98	43 - 140
Carbon tetrachloride	20.0	16.9		ug/L		84	55 - 137
Chlorobenzene	20.0	18.7		ug/L		94	80 - 121
Chloroethane	20.0	15.8		ug/L		79	38 - 152
Chloroform	20.0	17.9		ug/L		89	74 - 122
Chloromethane	20.0	15.8		ug/L		79	47 - 143
cis-1,2-Dichloroethene	20.0	18.0		ug/L		90	77 - 123
cis-1,3-Dichloropropene	20.0	16.9		ug/L		85	64 - 130
Cyclohexane	20.0	18.7		ug/L		93	58 - 146
Chlorodibromomethane	20.0	18.0		ug/L		90	70 - 124
Dichlorodifluoromethane	20.0	16.5		ug/L		82	34 - 153
Ethylbenzene	20.0	18.1		ug/L		91	80 - 121
Isopropylbenzene	20.0	18.3		ug/L		91	74 - 128
Methyl acetate	40.0	33.8		ug/L		85	42 - 169
Methyl tert-butyl ether	20.0	16.4		ug/L		82	65 - 126
Methylcyclohexane	20.0	19.3		ug/L		96	62 - 136

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QC Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-174430-1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-547096/5

Matrix: Water

Analysis Batch: 547096

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Methylene Chloride	20.0	18.5		ug/L		92	71 - 125
Styrene	20.0	17.6		ug/L		88	80 - 135
Tetrachloroethene	20.0	19.8		ug/L		99	76 - 123
Toluene	20.0	17.7		ug/L		89	80 - 123
trans-1,2-Dichloroethene	20.0	17.0		ug/L		85	75 - 124
trans-1,3-Dichloropropene	20.0	16.5		ug/L		82	57 - 129
Trichloroethene	20.0	18.2		ug/L		91	70 - 122
Trichlorofluoromethane	20.0	16.6		ug/L		83	30 - 170
Vinyl chloride	20.0	16.3		ug/L		82	60 - 144
Xylenes, Total	40.0	36.1		ug/L		90	80 - 121
m-Xylene & p-Xylene	20.0	18.1		ug/L		90	80 - 120
o-Xylene	20.0	18.0		ug/L		90	80 - 123

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Toluene-d8 (Surr)	93		78 - 122
Dibromofluoromethane (Surr)	99		73 - 120
4-Bromofluorobenzene (Surr)	87		56 - 136
1,2-Dichloroethane-d4 (Surr)	88		62 - 137

Lab Sample ID: MB 240-547696/7

Matrix: Water

Analysis Batch: 547696

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	0.48	ug/L			10/19/22 12:22	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.60	ug/L			10/19/22 12:22	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			10/19/22 12:22	1
1,1,2-Trichloroethane	1.0	U	1.0	0.48	ug/L			10/19/22 12:22	1
1,1-Dichloroethane	1.0	U	1.0	0.47	ug/L			10/19/22 12:22	1
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			10/19/22 12:22	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.77	ug/L			10/19/22 12:22	1
1,2-Dibromo-3-Chloropropane	2.0	U	2.0	0.91	ug/L			10/19/22 12:22	1
Ethylene Dibromide	1.0	U	1.0	0.41	ug/L			10/19/22 12:22	1
1,2-Dichlorobenzene	1.0	U	1.0	0.48	ug/L			10/19/22 12:22	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			10/19/22 12:22	1
1,2-Dichloropropane	1.0	U	1.0	0.47	ug/L			10/19/22 12:22	1
1,3-Dichlorobenzene	1.0	U	1.0	0.45	ug/L			10/19/22 12:22	1
1,4-Dichlorobenzene	1.0	U	1.0	0.41	ug/L			10/19/22 12:22	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			10/19/22 12:22	1
2-Hexanone	10	U	10	1.1	ug/L			10/19/22 12:22	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.99	ug/L			10/19/22 12:22	1
Acetone	10	U	10	5.4	ug/L			10/19/22 12:22	1
Benzene	1.0	U	1.0	0.42	ug/L			10/19/22 12:22	1
Dichlorobromomethane	1.0	U	1.0	0.17	ug/L			10/19/22 12:22	1
Bromoform	1.0	U	1.0	0.76	ug/L			10/19/22 12:22	1
Bromomethane	1.0	U	1.0	0.42	ug/L			10/19/22 12:22	1
Carbon disulfide	1.0	U	1.0	0.59	ug/L			10/19/22 12:22	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			10/19/22 12:22	1

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QC Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-174430-1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 240-547696/7

Matrix: Water

Analysis Batch: 547696

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlorobenzene	1.0	U	1.0	0.38	ug/L			10/19/22 12:22	1
Chloroethane	1.0	U	1.0	0.83	ug/L			10/19/22 12:22	1
Chloroform	1.0	U	1.0	0.47	ug/L			10/19/22 12:22	1
Chloromethane	1.0	U	1.0	0.63	ug/L			10/19/22 12:22	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			10/19/22 12:22	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			10/19/22 12:22	1
Cyclohexane	1.0	U	1.0	0.48	ug/L			10/19/22 12:22	1
Chlorodibromomethane	1.0	U	1.0	0.39	ug/L			10/19/22 12:22	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			10/19/22 12:22	1
Ethylbenzene	1.0	U	1.0	0.42	ug/L			10/19/22 12:22	1
Isopropylbenzene	1.0	U	1.0	0.49	ug/L			10/19/22 12:22	1
Methyl acetate	10	U	10	1.7	ug/L			10/19/22 12:22	1
Methyl tert-butyl ether	1.0	U	1.0	0.47	ug/L			10/19/22 12:22	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			10/19/22 12:22	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			10/19/22 12:22	1
Styrene	1.0	U	1.0	0.45	ug/L			10/19/22 12:22	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			10/19/22 12:22	1
Toluene	1.0	U	1.0	0.44	ug/L			10/19/22 12:22	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			10/19/22 12:22	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			10/19/22 12:22	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			10/19/22 12:22	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			10/19/22 12:22	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			10/19/22 12:22	1
Xylenes, Total	2.0	U	2.0	0.42	ug/L			10/19/22 12:22	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	104		78 - 122		10/19/22 12:22	1
Dibromofluoromethane (Surr)	91		73 - 120		10/19/22 12:22	1
4-Bromofluorobenzene (Surr)	85		56 - 136		10/19/22 12:22	1
1,2-Dichloroethane-d4 (Surr)	97		62 - 137		10/19/22 12:22	1

Lab Sample ID: LCS 240-547696/4

Matrix: Water

Analysis Batch: 547696

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,1-Trichloroethane	25.0	21.6		ug/L		86	64 - 131
1,1,2,2-Tetrachloroethane	25.0	26.8		ug/L		107	58 - 157
1,1,2-Trichloro-1,2,2-trifluoroethane	25.0	22.0		ug/L		88	51 - 146
1,1,2-Trichloroethane	25.0	27.8		ug/L		111	70 - 138
1,1-Dichloroethane	25.0	22.4		ug/L		90	72 - 127
1,1-Dichloroethene	25.0	19.9		ug/L		80	63 - 134
1,2,4-Trichlorobenzene	25.0	22.6		ug/L		91	44 - 147
1,2-Dibromo-3-Chloropropane	25.0	23.8		ug/L		95	53 - 135
Ethylene Dibromide	25.0	27.3		ug/L		109	71 - 134
1,2-Dichlorobenzene	25.0	24.7		ug/L		99	78 - 120
1,2-Dichloroethane	25.0	23.9		ug/L		96	66 - 128
1,2-Dichloropropane	25.0	25.9		ug/L		103	75 - 133

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QC Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-174430-1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 240-547696/4

Matrix: Water

Analysis Batch: 547696

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,3-Dichlorobenzene	25.0	25.2		ug/L		101	80 - 120
1,4-Dichlorobenzene	25.0	24.6		ug/L		98	80 - 120
2-Butanone (MEK)	50.0	52.0		ug/L		104	54 - 156
2-Hexanone	50.0	61.1		ug/L		122	43 - 167
4-Methyl-2-pentanone (MIBK)	50.0	55.6		ug/L		111	46 - 158
Acetone	50.0	46.2		ug/L		92	50 - 149
Benzene	25.0	25.2		ug/L		101	77 - 123
Dichlorobromomethane	25.0	25.9		ug/L		104	69 - 126
Bromoform	25.0	23.4		ug/L		94	57 - 129
Bromomethane	12.5	11.2		ug/L		90	36 - 142
Carbon disulfide	25.0	18.5		ug/L		74	43 - 140
Carbon tetrachloride	25.0	22.0		ug/L		88	55 - 137
Chlorobenzene	25.0	25.5		ug/L		102	80 - 121
Chloroethane	12.5	10.7		ug/L		86	38 - 152
Chloroform	25.0	23.2		ug/L		93	74 - 122
Chloromethane	12.5	11.3		ug/L		91	47 - 143
cis-1,2-Dichloroethene	25.0	23.0		ug/L		92	77 - 123
cis-1,3-Dichloropropene	25.0	27.1		ug/L		108	64 - 130
Cyclohexane	25.0	20.9		ug/L		84	58 - 146
Chlorodibromomethane	25.0	28.0		ug/L		112	70 - 124
Dichlorodifluoromethane	12.5	10.8		ug/L		86	34 - 153
Ethylbenzene	25.0	26.0		ug/L		104	80 - 121
Isopropylbenzene	25.0	22.2		ug/L		89	74 - 128
Methyl acetate	50.0	53.2		ug/L		106	42 - 169
Methyl tert-butyl ether	25.0	22.8		ug/L		91	65 - 126
Methylcyclohexane	25.0	21.7		ug/L		87	62 - 136
Methylene Chloride	25.0	19.4		ug/L		77	71 - 125
Styrene	25.0	24.1		ug/L		96	80 - 135
Tetrachloroethene	25.0	25.9		ug/L		104	76 - 123
Toluene	25.0	27.4		ug/L		110	80 - 123
trans-1,2-Dichloroethene	25.0	23.2		ug/L		93	75 - 124
trans-1,3-Dichloropropene	25.0	25.5		ug/L		102	57 - 129
Trichloroethene	25.0	24.4		ug/L		98	70 - 122
Trichlorofluoromethane	12.5	12.6		ug/L		100	30 - 170
Vinyl chloride	12.5	11.8		ug/L		95	60 - 144
Xylenes, Total	50.0	48.3		ug/L		97	80 - 121
m-Xylene & p-Xylene	25.0	24.6		ug/L		98	80 - 120
o-Xylene	25.0	23.7		ug/L		95	80 - 123

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Toluene-d8 (Surr)	106		78 - 122
Dibromofluoromethane (Surr)	88		73 - 120
4-Bromofluorobenzene (Surr)	102		56 - 136
1,2-Dichloroethane-d4 (Surr)	88		62 - 137

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QC Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-174430-1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-174430-4 MS

Matrix: Water

Analysis Batch: 547696

Client Sample ID: GW-11223416-101022-SK-004

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,1-Trichloroethane	1.0	U	25.0	21.3		ug/L		85	60 - 130
1,1,2,2-Tetrachloroethane	1.0	U	25.0	25.1		ug/L		100	54 - 145
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	25.0	19.1		ug/L		76	41 - 147
1,1,2-Trichloroethane	1.0	U	25.0	26.4		ug/L		105	69 - 131
1,1-Dichloroethane	1.0	U	25.0	21.9		ug/L		88	68 - 125
1,1-Dichloroethene	1.0	U	25.0	19.2		ug/L		77	56 - 135
1,2,4-Trichlorobenzene	1.0	U	25.0	20.9		ug/L		84	29 - 156
1,2-Dibromo-3-Chloropropane	2.0	U	25.0	22.5		ug/L		90	41 - 129
Ethylene Dibromide	1.0	U	25.0	26.8		ug/L		107	69 - 125
1,2-Dichlorobenzene	1.0	U	25.0	23.0		ug/L		92	73 - 120
1,2-Dichloroethane	1.0	U	25.0	24.3		ug/L		97	63 - 126
1,2-Dichloropropane	1.0	U	25.0	25.4		ug/L		102	69 - 130
1,3-Dichlorobenzene	1.0	U	25.0	22.7		ug/L		91	73 - 120
1,4-Dichlorobenzene	1.0	U	25.0	22.5		ug/L		90	74 - 120
2-Butanone (MEK)	10	U	50.0	52.7		ug/L		105	40 - 151
2-Hexanone	10	U	50.0	59.0		ug/L		118	35 - 156
4-Methyl-2-pentanone (MIBK)	10	U	50.0	54.5		ug/L		109	31 - 153
Acetone	10	U	50.0	41.8		ug/L		84	33 - 149
Benzene	1.0	U	25.0	24.3		ug/L		97	64 - 128
Dichlorobromomethane	1.0	U	25.0	25.3		ug/L		101	62 - 125
Bromoform	1.0	U	25.0	22.6		ug/L		90	47 - 125
Bromomethane	1.0	U	12.5	10.6		ug/L		85	28 - 150
Carbon disulfide	1.0	U	25.0	18.5		ug/L		74	38 - 140
Carbon tetrachloride	1.0	U	25.0	20.8		ug/L		83	51 - 133
Chlorobenzene	1.0	U	25.0	23.5		ug/L		94	74 - 121
Chloroethane	1.0	U	12.5	10.5		ug/L		84	10 - 199
Chloroform	1.0	U	25.0	22.5		ug/L		90	70 - 122
Chloromethane	1.0	U	12.5	11.1		ug/L		89	32 - 149
cis-1,2-Dichloroethene	1.0	U	25.0	22.7		ug/L		91	66 - 128
cis-1,3-Dichloropropene	1.0	U	25.0	24.2		ug/L		97	47 - 125
Cyclohexane	1.0	U	25.0	18.5		ug/L		74	42 - 147
Chlorodibromomethane	1.0	U	25.0	26.4		ug/L		106	65 - 120
Dichlorodifluoromethane	1.0	U	12.5	9.52		ug/L		76	38 - 139
Ethylbenzene	1.0	U	25.0	24.0		ug/L		96	67 - 127
Isopropylbenzene	1.0	U	25.0	19.7		ug/L		79	64 - 129
Methyl acetate	10	U	50.0	48.6		ug/L		97	37 - 155
Methyl tert-butyl ether	1.0	U	25.0	22.1		ug/L		89	47 - 134
Methylcyclohexane	1.0	U	25.0	18.0		ug/L		72	39 - 144
Methylene Chloride	5.0	U	25.0	18.9		ug/L		76	62 - 129
Styrene	1.0	U	25.0	22.3		ug/L		89	70 - 139
Tetrachloroethene	1.0	U	25.0	23.2		ug/L		93	62 - 131
Toluene	1.0	U	25.0	25.4		ug/L		101	58 - 135
trans-1,2-Dichloroethene	1.0	U	25.0	22.1		ug/L		89	56 - 136
trans-1,3-Dichloropropene	1.0	U	25.0	23.7		ug/L		95	47 - 120
Trichloroethene	1.0	U	25.0	23.2		ug/L		93	61 - 124
Trichlorofluoromethane	1.0	U	12.5	11.6		ug/L		93	24 - 177
Vinyl chloride	1.0	U	12.5	11.7		ug/L		93	43 - 157
Xylenes, Total	2.0	U	50.0	44.2		ug/L		88	71 - 123

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QC Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-174430-1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-174430-4 MS

Matrix: Water

Analysis Batch: 547696

Client Sample ID: GW-11223416-101022-SK-004

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
m-Xylene & p-Xylene	2.0	U	25.0	22.5		ug/L		90	71 - 123
o-Xylene	1.0	U	25.0	21.7		ug/L		87	70 - 125
Surrogate	MS %Recovery	MS Qualifier	Limits						
Toluene-d8 (Surr)	104		78 - 122						
Dibromofluoromethane (Surr)	88		73 - 120						
4-Bromofluorobenzene (Surr)	102		56 - 136						
1,2-Dichloroethane-d4 (Surr)	90		62 - 137						

Lab Sample ID: 240-174430-4 MSD

Matrix: Water

Analysis Batch: 547696

Client Sample ID: GW-11223416-101022-SK-004

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1,1-Trichloroethane	1.0	U	25.0	21.6		ug/L		86	60 - 130	1	17
1,1,2,2-Tetrachloroethane	1.0	U	25.0	25.2		ug/L		101	54 - 145	0	15
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	25.0	18.9		ug/L		76	41 - 147	1	35
1,1,2-Trichloroethane	1.0	U	25.0	26.1		ug/L		105	69 - 131	1	14
1,1-Dichloroethane	1.0	U	25.0	22.2		ug/L		89	68 - 125	1	13
1,1-Dichloroethene	1.0	U	25.0	19.8		ug/L		79	56 - 135	3	26
1,2,4-Trichlorobenzene	1.0	U	25.0	21.3		ug/L		85	29 - 156	2	19
1,2-Dibromo-3-Chloropropane	2.0	U	25.0	22.4		ug/L		90	41 - 129	0	22
Ethylene Dibromide	1.0	U	25.0	26.5		ug/L		106	69 - 125	1	14
1,2-Dichlorobenzene	1.0	U	25.0	23.2		ug/L		93	73 - 120	1	14
1,2-Dichloroethane	1.0	U	25.0	24.0		ug/L		96	63 - 126	1	12
1,2-Dichloropropane	1.0	U	25.0	25.5		ug/L		102	69 - 130	0	13
1,3-Dichlorobenzene	1.0	U	25.0	22.8		ug/L		91	73 - 120	1	14
1,4-Dichlorobenzene	1.0	U	25.0	22.3		ug/L		89	74 - 120	1	15
2-Butanone (MEK)	10	U	50.0	52.0		ug/L		104	40 - 151	1	20
2-Hexanone	10	U	50.0	57.5		ug/L		115	35 - 156	3	17
4-Methyl-2-pentanone (MIBK)	10	U	50.0	54.0		ug/L		108	31 - 153	1	15
Acetone	10	U	50.0	49.9		ug/L		100	33 - 149	17	34
Benzene	1.0	U	25.0	24.7		ug/L		99	64 - 128	2	14
Dichlorobromomethane	1.0	U	25.0	25.6		ug/L		102	62 - 125	1	13
Bromoform	1.0	U	25.0	22.0		ug/L		88	47 - 125	3	15
Bromomethane	1.0	U	12.5	10.4		ug/L		83	28 - 150	3	26
Carbon disulfide	1.0	U	25.0	19.0		ug/L		76	38 - 140	2	23
Carbon tetrachloride	1.0	U	25.0	21.9		ug/L		87	51 - 133	5	24
Chlorobenzene	1.0	U	25.0	23.5		ug/L		94	74 - 121	0	14
Chloroethane	1.0	U	12.5	10.4		ug/L		83	10 - 199	1	30
Chloroform	1.0	U	25.0	23.2		ug/L		93	70 - 122	3	14
Chloromethane	1.0	U	12.5	11.1		ug/L		89	32 - 149	0	27
cis-1,2-Dichloroethene	1.0	U	25.0	23.1		ug/L		92	66 - 128	2	14
cis-1,3-Dichloropropene	1.0	U	25.0	24.5		ug/L		98	47 - 125	1	13
Cyclohexane	1.0	U	25.0	19.3		ug/L		77	42 - 147	4	35
Chlorodibromomethane	1.0	U	25.0	26.6		ug/L		106	65 - 120	1	13
Dichlorodifluoromethane	1.0	U	12.5	9.33		ug/L		75	38 - 139	2	35
Ethylbenzene	1.0	U	25.0	24.4		ug/L		98	67 - 127	1	15

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QC Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-174430-1

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: 240-174430-4 MSD

Client Sample ID: GW-11223416-101022-SK-004

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 547696

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Isopropylbenzene	1.0	U	25.0	20.1		ug/L		80	64 - 129	2	18
Methyl acetate	10	U	50.0	48.7		ug/L		97	37 - 155	0	18
Methyl tert-butyl ether	1.0	U	25.0	22.7		ug/L		91	47 - 134	2	16
Methylcyclohexane	1.0	U	25.0	18.4		ug/L		74	39 - 144	2	35
Methylene Chloride	5.0	U	25.0	18.9		ug/L		76	62 - 129	0	17
Styrene	1.0	U	25.0	22.5		ug/L		90	70 - 139	1	18
Tetrachloroethene	1.0	U	25.0	23.4		ug/L		94	62 - 131	1	20
Toluene	1.0	U	25.0	25.8		ug/L		103	58 - 135	2	14
trans-1,2-Dichloroethene	1.0	U	25.0	22.6		ug/L		90	56 - 136	2	15
trans-1,3-Dichloropropene	1.0	U	25.0	24.1		ug/L		96	47 - 120	2	14
Trichloroethene	1.0	U	25.0	23.9		ug/L		96	61 - 124	3	15
Trichlorofluoromethane	1.0	U	12.5	11.3		ug/L		91	24 - 177	2	34
Vinyl chloride	1.0	U	12.5	11.5		ug/L		92	43 - 157	1	24
Xylenes, Total	2.0	U	50.0	44.5		ug/L		89	71 - 123	1	15
m-Xylene & p-Xylene	2.0	U	25.0	22.7		ug/L		91	71 - 123	1	16
o-Xylene	1.0	U	25.0	21.8		ug/L		87	70 - 125	1	15

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Toluene-d8 (Surr)	104		78 - 122
Dibromofluoromethane (Surr)	90		73 - 120
4-Bromofluorobenzene (Surr)	101		56 - 136
1,2-Dichloroethane-d4 (Surr)	92		62 - 137

Surrogate Summary

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-174430-1

Method: 8260C - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		TOL (78-122)	DBFM (73-120)	BFB (56-136)	DCA (62-137)
240-174430-1	GW-11223416-101022-SK-001	100	108	89	101
240-174430-2	GW-11223416-101022-SK-002	105	93	83	97
240-174430-3	GW-11223416-101022-SK-003	104	92	91	96
240-174430-4	GW-11223416-101022-SK-004	106	91	86	97
240-174430-4 MS	GW-11223416-101022-SK-004	104	88	102	90
240-174430-4 MSD	GW-11223416-101022-SK-004	104	90	101	92
240-174430-5	TB-11223416-101022-SK	103	93	82	95
LCS 240-547096/5	Lab Control Sample	93	99	87	88
LCS 240-547696/4	Lab Control Sample	106	88	102	88
MB 240-547096/9	Method Blank	92	96	82	93
MB 240-547696/7	Method Blank	104	91	85	97

Surrogate Legend

TOL = Toluene-d8 (Surr)

DBFM = Dibromofluoromethane (Surr)

BFB = 4-Bromofluorobenzene (Surr)

DCA = 1,2-Dichloroethane-d4 (Surr)

Lab Chronicle

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-174430-1

Client Sample ID: GW-11223416-101022-SK-001

Lab Sample ID: 240-174430-1

Date Collected: 10/10/22 10:45

Matrix: Water

Date Received: 10/11/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260C		1	547096	HMB	EET CAN	10/14/22 20:36

Client Sample ID: GW-11223416-101022-SK-002

Lab Sample ID: 240-174430-2

Date Collected: 10/10/22 10:50

Matrix: Water

Date Received: 10/11/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260C		1	547696	SAM	EET CAN	10/19/22 14:25

Client Sample ID: GW-11223416-101022-SK-003

Lab Sample ID: 240-174430-3

Date Collected: 10/10/22 11:55

Matrix: Water

Date Received: 10/11/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260C		1	547696	SAM	EET CAN	10/19/22 14:50

Client Sample ID: GW-11223416-101022-SK-004

Lab Sample ID: 240-174430-4

Date Collected: 10/10/22 13:25

Matrix: Water

Date Received: 10/11/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260C		1	547696	SAM	EET CAN	10/19/22 15:15

Client Sample ID: TB-11223416-101022-SK

Lab Sample ID: 240-174430-5

Date Collected: 10/10/22 00:00

Matrix: Water

Date Received: 10/11/22 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260C		1	547696	SAM	EET CAN	10/19/22 13:36

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-174430-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23
Connecticut	State	PH-0590	12-31-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-27-23
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23
Kentucky (WW)	State	KY98016	12-31-22
Minnesota	NELAP	039-999-348	12-31-22
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-23
Ohio	State	8303	02-27-23
Ohio VAP	State	CL0024	02-27-23
Oregon	NELAP	4062	02-27-23
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
Washington	State	C971	01-12-23
West Virginia DEP	State	210	12-31-22

Eurofins - Canton Sample Receipt Form/Narrative Login #: 174430
Barberton Facility

Client GHD Site Name PCC Cooler unpacked by: Jup
Cooler Received on 10-11-22 Opened on 10-11-22
FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off Eurofins Courier Other
Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # EC Foam Box Client Cooler Box Other _____
Packing material used: (Bubble Wrap) Foam Plastic Bag None Other _____
COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
IR GUN# IR-13 (CF +0.7 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
IR GUN #IR-15 (CF 0.0°C) Observed Cooler Temp. 3.7 °C Corrected Cooler Temp. 3.7 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
- Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
- Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No NA
- Were tamper/custody seals intact and uncompromised? Yes No NA

3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? Yes No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)? Yes No
10. Were correct bottle(s) used for the test(s) indicated? Yes No
11. Sufficient quantity received to perform indicated analyses? Yes No
12. Are these work share samples and all listed on the COC? Yes No
If yes, Questions 13-17 have been checked at the originating laboratory.

13. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC286797
14. Were VOAs on the COC? Yes No
15. Were air bubbles >6 mm in any VOA vials? Yes Larger than this. Yes No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 0104201 Yes No
17. Was a LL Hg or Me Hg trip blank present? Yes No

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other
Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page Samples processed by: _____

19. SAMPLE CONDITION
Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) 1x40-001, 2x40-003 were received with bubble >6 mm in diameter. (Notify PM)
9x40-004

20. SAMPLE PRESERVATION
Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____
VOA Sample Preservation - Date/Time VOAs Frozen: _____

ANALYTICAL REPORT

PREPARED FOR

Attn: Mr. James Abston
GHD Services Inc.
26850 Haggerty Rd.
Farmington Hills, Michigan 48331

Generated 4/25/2023 8:02:45 AM

JOB DESCRIPTION

11223416, PCC Validation

JOB NUMBER

240-183469-1

Eurofins Canton

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization



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4/25/2023 8:02:45 AM

Authorized for release by
Denise Heckler, Project Manager II
Denise.Heckler@et.eurofinsus.com
(330)966-9477

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Case Narrative

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183469-1

Job ID: 240-183469-1

Laboratory: Eurofins Canton

Narrative

Job Narrative
240-183469-1

Comments

No additional comments.

Receipt

The samples were received on 4/13/2023 9:30 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 4.8° C.

GC/MS VOA

Method 8260D: The continuing calibration verification (CCV) analyzed in batch 240-569777 was outside the method criteria for the following analyte(s): Bromomethane. An MRL standard at or below the reporting limit (RL) was analyzed with the affected samples and found to be acceptable. As indicated in the reference method, sample analysis may proceed; however, any detection for the affected analyte(s) is considered estimated.

Method 8260D: The continuing calibration verification (CCV), laboratory control sample (LCS), matrix spike (MS) and matrix spike duplicate (MSD) exceeded calibration range but passed the % recovery limits. An MRL standard at or below the reporting limit (RL) was analyzed with the affected samples and found to be acceptable. The samples associated with the standards were non-detects for Acetone ; therefore, the data have been reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Definitions/Glossary

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183469-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
E	Result exceeded calibration range.
F2	MS/MSD RPD exceeds control limits
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Sample Summary

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183469-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-183469-1	GW-11223416-041023-SK-001	Water	04/10/23 10:25	04/13/23 09:30
240-183469-2	GW-11223416-041023-SK-002	Water	04/10/23 11:15	04/13/23 09:30
240-183469-3	GW-11223416-041023-SK-003	Water	04/10/23 12:40	04/13/23 09:30
240-183469-4	GW-11223416-041023-SK-004	Water	04/10/23 14:00	04/13/23 09:30
240-183469-5	GW-11223416-041023-SK-005	Water	04/10/23 14:25	04/13/23 09:30
240-183469-6	GW-11223416-041123-SK-006	Water	04/11/23 10:20	04/13/23 09:30
240-183469-7	GW-11223416-041123-SK-007	Water	04/11/23 11:15	04/13/23 09:30
240-183469-8	GW-11223416-041123-SK-008	Water	04/11/23 13:25	04/13/23 09:30
240-183469-9	GW-11223416-041123-SK-009	Water	04/11/23 12:05	04/13/23 09:30
240-183469-10	GW-11223416-041123-SK-010	Water	04/11/23 14:00	04/13/23 09:30
240-183469-11	GW-11223416-041223-SK-011	Water	04/12/23 09:55	04/13/23 09:30
240-183469-12	GW-11223416-041223-SK-012	Water	04/12/23 10:50	04/13/23 09:30
240-183469-13	GW-11223416-041223-SK-013	Water	04/12/23 11:50	04/13/23 09:30
240-183469-14	TB-11223416-041223-SK	Water	04/12/23 00:00	04/13/23 09:30

Detection Summary

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183469-1

Client Sample ID: GW-11223416-041023-SK-001

Lab Sample ID: 240-183469-1

No Detections.

Client Sample ID: GW-11223416-041023-SK-002

Lab Sample ID: 240-183469-2

No Detections.

Client Sample ID: GW-11223416-041023-SK-003

Lab Sample ID: 240-183469-3

No Detections.

Client Sample ID: GW-11223416-041023-SK-004

Lab Sample ID: 240-183469-4

No Detections.

Client Sample ID: GW-11223416-041023-SK-005

Lab Sample ID: 240-183469-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
2-Butanone (MEK)	1.5	J	10	1.2	ug/L	1			8260D	Total/NA
4-Methyl-2-pentanone (MIBK)	1.2	J	10	0.99	ug/L	1			8260D	Total/NA
Xylenes, Total	1.7	J	2.0	0.42	ug/L	1			8260D	Total/NA

Client Sample ID: GW-11223416-041123-SK-006

Lab Sample ID: 240-183469-6

No Detections.

Client Sample ID: GW-11223416-041123-SK-007

Lab Sample ID: 240-183469-7

No Detections.

Client Sample ID: GW-11223416-041123-SK-008

Lab Sample ID: 240-183469-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
1,1,1-Trichloroethane	14		1.0	0.48	ug/L	1			8260D	Total/NA
Trichloroethene	40		1.0	0.44	ug/L	1			8260D	Total/NA

Client Sample ID: GW-11223416-041123-SK-009

Lab Sample ID: 240-183469-9

No Detections.

Client Sample ID: GW-11223416-041123-SK-010

Lab Sample ID: 240-183469-10

No Detections.

Client Sample ID: GW-11223416-041223-SK-011

Lab Sample ID: 240-183469-11

No Detections.

Client Sample ID: GW-11223416-041223-SK-012

Lab Sample ID: 240-183469-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	0.62	J	1.0	0.46	ug/L	1			8260D	Total/NA

Client Sample ID: GW-11223416-041223-SK-013

Lab Sample ID: 240-183469-13

No Detections.

Client Sample ID: TB-11223416-041223-SK

Lab Sample ID: 240-183469-14

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins Canton

Method Summary

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183469-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183469-1

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Client Sample ID: GW-11223416-041023-SK-001

Date Collected: 04/10/23 10:25

Date Received: 04/13/23 09:30

Lab Sample ID: 240-183469-1

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	0.48	ug/L			04/18/23 16:49	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.60	ug/L			04/18/23 16:49	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			04/18/23 16:49	1
1,1,2-Trichloroethane	1.0	U	1.0	0.48	ug/L			04/18/23 16:49	1
1,1-Dichloroethane	1.0	U	1.0	0.47	ug/L			04/18/23 16:49	1
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			04/18/23 16:49	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.77	ug/L			04/18/23 16:49	1
1,2-Dibromo-3-Chloropropane	2.0	U	2.0	0.91	ug/L			04/18/23 16:49	1
Ethylene Dibromide	1.0	U	1.0	0.41	ug/L			04/18/23 16:49	1
1,2-Dichlorobenzene	1.0	U	1.0	0.48	ug/L			04/18/23 16:49	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			04/18/23 16:49	1
1,2-Dichloropropane	1.0	U	1.0	0.47	ug/L			04/18/23 16:49	1
1,3-Dichlorobenzene	1.0	U	1.0	0.45	ug/L			04/18/23 16:49	1
1,4-Dichlorobenzene	1.0	U	1.0	0.41	ug/L			04/18/23 16:49	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			04/18/23 16:49	1
2-Hexanone	10	U	10	1.1	ug/L			04/18/23 16:49	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.99	ug/L			04/18/23 16:49	1
Acetone	10	U	10	5.4	ug/L			04/18/23 16:49	1
Benzene	1.0	U	1.0	0.42	ug/L			04/18/23 16:49	1
Dichlorobromomethane	1.0	U	1.0	0.17	ug/L			04/18/23 16:49	1
Bromoform	1.0	U	1.0	0.76	ug/L			04/18/23 16:49	1
Bromomethane	1.0	U	1.0	0.42	ug/L			04/18/23 16:49	1
Carbon disulfide	1.0	U	1.0	0.59	ug/L			04/18/23 16:49	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			04/18/23 16:49	1
Chlorobenzene	1.0	U	1.0	0.38	ug/L			04/18/23 16:49	1
Chloroethane	1.0	U	1.0	0.83	ug/L			04/18/23 16:49	1
Chloroform	1.0	U	1.0	0.47	ug/L			04/18/23 16:49	1
Chloromethane	1.0	U	1.0	0.63	ug/L			04/18/23 16:49	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			04/18/23 16:49	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			04/18/23 16:49	1
Cyclohexane	1.0	U	1.0	0.48	ug/L			04/18/23 16:49	1
Chlorodibromomethane	1.0	U	1.0	0.39	ug/L			04/18/23 16:49	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			04/18/23 16:49	1
Ethylbenzene	1.0	U	1.0	0.42	ug/L			04/18/23 16:49	1
Isopropylbenzene	1.0	U	1.0	0.49	ug/L			04/18/23 16:49	1
Methyl acetate	10	U	10	1.7	ug/L			04/18/23 16:49	1
Methyl tert-butyl ether	1.0	U	1.0	0.47	ug/L			04/18/23 16:49	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			04/18/23 16:49	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			04/18/23 16:49	1
Styrene	1.0	U	1.0	0.45	ug/L			04/18/23 16:49	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			04/18/23 16:49	1
Toluene	1.0	U	1.0	0.44	ug/L			04/18/23 16:49	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			04/18/23 16:49	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			04/18/23 16:49	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			04/18/23 16:49	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			04/18/23 16:49	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			04/18/23 16:49	1
Xylenes, Total	2.0	U	2.0	0.42	ug/L			04/18/23 16:49	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183469-1

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Toluene-d8 (Surr)</i>	102		78 - 122		04/18/23 16:49	1
<i>Dibromofluoromethane (Surr)</i>	101		73 - 120		04/18/23 16:49	1
<i>4-Bromofluorobenzene (Surr)</i>	102		56 - 136		04/18/23 16:49	1
<i>1,2-Dichloroethane-d4 (Surr)</i>	104		62 - 137		04/18/23 16:49	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183469-1

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Client Sample ID: GW-11223416-041023-SK-002

Date Collected: 04/10/23 11:15

Date Received: 04/13/23 09:30

Lab Sample ID: 240-183469-2

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	0.48	ug/L			04/18/23 17:14	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.60	ug/L			04/18/23 17:14	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			04/18/23 17:14	1
1,1,2-Trichloroethane	1.0	U	1.0	0.48	ug/L			04/18/23 17:14	1
1,1-Dichloroethane	1.0	U	1.0	0.47	ug/L			04/18/23 17:14	1
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			04/18/23 17:14	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.77	ug/L			04/18/23 17:14	1
1,2-Dibromo-3-Chloropropane	2.0	U	2.0	0.91	ug/L			04/18/23 17:14	1
Ethylene Dibromide	1.0	U	1.0	0.41	ug/L			04/18/23 17:14	1
1,2-Dichlorobenzene	1.0	U	1.0	0.48	ug/L			04/18/23 17:14	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			04/18/23 17:14	1
1,2-Dichloropropane	1.0	U	1.0	0.47	ug/L			04/18/23 17:14	1
1,3-Dichlorobenzene	1.0	U	1.0	0.45	ug/L			04/18/23 17:14	1
1,4-Dichlorobenzene	1.0	U	1.0	0.41	ug/L			04/18/23 17:14	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			04/18/23 17:14	1
2-Hexanone	10	U	10	1.1	ug/L			04/18/23 17:14	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.99	ug/L			04/18/23 17:14	1
Acetone	10	U	10	5.4	ug/L			04/18/23 17:14	1
Benzene	1.0	U	1.0	0.42	ug/L			04/18/23 17:14	1
Dichlorobromomethane	1.0	U	1.0	0.17	ug/L			04/18/23 17:14	1
Bromoform	1.0	U	1.0	0.76	ug/L			04/18/23 17:14	1
Bromomethane	1.0	U	1.0	0.42	ug/L			04/18/23 17:14	1
Carbon disulfide	1.0	U	1.0	0.59	ug/L			04/18/23 17:14	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			04/18/23 17:14	1
Chlorobenzene	1.0	U	1.0	0.38	ug/L			04/18/23 17:14	1
Chloroethane	1.0	U	1.0	0.83	ug/L			04/18/23 17:14	1
Chloroform	1.0	U	1.0	0.47	ug/L			04/18/23 17:14	1
Chloromethane	1.0	U	1.0	0.63	ug/L			04/18/23 17:14	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			04/18/23 17:14	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			04/18/23 17:14	1
Cyclohexane	1.0	U	1.0	0.48	ug/L			04/18/23 17:14	1
Chlorodibromomethane	1.0	U	1.0	0.39	ug/L			04/18/23 17:14	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			04/18/23 17:14	1
Ethylbenzene	1.0	U	1.0	0.42	ug/L			04/18/23 17:14	1
Isopropylbenzene	1.0	U	1.0	0.49	ug/L			04/18/23 17:14	1
Methyl acetate	10	U	10	1.7	ug/L			04/18/23 17:14	1
Methyl tert-butyl ether	1.0	U	1.0	0.47	ug/L			04/18/23 17:14	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			04/18/23 17:14	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			04/18/23 17:14	1
Styrene	1.0	U	1.0	0.45	ug/L			04/18/23 17:14	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			04/18/23 17:14	1
Toluene	1.0	U	1.0	0.44	ug/L			04/18/23 17:14	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			04/18/23 17:14	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			04/18/23 17:14	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			04/18/23 17:14	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			04/18/23 17:14	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			04/18/23 17:14	1
Xylenes, Total	2.0	U	2.0	0.42	ug/L			04/18/23 17:14	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183469-1

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>Toluene-d8 (Surr)</i>	101		78 - 122		04/18/23 17:14	1
<i>Dibromofluoromethane (Surr)</i>	100		73 - 120		04/18/23 17:14	1
<i>4-Bromofluorobenzene (Surr)</i>	101		56 - 136		04/18/23 17:14	1
<i>1,2-Dichloroethane-d4 (Surr)</i>	103		62 - 137		04/18/23 17:14	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183469-1

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Client Sample ID: GW-11223416-041023-SK-003

Date Collected: 04/10/23 12:40

Date Received: 04/13/23 09:30

Lab Sample ID: 240-183469-3

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	0.48	ug/L			04/18/23 17:39	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.60	ug/L			04/18/23 17:39	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			04/18/23 17:39	1
1,1,2-Trichloroethane	1.0	U	1.0	0.48	ug/L			04/18/23 17:39	1
1,1-Dichloroethane	1.0	U	1.0	0.47	ug/L			04/18/23 17:39	1
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			04/18/23 17:39	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.77	ug/L			04/18/23 17:39	1
1,2-Dibromo-3-Chloropropane	2.0	U	2.0	0.91	ug/L			04/18/23 17:39	1
Ethylene Dibromide	1.0	U	1.0	0.41	ug/L			04/18/23 17:39	1
1,2-Dichlorobenzene	1.0	U	1.0	0.48	ug/L			04/18/23 17:39	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			04/18/23 17:39	1
1,2-Dichloropropane	1.0	U	1.0	0.47	ug/L			04/18/23 17:39	1
1,3-Dichlorobenzene	1.0	U	1.0	0.45	ug/L			04/18/23 17:39	1
1,4-Dichlorobenzene	1.0	U	1.0	0.41	ug/L			04/18/23 17:39	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			04/18/23 17:39	1
2-Hexanone	10	U	10	1.1	ug/L			04/18/23 17:39	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.99	ug/L			04/18/23 17:39	1
Acetone	10	U	10	5.4	ug/L			04/18/23 17:39	1
Benzene	1.0	U	1.0	0.42	ug/L			04/18/23 17:39	1
Dichlorobromomethane	1.0	U	1.0	0.17	ug/L			04/18/23 17:39	1
Bromoform	1.0	U	1.0	0.76	ug/L			04/18/23 17:39	1
Bromomethane	1.0	U	1.0	0.42	ug/L			04/18/23 17:39	1
Carbon disulfide	1.0	U	1.0	0.59	ug/L			04/18/23 17:39	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			04/18/23 17:39	1
Chlorobenzene	1.0	U	1.0	0.38	ug/L			04/18/23 17:39	1
Chloroethane	1.0	U	1.0	0.83	ug/L			04/18/23 17:39	1
Chloroform	1.0	U	1.0	0.47	ug/L			04/18/23 17:39	1
Chloromethane	1.0	U	1.0	0.63	ug/L			04/18/23 17:39	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			04/18/23 17:39	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			04/18/23 17:39	1
Cyclohexane	1.0	U	1.0	0.48	ug/L			04/18/23 17:39	1
Chlorodibromomethane	1.0	U	1.0	0.39	ug/L			04/18/23 17:39	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			04/18/23 17:39	1
Ethylbenzene	1.0	U	1.0	0.42	ug/L			04/18/23 17:39	1
Isopropylbenzene	1.0	U	1.0	0.49	ug/L			04/18/23 17:39	1
Methyl acetate	10	U	10	1.7	ug/L			04/18/23 17:39	1
Methyl tert-butyl ether	1.0	U	1.0	0.47	ug/L			04/18/23 17:39	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			04/18/23 17:39	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			04/18/23 17:39	1
Styrene	1.0	U	1.0	0.45	ug/L			04/18/23 17:39	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			04/18/23 17:39	1
Toluene	1.0	U	1.0	0.44	ug/L			04/18/23 17:39	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			04/18/23 17:39	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			04/18/23 17:39	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			04/18/23 17:39	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			04/18/23 17:39	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			04/18/23 17:39	1
Xylenes, Total	2.0	U	2.0	0.42	ug/L			04/18/23 17:39	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183469-1

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>Toluene-d8 (Surr)</i>	103		78 - 122		04/18/23 17:39	1
<i>Dibromofluoromethane (Surr)</i>	100		73 - 120		04/18/23 17:39	1
<i>4-Bromofluorobenzene (Surr)</i>	98		56 - 136		04/18/23 17:39	1
<i>1,2-Dichloroethane-d4 (Surr)</i>	104		62 - 137		04/18/23 17:39	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183469-1

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Client Sample ID: GW-11223416-041023-SK-004

Date Collected: 04/10/23 14:00

Date Received: 04/13/23 09:30

Lab Sample ID: 240-183469-4

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	0.48	ug/L			04/18/23 18:04	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.60	ug/L			04/18/23 18:04	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			04/18/23 18:04	1
1,1,2-Trichloroethane	1.0	U	1.0	0.48	ug/L			04/18/23 18:04	1
1,1-Dichloroethane	1.0	U	1.0	0.47	ug/L			04/18/23 18:04	1
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			04/18/23 18:04	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.77	ug/L			04/18/23 18:04	1
1,2-Dibromo-3-Chloropropane	2.0	U	2.0	0.91	ug/L			04/18/23 18:04	1
Ethylene Dibromide	1.0	U	1.0	0.41	ug/L			04/18/23 18:04	1
1,2-Dichlorobenzene	1.0	U	1.0	0.48	ug/L			04/18/23 18:04	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			04/18/23 18:04	1
1,2-Dichloropropane	1.0	U	1.0	0.47	ug/L			04/18/23 18:04	1
1,3-Dichlorobenzene	1.0	U	1.0	0.45	ug/L			04/18/23 18:04	1
1,4-Dichlorobenzene	1.0	U	1.0	0.41	ug/L			04/18/23 18:04	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			04/18/23 18:04	1
2-Hexanone	10	U	10	1.1	ug/L			04/18/23 18:04	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.99	ug/L			04/18/23 18:04	1
Acetone	10	U	10	5.4	ug/L			04/18/23 18:04	1
Benzene	1.0	U	1.0	0.42	ug/L			04/18/23 18:04	1
Dichlorobromomethane	1.0	U	1.0	0.17	ug/L			04/18/23 18:04	1
Bromoform	1.0	U	1.0	0.76	ug/L			04/18/23 18:04	1
Bromomethane	1.0	U	1.0	0.42	ug/L			04/18/23 18:04	1
Carbon disulfide	1.0	U	1.0	0.59	ug/L			04/18/23 18:04	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			04/18/23 18:04	1
Chlorobenzene	1.0	U	1.0	0.38	ug/L			04/18/23 18:04	1
Chloroethane	1.0	U	1.0	0.83	ug/L			04/18/23 18:04	1
Chloroform	1.0	U	1.0	0.47	ug/L			04/18/23 18:04	1
Chloromethane	1.0	U	1.0	0.63	ug/L			04/18/23 18:04	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			04/18/23 18:04	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			04/18/23 18:04	1
Cyclohexane	1.0	U	1.0	0.48	ug/L			04/18/23 18:04	1
Chlorodibromomethane	1.0	U	1.0	0.39	ug/L			04/18/23 18:04	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			04/18/23 18:04	1
Ethylbenzene	1.0	U	1.0	0.42	ug/L			04/18/23 18:04	1
Isopropylbenzene	1.0	U	1.0	0.49	ug/L			04/18/23 18:04	1
Methyl acetate	10	U	10	1.7	ug/L			04/18/23 18:04	1
Methyl tert-butyl ether	1.0	U	1.0	0.47	ug/L			04/18/23 18:04	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			04/18/23 18:04	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			04/18/23 18:04	1
Styrene	1.0	U	1.0	0.45	ug/L			04/18/23 18:04	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			04/18/23 18:04	1
Toluene	1.0	U	1.0	0.44	ug/L			04/18/23 18:04	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			04/18/23 18:04	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			04/18/23 18:04	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			04/18/23 18:04	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			04/18/23 18:04	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			04/18/23 18:04	1
Xylenes, Total	2.0	U	2.0	0.42	ug/L			04/18/23 18:04	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183469-1

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>Toluene-d8 (Surr)</i>	101		78 - 122		04/18/23 18:04	1
<i>Dibromofluoromethane (Surr)</i>	100		73 - 120		04/18/23 18:04	1
<i>4-Bromofluorobenzene (Surr)</i>	98		56 - 136		04/18/23 18:04	1
<i>1,2-Dichloroethane-d4 (Surr)</i>	103		62 - 137		04/18/23 18:04	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183469-1

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Client Sample ID: GW-11223416-041023-SK-005

Date Collected: 04/10/23 14:25

Date Received: 04/13/23 09:30

Lab Sample ID: 240-183469-5

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	0.48	ug/L			04/18/23 18:29	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.60	ug/L			04/18/23 18:29	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			04/18/23 18:29	1
1,1,2-Trichloroethane	1.0	U	1.0	0.48	ug/L			04/18/23 18:29	1
1,1-Dichloroethane	1.0	U	1.0	0.47	ug/L			04/18/23 18:29	1
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			04/18/23 18:29	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.77	ug/L			04/18/23 18:29	1
1,2-Dibromo-3-Chloropropane	2.0	U	2.0	0.91	ug/L			04/18/23 18:29	1
Ethylene Dibromide	1.0	U	1.0	0.41	ug/L			04/18/23 18:29	1
1,2-Dichlorobenzene	1.0	U	1.0	0.48	ug/L			04/18/23 18:29	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			04/18/23 18:29	1
1,2-Dichloropropane	1.0	U	1.0	0.47	ug/L			04/18/23 18:29	1
1,3-Dichlorobenzene	1.0	U	1.0	0.45	ug/L			04/18/23 18:29	1
1,4-Dichlorobenzene	1.0	U	1.0	0.41	ug/L			04/18/23 18:29	1
2-Butanone (MEK)	1.5	J	10	1.2	ug/L			04/18/23 18:29	1
2-Hexanone	10	U	10	1.1	ug/L			04/18/23 18:29	1
4-Methyl-2-pentanone (MIBK)	1.2	J	10	0.99	ug/L			04/18/23 18:29	1
Acetone	10	U	10	5.4	ug/L			04/18/23 18:29	1
Benzene	1.0	U	1.0	0.42	ug/L			04/18/23 18:29	1
Dichlorobromomethane	1.0	U	1.0	0.17	ug/L			04/18/23 18:29	1
Bromoform	1.0	U	1.0	0.76	ug/L			04/18/23 18:29	1
Bromomethane	1.0	U	1.0	0.42	ug/L			04/18/23 18:29	1
Carbon disulfide	1.0	U	1.0	0.59	ug/L			04/18/23 18:29	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			04/18/23 18:29	1
Chlorobenzene	1.0	U	1.0	0.38	ug/L			04/18/23 18:29	1
Chloroethane	1.0	U	1.0	0.83	ug/L			04/18/23 18:29	1
Chloroform	1.0	U	1.0	0.47	ug/L			04/18/23 18:29	1
Chloromethane	1.0	U	1.0	0.63	ug/L			04/18/23 18:29	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			04/18/23 18:29	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			04/18/23 18:29	1
Cyclohexane	1.0	U	1.0	0.48	ug/L			04/18/23 18:29	1
Chlorodibromomethane	1.0	U	1.0	0.39	ug/L			04/18/23 18:29	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			04/18/23 18:29	1
Ethylbenzene	1.0	U	1.0	0.42	ug/L			04/18/23 18:29	1
Isopropylbenzene	1.0	U	1.0	0.49	ug/L			04/18/23 18:29	1
Methyl acetate	10	U	10	1.7	ug/L			04/18/23 18:29	1
Methyl tert-butyl ether	1.0	U	1.0	0.47	ug/L			04/18/23 18:29	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			04/18/23 18:29	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			04/18/23 18:29	1
Styrene	1.0	U	1.0	0.45	ug/L			04/18/23 18:29	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			04/18/23 18:29	1
Toluene	1.0	U	1.0	0.44	ug/L			04/18/23 18:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			04/18/23 18:29	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			04/18/23 18:29	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			04/18/23 18:29	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			04/18/23 18:29	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			04/18/23 18:29	1
Xylenes, Total	1.7	J	2.0	0.42	ug/L			04/18/23 18:29	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183469-1

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>Toluene-d8 (Surr)</i>	99		78 - 122		04/18/23 18:29	1
<i>Dibromofluoromethane (Surr)</i>	99		73 - 120		04/18/23 18:29	1
<i>4-Bromofluorobenzene (Surr)</i>	101		56 - 136		04/18/23 18:29	1
<i>1,2-Dichloroethane-d4 (Surr)</i>	103		62 - 137		04/18/23 18:29	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183469-1

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Client Sample ID: GW-11223416-041123-SK-006

Date Collected: 04/11/23 10:20

Date Received: 04/13/23 09:30

Lab Sample ID: 240-183469-6

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	0.48	ug/L			04/18/23 18:54	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.60	ug/L			04/18/23 18:54	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			04/18/23 18:54	1
1,1,2-Trichloroethane	1.0	U	1.0	0.48	ug/L			04/18/23 18:54	1
1,1-Dichloroethane	1.0	U	1.0	0.47	ug/L			04/18/23 18:54	1
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			04/18/23 18:54	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.77	ug/L			04/18/23 18:54	1
1,2-Dibromo-3-Chloropropane	2.0	U	2.0	0.91	ug/L			04/18/23 18:54	1
Ethylene Dibromide	1.0	U	1.0	0.41	ug/L			04/18/23 18:54	1
1,2-Dichlorobenzene	1.0	U	1.0	0.48	ug/L			04/18/23 18:54	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			04/18/23 18:54	1
1,2-Dichloropropane	1.0	U	1.0	0.47	ug/L			04/18/23 18:54	1
1,3-Dichlorobenzene	1.0	U	1.0	0.45	ug/L			04/18/23 18:54	1
1,4-Dichlorobenzene	1.0	U	1.0	0.41	ug/L			04/18/23 18:54	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			04/18/23 18:54	1
2-Hexanone	10	U	10	1.1	ug/L			04/18/23 18:54	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.99	ug/L			04/18/23 18:54	1
Acetone	10	U	10	5.4	ug/L			04/18/23 18:54	1
Benzene	1.0	U	1.0	0.42	ug/L			04/18/23 18:54	1
Dichlorobromomethane	1.0	U	1.0	0.17	ug/L			04/18/23 18:54	1
Bromoform	1.0	U	1.0	0.76	ug/L			04/18/23 18:54	1
Bromomethane	1.0	U	1.0	0.42	ug/L			04/18/23 18:54	1
Carbon disulfide	1.0	U	1.0	0.59	ug/L			04/18/23 18:54	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			04/18/23 18:54	1
Chlorobenzene	1.0	U	1.0	0.38	ug/L			04/18/23 18:54	1
Chloroethane	1.0	U	1.0	0.83	ug/L			04/18/23 18:54	1
Chloroform	1.0	U	1.0	0.47	ug/L			04/18/23 18:54	1
Chloromethane	1.0	U	1.0	0.63	ug/L			04/18/23 18:54	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			04/18/23 18:54	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			04/18/23 18:54	1
Cyclohexane	1.0	U	1.0	0.48	ug/L			04/18/23 18:54	1
Chlorodibromomethane	1.0	U	1.0	0.39	ug/L			04/18/23 18:54	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			04/18/23 18:54	1
Ethylbenzene	1.0	U	1.0	0.42	ug/L			04/18/23 18:54	1
Isopropylbenzene	1.0	U	1.0	0.49	ug/L			04/18/23 18:54	1
Methyl acetate	10	U	10	1.7	ug/L			04/18/23 18:54	1
Methyl tert-butyl ether	1.0	U	1.0	0.47	ug/L			04/18/23 18:54	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			04/18/23 18:54	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			04/18/23 18:54	1
Styrene	1.0	U	1.0	0.45	ug/L			04/18/23 18:54	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			04/18/23 18:54	1
Toluene	1.0	U	1.0	0.44	ug/L			04/18/23 18:54	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			04/18/23 18:54	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			04/18/23 18:54	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			04/18/23 18:54	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			04/18/23 18:54	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			04/18/23 18:54	1
Xylenes, Total	2.0	U	2.0	0.42	ug/L			04/18/23 18:54	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183469-1

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>Toluene-d8 (Surr)</i>	100		78 - 122		04/18/23 18:54	1
<i>Dibromofluoromethane (Surr)</i>	100		73 - 120		04/18/23 18:54	1
<i>4-Bromofluorobenzene (Surr)</i>	98		56 - 136		04/18/23 18:54	1
<i>1,2-Dichloroethane-d4 (Surr)</i>	103		62 - 137		04/18/23 18:54	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183469-1

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Client Sample ID: GW-11223416-041123-SK-007

Date Collected: 04/11/23 11:15

Date Received: 04/13/23 09:30

Lab Sample ID: 240-183469-7

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	0.48	ug/L			04/18/23 19:19	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.60	ug/L			04/18/23 19:19	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			04/18/23 19:19	1
1,1,2-Trichloroethane	1.0	U	1.0	0.48	ug/L			04/18/23 19:19	1
1,1-Dichloroethane	1.0	U	1.0	0.47	ug/L			04/18/23 19:19	1
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			04/18/23 19:19	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.77	ug/L			04/18/23 19:19	1
1,2-Dibromo-3-Chloropropane	2.0	U	2.0	0.91	ug/L			04/18/23 19:19	1
Ethylene Dibromide	1.0	U	1.0	0.41	ug/L			04/18/23 19:19	1
1,2-Dichlorobenzene	1.0	U	1.0	0.48	ug/L			04/18/23 19:19	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			04/18/23 19:19	1
1,2-Dichloropropane	1.0	U	1.0	0.47	ug/L			04/18/23 19:19	1
1,3-Dichlorobenzene	1.0	U	1.0	0.45	ug/L			04/18/23 19:19	1
1,4-Dichlorobenzene	1.0	U	1.0	0.41	ug/L			04/18/23 19:19	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			04/18/23 19:19	1
2-Hexanone	10	U	10	1.1	ug/L			04/18/23 19:19	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.99	ug/L			04/18/23 19:19	1
Acetone	10	U	10	5.4	ug/L			04/18/23 19:19	1
Benzene	1.0	U	1.0	0.42	ug/L			04/18/23 19:19	1
Dichlorobromomethane	1.0	U	1.0	0.17	ug/L			04/18/23 19:19	1
Bromoform	1.0	U	1.0	0.76	ug/L			04/18/23 19:19	1
Bromomethane	1.0	U	1.0	0.42	ug/L			04/18/23 19:19	1
Carbon disulfide	1.0	U	1.0	0.59	ug/L			04/18/23 19:19	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			04/18/23 19:19	1
Chlorobenzene	1.0	U	1.0	0.38	ug/L			04/18/23 19:19	1
Chloroethane	1.0	U	1.0	0.83	ug/L			04/18/23 19:19	1
Chloroform	1.0	U	1.0	0.47	ug/L			04/18/23 19:19	1
Chloromethane	1.0	U	1.0	0.63	ug/L			04/18/23 19:19	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			04/18/23 19:19	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			04/18/23 19:19	1
Cyclohexane	1.0	U	1.0	0.48	ug/L			04/18/23 19:19	1
Chlorodibromomethane	1.0	U	1.0	0.39	ug/L			04/18/23 19:19	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			04/18/23 19:19	1
Ethylbenzene	1.0	U	1.0	0.42	ug/L			04/18/23 19:19	1
Isopropylbenzene	1.0	U	1.0	0.49	ug/L			04/18/23 19:19	1
Methyl acetate	10	U	10	1.7	ug/L			04/18/23 19:19	1
Methyl tert-butyl ether	1.0	U	1.0	0.47	ug/L			04/18/23 19:19	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			04/18/23 19:19	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			04/18/23 19:19	1
Styrene	1.0	U	1.0	0.45	ug/L			04/18/23 19:19	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			04/18/23 19:19	1
Toluene	1.0	U	1.0	0.44	ug/L			04/18/23 19:19	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			04/18/23 19:19	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			04/18/23 19:19	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			04/18/23 19:19	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			04/18/23 19:19	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			04/18/23 19:19	1
Xylenes, Total	2.0	U	2.0	0.42	ug/L			04/18/23 19:19	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183469-1

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>Toluene-d8 (Surr)</i>	99		78 - 122		04/18/23 19:19	1
<i>Dibromofluoromethane (Surr)</i>	98		73 - 120		04/18/23 19:19	1
<i>4-Bromofluorobenzene (Surr)</i>	98		56 - 136		04/18/23 19:19	1
<i>1,2-Dichloroethane-d4 (Surr)</i>	103		62 - 137		04/18/23 19:19	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183469-1

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Client Sample ID: GW-11223416-041123-SK-008

Date Collected: 04/11/23 13:25

Date Received: 04/13/23 09:30

Lab Sample ID: 240-183469-8

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	14		1.0	0.48	ug/L			04/18/23 19:44	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.60	ug/L			04/18/23 19:44	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			04/18/23 19:44	1
1,1,2-Trichloroethane	1.0	U	1.0	0.48	ug/L			04/18/23 19:44	1
1,1-Dichloroethane	1.0	U	1.0	0.47	ug/L			04/18/23 19:44	1
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			04/18/23 19:44	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.77	ug/L			04/18/23 19:44	1
1,2-Dibromo-3-Chloropropane	2.0	U	2.0	0.91	ug/L			04/18/23 19:44	1
Ethylene Dibromide	1.0	U	1.0	0.41	ug/L			04/18/23 19:44	1
1,2-Dichlorobenzene	1.0	U	1.0	0.48	ug/L			04/18/23 19:44	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			04/18/23 19:44	1
1,2-Dichloropropane	1.0	U	1.0	0.47	ug/L			04/18/23 19:44	1
1,3-Dichlorobenzene	1.0	U	1.0	0.45	ug/L			04/18/23 19:44	1
1,4-Dichlorobenzene	1.0	U	1.0	0.41	ug/L			04/18/23 19:44	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			04/18/23 19:44	1
2-Hexanone	10	U	10	1.1	ug/L			04/18/23 19:44	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.99	ug/L			04/18/23 19:44	1
Acetone	10	U F2	10	5.4	ug/L			04/18/23 19:44	1
Benzene	1.0	U	1.0	0.42	ug/L			04/18/23 19:44	1
Dichlorobromomethane	1.0	U	1.0	0.17	ug/L			04/18/23 19:44	1
Bromoform	1.0	U	1.0	0.76	ug/L			04/18/23 19:44	1
Bromomethane	1.0	U	1.0	0.42	ug/L			04/18/23 19:44	1
Carbon disulfide	1.0	U	1.0	0.59	ug/L			04/18/23 19:44	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			04/18/23 19:44	1
Chlorobenzene	1.0	U	1.0	0.38	ug/L			04/18/23 19:44	1
Chloroethane	1.0	U	1.0	0.83	ug/L			04/18/23 19:44	1
Chloroform	1.0	U	1.0	0.47	ug/L			04/18/23 19:44	1
Chloromethane	1.0	U	1.0	0.63	ug/L			04/18/23 19:44	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			04/18/23 19:44	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			04/18/23 19:44	1
Cyclohexane	1.0	U	1.0	0.48	ug/L			04/18/23 19:44	1
Chlorodibromomethane	1.0	U	1.0	0.39	ug/L			04/18/23 19:44	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			04/18/23 19:44	1
Ethylbenzene	1.0	U	1.0	0.42	ug/L			04/18/23 19:44	1
Isopropylbenzene	1.0	U	1.0	0.49	ug/L			04/18/23 19:44	1
Methyl acetate	10	U F2	10	1.7	ug/L			04/18/23 19:44	1
Methyl tert-butyl ether	1.0	U	1.0	0.47	ug/L			04/18/23 19:44	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			04/18/23 19:44	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			04/18/23 19:44	1
Styrene	1.0	U	1.0	0.45	ug/L			04/18/23 19:44	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			04/18/23 19:44	1
Toluene	1.0	U	1.0	0.44	ug/L			04/18/23 19:44	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			04/18/23 19:44	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			04/18/23 19:44	1
Trichloroethene	40		1.0	0.44	ug/L			04/18/23 19:44	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			04/18/23 19:44	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			04/18/23 19:44	1
Xylenes, Total	2.0	U	2.0	0.42	ug/L			04/18/23 19:44	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183469-1

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Toluene-d8 (Surr)</i>	103		78 - 122		04/18/23 19:44	1
<i>Dibromofluoromethane (Surr)</i>	103		73 - 120		04/18/23 19:44	1
<i>4-Bromofluorobenzene (Surr)</i>	100		56 - 136		04/18/23 19:44	1
<i>1,2-Dichloroethane-d4 (Surr)</i>	104		62 - 137		04/18/23 19:44	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183469-1

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Client Sample ID: GW-11223416-041123-SK-009

Date Collected: 04/11/23 12:05

Date Received: 04/13/23 09:30

Lab Sample ID: 240-183469-9

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	0.48	ug/L			04/18/23 20:09	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.60	ug/L			04/18/23 20:09	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			04/18/23 20:09	1
1,1,2-Trichloroethane	1.0	U	1.0	0.48	ug/L			04/18/23 20:09	1
1,1-Dichloroethane	1.0	U	1.0	0.47	ug/L			04/18/23 20:09	1
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			04/18/23 20:09	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.77	ug/L			04/18/23 20:09	1
1,2-Dibromo-3-Chloropropane	2.0	U	2.0	0.91	ug/L			04/18/23 20:09	1
Ethylene Dibromide	1.0	U	1.0	0.41	ug/L			04/18/23 20:09	1
1,2-Dichlorobenzene	1.0	U	1.0	0.48	ug/L			04/18/23 20:09	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			04/18/23 20:09	1
1,2-Dichloropropane	1.0	U	1.0	0.47	ug/L			04/18/23 20:09	1
1,3-Dichlorobenzene	1.0	U	1.0	0.45	ug/L			04/18/23 20:09	1
1,4-Dichlorobenzene	1.0	U	1.0	0.41	ug/L			04/18/23 20:09	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			04/18/23 20:09	1
2-Hexanone	10	U	10	1.1	ug/L			04/18/23 20:09	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.99	ug/L			04/18/23 20:09	1
Acetone	10	U	10	5.4	ug/L			04/18/23 20:09	1
Benzene	1.0	U	1.0	0.42	ug/L			04/18/23 20:09	1
Dichlorobromomethane	1.0	U	1.0	0.17	ug/L			04/18/23 20:09	1
Bromoform	1.0	U	1.0	0.76	ug/L			04/18/23 20:09	1
Bromomethane	1.0	U	1.0	0.42	ug/L			04/18/23 20:09	1
Carbon disulfide	1.0	U	1.0	0.59	ug/L			04/18/23 20:09	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			04/18/23 20:09	1
Chlorobenzene	1.0	U	1.0	0.38	ug/L			04/18/23 20:09	1
Chloroethane	1.0	U	1.0	0.83	ug/L			04/18/23 20:09	1
Chloroform	1.0	U	1.0	0.47	ug/L			04/18/23 20:09	1
Chloromethane	1.0	U	1.0	0.63	ug/L			04/18/23 20:09	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			04/18/23 20:09	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			04/18/23 20:09	1
Cyclohexane	1.0	U	1.0	0.48	ug/L			04/18/23 20:09	1
Chlorodibromomethane	1.0	U	1.0	0.39	ug/L			04/18/23 20:09	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			04/18/23 20:09	1
Ethylbenzene	1.0	U	1.0	0.42	ug/L			04/18/23 20:09	1
Isopropylbenzene	1.0	U	1.0	0.49	ug/L			04/18/23 20:09	1
Methyl acetate	10	U	10	1.7	ug/L			04/18/23 20:09	1
Methyl tert-butyl ether	1.0	U	1.0	0.47	ug/L			04/18/23 20:09	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			04/18/23 20:09	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			04/18/23 20:09	1
Styrene	1.0	U	1.0	0.45	ug/L			04/18/23 20:09	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			04/18/23 20:09	1
Toluene	1.0	U	1.0	0.44	ug/L			04/18/23 20:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			04/18/23 20:09	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			04/18/23 20:09	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			04/18/23 20:09	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			04/18/23 20:09	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			04/18/23 20:09	1
Xylenes, Total	2.0	U	2.0	0.42	ug/L			04/18/23 20:09	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183469-1

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Toluene-d8 (Surr)</i>	100		78 - 122		04/18/23 20:09	1
<i>Dibromofluoromethane (Surr)</i>	100		73 - 120		04/18/23 20:09	1
<i>4-Bromofluorobenzene (Surr)</i>	97		56 - 136		04/18/23 20:09	1
<i>1,2-Dichloroethane-d4 (Surr)</i>	104		62 - 137		04/18/23 20:09	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183469-1

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Client Sample ID: GW-11223416-041123-SK-010

Date Collected: 04/11/23 14:00

Date Received: 04/13/23 09:30

Lab Sample ID: 240-183469-10

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	0.48	ug/L			04/18/23 20:34	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.60	ug/L			04/18/23 20:34	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			04/18/23 20:34	1
1,1,2-Trichloroethane	1.0	U	1.0	0.48	ug/L			04/18/23 20:34	1
1,1-Dichloroethane	1.0	U	1.0	0.47	ug/L			04/18/23 20:34	1
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			04/18/23 20:34	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.77	ug/L			04/18/23 20:34	1
1,2-Dibromo-3-Chloropropane	2.0	U	2.0	0.91	ug/L			04/18/23 20:34	1
Ethylene Dibromide	1.0	U	1.0	0.41	ug/L			04/18/23 20:34	1
1,2-Dichlorobenzene	1.0	U	1.0	0.48	ug/L			04/18/23 20:34	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			04/18/23 20:34	1
1,2-Dichloropropane	1.0	U	1.0	0.47	ug/L			04/18/23 20:34	1
1,3-Dichlorobenzene	1.0	U	1.0	0.45	ug/L			04/18/23 20:34	1
1,4-Dichlorobenzene	1.0	U	1.0	0.41	ug/L			04/18/23 20:34	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			04/18/23 20:34	1
2-Hexanone	10	U	10	1.1	ug/L			04/18/23 20:34	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.99	ug/L			04/18/23 20:34	1
Acetone	10	U	10	5.4	ug/L			04/18/23 20:34	1
Benzene	1.0	U	1.0	0.42	ug/L			04/18/23 20:34	1
Dichlorobromomethane	1.0	U	1.0	0.17	ug/L			04/18/23 20:34	1
Bromoform	1.0	U	1.0	0.76	ug/L			04/18/23 20:34	1
Bromomethane	1.0	U	1.0	0.42	ug/L			04/18/23 20:34	1
Carbon disulfide	1.0	U	1.0	0.59	ug/L			04/18/23 20:34	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			04/18/23 20:34	1
Chlorobenzene	1.0	U	1.0	0.38	ug/L			04/18/23 20:34	1
Chloroethane	1.0	U	1.0	0.83	ug/L			04/18/23 20:34	1
Chloroform	1.0	U	1.0	0.47	ug/L			04/18/23 20:34	1
Chloromethane	1.0	U	1.0	0.63	ug/L			04/18/23 20:34	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			04/18/23 20:34	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			04/18/23 20:34	1
Cyclohexane	1.0	U	1.0	0.48	ug/L			04/18/23 20:34	1
Chlorodibromomethane	1.0	U	1.0	0.39	ug/L			04/18/23 20:34	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			04/18/23 20:34	1
Ethylbenzene	1.0	U	1.0	0.42	ug/L			04/18/23 20:34	1
Isopropylbenzene	1.0	U	1.0	0.49	ug/L			04/18/23 20:34	1
Methyl acetate	10	U	10	1.7	ug/L			04/18/23 20:34	1
Methyl tert-butyl ether	1.0	U	1.0	0.47	ug/L			04/18/23 20:34	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			04/18/23 20:34	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			04/18/23 20:34	1
Styrene	1.0	U	1.0	0.45	ug/L			04/18/23 20:34	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			04/18/23 20:34	1
Toluene	1.0	U	1.0	0.44	ug/L			04/18/23 20:34	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			04/18/23 20:34	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			04/18/23 20:34	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			04/18/23 20:34	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			04/18/23 20:34	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			04/18/23 20:34	1
Xylenes, Total	2.0	U	2.0	0.42	ug/L			04/18/23 20:34	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183469-1

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>Toluene-d8 (Surr)</i>	99		78 - 122		04/18/23 20:34	1
<i>Dibromofluoromethane (Surr)</i>	98		73 - 120		04/18/23 20:34	1
<i>4-Bromofluorobenzene (Surr)</i>	95		56 - 136		04/18/23 20:34	1
<i>1,2-Dichloroethane-d4 (Surr)</i>	103		62 - 137		04/18/23 20:34	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183469-1

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Client Sample ID: GW-11223416-041223-SK-011

Date Collected: 04/12/23 09:55

Date Received: 04/13/23 09:30

Lab Sample ID: 240-183469-11

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	0.48	ug/L			04/18/23 20:59	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.60	ug/L			04/18/23 20:59	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			04/18/23 20:59	1
1,1,2-Trichloroethane	1.0	U	1.0	0.48	ug/L			04/18/23 20:59	1
1,1-Dichloroethane	1.0	U	1.0	0.47	ug/L			04/18/23 20:59	1
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			04/18/23 20:59	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.77	ug/L			04/18/23 20:59	1
1,2-Dibromo-3-Chloropropane	2.0	U	2.0	0.91	ug/L			04/18/23 20:59	1
Ethylene Dibromide	1.0	U	1.0	0.41	ug/L			04/18/23 20:59	1
1,2-Dichlorobenzene	1.0	U	1.0	0.48	ug/L			04/18/23 20:59	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			04/18/23 20:59	1
1,2-Dichloropropane	1.0	U	1.0	0.47	ug/L			04/18/23 20:59	1
1,3-Dichlorobenzene	1.0	U	1.0	0.45	ug/L			04/18/23 20:59	1
1,4-Dichlorobenzene	1.0	U	1.0	0.41	ug/L			04/18/23 20:59	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			04/18/23 20:59	1
2-Hexanone	10	U	10	1.1	ug/L			04/18/23 20:59	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.99	ug/L			04/18/23 20:59	1
Acetone	10	U	10	5.4	ug/L			04/18/23 20:59	1
Benzene	1.0	U	1.0	0.42	ug/L			04/18/23 20:59	1
Dichlorobromomethane	1.0	U	1.0	0.17	ug/L			04/18/23 20:59	1
Bromoform	1.0	U	1.0	0.76	ug/L			04/18/23 20:59	1
Bromomethane	1.0	U	1.0	0.42	ug/L			04/18/23 20:59	1
Carbon disulfide	1.0	U	1.0	0.59	ug/L			04/18/23 20:59	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			04/18/23 20:59	1
Chlorobenzene	1.0	U	1.0	0.38	ug/L			04/18/23 20:59	1
Chloroethane	1.0	U	1.0	0.83	ug/L			04/18/23 20:59	1
Chloroform	1.0	U	1.0	0.47	ug/L			04/18/23 20:59	1
Chloromethane	1.0	U	1.0	0.63	ug/L			04/18/23 20:59	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			04/18/23 20:59	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			04/18/23 20:59	1
Cyclohexane	1.0	U	1.0	0.48	ug/L			04/18/23 20:59	1
Chlorodibromomethane	1.0	U	1.0	0.39	ug/L			04/18/23 20:59	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			04/18/23 20:59	1
Ethylbenzene	1.0	U	1.0	0.42	ug/L			04/18/23 20:59	1
Isopropylbenzene	1.0	U	1.0	0.49	ug/L			04/18/23 20:59	1
Methyl acetate	10	U	10	1.7	ug/L			04/18/23 20:59	1
Methyl tert-butyl ether	1.0	U	1.0	0.47	ug/L			04/18/23 20:59	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			04/18/23 20:59	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			04/18/23 20:59	1
Styrene	1.0	U	1.0	0.45	ug/L			04/18/23 20:59	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			04/18/23 20:59	1
Toluene	1.0	U	1.0	0.44	ug/L			04/18/23 20:59	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			04/18/23 20:59	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			04/18/23 20:59	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			04/18/23 20:59	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			04/18/23 20:59	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			04/18/23 20:59	1
Xylenes, Total	2.0	U	2.0	0.42	ug/L			04/18/23 20:59	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183469-1

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>Toluene-d8 (Surr)</i>	100		78 - 122		04/18/23 20:59	1
<i>Dibromofluoromethane (Surr)</i>	99		73 - 120		04/18/23 20:59	1
<i>4-Bromofluorobenzene (Surr)</i>	97		56 - 136		04/18/23 20:59	1
<i>1,2-Dichloroethane-d4 (Surr)</i>	104		62 - 137		04/18/23 20:59	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183469-1

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Client Sample ID: GW-11223416-041223-SK-012

Date Collected: 04/12/23 10:50

Date Received: 04/13/23 09:30

Lab Sample ID: 240-183469-12

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	0.48	ug/L			04/18/23 21:24	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.60	ug/L			04/18/23 21:24	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			04/18/23 21:24	1
1,1,2-Trichloroethane	1.0	U	1.0	0.48	ug/L			04/18/23 21:24	1
1,1-Dichloroethane	1.0	U	1.0	0.47	ug/L			04/18/23 21:24	1
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			04/18/23 21:24	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.77	ug/L			04/18/23 21:24	1
1,2-Dibromo-3-Chloropropane	2.0	U	2.0	0.91	ug/L			04/18/23 21:24	1
Ethylene Dibromide	1.0	U	1.0	0.41	ug/L			04/18/23 21:24	1
1,2-Dichlorobenzene	1.0	U	1.0	0.48	ug/L			04/18/23 21:24	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			04/18/23 21:24	1
1,2-Dichloropropane	1.0	U	1.0	0.47	ug/L			04/18/23 21:24	1
1,3-Dichlorobenzene	1.0	U	1.0	0.45	ug/L			04/18/23 21:24	1
1,4-Dichlorobenzene	1.0	U	1.0	0.41	ug/L			04/18/23 21:24	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			04/18/23 21:24	1
2-Hexanone	10	U	10	1.1	ug/L			04/18/23 21:24	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.99	ug/L			04/18/23 21:24	1
Acetone	10	U	10	5.4	ug/L			04/18/23 21:24	1
Benzene	1.0	U	1.0	0.42	ug/L			04/18/23 21:24	1
Dichlorobromomethane	1.0	U	1.0	0.17	ug/L			04/18/23 21:24	1
Bromoform	1.0	U	1.0	0.76	ug/L			04/18/23 21:24	1
Bromomethane	1.0	U	1.0	0.42	ug/L			04/18/23 21:24	1
Carbon disulfide	1.0	U	1.0	0.59	ug/L			04/18/23 21:24	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			04/18/23 21:24	1
Chlorobenzene	1.0	U	1.0	0.38	ug/L			04/18/23 21:24	1
Chloroethane	1.0	U	1.0	0.83	ug/L			04/18/23 21:24	1
Chloroform	1.0	U	1.0	0.47	ug/L			04/18/23 21:24	1
Chloromethane	1.0	U	1.0	0.63	ug/L			04/18/23 21:24	1
cis-1,2-Dichloroethene	0.62	J	1.0	0.46	ug/L			04/18/23 21:24	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			04/18/23 21:24	1
Cyclohexane	1.0	U	1.0	0.48	ug/L			04/18/23 21:24	1
Chlorodibromomethane	1.0	U	1.0	0.39	ug/L			04/18/23 21:24	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			04/18/23 21:24	1
Ethylbenzene	1.0	U	1.0	0.42	ug/L			04/18/23 21:24	1
Isopropylbenzene	1.0	U	1.0	0.49	ug/L			04/18/23 21:24	1
Methyl acetate	10	U	10	1.7	ug/L			04/18/23 21:24	1
Methyl tert-butyl ether	1.0	U	1.0	0.47	ug/L			04/18/23 21:24	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			04/18/23 21:24	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			04/18/23 21:24	1
Styrene	1.0	U	1.0	0.45	ug/L			04/18/23 21:24	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			04/18/23 21:24	1
Toluene	1.0	U	1.0	0.44	ug/L			04/18/23 21:24	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			04/18/23 21:24	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			04/18/23 21:24	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			04/18/23 21:24	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			04/18/23 21:24	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			04/18/23 21:24	1
Xylenes, Total	2.0	U	2.0	0.42	ug/L			04/18/23 21:24	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183469-1

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>Toluene-d8 (Surr)</i>	99		78 - 122		04/18/23 21:24	1
<i>Dibromofluoromethane (Surr)</i>	97		73 - 120		04/18/23 21:24	1
<i>4-Bromofluorobenzene (Surr)</i>	96		56 - 136		04/18/23 21:24	1
<i>1,2-Dichloroethane-d4 (Surr)</i>	103		62 - 137		04/18/23 21:24	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183469-1

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Client Sample ID: GW-11223416-041223-SK-013

Date Collected: 04/12/23 11:50

Date Received: 04/13/23 09:30

Lab Sample ID: 240-183469-13

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	0.48	ug/L			04/18/23 21:49	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.60	ug/L			04/18/23 21:49	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			04/18/23 21:49	1
1,1,2-Trichloroethane	1.0	U	1.0	0.48	ug/L			04/18/23 21:49	1
1,1-Dichloroethane	1.0	U	1.0	0.47	ug/L			04/18/23 21:49	1
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			04/18/23 21:49	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.77	ug/L			04/18/23 21:49	1
1,2-Dibromo-3-Chloropropane	2.0	U	2.0	0.91	ug/L			04/18/23 21:49	1
Ethylene Dibromide	1.0	U	1.0	0.41	ug/L			04/18/23 21:49	1
1,2-Dichlorobenzene	1.0	U	1.0	0.48	ug/L			04/18/23 21:49	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			04/18/23 21:49	1
1,2-Dichloropropane	1.0	U	1.0	0.47	ug/L			04/18/23 21:49	1
1,3-Dichlorobenzene	1.0	U	1.0	0.45	ug/L			04/18/23 21:49	1
1,4-Dichlorobenzene	1.0	U	1.0	0.41	ug/L			04/18/23 21:49	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			04/18/23 21:49	1
2-Hexanone	10	U	10	1.1	ug/L			04/18/23 21:49	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.99	ug/L			04/18/23 21:49	1
Acetone	10	U	10	5.4	ug/L			04/18/23 21:49	1
Benzene	1.0	U	1.0	0.42	ug/L			04/18/23 21:49	1
Dichlorobromomethane	1.0	U	1.0	0.17	ug/L			04/18/23 21:49	1
Bromoform	1.0	U	1.0	0.76	ug/L			04/18/23 21:49	1
Bromomethane	1.0	U	1.0	0.42	ug/L			04/18/23 21:49	1
Carbon disulfide	1.0	U	1.0	0.59	ug/L			04/18/23 21:49	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			04/18/23 21:49	1
Chlorobenzene	1.0	U	1.0	0.38	ug/L			04/18/23 21:49	1
Chloroethane	1.0	U	1.0	0.83	ug/L			04/18/23 21:49	1
Chloroform	1.0	U	1.0	0.47	ug/L			04/18/23 21:49	1
Chloromethane	1.0	U	1.0	0.63	ug/L			04/18/23 21:49	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			04/18/23 21:49	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			04/18/23 21:49	1
Cyclohexane	1.0	U	1.0	0.48	ug/L			04/18/23 21:49	1
Chlorodibromomethane	1.0	U	1.0	0.39	ug/L			04/18/23 21:49	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			04/18/23 21:49	1
Ethylbenzene	1.0	U	1.0	0.42	ug/L			04/18/23 21:49	1
Isopropylbenzene	1.0	U	1.0	0.49	ug/L			04/18/23 21:49	1
Methyl acetate	10	U	10	1.7	ug/L			04/18/23 21:49	1
Methyl tert-butyl ether	1.0	U	1.0	0.47	ug/L			04/18/23 21:49	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			04/18/23 21:49	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			04/18/23 21:49	1
Styrene	1.0	U	1.0	0.45	ug/L			04/18/23 21:49	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			04/18/23 21:49	1
Toluene	1.0	U	1.0	0.44	ug/L			04/18/23 21:49	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			04/18/23 21:49	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			04/18/23 21:49	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			04/18/23 21:49	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			04/18/23 21:49	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			04/18/23 21:49	1
Xylenes, Total	2.0	U	2.0	0.42	ug/L			04/18/23 21:49	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183469-1

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>Toluene-d8 (Surr)</i>	101		78 - 122		04/18/23 21:49	1
<i>Dibromofluoromethane (Surr)</i>	101		73 - 120		04/18/23 21:49	1
<i>4-Bromofluorobenzene (Surr)</i>	96		56 - 136		04/18/23 21:49	1
<i>1,2-Dichloroethane-d4 (Surr)</i>	105		62 - 137		04/18/23 21:49	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183469-1

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Client Sample ID: TB-11223416-041223-SK

Date Collected: 04/12/23 00:00

Date Received: 04/13/23 09:30

Lab Sample ID: 240-183469-14

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	0.48	ug/L			04/21/23 14:24	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.60	ug/L			04/21/23 14:24	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			04/21/23 14:24	1
1,1,2-Trichloroethane	1.0	U	1.0	0.48	ug/L			04/21/23 14:24	1
1,1-Dichloroethane	1.0	U	1.0	0.47	ug/L			04/21/23 14:24	1
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			04/21/23 14:24	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.77	ug/L			04/21/23 14:24	1
1,2-Dibromo-3-Chloropropane	2.0	U	2.0	0.91	ug/L			04/21/23 14:24	1
Ethylene Dibromide	1.0	U	1.0	0.41	ug/L			04/21/23 14:24	1
1,2-Dichlorobenzene	1.0	U	1.0	0.48	ug/L			04/21/23 14:24	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			04/21/23 14:24	1
1,2-Dichloropropane	1.0	U	1.0	0.47	ug/L			04/21/23 14:24	1
1,3-Dichlorobenzene	1.0	U	1.0	0.45	ug/L			04/21/23 14:24	1
1,4-Dichlorobenzene	1.0	U	1.0	0.41	ug/L			04/21/23 14:24	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			04/21/23 14:24	1
2-Hexanone	10	U	10	1.1	ug/L			04/21/23 14:24	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.99	ug/L			04/21/23 14:24	1
Acetone	10	U	10	5.4	ug/L			04/21/23 14:24	1
Benzene	1.0	U	1.0	0.42	ug/L			04/21/23 14:24	1
Dichlorobromomethane	1.0	U	1.0	0.17	ug/L			04/21/23 14:24	1
Bromoform	1.0	U	1.0	0.76	ug/L			04/21/23 14:24	1
Bromomethane	1.0	U	1.0	0.42	ug/L			04/21/23 14:24	1
Carbon disulfide	1.0	U	1.0	0.59	ug/L			04/21/23 14:24	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			04/21/23 14:24	1
Chlorobenzene	1.0	U	1.0	0.38	ug/L			04/21/23 14:24	1
Chloroethane	1.0	U	1.0	0.83	ug/L			04/21/23 14:24	1
Chloroform	1.0	U	1.0	0.47	ug/L			04/21/23 14:24	1
Chloromethane	1.0	U	1.0	0.63	ug/L			04/21/23 14:24	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			04/21/23 14:24	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			04/21/23 14:24	1
Cyclohexane	1.0	U	1.0	0.48	ug/L			04/21/23 14:24	1
Chlorodibromomethane	1.0	U	1.0	0.39	ug/L			04/21/23 14:24	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			04/21/23 14:24	1
Ethylbenzene	1.0	U	1.0	0.42	ug/L			04/21/23 14:24	1
Isopropylbenzene	1.0	U	1.0	0.49	ug/L			04/21/23 14:24	1
Methyl acetate	10	U	10	1.7	ug/L			04/21/23 14:24	1
Methyl tert-butyl ether	1.0	U	1.0	0.47	ug/L			04/21/23 14:24	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			04/21/23 14:24	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			04/21/23 14:24	1
Styrene	1.0	U	1.0	0.45	ug/L			04/21/23 14:24	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			04/21/23 14:24	1
Toluene	1.0	U	1.0	0.44	ug/L			04/21/23 14:24	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			04/21/23 14:24	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			04/21/23 14:24	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			04/21/23 14:24	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			04/21/23 14:24	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			04/21/23 14:24	1
Xylenes, Total	2.0	U	2.0	0.42	ug/L			04/21/23 14:24	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183469-1

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>Toluene-d8 (Surr)</i>	101		78 - 122		04/21/23 14:24	1
<i>Dibromofluoromethane (Surr)</i>	101		73 - 120		04/21/23 14:24	1
<i>4-Bromofluorobenzene (Surr)</i>	97		56 - 136		04/21/23 14:24	1
<i>1,2-Dichloroethane-d4 (Surr)</i>	103		62 - 137		04/21/23 14:24	1

QC Association Summary

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183469-1

GC/MS VOA

Analysis Batch: 569777

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-183469-1	GW-11223416-041023-SK-001	Total/NA	Water	8260D	
240-183469-2	GW-11223416-041023-SK-002	Total/NA	Water	8260D	
240-183469-3	GW-11223416-041023-SK-003	Total/NA	Water	8260D	
240-183469-4	GW-11223416-041023-SK-004	Total/NA	Water	8260D	
240-183469-5	GW-11223416-041023-SK-005	Total/NA	Water	8260D	
240-183469-6	GW-11223416-041123-SK-006	Total/NA	Water	8260D	
240-183469-7	GW-11223416-041123-SK-007	Total/NA	Water	8260D	
240-183469-8	GW-11223416-041123-SK-008	Total/NA	Water	8260D	
240-183469-9	GW-11223416-041123-SK-009	Total/NA	Water	8260D	
240-183469-10	GW-11223416-041123-SK-010	Total/NA	Water	8260D	
240-183469-11	GW-11223416-041223-SK-011	Total/NA	Water	8260D	
240-183469-12	GW-11223416-041223-SK-012	Total/NA	Water	8260D	
240-183469-13	GW-11223416-041223-SK-013	Total/NA	Water	8260D	
MB 240-569777/8	Method Blank	Total/NA	Water	8260D	
LCS 240-569777/5	Lab Control Sample	Total/NA	Water	8260D	
240-183469-8 MS	GW-11223416-041123-SK-008	Total/NA	Water	8260D	
240-183469-8 MSD	GW-11223416-041123-SK-008	Total/NA	Water	8260D	

Analysis Batch: 570323

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-183469-14	TB-11223416-041223-SK	Total/NA	Water	8260D	
MB 240-570323/8	Method Blank	Total/NA	Water	8260D	
LCS 240-570323/5	Lab Control Sample	Total/NA	Water	8260D	

QC Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183469-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-569777/8

Matrix: Water

Analysis Batch: 569777

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,1,1-Trichloroethane	1.0	U	1.0	0.48	ug/L			04/18/23 15:10	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.60	ug/L			04/18/23 15:10	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			04/18/23 15:10	1
1,1,2-Trichloroethane	1.0	U	1.0	0.48	ug/L			04/18/23 15:10	1
1,1-Dichloroethane	1.0	U	1.0	0.47	ug/L			04/18/23 15:10	1
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			04/18/23 15:10	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.77	ug/L			04/18/23 15:10	1
1,2-Dibromo-3-Chloropropane	2.0	U	2.0	0.91	ug/L			04/18/23 15:10	1
Ethylene Dibromide	1.0	U	1.0	0.41	ug/L			04/18/23 15:10	1
1,2-Dichlorobenzene	1.0	U	1.0	0.48	ug/L			04/18/23 15:10	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			04/18/23 15:10	1
1,2-Dichloropropane	1.0	U	1.0	0.47	ug/L			04/18/23 15:10	1
1,3-Dichlorobenzene	1.0	U	1.0	0.45	ug/L			04/18/23 15:10	1
1,4-Dichlorobenzene	1.0	U	1.0	0.41	ug/L			04/18/23 15:10	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			04/18/23 15:10	1
2-Hexanone	10	U	10	1.1	ug/L			04/18/23 15:10	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.99	ug/L			04/18/23 15:10	1
Acetone	10	U	10	5.4	ug/L			04/18/23 15:10	1
Benzene	1.0	U	1.0	0.42	ug/L			04/18/23 15:10	1
Dichlorobromomethane	1.0	U	1.0	0.17	ug/L			04/18/23 15:10	1
Bromoform	1.0	U	1.0	0.76	ug/L			04/18/23 15:10	1
Bromomethane	1.0	U	1.0	0.42	ug/L			04/18/23 15:10	1
Carbon disulfide	1.0	U	1.0	0.59	ug/L			04/18/23 15:10	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			04/18/23 15:10	1
Chlorobenzene	1.0	U	1.0	0.38	ug/L			04/18/23 15:10	1
Chloroethane	1.0	U	1.0	0.83	ug/L			04/18/23 15:10	1
Chloroform	1.0	U	1.0	0.47	ug/L			04/18/23 15:10	1
Chloromethane	1.0	U	1.0	0.63	ug/L			04/18/23 15:10	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			04/18/23 15:10	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			04/18/23 15:10	1
Cyclohexane	1.0	U	1.0	0.48	ug/L			04/18/23 15:10	1
Chlorodibromomethane	1.0	U	1.0	0.39	ug/L			04/18/23 15:10	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			04/18/23 15:10	1
Ethylbenzene	1.0	U	1.0	0.42	ug/L			04/18/23 15:10	1
Isopropylbenzene	1.0	U	1.0	0.49	ug/L			04/18/23 15:10	1
Methyl acetate	10	U	10	1.7	ug/L			04/18/23 15:10	1
Methyl tert-butyl ether	1.0	U	1.0	0.47	ug/L			04/18/23 15:10	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			04/18/23 15:10	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			04/18/23 15:10	1
Styrene	1.0	U	1.0	0.45	ug/L			04/18/23 15:10	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			04/18/23 15:10	1
Toluene	1.0	U	1.0	0.44	ug/L			04/18/23 15:10	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			04/18/23 15:10	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			04/18/23 15:10	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			04/18/23 15:10	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			04/18/23 15:10	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			04/18/23 15:10	1
Xylenes, Total	2.0	U	2.0	0.42	ug/L			04/18/23 15:10	1

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QC Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183469-1

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

Lab Sample ID: MB 240-569777/8

Matrix: Water

Analysis Batch: 569777

Client Sample ID: Method Blank

Prep Type: Total/NA

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	96		78 - 122		04/18/23 15:10	1
Dibromofluoromethane (Surr)	100		73 - 120		04/18/23 15:10	1
4-Bromofluorobenzene (Surr)	97		56 - 136		04/18/23 15:10	1
1,2-Dichloroethane-d4 (Surr)	101		62 - 137		04/18/23 15:10	1

Lab Sample ID: LCS 240-569777/5

Matrix: Water

Analysis Batch: 569777

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,1-Trichloroethane	25.0	26.2		ug/L		105	64 - 131
1,1,1,2,2-Tetrachloroethane	25.0	27.2		ug/L		109	58 - 157
1,1,1,2-Trichloro-1,2,2-trifluoroethane	25.0	23.7		ug/L		95	51 - 146
1,1,2-Trichloroethane	25.0	25.8		ug/L		103	70 - 138
1,1-Dichloroethane	25.0	23.8		ug/L		95	72 - 127
1,1-Dichloroethene	25.0	24.4		ug/L		97	63 - 134
1,2,4-Trichlorobenzene	25.0	23.0		ug/L		92	44 - 147
1,2-Dibromo-3-Chloropropane	25.0	25.7		ug/L		103	53 - 135
Ethylene Dibromide	25.0	26.2		ug/L		105	71 - 134
1,2-Dichlorobenzene	25.0	24.9		ug/L		100	78 - 120
1,2-Dichloroethane	25.0	23.5		ug/L		94	66 - 128
1,2-Dichloropropane	25.0	25.0		ug/L		100	75 - 133
1,3-Dichlorobenzene	25.0	24.7		ug/L		99	80 - 120
1,4-Dichlorobenzene	25.0	24.7		ug/L		99	80 - 120
2-Butanone (MEK)	50.0	53.4		ug/L		107	54 - 156
2-Hexanone	50.0	52.9		ug/L		106	43 - 167
4-Methyl-2-pentanone (MIBK)	50.0	50.9		ug/L		102	46 - 158
Acetone	50.0	43.7		ug/L		87	50 - 149
Benzene	25.0	26.1		ug/L		104	77 - 123
Dichlorobromomethane	25.0	26.2		ug/L		105	69 - 126
Bromoform	25.0	28.0		ug/L		112	57 - 129
Bromomethane	12.5	11.7		ug/L		93	36 - 142
Carbon disulfide	25.0	27.6		ug/L		111	43 - 140
Carbon tetrachloride	25.0	25.7		ug/L		103	55 - 137
Chlorobenzene	25.0	24.5		ug/L		98	80 - 121
Chloroethane	12.5	10.6		ug/L		84	38 - 152
Chloroform	25.0	24.9		ug/L		99	74 - 122
Chloromethane	12.5	11.8		ug/L		94	47 - 143
cis-1,2-Dichloroethene	25.0	25.8		ug/L		103	77 - 123
cis-1,3-Dichloropropene	25.0	25.9		ug/L		103	64 - 130
Cyclohexane	25.0	24.5		ug/L		98	58 - 146
Chlorodibromomethane	25.0	26.0		ug/L		104	70 - 124
Dichlorodifluoromethane	12.5	11.8		ug/L		95	34 - 153
Ethylbenzene	25.0	25.3		ug/L		101	80 - 121
Isopropylbenzene	25.0	25.4		ug/L		102	74 - 128
Methyl acetate	50.0	45.3		ug/L		91	42 - 169
Methyl tert-butyl ether	25.0	25.6		ug/L		102	65 - 126
Methylcyclohexane	25.0	26.1		ug/L		104	62 - 136

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QC Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183469-1

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

Lab Sample ID: LCS 240-569777/5

Matrix: Water

Analysis Batch: 569777

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Methylene Chloride	25.0	25.5		ug/L		102	71 - 125
Styrene	25.0	26.0		ug/L		104	80 - 135
Tetrachloroethene	25.0	25.9		ug/L		104	76 - 123
Toluene	25.0	24.6		ug/L		98	80 - 123
trans-1,2-Dichloroethene	25.0	25.4		ug/L		102	75 - 124
trans-1,3-Dichloropropene	25.0	25.5		ug/L		102	57 - 129
Trichloroethene	25.0	25.2		ug/L		101	70 - 122
Trichlorofluoromethane	12.5	12.0		ug/L		96	30 - 170
Vinyl chloride	12.5	12.0		ug/L		96	60 - 144
Xylenes, Total	50.0	50.5		ug/L		101	80 - 121
m-Xylene & p-Xylene	25.0	25.4		ug/L		102	80 - 120
o-Xylene	25.0	25.1		ug/L		101	80 - 123

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Toluene-d8 (Surr)	99		78 - 122
Dibromofluoromethane (Surr)	102		73 - 120
4-Bromofluorobenzene (Surr)	101		56 - 136
1,2-Dichloroethane-d4 (Surr)	101		62 - 137

Lab Sample ID: 240-183469-8 MS

Matrix: Water

Analysis Batch: 569777

Client Sample ID: GW-11223416-041123-SK-008

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,1-Trichloroethane	14		25.0	34.4		ug/L		83	60 - 130
1,1,2,2-Tetrachloroethane	1.0	U	25.0	25.5		ug/L		102	54 - 145
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	25.0	24.4		ug/L		97	41 - 147
1,1,2-Trichloroethane	1.0	U	25.0	23.6		ug/L		95	69 - 131
1,1-Dichloroethane	1.0	U	25.0	21.3		ug/L		85	68 - 125
1,1-Dichloroethene	1.0	U	25.0	22.2		ug/L		89	56 - 135
1,2,4-Trichlorobenzene	1.0	U	25.0	19.5		ug/L		78	29 - 156
1,2-Dibromo-3-Chloropropane	2.0	U	25.0	21.3		ug/L		85	41 - 129
Ethylene Dibromide	1.0	U	25.0	23.0		ug/L		92	69 - 125
1,2-Dichlorobenzene	1.0	U	25.0	21.2		ug/L		85	73 - 120
1,2-Dichloroethane	1.0	U	25.0	20.7		ug/L		83	63 - 126
1,2-Dichloropropane	1.0	U	25.0	22.9		ug/L		92	69 - 130
1,3-Dichlorobenzene	1.0	U	25.0	21.1		ug/L		84	73 - 120
1,4-Dichlorobenzene	1.0	U	25.0	21.1		ug/L		84	74 - 120
2-Butanone (MEK)	10	U	50.0	44.2		ug/L		88	40 - 151
2-Hexanone	10	U	50.0	48.2		ug/L		96	35 - 156
4-Methyl-2-pentanone (MIBK)	10	U	50.0	46.7		ug/L		93	31 - 153
Acetone	10	U F2	50.0	29.5		ug/L		59	33 - 149
Benzene	1.0	U	25.0	23.2		ug/L		93	64 - 128
Dichlorobromomethane	1.0	U	25.0	21.7		ug/L		87	62 - 125
Bromoform	1.0	U	25.0	19.9		ug/L		80	47 - 125
Bromomethane	1.0	U	12.5	10.8		ug/L		87	28 - 150
Carbon disulfide	1.0	U	25.0	23.2		ug/L		93	38 - 140
Carbon tetrachloride	1.0	U	25.0	20.3		ug/L		81	51 - 133

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QC Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183469-1

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

Lab Sample ID: 240-183469-8 MS

Client Sample ID: GW-11223416-041123-SK-008

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 569777

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Chlorobenzene	1.0	U	25.0	21.5		ug/L		86	74 - 121
Chloroethane	1.0	U	12.5	9.41		ug/L		75	10 - 199
Chloroform	1.0	U	25.0	22.7		ug/L		91	70 - 122
Chloromethane	1.0	U	12.5	10.2		ug/L		82	32 - 149
cis-1,2-Dichloroethene	1.0	U	25.0	22.5		ug/L		90	66 - 128
cis-1,3-Dichloropropene	1.0	U	25.0	20.7		ug/L		83	47 - 125
Cyclohexane	1.0	U	25.0	22.9		ug/L		92	42 - 147
Chlorodibromomethane	1.0	U	25.0	20.5		ug/L		82	65 - 120
Dichlorodifluoromethane	1.0	U	12.5	13.5		ug/L		108	38 - 139
Ethylbenzene	1.0	U	25.0	22.2		ug/L		89	67 - 127
Isopropylbenzene	1.0	U	25.0	21.8		ug/L		87	64 - 129
Methyl acetate	10	U F2	50.0	34.1		ug/L		68	37 - 155
Methyl tert-butyl ether	1.0	U	25.0	20.7		ug/L		83	47 - 134
Methylcyclohexane	1.0	U	25.0	24.3		ug/L		97	39 - 144
Methylene Chloride	5.0	U	25.0	22.4		ug/L		90	62 - 129
Styrene	1.0	U	25.0	22.7		ug/L		91	70 - 139
Tetrachloroethene	1.0	U	25.0	23.3		ug/L		93	62 - 131
Toluene	1.0	U	25.0	22.0		ug/L		88	58 - 135
trans-1,2-Dichloroethene	1.0	U	25.0	22.6		ug/L		90	56 - 136
trans-1,3-Dichloropropene	1.0	U	25.0	19.8		ug/L		79	47 - 120
Trichloroethene	40		25.0	55.4		ug/L		63	61 - 124
Trichlorofluoromethane	1.0	U	12.5	11.9		ug/L		95	24 - 177
Vinyl chloride	1.0	U	12.5	10.7		ug/L		85	43 - 157
Xylenes, Total	2.0	U	50.0	43.5		ug/L		87	71 - 123
m-Xylene & p-Xylene	2.0	U	25.0	22.0		ug/L		88	71 - 123
o-Xylene	1.0	U	25.0	21.5		ug/L		86	70 - 125

Surrogate	MS %Recovery	MS Qualifier	MS Limits
Toluene-d8 (Surr)	101		78 - 122
Dibromofluoromethane (Surr)	100		73 - 120
4-Bromofluorobenzene (Surr)	102		56 - 136
1,2-Dichloroethane-d4 (Surr)	97		62 - 137

Lab Sample ID: 240-183469-8 MSD

Client Sample ID: GW-11223416-041123-SK-008

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 569777

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1,1-Trichloroethane	14		25.0	34.4		ug/L		83	60 - 130	0	17
1,1,2,2-Tetrachloroethane	1.0	U	25.0	25.8		ug/L		103	54 - 145	1	15
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	25.0	19.4		ug/L		78	41 - 147	22	35
1,1,2-Trichloroethane	1.0	U	25.0	23.9		ug/L		96	69 - 131	1	14
1,1-Dichloroethane	1.0	U	25.0	21.9		ug/L		88	68 - 125	3	13
1,1-Dichloroethene	1.0	U	25.0	20.6		ug/L		83	56 - 135	7	26
1,2,4-Trichlorobenzene	1.0	U	25.0	21.5		ug/L		86	29 - 156	10	19
1,2-Dibromo-3-Chloropropane	2.0	U	25.0	22.1		ug/L		88	41 - 129	4	22
Ethylene Dibromide	1.0	U	25.0	24.0		ug/L		96	69 - 125	4	14
1,2-Dichlorobenzene	1.0	U	25.0	22.2		ug/L		89	73 - 120	5	14

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QC Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183469-1

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

Lab Sample ID: 240-183469-8 MSD

Client Sample ID: GW-11223416-041123-SK-008

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 569777

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,2-Dichloroethane	1.0	U	25.0	22.0		ug/L		88	63 - 126	6	12
1,2-Dichloropropane	1.0	U	25.0	22.8		ug/L		91	69 - 130	1	13
1,3-Dichlorobenzene	1.0	U	25.0	21.4		ug/L		86	73 - 120	2	14
1,4-Dichlorobenzene	1.0	U	25.0	21.4		ug/L		85	74 - 120	1	15
2-Butanone (MEK)	10	U	50.0	53.7		ug/L		107	40 - 151	19	20
2-Hexanone	10	U	50.0	47.0		ug/L		94	35 - 156	2	17
4-Methyl-2-pentanone (MIBK)	10	U	50.0	47.1		ug/L		94	31 - 153	1	15
Acetone	10	U F2	50.0	47.0	F2	ug/L		94	33 - 149	46	34
Benzene	1.0	U	25.0	23.2		ug/L		93	64 - 128	0	14
Dichlorobromomethane	1.0	U	25.0	22.7		ug/L		91	62 - 125	4	13
Bromoform	1.0	U	25.0	20.8		ug/L		83	47 - 125	5	15
Bromomethane	1.0	U	12.5	11.0		ug/L		88	28 - 150	2	26
Carbon disulfide	1.0	U	25.0	22.4		ug/L		90	38 - 140	3	23
Carbon tetrachloride	1.0	U	25.0	20.0		ug/L		80	51 - 133	1	24
Chlorobenzene	1.0	U	25.0	21.4		ug/L		86	74 - 121	1	14
Chloroethane	1.0	U	12.5	9.82		ug/L		79	10 - 199	4	30
Chloroform	1.0	U	25.0	23.1		ug/L		92	70 - 122	2	14
Chloromethane	1.0	U	12.5	10.8		ug/L		87	32 - 149	6	27
cis-1,2-Dichloroethene	1.0	U	25.0	23.5		ug/L		94	66 - 128	4	14
cis-1,3-Dichloropropene	1.0	U	25.0	21.7		ug/L		87	47 - 125	5	13
Cyclohexane	1.0	U	25.0	20.5		ug/L		82	42 - 147	11	35
Chlorodibromomethane	1.0	U	25.0	21.5		ug/L		86	65 - 120	5	13
Dichlorodifluoromethane	1.0	U	12.5	9.82		ug/L		79	38 - 139	31	35
Ethylbenzene	1.0	U	25.0	21.2		ug/L		85	67 - 127	5	15
Isopropylbenzene	1.0	U	25.0	21.6		ug/L		86	64 - 129	1	18
Methyl acetate	10	U F2	50.0	41.2	F2	ug/L		82	37 - 155	19	18
Methyl tert-butyl ether	1.0	U	25.0	23.1		ug/L		92	47 - 134	11	16
Methylcyclohexane	1.0	U	25.0	21.7		ug/L		87	39 - 144	11	35
Methylene Chloride	5.0	U	25.0	22.8		ug/L		91	62 - 129	1	17
Styrene	1.0	U	25.0	22.5		ug/L		90	70 - 139	1	18
Tetrachloroethene	1.0	U	25.0	23.0		ug/L		92	62 - 131	1	20
Toluene	1.0	U	25.0	21.7		ug/L		87	58 - 135	1	14
trans-1,2-Dichloroethene	1.0	U	25.0	22.5		ug/L		90	56 - 136	0	15
trans-1,3-Dichloropropene	1.0	U	25.0	20.6		ug/L		83	47 - 120	4	14
Trichloroethene	40		25.0	55.1		ug/L		62	61 - 124	1	15
Trichlorofluoromethane	1.0	U	12.5	10.1		ug/L		81	24 - 177	16	34
Vinyl chloride	1.0	U	12.5	10.3		ug/L		82	43 - 157	3	24
Xylenes, Total	2.0	U	50.0	43.3		ug/L		87	71 - 123	0	15
m-Xylene & p-Xylene	2.0	U	25.0	21.7		ug/L		87	71 - 123	2	16
o-Xylene	1.0	U	25.0	21.6		ug/L		87	70 - 125	1	15

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Toluene-d8 (Surr)	97		78 - 122
Dibromofluoromethane (Surr)	98		73 - 120
4-Bromofluorobenzene (Surr)	99		56 - 136
1,2-Dichloroethane-d4 (Surr)	99		62 - 137

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QC Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183469-1

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

Lab Sample ID: MB 240-570323/8

Matrix: Water

Analysis Batch: 570323

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,1,1-Trichloroethane	1.0	U	1.0	0.48	ug/L			04/21/23 13:09	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.60	ug/L			04/21/23 13:09	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			04/21/23 13:09	1
1,1,2-Trichloroethane	1.0	U	1.0	0.48	ug/L			04/21/23 13:09	1
1,1-Dichloroethane	1.0	U	1.0	0.47	ug/L			04/21/23 13:09	1
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			04/21/23 13:09	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.77	ug/L			04/21/23 13:09	1
1,2-Dibromo-3-Chloropropane	2.0	U	2.0	0.91	ug/L			04/21/23 13:09	1
Ethylene Dibromide	1.0	U	1.0	0.41	ug/L			04/21/23 13:09	1
1,2-Dichlorobenzene	1.0	U	1.0	0.48	ug/L			04/21/23 13:09	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			04/21/23 13:09	1
1,2-Dichloropropane	1.0	U	1.0	0.47	ug/L			04/21/23 13:09	1
1,3-Dichlorobenzene	1.0	U	1.0	0.45	ug/L			04/21/23 13:09	1
1,4-Dichlorobenzene	1.0	U	1.0	0.41	ug/L			04/21/23 13:09	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			04/21/23 13:09	1
2-Hexanone	10	U	10	1.1	ug/L			04/21/23 13:09	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.99	ug/L			04/21/23 13:09	1
Acetone	10	U	10	5.4	ug/L			04/21/23 13:09	1
Benzene	1.0	U	1.0	0.42	ug/L			04/21/23 13:09	1
Dichlorobromomethane	1.0	U	1.0	0.17	ug/L			04/21/23 13:09	1
Bromoform	1.0	U	1.0	0.76	ug/L			04/21/23 13:09	1
Bromomethane	1.0	U	1.0	0.42	ug/L			04/21/23 13:09	1
Carbon disulfide	1.0	U	1.0	0.59	ug/L			04/21/23 13:09	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			04/21/23 13:09	1
Chlorobenzene	1.0	U	1.0	0.38	ug/L			04/21/23 13:09	1
Chloroethane	1.0	U	1.0	0.83	ug/L			04/21/23 13:09	1
Chloroform	1.0	U	1.0	0.47	ug/L			04/21/23 13:09	1
Chloromethane	1.0	U	1.0	0.63	ug/L			04/21/23 13:09	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			04/21/23 13:09	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			04/21/23 13:09	1
Cyclohexane	1.0	U	1.0	0.48	ug/L			04/21/23 13:09	1
Chlorodibromomethane	1.0	U	1.0	0.39	ug/L			04/21/23 13:09	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			04/21/23 13:09	1
Ethylbenzene	1.0	U	1.0	0.42	ug/L			04/21/23 13:09	1
Isopropylbenzene	1.0	U	1.0	0.49	ug/L			04/21/23 13:09	1
Methyl acetate	10	U	10	1.7	ug/L			04/21/23 13:09	1
Methyl tert-butyl ether	1.0	U	1.0	0.47	ug/L			04/21/23 13:09	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			04/21/23 13:09	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			04/21/23 13:09	1
Styrene	1.0	U	1.0	0.45	ug/L			04/21/23 13:09	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			04/21/23 13:09	1
Toluene	1.0	U	1.0	0.44	ug/L			04/21/23 13:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			04/21/23 13:09	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			04/21/23 13:09	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			04/21/23 13:09	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			04/21/23 13:09	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			04/21/23 13:09	1
Xylenes, Total	2.0	U	2.0	0.42	ug/L			04/21/23 13:09	1

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QC Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183469-1

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

Lab Sample ID: MB 240-570323/8

Matrix: Water

Analysis Batch: 570323

Client Sample ID: Method Blank

Prep Type: Total/NA

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	100		78 - 122		04/21/23 13:09	1
Dibromofluoromethane (Surr)	101		73 - 120		04/21/23 13:09	1
4-Bromofluorobenzene (Surr)	96		56 - 136		04/21/23 13:09	1
1,2-Dichloroethane-d4 (Surr)	104		62 - 137		04/21/23 13:09	1

Lab Sample ID: LCS 240-570323/5

Matrix: Water

Analysis Batch: 570323

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,1-Trichloroethane	25.0	24.9		ug/L		100	64 - 131
1,1,1,2-Tetrachloroethane	25.0	26.7		ug/L		107	58 - 157
1,1,2-Trichloro-1,2,2-trifluoroethane	25.0	23.6		ug/L		95	51 - 146
1,1,2-Trichloroethane	25.0	26.1		ug/L		104	70 - 138
1,1-Dichloroethane	25.0	23.1		ug/L		92	72 - 127
1,1-Dichloroethene	25.0	23.3		ug/L		93	63 - 134
1,2,4-Trichlorobenzene	25.0	23.1		ug/L		93	44 - 147
1,2-Dibromo-3-Chloropropane	25.0	25.4		ug/L		101	53 - 135
Ethylene Dibromide	25.0	25.3		ug/L		101	71 - 134
1,2-Dichlorobenzene	25.0	23.4		ug/L		94	78 - 120
1,2-Dichloroethane	25.0	23.4		ug/L		93	66 - 128
1,2-Dichloropropane	25.0	24.7		ug/L		99	75 - 133
1,3-Dichlorobenzene	25.0	24.0		ug/L		96	80 - 120
1,4-Dichlorobenzene	25.0	23.4		ug/L		94	80 - 120
2-Butanone (MEK)	50.0	58.3		ug/L		117	54 - 156
2-Hexanone	50.0	52.8		ug/L		106	43 - 167
4-Methyl-2-pentanone (MIBK)	50.0	51.6		ug/L		103	46 - 158
Acetone	50.0	55.4	E	ug/L		111	50 - 149
Benzene	25.0	25.2		ug/L		101	77 - 123
Dichlorobromomethane	25.0	25.2		ug/L		101	69 - 126
Bromoform	25.0	28.3		ug/L		113	57 - 129
Bromomethane	12.5	12.5		ug/L		100	36 - 142
Carbon disulfide	25.0	26.2		ug/L		105	43 - 140
Carbon tetrachloride	25.0	24.8		ug/L		99	55 - 137
Chlorobenzene	25.0	24.1		ug/L		96	80 - 121
Chloroethane	12.5	11.4		ug/L		91	38 - 152
Chloroform	25.0	24.2		ug/L		97	74 - 122
Chloromethane	12.5	11.1		ug/L		89	47 - 143
cis-1,2-Dichloroethene	25.0	24.7		ug/L		99	77 - 123
cis-1,3-Dichloropropene	25.0	25.1		ug/L		100	64 - 130
Cyclohexane	25.0	23.7		ug/L		95	58 - 146
Chlorodibromomethane	25.0	25.5		ug/L		102	70 - 124
Dichlorodifluoromethane	12.5	10.1		ug/L		81	34 - 153
Ethylbenzene	25.0	24.4		ug/L		98	80 - 121
Isopropylbenzene	25.0	24.5		ug/L		98	74 - 128
Methyl acetate	50.0	48.0		ug/L		96	42 - 169
Methyl tert-butyl ether	25.0	24.9		ug/L		100	65 - 126
Methylcyclohexane	25.0	25.1		ug/L		100	62 - 136

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QC Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183469-1

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

Lab Sample ID: LCS 240-570323/5

Matrix: Water

Analysis Batch: 570323

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Methylene Chloride	25.0	25.8		ug/L		103	71 - 125
Styrene	25.0	25.2		ug/L		101	80 - 135
Tetrachloroethene	25.0	23.8		ug/L		95	76 - 123
Toluene	25.0	23.9		ug/L		95	80 - 123
trans-1,2-Dichloroethene	25.0	24.1		ug/L		97	75 - 124
trans-1,3-Dichloropropene	25.0	25.2		ug/L		101	57 - 129
Trichloroethene	25.0	23.4		ug/L		93	70 - 122
Trichlorofluoromethane	12.5	11.7		ug/L		94	30 - 170
Vinyl chloride	12.5	10.8		ug/L		86	60 - 144
Xylenes, Total	50.0	48.9		ug/L		98	80 - 121
m-Xylene & p-Xylene	25.0	24.5		ug/L		98	80 - 120
o-Xylene	25.0	24.4		ug/L		97	80 - 123

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Toluene-d8 (Surr)	99		78 - 122
Dibromofluoromethane (Surr)	99		73 - 120
4-Bromofluorobenzene (Surr)	100		56 - 136
1,2-Dichloroethane-d4 (Surr)	100		62 - 137

Surrogate Summary

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183469-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		TOL (78-122)	DBFM (73-120)	BFB (56-136)	DCA (62-137)
240-183469-1	GW-11223416-041023-SK-001	102	101	102	104
240-183469-2	GW-11223416-041023-SK-002	101	100	101	103
240-183469-3	GW-11223416-041023-SK-003	103	100	98	104
240-183469-4	GW-11223416-041023-SK-004	101	100	98	103
240-183469-5	GW-11223416-041023-SK-005	99	99	101	103
240-183469-6	GW-11223416-041123-SK-006	100	100	98	103
240-183469-7	GW-11223416-041123-SK-007	99	98	98	103
240-183469-8	GW-11223416-041123-SK-008	103	103	100	104
240-183469-8 MS	GW-11223416-041123-SK-008	101	100	102	97
240-183469-8 MSD	GW-11223416-041123-SK-008	97	98	99	99
240-183469-9	GW-11223416-041123-SK-009	100	100	97	104
240-183469-10	GW-11223416-041123-SK-010	99	98	95	103
240-183469-11	GW-11223416-041223-SK-011	100	99	97	104
240-183469-12	GW-11223416-041223-SK-012	99	97	96	103
240-183469-13	GW-11223416-041223-SK-013	101	101	96	105
240-183469-14	TB-11223416-041223-SK	101	101	97	103
LCS 240-569777/5	Lab Control Sample	99	102	101	101
LCS 240-570323/5	Lab Control Sample	99	99	100	100
MB 240-569777/8	Method Blank	96	100	97	101
MB 240-570323/8	Method Blank	100	101	96	104

Surrogate Legend

TOL = Toluene-d8 (Surr)

DBFM = Dibromofluoromethane (Surr)

BFB = 4-Bromofluorobenzene (Surr)

DCA = 1,2-Dichloroethane-d4 (Surr)

Lab Chronicle

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183469-1

Client Sample ID: GW-11223416-041023-SK-001

Lab Sample ID: 240-183469-1

Date Collected: 04/10/23 10:25

Matrix: Water

Date Received: 04/13/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	569777	SAM	EET CAN	04/18/23 16:49

Client Sample ID: GW-11223416-041023-SK-002

Lab Sample ID: 240-183469-2

Date Collected: 04/10/23 11:15

Matrix: Water

Date Received: 04/13/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	569777	SAM	EET CAN	04/18/23 17:14

Client Sample ID: GW-11223416-041023-SK-003

Lab Sample ID: 240-183469-3

Date Collected: 04/10/23 12:40

Matrix: Water

Date Received: 04/13/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	569777	SAM	EET CAN	04/18/23 17:39

Client Sample ID: GW-11223416-041023-SK-004

Lab Sample ID: 240-183469-4

Date Collected: 04/10/23 14:00

Matrix: Water

Date Received: 04/13/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	569777	SAM	EET CAN	04/18/23 18:04

Client Sample ID: GW-11223416-041023-SK-005

Lab Sample ID: 240-183469-5

Date Collected: 04/10/23 14:25

Matrix: Water

Date Received: 04/13/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	569777	SAM	EET CAN	04/18/23 18:29

Client Sample ID: GW-11223416-041123-SK-006

Lab Sample ID: 240-183469-6

Date Collected: 04/11/23 10:20

Matrix: Water

Date Received: 04/13/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	569777	SAM	EET CAN	04/18/23 18:54

Client Sample ID: GW-11223416-041123-SK-007

Lab Sample ID: 240-183469-7

Date Collected: 04/11/23 11:15

Matrix: Water

Date Received: 04/13/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	569777	SAM	EET CAN	04/18/23 19:19

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Lab Chronicle

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183469-1

Client Sample ID: GW-11223416-041123-SK-008

Lab Sample ID: 240-183469-8

Date Collected: 04/11/23 13:25

Matrix: Water

Date Received: 04/13/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	569777	SAM	EET CAN	04/18/23 19:44

Client Sample ID: GW-11223416-041123-SK-009

Lab Sample ID: 240-183469-9

Date Collected: 04/11/23 12:05

Matrix: Water

Date Received: 04/13/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	569777	SAM	EET CAN	04/18/23 20:09

Client Sample ID: GW-11223416-041123-SK-010

Lab Sample ID: 240-183469-10

Date Collected: 04/11/23 14:00

Matrix: Water

Date Received: 04/13/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	569777	SAM	EET CAN	04/18/23 20:34

Client Sample ID: GW-11223416-041223-SK-011

Lab Sample ID: 240-183469-11

Date Collected: 04/12/23 09:55

Matrix: Water

Date Received: 04/13/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	569777	SAM	EET CAN	04/18/23 20:59

Client Sample ID: GW-11223416-041223-SK-012

Lab Sample ID: 240-183469-12

Date Collected: 04/12/23 10:50

Matrix: Water

Date Received: 04/13/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	569777	SAM	EET CAN	04/18/23 21:24

Client Sample ID: GW-11223416-041223-SK-013

Lab Sample ID: 240-183469-13

Date Collected: 04/12/23 11:50

Matrix: Water

Date Received: 04/13/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	569777	SAM	EET CAN	04/18/23 21:49

Client Sample ID: TB-11223416-041223-SK

Lab Sample ID: 240-183469-14

Date Collected: 04/12/23 00:00

Matrix: Water

Date Received: 04/13/23 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	570323	SAM	EET CAN	04/21/23 14:24

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

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Accreditation/Certification Summary

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183469-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23 *
Connecticut	State	PH-0590	06-29-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-28-24
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23 *
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-23 *
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-28-24
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

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4.6/4.8

Chain of Custody Record

MICHIGAN
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Environment Testing

Client Information		Sampler: <u>Scott Kippen</u>		Lab PM: <u>Heckler, Denise D</u>	Carrier Tracking No(s): <u>FedEx</u>	COC No: <u>240-106311-38061.2</u>						
Client Contact: <u>Mr. James Abston</u>		Phone: <u>248 756-7587</u>		E-Mail: <u>Denise Heckler@eurofins.com</u>	State of Origin: <u>Michigan</u>	Page 2 of 4						
Company: <u>GHD Services Inc.</u>		PWSID		Job #								
Address: <u>26850 Haggerty Rd.</u>		Due Date Requested:										
City: <u>Farmington Hills</u>		TAT Requested (days): <u>2 week - standard</u>										
State, Zip: <u>MI, 48331</u>		Compliance Project: <u>Δ Yes Δ No</u>										
Phone: <u>248-893-3381(Tel)</u>		Purchase Order Requested										
Email: <u>James.abston@ghd.com</u>		PO #: <u>11223416</u>										
Project Name: <u>11223416, PCC Validation</u>		WO #: <u>24020174</u>										
Site: <u>Pontiac, MI</u>		SSOW#										
Sample Identification		Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (Water, Soil, Other)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	60208 - Al, Pb, V	60208 - Al, Pb, V-Diss FF	8260D - VOCs	Total Number of Containers	Special Instructions/Note:
GW-11223416-041023-SK-001		4-10-23	10:25	G	Water						3	
↓ -002			11:15		Water						3	
↓ -003			12:40		Water						3	
↓ -004			14:00		Water						3	
↓ -005			14:45		Water						3	
GW-11223416-041123-SK-006		4-11-23	16:20		Water						3	
↓ -007			11:15		Water						3	
↓ -008			13:25		Water	X					9	
↓ -009			12:05		Water						3	
↓ -010			14:00		Water						3	
GW-11223416-041223-SK-011		4-12-23	9:55		Water						3	
Possible Hazard Identification		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)										
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown ☐ Radiological		☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months										
Deliverable Requested: I, II, III, IV, Other (specify)		Special Instructions/QC Requirements:										
Empty Kit Relinquished by		Date:		Time:		Method of Shipment:						
Relinquished by: <u>R. Scott R</u>		Date/Time: <u>4-12-23 16:50</u>	Company: <u>GHD</u>		Received by: <u>Mandy Bl</u>		Date/Time: <u>4-12-23 9:30</u>	Company: <u>cedr</u>				
Relinquished by:		Date/Time:	Company:		Received by:		Date/Time:	Company:				
Relinquished by:		Date/Time:	Company:		Received by:		Date/Time:	Company:				
Custody Seals Intact: <u>Δ Yes Δ No</u>		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:								

Eurofins Canton
180 S. Van Buren Avenue
Barberton, OH 44203
Phone: 330-497-9396 Fax: 330-497-9397

Chain of Custody Record

MICHIGAN
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Environment Testing

[illegible]

Eurofins - Canton Sample Receipt Form/Narrative
Barberton Facility

Login # : 183469

Client GHD Site Name _____ Cooler unpacked by: Mamaly
Cooler Received on 4-13-23 Opened on 4-13-23
FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # ee11x Foam Box _____ Client Cooler Box _____ Other _____
Packing material used: Bubble Wrap Foam Plastic Bag None Other _____
COOLANT: Wet Ice Blue Ice Dry Ice Water None _____

1. Cooler temperature upon receipt _____ ☐ See Multiple Cooler Form
IR GUN # 13 (CF +2 °C) Observed Cooler Temp. 4.6 °C Corrected Cooler Temp. 4.8 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity _____
-Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No NA
-Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No MB
4. Did custody papers accompany the sample(s)? Yes No 4-13-23
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? Yes No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)? Yes No
10. Were correct bottle(s) used for the test(s) indicated? Yes No
11. Sufficient quantity received to perform indicated analyses? Yes No
12. Are these work share samples and all listed on the COC?
If yes, Questions 13-17 have been checked at the originating laboratory.
13. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC203864
14. Were VOAs on the COC? Yes No
15. Were air bubbles >6 mm in any VOA vials? Yes No NA  Larger than this.
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____ Yes No
17. Was a LL Hg or Me Hg trip blank present? Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other _____
Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page Samples processed by: _____

19. SAMPLE CONDITION
Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION
Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____
VOA Sample Preservation - Date/Time VOAs Frozen: _____



ANALYTICAL REPORT

PREPARED FOR

Attn: Mr. James Abston
GHD Services Inc.
26850 Haggerty Rd.
Farmington Hills, Michigan 48331

Generated 4/27/2023 3:19:39 PM

JOB DESCRIPTION

11223416, PCC Validation

JOB NUMBER

240-183576-1

Eurofins Canton

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization



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4/27/2023 3:19:39 PM

Authorized for release by
Denise Heckler, Project Manager II
Denise.Heckler@et.eurofinsus.com
(330)966-9477

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Case Narrative

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183576-1

Job ID: 240-183576-1

Laboratory: Eurofins Canton

Narrative

Job Narrative 240-183576-1

Comments

No additional comments.

Receipt

The samples were received on 4/14/2023 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 4.6° C.

GC/MS VOA

Method 8260D: The continuing calibration verification (CCV) associated with batch 240-570155 recovered above the upper control limit for Bromomethane and Chloroethane. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The associated samples are impacted: GW-11223416-041223-SK-014 (240-183576-1), GW-11223416-041223-SK-015 (240-183576-2), GW-11223416-041223-SK-016 (240-183576-3), GW-11223416-041323-SK-017 (240-183576-4), GW-11223416-041323-SK-018 (240-183576-5), GW-11223416-041323-SK-019 (240-183576-6), GW-11223416-041323-SK-019 (240-183576-6[MS]), GW-11223416-041323-SK-019 (240-183576-6[MSD]) and TB-11223416-041323-SK (240-183576-7).

Method 8260D: The continuing calibration verification (CCV) analyzed in batch 240-570741 was outside the method criteria for the following analyte(s): Bromomethane. A CCV standard at or below the reporting limit (RL) was analyzed with the affected samples and found to be acceptable. As indicated in the reference method, sample analysis may proceed; however, any detection for the affected analyte(s) is considered estimated.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals

Method 6020B: Some requested practical quantitation limits (PQLs) fall below the laboratory's verified standard quantitation limit. The continuing calibration blanks and method blanks may not support the lower PQL.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Definitions/Glossary

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183576-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
□	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Sample Summary

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183576-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-183576-1	GW-11223416-041223-SK-014	Water	04/12/23 12:10	04/14/23 10:00
240-183576-2	GW-11223416-041223-SK-015	Water	04/12/23 12:45	04/14/23 10:00
240-183576-3	GW-11223416-041223-SK-016	Water	04/12/23 13:50	04/14/23 10:00
240-183576-4	GW-11223416-041323-SK-017	Water	04/13/23 10:25	04/14/23 10:00
240-183576-5	GW-11223416-041323-SK-018	Water	04/13/23 11:35	04/14/23 10:00
240-183576-6	GW-11223416-041323-SK-019	Water	04/13/23 12:50	04/14/23 10:00
240-183576-7	TB-11223416-041323-SK	Water	04/13/23 00:00	04/14/23 10:00

Detection Summary

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183576-1

Client Sample ID: GW-11223416-041223-SK-014

Lab Sample ID: 240-183576-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	0.46	J	1.0	0.44	ug/L	1		8260D	Total/NA

Client Sample ID: GW-11223416-041223-SK-015

Lab Sample ID: 240-183576-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	47	J	50	34	ug/L	1		6020B	Total
Aluminum	44	J	50	34	ug/L	1		6020B	Recoverable
									Dissolved

Client Sample ID: GW-11223416-041223-SK-016

Lab Sample ID: 240-183576-3

No Detections.

Client Sample ID: GW-11223416-041323-SK-017

Lab Sample ID: 240-183576-4

No Detections.

Client Sample ID: GW-11223416-041323-SK-018

Lab Sample ID: 240-183576-5

No Detections.

Client Sample ID: GW-11223416-041323-SK-019

Lab Sample ID: 240-183576-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	180		50	34	ug/L	1		6020B	Total
Aluminum	190		50	34	ug/L	1		6020B	Recoverable
Vanadium	0.88	J	4.0	0.82	ug/L	1		6020B	Dissolved

Client Sample ID: TB-11223416-041323-SK

Lab Sample ID: 240-183576-7

No Detections.

This Detection Summary does not include radiochemical test results.

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Method Summary

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183576-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CAN
6020B	Metals (ICP/MS)	SW846	EET CAN
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	EET CAN
5030C	Purge and Trap	SW846	EET CAN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183576-1

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Client Sample ID: GW-11223416-041223-SK-014

Date Collected: 04/12/23 12:10

Date Received: 04/14/23 10:00

Lab Sample ID: 240-183576-1

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	0.48	ug/L			04/20/23 21:35	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.60	ug/L			04/20/23 21:35	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			04/20/23 21:35	1
1,1,2-Trichloroethane	1.0	U	1.0	0.48	ug/L			04/20/23 21:35	1
1,1-Dichloroethane	1.0	U	1.0	0.47	ug/L			04/20/23 21:35	1
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			04/20/23 21:35	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.77	ug/L			04/20/23 21:35	1
1,2-Dibromo-3-Chloropropane	2.0	U	2.0	0.91	ug/L			04/20/23 21:35	1
Ethylene Dibromide	1.0	U	1.0	0.41	ug/L			04/20/23 21:35	1
1,2-Dichlorobenzene	1.0	U	1.0	0.48	ug/L			04/20/23 21:35	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			04/20/23 21:35	1
1,2-Dichloropropane	1.0	U	1.0	0.47	ug/L			04/20/23 21:35	1
1,3-Dichlorobenzene	1.0	U	1.0	0.45	ug/L			04/20/23 21:35	1
1,4-Dichlorobenzene	1.0	U	1.0	0.41	ug/L			04/20/23 21:35	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			04/20/23 21:35	1
2-Hexanone	10	U	10	1.1	ug/L			04/20/23 21:35	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.99	ug/L			04/20/23 21:35	1
Acetone	10	U	10	5.4	ug/L			04/20/23 21:35	1
Benzene	1.0	U	1.0	0.42	ug/L			04/20/23 21:35	1
Dichlorobromomethane	1.0	U	1.0	0.17	ug/L			04/20/23 21:35	1
Bromoform	1.0	U	1.0	0.76	ug/L			04/20/23 21:35	1
Bromomethane	1.0	U	1.0	0.42	ug/L			04/20/23 21:35	1
Carbon disulfide	1.0	U	1.0	0.59	ug/L			04/20/23 21:35	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			04/20/23 21:35	1
Chlorobenzene	1.0	U	1.0	0.38	ug/L			04/20/23 21:35	1
Chloroethane	1.0	U	1.0	0.83	ug/L			04/20/23 21:35	1
Chloroform	1.0	U	1.0	0.47	ug/L			04/20/23 21:35	1
Chloromethane	1.0	U	1.0	0.63	ug/L			04/20/23 21:35	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			04/20/23 21:35	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			04/20/23 21:35	1
Cyclohexane	1.0	U	1.0	0.48	ug/L			04/20/23 21:35	1
Chlorodibromomethane	1.0	U	1.0	0.39	ug/L			04/20/23 21:35	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			04/20/23 21:35	1
Ethylbenzene	1.0	U	1.0	0.42	ug/L			04/20/23 21:35	1
Isopropylbenzene	1.0	U	1.0	0.49	ug/L			04/20/23 21:35	1
Methyl acetate	10	U	10	1.7	ug/L			04/20/23 21:35	1
Methyl tert-butyl ether	1.0	U	1.0	0.47	ug/L			04/20/23 21:35	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			04/20/23 21:35	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			04/20/23 21:35	1
Styrene	1.0	U	1.0	0.45	ug/L			04/20/23 21:35	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			04/20/23 21:35	1
Toluene	1.0	U	1.0	0.44	ug/L			04/20/23 21:35	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			04/20/23 21:35	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			04/20/23 21:35	1
Trichloroethene	0.46	J	1.0	0.44	ug/L			04/20/23 21:35	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			04/20/23 21:35	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			04/20/23 21:35	1
Xylenes, Total	2.0	U	2.0	0.42	ug/L			04/20/23 21:35	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183576-1

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>Toluene-d8 (Surr)</i>	99		78 - 122		04/20/23 21:35	1
<i>Dibromofluoromethane (Surr)</i>	94		73 - 120		04/20/23 21:35	1
<i>4-Bromofluorobenzene (Surr)</i>	85		56 - 136		04/20/23 21:35	1
<i>1,2-Dichloroethane-d4 (Surr)</i>	101		62 - 137		04/20/23 21:35	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183576-1

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Client Sample ID: GW-11223416-041223-SK-015

Date Collected: 04/12/23 12:45

Date Received: 04/14/23 10:00

Lab Sample ID: 240-183576-2

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	0.48	ug/L			04/20/23 16:36	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.60	ug/L			04/20/23 16:36	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			04/20/23 16:36	1
1,1,2-Trichloroethane	1.0	U	1.0	0.48	ug/L			04/20/23 16:36	1
1,1-Dichloroethane	1.0	U	1.0	0.47	ug/L			04/20/23 16:36	1
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			04/20/23 16:36	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.77	ug/L			04/20/23 16:36	1
1,2-Dibromo-3-Chloropropane	2.0	U	2.0	0.91	ug/L			04/20/23 16:36	1
Ethylene Dibromide	1.0	U	1.0	0.41	ug/L			04/20/23 16:36	1
1,2-Dichlorobenzene	1.0	U	1.0	0.48	ug/L			04/20/23 16:36	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			04/20/23 16:36	1
1,2-Dichloropropane	1.0	U	1.0	0.47	ug/L			04/20/23 16:36	1
1,3-Dichlorobenzene	1.0	U	1.0	0.45	ug/L			04/20/23 16:36	1
1,4-Dichlorobenzene	1.0	U	1.0	0.41	ug/L			04/20/23 16:36	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			04/20/23 16:36	1
2-Hexanone	10	U	10	1.1	ug/L			04/20/23 16:36	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.99	ug/L			04/20/23 16:36	1
Acetone	10	U	10	5.4	ug/L			04/20/23 16:36	1
Benzene	1.0	U	1.0	0.42	ug/L			04/20/23 16:36	1
Dichlorobromomethane	1.0	U	1.0	0.17	ug/L			04/20/23 16:36	1
Bromoform	1.0	U	1.0	0.76	ug/L			04/20/23 16:36	1
Bromomethane	1.0	U	1.0	0.42	ug/L			04/20/23 16:36	1
Carbon disulfide	1.0	U	1.0	0.59	ug/L			04/20/23 16:36	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			04/20/23 16:36	1
Chlorobenzene	1.0	U	1.0	0.38	ug/L			04/20/23 16:36	1
Chloroethane	1.0	U	1.0	0.83	ug/L			04/20/23 16:36	1
Chloroform	1.0	U	1.0	0.47	ug/L			04/20/23 16:36	1
Chloromethane	1.0	U	1.0	0.63	ug/L			04/20/23 16:36	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			04/20/23 16:36	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			04/20/23 16:36	1
Cyclohexane	1.0	U	1.0	0.48	ug/L			04/20/23 16:36	1
Chlorodibromomethane	1.0	U	1.0	0.39	ug/L			04/20/23 16:36	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			04/20/23 16:36	1
Ethylbenzene	1.0	U	1.0	0.42	ug/L			04/20/23 16:36	1
Isopropylbenzene	1.0	U	1.0	0.49	ug/L			04/20/23 16:36	1
Methyl acetate	10	U	10	1.7	ug/L			04/20/23 16:36	1
Methyl tert-butyl ether	1.0	U	1.0	0.47	ug/L			04/20/23 16:36	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			04/20/23 16:36	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			04/20/23 16:36	1
Styrene	1.0	U	1.0	0.45	ug/L			04/20/23 16:36	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			04/20/23 16:36	1
Toluene	1.0	U	1.0	0.44	ug/L			04/20/23 16:36	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			04/20/23 16:36	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			04/20/23 16:36	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			04/20/23 16:36	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			04/20/23 16:36	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			04/20/23 16:36	1
Xylenes, Total	2.0	U	2.0	0.42	ug/L			04/20/23 16:36	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183576-1

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>Toluene-d8 (Surr)</i>	99		78 - 122		04/20/23 16:36	1
<i>Dibromofluoromethane (Surr)</i>	94		73 - 120		04/20/23 16:36	1
<i>4-Bromofluorobenzene (Surr)</i>	86		56 - 136		04/20/23 16:36	1
<i>1,2-Dichloroethane-d4 (Surr)</i>	101		62 - 137		04/20/23 16:36	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183576-1

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Client Sample ID: GW-11223416-041223-SK-016

Date Collected: 04/12/23 13:50

Date Received: 04/14/23 10:00

Lab Sample ID: 240-183576-3

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	0.48	ug/L			04/20/23 17:01	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.60	ug/L			04/20/23 17:01	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			04/20/23 17:01	1
1,1,2-Trichloroethane	1.0	U	1.0	0.48	ug/L			04/20/23 17:01	1
1,1-Dichloroethane	1.0	U	1.0	0.47	ug/L			04/20/23 17:01	1
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			04/20/23 17:01	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.77	ug/L			04/20/23 17:01	1
1,2-Dibromo-3-Chloropropane	2.0	U	2.0	0.91	ug/L			04/20/23 17:01	1
Ethylene Dibromide	1.0	U	1.0	0.41	ug/L			04/20/23 17:01	1
1,2-Dichlorobenzene	1.0	U	1.0	0.48	ug/L			04/20/23 17:01	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			04/20/23 17:01	1
1,2-Dichloropropane	1.0	U	1.0	0.47	ug/L			04/20/23 17:01	1
1,3-Dichlorobenzene	1.0	U	1.0	0.45	ug/L			04/20/23 17:01	1
1,4-Dichlorobenzene	1.0	U	1.0	0.41	ug/L			04/20/23 17:01	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			04/20/23 17:01	1
2-Hexanone	10	U	10	1.1	ug/L			04/20/23 17:01	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.99	ug/L			04/20/23 17:01	1
Acetone	10	U	10	5.4	ug/L			04/20/23 17:01	1
Benzene	1.0	U	1.0	0.42	ug/L			04/20/23 17:01	1
Dichlorobromomethane	1.0	U	1.0	0.17	ug/L			04/20/23 17:01	1
Bromoform	1.0	U	1.0	0.76	ug/L			04/20/23 17:01	1
Bromomethane	1.0	U	1.0	0.42	ug/L			04/20/23 17:01	1
Carbon disulfide	1.0	U	1.0	0.59	ug/L			04/20/23 17:01	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			04/20/23 17:01	1
Chlorobenzene	1.0	U	1.0	0.38	ug/L			04/20/23 17:01	1
Chloroethane	1.0	U	1.0	0.83	ug/L			04/20/23 17:01	1
Chloroform	1.0	U	1.0	0.47	ug/L			04/20/23 17:01	1
Chloromethane	1.0	U	1.0	0.63	ug/L			04/20/23 17:01	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			04/20/23 17:01	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			04/20/23 17:01	1
Cyclohexane	1.0	U	1.0	0.48	ug/L			04/20/23 17:01	1
Chlorodibromomethane	1.0	U	1.0	0.39	ug/L			04/20/23 17:01	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			04/20/23 17:01	1
Ethylbenzene	1.0	U	1.0	0.42	ug/L			04/20/23 17:01	1
Isopropylbenzene	1.0	U	1.0	0.49	ug/L			04/20/23 17:01	1
Methyl acetate	10	U	10	1.7	ug/L			04/20/23 17:01	1
Methyl tert-butyl ether	1.0	U	1.0	0.47	ug/L			04/20/23 17:01	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			04/20/23 17:01	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			04/20/23 17:01	1
Styrene	1.0	U	1.0	0.45	ug/L			04/20/23 17:01	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			04/20/23 17:01	1
Toluene	1.0	U	1.0	0.44	ug/L			04/20/23 17:01	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			04/20/23 17:01	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			04/20/23 17:01	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			04/20/23 17:01	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			04/20/23 17:01	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			04/20/23 17:01	1
Xylenes, Total	2.0	U	2.0	0.42	ug/L			04/20/23 17:01	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183576-1

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>Toluene-d8 (Surr)</i>	99		78 - 122		04/20/23 17:01	1
<i>Dibromofluoromethane (Surr)</i>	92		73 - 120		04/20/23 17:01	1
<i>4-Bromofluorobenzene (Surr)</i>	84		56 - 136		04/20/23 17:01	1
<i>1,2-Dichloroethane-d4 (Surr)</i>	98		62 - 137		04/20/23 17:01	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183576-1

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Client Sample ID: GW-11223416-041323-SK-017

Date Collected: 04/13/23 10:25

Date Received: 04/14/23 10:00

Lab Sample ID: 240-183576-4

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	0.48	ug/L			04/20/23 17:26	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.60	ug/L			04/20/23 17:26	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			04/20/23 17:26	1
1,1,2-Trichloroethane	1.0	U	1.0	0.48	ug/L			04/20/23 17:26	1
1,1-Dichloroethane	1.0	U	1.0	0.47	ug/L			04/20/23 17:26	1
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			04/20/23 17:26	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.77	ug/L			04/20/23 17:26	1
1,2-Dibromo-3-Chloropropane	2.0	U	2.0	0.91	ug/L			04/20/23 17:26	1
Ethylene Dibromide	1.0	U	1.0	0.41	ug/L			04/20/23 17:26	1
1,2-Dichlorobenzene	1.0	U	1.0	0.48	ug/L			04/20/23 17:26	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			04/20/23 17:26	1
1,2-Dichloropropane	1.0	U	1.0	0.47	ug/L			04/20/23 17:26	1
1,3-Dichlorobenzene	1.0	U	1.0	0.45	ug/L			04/20/23 17:26	1
1,4-Dichlorobenzene	1.0	U	1.0	0.41	ug/L			04/20/23 17:26	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			04/20/23 17:26	1
2-Hexanone	10	U	10	1.1	ug/L			04/20/23 17:26	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.99	ug/L			04/20/23 17:26	1
Acetone	10	U	10	5.4	ug/L			04/20/23 17:26	1
Benzene	1.0	U	1.0	0.42	ug/L			04/20/23 17:26	1
Dichlorobromomethane	1.0	U	1.0	0.17	ug/L			04/20/23 17:26	1
Bromoform	1.0	U	1.0	0.76	ug/L			04/20/23 17:26	1
Bromomethane	1.0	U	1.0	0.42	ug/L			04/20/23 17:26	1
Carbon disulfide	1.0	U	1.0	0.59	ug/L			04/20/23 17:26	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			04/20/23 17:26	1
Chlorobenzene	1.0	U	1.0	0.38	ug/L			04/20/23 17:26	1
Chloroethane	1.0	U	1.0	0.83	ug/L			04/20/23 17:26	1
Chloroform	1.0	U	1.0	0.47	ug/L			04/20/23 17:26	1
Chloromethane	1.0	U	1.0	0.63	ug/L			04/20/23 17:26	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			04/20/23 17:26	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			04/20/23 17:26	1
Cyclohexane	1.0	U	1.0	0.48	ug/L			04/20/23 17:26	1
Chlorodibromomethane	1.0	U	1.0	0.39	ug/L			04/20/23 17:26	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			04/20/23 17:26	1
Ethylbenzene	1.0	U	1.0	0.42	ug/L			04/20/23 17:26	1
Isopropylbenzene	1.0	U	1.0	0.49	ug/L			04/20/23 17:26	1
Methyl acetate	10	U	10	1.7	ug/L			04/20/23 17:26	1
Methyl tert-butyl ether	1.0	U	1.0	0.47	ug/L			04/20/23 17:26	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			04/20/23 17:26	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			04/20/23 17:26	1
Styrene	1.0	U	1.0	0.45	ug/L			04/20/23 17:26	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			04/20/23 17:26	1
Toluene	1.0	U	1.0	0.44	ug/L			04/20/23 17:26	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			04/20/23 17:26	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			04/20/23 17:26	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			04/20/23 17:26	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			04/20/23 17:26	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			04/20/23 17:26	1
Xylenes, Total	2.0	U	2.0	0.42	ug/L			04/20/23 17:26	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183576-1

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>Toluene-d8 (Surr)</i>	99		78 - 122		04/20/23 17:26	1
<i>Dibromofluoromethane (Surr)</i>	92		73 - 120		04/20/23 17:26	1
<i>4-Bromofluorobenzene (Surr)</i>	86		56 - 136		04/20/23 17:26	1
<i>1,2-Dichloroethane-d4 (Surr)</i>	99		62 - 137		04/20/23 17:26	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183576-1

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Client Sample ID: GW-11223416-041323-SK-018

Date Collected: 04/13/23 11:35

Date Received: 04/14/23 10:00

Lab Sample ID: 240-183576-5

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	0.48	ug/L			04/25/23 17:47	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.60	ug/L			04/25/23 17:47	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			04/25/23 17:47	1
1,1,2-Trichloroethane	1.0	U	1.0	0.48	ug/L			04/25/23 17:47	1
1,1-Dichloroethane	1.0	U	1.0	0.47	ug/L			04/25/23 17:47	1
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			04/25/23 17:47	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.77	ug/L			04/25/23 17:47	1
1,2-Dibromo-3-Chloropropane	2.0	U	2.0	0.91	ug/L			04/25/23 17:47	1
Ethylene Dibromide	1.0	U	1.0	0.41	ug/L			04/25/23 17:47	1
1,2-Dichlorobenzene	1.0	U	1.0	0.48	ug/L			04/25/23 17:47	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			04/25/23 17:47	1
1,2-Dichloropropane	1.0	U	1.0	0.47	ug/L			04/25/23 17:47	1
1,3-Dichlorobenzene	1.0	U	1.0	0.45	ug/L			04/25/23 17:47	1
1,4-Dichlorobenzene	1.0	U	1.0	0.41	ug/L			04/25/23 17:47	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			04/25/23 17:47	1
2-Hexanone	10	U	10	1.1	ug/L			04/25/23 17:47	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.99	ug/L			04/25/23 17:47	1
Acetone	10	U	10	5.4	ug/L			04/25/23 17:47	1
Benzene	1.0	U	1.0	0.42	ug/L			04/25/23 17:47	1
Dichlorobromomethane	1.0	U	1.0	0.17	ug/L			04/25/23 17:47	1
Bromoform	1.0	U	1.0	0.76	ug/L			04/25/23 17:47	1
Bromomethane	1.0	U	1.0	0.42	ug/L			04/25/23 17:47	1
Carbon disulfide	1.0	U	1.0	0.59	ug/L			04/25/23 17:47	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			04/25/23 17:47	1
Chlorobenzene	1.0	U	1.0	0.38	ug/L			04/25/23 17:47	1
Chloroethane	1.0	U	1.0	0.83	ug/L			04/25/23 17:47	1
Chloroform	1.0	U	1.0	0.47	ug/L			04/25/23 17:47	1
Chloromethane	1.0	U	1.0	0.63	ug/L			04/25/23 17:47	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			04/25/23 17:47	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			04/25/23 17:47	1
Cyclohexane	1.0	U	1.0	0.48	ug/L			04/25/23 17:47	1
Chlorodibromomethane	1.0	U	1.0	0.39	ug/L			04/25/23 17:47	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			04/25/23 17:47	1
Ethylbenzene	1.0	U	1.0	0.42	ug/L			04/25/23 17:47	1
Isopropylbenzene	1.0	U	1.0	0.49	ug/L			04/25/23 17:47	1
Methyl acetate	10	U	10	1.7	ug/L			04/25/23 17:47	1
Methyl tert-butyl ether	1.0	U	1.0	0.47	ug/L			04/25/23 17:47	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			04/25/23 17:47	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			04/25/23 17:47	1
Styrene	1.0	U	1.0	0.45	ug/L			04/25/23 17:47	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			04/25/23 17:47	1
Toluene	1.0	U	1.0	0.44	ug/L			04/25/23 17:47	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			04/25/23 17:47	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			04/25/23 17:47	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			04/25/23 17:47	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			04/25/23 17:47	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			04/25/23 17:47	1
Xylenes, Total	2.0	U	2.0	0.42	ug/L			04/25/23 17:47	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183576-1

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>Toluene-d8 (Surr)</i>	102		78 - 122		04/25/23 17:47	1
<i>Dibromofluoromethane (Surr)</i>	109		73 - 120		04/25/23 17:47	1
<i>4-Bromofluorobenzene (Surr)</i>	96		56 - 136		04/25/23 17:47	1
<i>1,2-Dichloroethane-d4 (Surr)</i>	108		62 - 137		04/25/23 17:47	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183576-1

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Client Sample ID: GW-11223416-041323-SK-019

Date Collected: 04/13/23 12:50

Date Received: 04/14/23 10:00

Lab Sample ID: 240-183576-6

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	0.48	ug/L			04/20/23 18:16	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.60	ug/L			04/20/23 18:16	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			04/20/23 18:16	1
1,1,2-Trichloroethane	1.0	U	1.0	0.48	ug/L			04/20/23 18:16	1
1,1-Dichloroethane	1.0	U	1.0	0.47	ug/L			04/20/23 18:16	1
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			04/20/23 18:16	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.77	ug/L			04/20/23 18:16	1
1,2-Dibromo-3-Chloropropane	2.0	U	2.0	0.91	ug/L			04/20/23 18:16	1
Ethylene Dibromide	1.0	U	1.0	0.41	ug/L			04/20/23 18:16	1
1,2-Dichlorobenzene	1.0	U	1.0	0.48	ug/L			04/20/23 18:16	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			04/20/23 18:16	1
1,2-Dichloropropane	1.0	U	1.0	0.47	ug/L			04/20/23 18:16	1
1,3-Dichlorobenzene	1.0	U	1.0	0.45	ug/L			04/20/23 18:16	1
1,4-Dichlorobenzene	1.0	U	1.0	0.41	ug/L			04/20/23 18:16	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			04/20/23 18:16	1
2-Hexanone	10	U	10	1.1	ug/L			04/20/23 18:16	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.99	ug/L			04/20/23 18:16	1
Acetone	10	U	10	5.4	ug/L			04/20/23 18:16	1
Benzene	1.0	U	1.0	0.42	ug/L			04/20/23 18:16	1
Dichlorobromomethane	1.0	U	1.0	0.17	ug/L			04/20/23 18:16	1
Bromoform	1.0	U	1.0	0.76	ug/L			04/20/23 18:16	1
Bromomethane	1.0	U	1.0	0.42	ug/L			04/20/23 18:16	1
Carbon disulfide	1.0	U	1.0	0.59	ug/L			04/20/23 18:16	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			04/20/23 18:16	1
Chlorobenzene	1.0	U	1.0	0.38	ug/L			04/20/23 18:16	1
Chloroethane	1.0	U	1.0	0.83	ug/L			04/20/23 18:16	1
Chloroform	1.0	U	1.0	0.47	ug/L			04/20/23 18:16	1
Chloromethane	1.0	U	1.0	0.63	ug/L			04/20/23 18:16	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			04/20/23 18:16	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			04/20/23 18:16	1
Cyclohexane	1.0	U	1.0	0.48	ug/L			04/20/23 18:16	1
Chlorodibromomethane	1.0	U	1.0	0.39	ug/L			04/20/23 18:16	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			04/20/23 18:16	1
Ethylbenzene	1.0	U	1.0	0.42	ug/L			04/20/23 18:16	1
Isopropylbenzene	1.0	U	1.0	0.49	ug/L			04/20/23 18:16	1
Methyl acetate	10	U	10	1.7	ug/L			04/20/23 18:16	1
Methyl tert-butyl ether	1.0	U	1.0	0.47	ug/L			04/20/23 18:16	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			04/20/23 18:16	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			04/20/23 18:16	1
Styrene	1.0	U	1.0	0.45	ug/L			04/20/23 18:16	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			04/20/23 18:16	1
Toluene	1.0	U	1.0	0.44	ug/L			04/20/23 18:16	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			04/20/23 18:16	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			04/20/23 18:16	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			04/20/23 18:16	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			04/20/23 18:16	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			04/20/23 18:16	1
Xylenes, Total	2.0	U	2.0	0.42	ug/L			04/20/23 18:16	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183576-1

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>Toluene-d8 (Surr)</i>	100		78 - 122		04/20/23 18:16	1
<i>Dibromofluoromethane (Surr)</i>	91		73 - 120		04/20/23 18:16	1
<i>4-Bromofluorobenzene (Surr)</i>	83		56 - 136		04/20/23 18:16	1
<i>1,2-Dichloroethane-d4 (Surr)</i>	97		62 - 137		04/20/23 18:16	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183576-1

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Client Sample ID: TB-11223416-041323-SK

Date Collected: 04/13/23 00:00

Date Received: 04/14/23 10:00

Lab Sample ID: 240-183576-7

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.0	U	1.0	0.48	ug/L			04/20/23 15:22	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.60	ug/L			04/20/23 15:22	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			04/20/23 15:22	1
1,1,2-Trichloroethane	1.0	U	1.0	0.48	ug/L			04/20/23 15:22	1
1,1-Dichloroethane	1.0	U	1.0	0.47	ug/L			04/20/23 15:22	1
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			04/20/23 15:22	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.77	ug/L			04/20/23 15:22	1
1,2-Dibromo-3-Chloropropane	2.0	U	2.0	0.91	ug/L			04/20/23 15:22	1
Ethylene Dibromide	1.0	U	1.0	0.41	ug/L			04/20/23 15:22	1
1,2-Dichlorobenzene	1.0	U	1.0	0.48	ug/L			04/20/23 15:22	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			04/20/23 15:22	1
1,2-Dichloropropane	1.0	U	1.0	0.47	ug/L			04/20/23 15:22	1
1,3-Dichlorobenzene	1.0	U	1.0	0.45	ug/L			04/20/23 15:22	1
1,4-Dichlorobenzene	1.0	U	1.0	0.41	ug/L			04/20/23 15:22	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			04/20/23 15:22	1
2-Hexanone	10	U	10	1.1	ug/L			04/20/23 15:22	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.99	ug/L			04/20/23 15:22	1
Acetone	10	U	10	5.4	ug/L			04/20/23 15:22	1
Benzene	1.0	U	1.0	0.42	ug/L			04/20/23 15:22	1
Dichlorobromomethane	1.0	U	1.0	0.17	ug/L			04/20/23 15:22	1
Bromoform	1.0	U	1.0	0.76	ug/L			04/20/23 15:22	1
Bromomethane	1.0	U	1.0	0.42	ug/L			04/20/23 15:22	1
Carbon disulfide	1.0	U	1.0	0.59	ug/L			04/20/23 15:22	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			04/20/23 15:22	1
Chlorobenzene	1.0	U	1.0	0.38	ug/L			04/20/23 15:22	1
Chloroethane	1.0	U	1.0	0.83	ug/L			04/20/23 15:22	1
Chloroform	1.0	U	1.0	0.47	ug/L			04/20/23 15:22	1
Chloromethane	1.0	U	1.0	0.63	ug/L			04/20/23 15:22	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			04/20/23 15:22	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			04/20/23 15:22	1
Cyclohexane	1.0	U	1.0	0.48	ug/L			04/20/23 15:22	1
Chlorodibromomethane	1.0	U	1.0	0.39	ug/L			04/20/23 15:22	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			04/20/23 15:22	1
Ethylbenzene	1.0	U	1.0	0.42	ug/L			04/20/23 15:22	1
Isopropylbenzene	1.0	U	1.0	0.49	ug/L			04/20/23 15:22	1
Methyl acetate	10	U	10	1.7	ug/L			04/20/23 15:22	1
Methyl tert-butyl ether	1.0	U	1.0	0.47	ug/L			04/20/23 15:22	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			04/20/23 15:22	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			04/20/23 15:22	1
Styrene	1.0	U	1.0	0.45	ug/L			04/20/23 15:22	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			04/20/23 15:22	1
Toluene	1.0	U	1.0	0.44	ug/L			04/20/23 15:22	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			04/20/23 15:22	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			04/20/23 15:22	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			04/20/23 15:22	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			04/20/23 15:22	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			04/20/23 15:22	1
Xylenes, Total	2.0	U	2.0	0.42	ug/L			04/20/23 15:22	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183576-1

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	101		78 - 122		04/20/23 15:22	1
Dibromofluoromethane (Surr)	93		73 - 120		04/20/23 15:22	1
4-Bromofluorobenzene (Surr)	87		56 - 136		04/20/23 15:22	1
1,2-Dichloroethane-d4 (Surr)	99		62 - 137		04/20/23 15:22	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183576-1

Method: SW846 6020B - Metals (ICP/MS) - Total Recoverable

Client Sample ID: GW-11223416-041223-SK-015

Date Collected: 04/12/23 12:45

Date Received: 04/14/23 10:00

Lab Sample ID: 240-183576-2

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	47	J	50	34	ug/L		04/18/23 14:00	04/19/23 22:58	1
Lead	1.0	U	1.0	0.45	ug/L		04/18/23 14:00	04/19/23 22:58	1
Vanadium	4.0	U	4.0	0.82	ug/L		04/18/23 14:00	04/19/23 22:58	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183576-1

Method: SW846 6020B - Metals (ICP/MS) - Total Recoverable

Client Sample ID: GW-11223416-041223-SK-016

Date Collected: 04/12/23 13:50

Date Received: 04/14/23 10:00

Lab Sample ID: 240-183576-3

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	50	U	50	34	ug/L		04/18/23 14:00	04/19/23 23:03	1
Lead	1.0	U	1.0	0.45	ug/L		04/18/23 14:00	04/19/23 23:03	1
Vanadium	4.0	U	4.0	0.82	ug/L		04/18/23 14:00	04/19/23 23:03	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183576-1

Method: SW846 6020B - Metals (ICP/MS) - Total Recoverable

Client Sample ID: GW-11223416-041323-SK-019

Date Collected: 04/13/23 12:50

Date Received: 04/14/23 10:00

Lab Sample ID: 240-183576-6

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	180		50	34	ug/L		04/18/23 14:00	04/19/23 22:22	1
Lead	1.0	U	1.0	0.45	ug/L		04/18/23 14:00	04/19/23 22:22	1
Vanadium	4.0	U	4.0	0.82	ug/L		04/18/23 14:00	04/19/23 22:22	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183576-1

Method: SW846 6020B - Metals (ICP/MS) - Dissolved

Client Sample ID: GW-11223416-041223-SK-015

Date Collected: 04/12/23 12:45

Date Received: 04/14/23 10:00

Lab Sample ID: 240-183576-2

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	44	J	50	34	ug/L		04/18/23 14:00	04/19/23 23:00	1
Lead	1.0	U	1.0	0.45	ug/L		04/18/23 14:00	04/19/23 23:00	1
Vanadium	4.0	U	4.0	0.82	ug/L		04/18/23 14:00	04/19/23 23:00	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183576-1

Method: SW846 6020B - Metals (ICP/MS) - Dissolved

Client Sample ID: GW-11223416-041223-SK-016

Date Collected: 04/12/23 13:50

Date Received: 04/14/23 10:00

Lab Sample ID: 240-183576-3

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	50	U	50	34	ug/L		04/18/23 14:00	04/19/23 23:06	1
Lead	1.0	U	1.0	0.45	ug/L		04/18/23 14:00	04/19/23 23:06	1
Vanadium	4.0	U	4.0	0.82	ug/L		04/18/23 14:00	04/19/23 23:06	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183576-1

Method: SW846 6020B - Metals (ICP/MS) - Dissolved

Client Sample ID: GW-11223416-041323-SK-019

Date Collected: 04/13/23 12:50

Date Received: 04/14/23 10:00

Lab Sample ID: 240-183576-6

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	190		50	34	ug/L		04/18/23 14:00	04/19/23 22:34	1
Lead	1.0	U	1.0	0.45	ug/L		04/18/23 14:00	04/19/23 22:34	1
Vanadium	0.88	J	4.0	0.82	ug/L		04/18/23 14:00	04/19/23 22:34	1

QC Association Summary

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183576-1

GC/MS VOA

Analysis Batch: 570155

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-183576-1	GW-11223416-041223-SK-014	Total/NA	Water	8260D	
240-183576-2	GW-11223416-041223-SK-015	Total/NA	Water	8260D	
240-183576-3	GW-11223416-041223-SK-016	Total/NA	Water	8260D	
240-183576-4	GW-11223416-041323-SK-017	Total/NA	Water	8260D	
240-183576-6	GW-11223416-041323-SK-019	Total/NA	Water	8260D	
240-183576-7	TB-11223416-041323-SK	Total/NA	Water	8260D	
MB 240-570155/7	Method Blank	Total/NA	Water	8260D	
LCS 240-570155/4	Lab Control Sample	Total/NA	Water	8260D	
240-183576-6 MS	GW-11223416-041323-SK-019	Total/NA	Water	8260D	
240-183576-6 MSD	GW-11223416-041323-SK-019	Total/NA	Water	8260D	

Analysis Batch: 570741

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-183576-5	GW-11223416-041323-SK-018	Total/NA	Water	8260D	
MB 240-570741/8	Method Blank	Total/NA	Water	8260D	
LCS 240-570741/5	Lab Control Sample	Total/NA	Water	8260D	

Metals

Prep Batch: 569850

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-183576-2	GW-11223416-041223-SK-015	Dissolved	Water	3005A	
240-183576-2	GW-11223416-041223-SK-015	Total Recoverable	Water	3005A	
240-183576-3	GW-11223416-041223-SK-016	Dissolved	Water	3005A	
240-183576-3	GW-11223416-041223-SK-016	Total Recoverable	Water	3005A	
240-183576-6	GW-11223416-041323-SK-019	Dissolved	Water	3005A	
240-183576-6	GW-11223416-041323-SK-019	Total Recoverable	Water	3005A	
MB 240-569850/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-569850/3-A	Lab Control Sample	Total Recoverable	Water	3005A	
240-183576-6 MS	GW-11223416-041323-SK-019	Dissolved	Water	3005A	
240-183576-6 MS	GW-11223416-041323-SK-019	Total Recoverable	Water	3005A	
240-183576-6 MSD	GW-11223416-041323-SK-019	Dissolved	Water	3005A	
240-183576-6 MSD	GW-11223416-041323-SK-019	Total Recoverable	Water	3005A	

Analysis Batch: 570098

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-183576-2	GW-11223416-041223-SK-015	Dissolved	Water	6020B	569850
240-183576-2	GW-11223416-041223-SK-015	Total Recoverable	Water	6020B	569850
240-183576-3	GW-11223416-041223-SK-016	Dissolved	Water	6020B	569850
240-183576-3	GW-11223416-041223-SK-016	Total Recoverable	Water	6020B	569850
240-183576-6	GW-11223416-041323-SK-019	Dissolved	Water	6020B	569850
240-183576-6	GW-11223416-041323-SK-019	Total Recoverable	Water	6020B	569850
MB 240-569850/1-A	Method Blank	Total Recoverable	Water	6020B	569850
LCS 240-569850/3-A	Lab Control Sample	Total Recoverable	Water	6020B	569850
240-183576-6 MS	GW-11223416-041323-SK-019	Dissolved	Water	6020B	569850
240-183576-6 MS	GW-11223416-041323-SK-019	Total Recoverable	Water	6020B	569850
240-183576-6 MSD	GW-11223416-041323-SK-019	Dissolved	Water	6020B	569850
240-183576-6 MSD	GW-11223416-041323-SK-019	Total Recoverable	Water	6020B	569850

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QC Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183576-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 240-570155/7

Matrix: Water

Analysis Batch: 570155

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,1,1-Trichloroethane	1.0	U	1.0	0.48	ug/L			04/20/23 14:56	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.60	ug/L			04/20/23 14:56	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			04/20/23 14:56	1
1,1,2-Trichloroethane	1.0	U	1.0	0.48	ug/L			04/20/23 14:56	1
1,1-Dichloroethane	1.0	U	1.0	0.47	ug/L			04/20/23 14:56	1
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			04/20/23 14:56	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.77	ug/L			04/20/23 14:56	1
1,2-Dibromo-3-Chloropropane	2.0	U	2.0	0.91	ug/L			04/20/23 14:56	1
Ethylene Dibromide	1.0	U	1.0	0.41	ug/L			04/20/23 14:56	1
1,2-Dichlorobenzene	1.0	U	1.0	0.48	ug/L			04/20/23 14:56	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			04/20/23 14:56	1
1,2-Dichloropropane	1.0	U	1.0	0.47	ug/L			04/20/23 14:56	1
1,3-Dichlorobenzene	1.0	U	1.0	0.45	ug/L			04/20/23 14:56	1
1,4-Dichlorobenzene	1.0	U	1.0	0.41	ug/L			04/20/23 14:56	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			04/20/23 14:56	1
2-Hexanone	10	U	10	1.1	ug/L			04/20/23 14:56	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.99	ug/L			04/20/23 14:56	1
Acetone	10	U	10	5.4	ug/L			04/20/23 14:56	1
Benzene	1.0	U	1.0	0.42	ug/L			04/20/23 14:56	1
Dichlorobromomethane	1.0	U	1.0	0.17	ug/L			04/20/23 14:56	1
Bromoform	1.0	U	1.0	0.76	ug/L			04/20/23 14:56	1
Bromomethane	1.0	U	1.0	0.42	ug/L			04/20/23 14:56	1
Carbon disulfide	1.0	U	1.0	0.59	ug/L			04/20/23 14:56	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			04/20/23 14:56	1
Chlorobenzene	1.0	U	1.0	0.38	ug/L			04/20/23 14:56	1
Chloroethane	1.0	U	1.0	0.83	ug/L			04/20/23 14:56	1
Chloroform	1.0	U	1.0	0.47	ug/L			04/20/23 14:56	1
Chloromethane	1.0	U	1.0	0.63	ug/L			04/20/23 14:56	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			04/20/23 14:56	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			04/20/23 14:56	1
Cyclohexane	1.0	U	1.0	0.48	ug/L			04/20/23 14:56	1
Chlorodibromomethane	1.0	U	1.0	0.39	ug/L			04/20/23 14:56	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			04/20/23 14:56	1
Ethylbenzene	1.0	U	1.0	0.42	ug/L			04/20/23 14:56	1
Isopropylbenzene	1.0	U	1.0	0.49	ug/L			04/20/23 14:56	1
Methyl acetate	10	U	10	1.7	ug/L			04/20/23 14:56	1
Methyl tert-butyl ether	1.0	U	1.0	0.47	ug/L			04/20/23 14:56	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			04/20/23 14:56	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			04/20/23 14:56	1
Styrene	1.0	U	1.0	0.45	ug/L			04/20/23 14:56	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			04/20/23 14:56	1
Toluene	1.0	U	1.0	0.44	ug/L			04/20/23 14:56	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			04/20/23 14:56	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			04/20/23 14:56	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			04/20/23 14:56	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			04/20/23 14:56	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			04/20/23 14:56	1
Xylenes, Total	2.0	U	2.0	0.42	ug/L			04/20/23 14:56	1

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QC Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183576-1

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

Lab Sample ID: MB 240-570155/7

Matrix: Water

Analysis Batch: 570155

Client Sample ID: Method Blank

Prep Type: Total/NA

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	98		78 - 122		04/20/23 14:56	1
Dibromofluoromethane (Surr)	94		73 - 120		04/20/23 14:56	1
4-Bromofluorobenzene (Surr)	87		56 - 136		04/20/23 14:56	1
1,2-Dichloroethane-d4 (Surr)	100		62 - 137		04/20/23 14:56	1

Lab Sample ID: LCS 240-570155/4

Matrix: Water

Analysis Batch: 570155

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,1-Trichloroethane	25.0	23.4		ug/L		94	64 - 131
1,1,1,2-Tetrachloroethane	25.0	26.8		ug/L		107	58 - 157
1,1,2-Trichloro-1,2,2-trifluoroethane	25.0	21.9		ug/L		87	51 - 146
1,1,2-Trichloroethane	25.0	26.4		ug/L		106	70 - 138
1,1-Dichloroethane	25.0	22.9		ug/L		92	72 - 127
1,1-Dichloroethene	25.0	22.5		ug/L		90	63 - 134
1,2,4-Trichlorobenzene	25.0	25.8		ug/L		103	44 - 147
1,2-Dibromo-3-Chloropropane	25.0	25.1		ug/L		101	53 - 135
Ethylene Dibromide	25.0	27.0		ug/L		108	71 - 134
1,2-Dichlorobenzene	25.0	25.9		ug/L		104	78 - 120
1,2-Dichloroethane	25.0	23.3		ug/L		93	66 - 128
1,2-Dichloropropane	25.0	25.7		ug/L		103	75 - 133
1,3-Dichlorobenzene	25.0	25.9		ug/L		104	80 - 120
1,4-Dichlorobenzene	25.0	25.7		ug/L		103	80 - 120
2-Butanone (MEK)	50.0	50.0		ug/L		100	54 - 156
2-Hexanone	50.0	63.5		ug/L		127	43 - 167
4-Methyl-2-pentanone (MIBK)	50.0	55.9		ug/L		112	46 - 158
Acetone	50.0	50.1		ug/L		100	50 - 149
Benzene	25.0	24.7		ug/L		99	77 - 123
Dichlorobromomethane	25.0	24.2		ug/L		97	69 - 126
Bromoform	25.0	25.5		ug/L		102	57 - 129
Bromomethane	12.5	15.3		ug/L		123	36 - 142
Carbon disulfide	25.0	22.8		ug/L		91	43 - 140
Carbon tetrachloride	25.0	23.8		ug/L		95	55 - 137
Chlorobenzene	25.0	25.7		ug/L		103	80 - 121
Chloroethane	12.5	14.5		ug/L		116	38 - 152
Chloroform	25.0	23.2		ug/L		93	74 - 122
Chloromethane	12.5	12.9		ug/L		103	47 - 143
cis-1,2-Dichloroethene	25.0	23.5		ug/L		94	77 - 123
cis-1,3-Dichloropropene	25.0	25.8		ug/L		103	64 - 130
Cyclohexane	25.0	27.2		ug/L		109	58 - 146
Chlorodibromomethane	25.0	25.4		ug/L		101	70 - 124
Dichlorodifluoromethane	12.5	8.73		ug/L		70	34 - 153
Ethylbenzene	25.0	27.2		ug/L		109	80 - 121
Isopropylbenzene	25.0	27.1		ug/L		108	74 - 128
Methyl acetate	50.0	46.0		ug/L		92	42 - 169
Methyl tert-butyl ether	25.0	23.9		ug/L		95	65 - 126
Methylcyclohexane	25.0	25.9		ug/L		104	62 - 136

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QC Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183576-1

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

Lab Sample ID: LCS 240-570155/4

Matrix: Water

Analysis Batch: 570155

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Methylene Chloride	25.0	21.8		ug/L		87	71 - 125
Styrene	25.0	25.9		ug/L		104	80 - 135
Tetrachloroethene	25.0	26.0		ug/L		104	76 - 123
Toluene	25.0	25.3		ug/L		101	80 - 123
trans-1,2-Dichloroethene	25.0	23.2		ug/L		93	75 - 124
trans-1,3-Dichloropropene	25.0	27.6		ug/L		110	57 - 129
Trichloroethene	25.0	23.8		ug/L		95	70 - 122
Trichlorofluoromethane	12.5	11.9		ug/L		96	30 - 170
Vinyl chloride	12.5	13.6		ug/L		109	60 - 144
Xylenes, Total	50.0	55.1		ug/L		110	80 - 121
m-Xylene & p-Xylene	25.0	27.6		ug/L		110	80 - 120
o-Xylene	25.0	27.5		ug/L		110	80 - 123

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Toluene-d8 (Surr)	102		78 - 122
Dibromofluoromethane (Surr)	92		73 - 120
4-Bromofluorobenzene (Surr)	101		56 - 136
1,2-Dichloroethane-d4 (Surr)	93		62 - 137

Lab Sample ID: 240-183576-6 MS

Matrix: Water

Analysis Batch: 570155

Client Sample ID: GW-11223416-041323-SK-019

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,1-Trichloroethane	1.0	U	25.0	22.1		ug/L		88	60 - 130
1,1,2,2-Tetrachloroethane	1.0	U	25.0	25.1		ug/L		101	54 - 145
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	25.0	20.2		ug/L		81	41 - 147
1,1,2-Trichloroethane	1.0	U	25.0	25.3		ug/L		101	69 - 131
1,1-Dichloroethane	1.0	U	25.0	22.2		ug/L		89	68 - 125
1,1-Dichloroethene	1.0	U	25.0	21.8		ug/L		87	56 - 135
1,2,4-Trichlorobenzene	1.0	U	25.0	23.8		ug/L		95	29 - 156
1,2-Dibromo-3-Chloropropane	2.0	U	25.0	22.5		ug/L		90	41 - 129
Ethylene Dibromide	1.0	U	25.0	25.0		ug/L		100	69 - 125
1,2-Dichlorobenzene	1.0	U	25.0	24.0		ug/L		96	73 - 120
1,2-Dichloroethane	1.0	U	25.0	22.9		ug/L		92	63 - 126
1,2-Dichloropropane	1.0	U	25.0	25.5		ug/L		102	69 - 130
1,3-Dichlorobenzene	1.0	U	25.0	23.3		ug/L		93	73 - 120
1,4-Dichlorobenzene	1.0	U	25.0	23.1		ug/L		92	74 - 120
2-Butanone (MEK)	10	U	50.0	47.7		ug/L		95	40 - 151
2-Hexanone	10	U	50.0	62.4		ug/L		125	35 - 156
4-Methyl-2-pentanone (MIBK)	10	U	50.0	55.7		ug/L		111	31 - 153
Acetone	10	U	50.0	46.7		ug/L		93	33 - 149
Benzene	1.0	U	25.0	23.8		ug/L		95	64 - 128
Dichlorobromomethane	1.0	U	25.0	23.2		ug/L		93	62 - 125
Bromoform	1.0	U	25.0	23.3		ug/L		93	47 - 125
Bromomethane	1.0	U	12.5	15.1		ug/L		121	28 - 150
Carbon disulfide	1.0	U	25.0	21.1		ug/L		84	38 - 140
Carbon tetrachloride	1.0	U	25.0	21.8		ug/L		87	51 - 133

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QC Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183576-1

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

Lab Sample ID: 240-183576-6 MS

Matrix: Water

Analysis Batch: 570155

Client Sample ID: GW-11223416-041323-SK-019

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Chlorobenzene	1.0	U	25.0	23.7		ug/L		95	74 - 121
Chloroethane	1.0	U	12.5	13.9		ug/L		111	10 - 199
Chloroform	1.0	U	25.0	22.4		ug/L		90	70 - 122
Chloromethane	1.0	U	12.5	12.9		ug/L		103	32 - 149
cis-1,2-Dichloroethene	1.0	U	25.0	22.9		ug/L		92	66 - 128
cis-1,3-Dichloropropene	1.0	U	25.0	22.4		ug/L		90	47 - 125
Cyclohexane	1.0	U	25.0	24.6		ug/L		98	42 - 147
Chlorodibromomethane	1.0	U	25.0	23.7		ug/L		95	65 - 120
Dichlorodifluoromethane	1.0	U	12.5	8.26		ug/L		66	38 - 139
Ethylbenzene	1.0	U	25.0	24.8		ug/L		99	67 - 127
Isopropylbenzene	1.0	U	25.0	24.4		ug/L		98	64 - 129
Methyl acetate	10	U	50.0	43.2		ug/L		86	37 - 155
Methyl tert-butyl ether	1.0	U	25.0	22.9		ug/L		92	47 - 134
Methylcyclohexane	1.0	U	25.0	23.4		ug/L		94	39 - 144
Methylene Chloride	5.0	U	25.0	20.7		ug/L		83	62 - 129
Styrene	1.0	U	25.0	23.6		ug/L		94	70 - 139
Tetrachloroethene	1.0	U	25.0	23.6		ug/L		94	62 - 131
Toluene	1.0	U	25.0	23.3		ug/L		93	58 - 135
trans-1,2-Dichloroethene	1.0	U	25.0	22.0		ug/L		88	56 - 136
trans-1,3-Dichloropropene	1.0	U	25.0	24.7		ug/L		99	47 - 120
Trichloroethene	1.0	U	25.0	22.3		ug/L		89	61 - 124
Trichlorofluoromethane	1.0	U	12.5	11.5		ug/L		92	24 - 177
Vinyl chloride	1.0	U	12.5	13.7		ug/L		110	43 - 157
Xylenes, Total	2.0	U	50.0	50.3		ug/L		101	71 - 123
m-Xylene & p-Xylene	2.0	U	25.0	25.2		ug/L		101	71 - 123
o-Xylene	1.0	U	25.0	25.1		ug/L		100	70 - 125

Surrogate	MS %Recovery	MS Qualifier	Limits
Toluene-d8 (Surr)	100		78 - 122
Dibromofluoromethane (Surr)	91		73 - 120
4-Bromofluorobenzene (Surr)	98		56 - 136
1,2-Dichloroethane-d4 (Surr)	92		62 - 137

Lab Sample ID: 240-183576-6 MSD

Matrix: Water

Analysis Batch: 570155

Client Sample ID: GW-11223416-041323-SK-019

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1,1-Trichloroethane	1.0	U	25.0	22.2		ug/L		89	60 - 130	0	17
1,1,2,2-Tetrachloroethane	1.0	U	25.0	25.0		ug/L		100	54 - 145	1	15
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	25.0	20.5		ug/L		82	41 - 147	1	35
1,1,2-Trichloroethane	1.0	U	25.0	24.8		ug/L		99	69 - 131	2	14
1,1-Dichloroethane	1.0	U	25.0	22.0		ug/L		88	68 - 125	1	13
1,1-Dichloroethene	1.0	U	25.0	21.8		ug/L		87	56 - 135	0	26
1,2,4-Trichlorobenzene	1.0	U	25.0	24.5		ug/L		98	29 - 156	3	19
1,2-Dibromo-3-Chloropropane	2.0	U	25.0	23.4		ug/L		94	41 - 129	4	22
Ethylene Dibromide	1.0	U	25.0	24.6		ug/L		98	69 - 125	2	14
1,2-Dichlorobenzene	1.0	U	25.0	23.8		ug/L		95	73 - 120	1	14

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QC Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183576-1

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

Lab Sample ID: 240-183576-6 MSD

Client Sample ID: GW-11223416-041323-SK-019

Matrix: Water

Prep Type: Total/NA

Analysis Batch: 570155

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,2-Dichloroethane	1.0	U	25.0	22.3		ug/L		89	63 - 126	3	12
1,2-Dichloropropane	1.0	U	25.0	24.3		ug/L		97	69 - 130	5	13
1,3-Dichlorobenzene	1.0	U	25.0	23.3		ug/L		93	73 - 120	0	14
1,4-Dichlorobenzene	1.0	U	25.0	23.1		ug/L		93	74 - 120	0	15
2-Butanone (MEK)	10	U	50.0	46.8		ug/L		94	40 - 151	2	20
2-Hexanone	10	U	50.0	62.0		ug/L		124	35 - 156	1	17
4-Methyl-2-pentanone (MIBK)	10	U	50.0	54.5		ug/L		109	31 - 153	2	15
Acetone	10	U	50.0	44.5		ug/L		89	33 - 149	5	34
Benzene	1.0	U	25.0	23.6		ug/L		94	64 - 128	1	14
Dichlorobromomethane	1.0	U	25.0	22.4		ug/L		89	62 - 125	4	13
Bromoform	1.0	U	25.0	22.6		ug/L		90	47 - 125	3	15
Bromomethane	1.0	U	12.5	14.6		ug/L		117	28 - 150	3	26
Carbon disulfide	1.0	U	25.0	21.8		ug/L		87	38 - 140	3	23
Carbon tetrachloride	1.0	U	25.0	21.5		ug/L		86	51 - 133	1	24
Chlorobenzene	1.0	U	25.0	23.4		ug/L		94	74 - 121	1	14
Chloroethane	1.0	U	12.5	14.2		ug/L		114	10 - 199	2	30
Chloroform	1.0	U	25.0	22.5		ug/L		90	70 - 122	0	14
Chloromethane	1.0	U	12.5	12.8		ug/L		103	32 - 149	0	27
cis-1,2-Dichloroethene	1.0	U	25.0	22.4		ug/L		90	66 - 128	2	14
cis-1,3-Dichloropropene	1.0	U	25.0	21.9		ug/L		88	47 - 125	2	13
Cyclohexane	1.0	U	25.0	24.6		ug/L		98	42 - 147	0	35
Chlorodibromomethane	1.0	U	25.0	23.4		ug/L		94	65 - 120	1	13
Dichlorodifluoromethane	1.0	U	12.5	8.20		ug/L		66	38 - 139	1	35
Ethylbenzene	1.0	U	25.0	24.0		ug/L		96	67 - 127	4	15
Isopropylbenzene	1.0	U	25.0	24.3		ug/L		97	64 - 129	0	18
Methyl acetate	10	U	50.0	43.5		ug/L		87	37 - 155	1	18
Methyl tert-butyl ether	1.0	U	25.0	23.0		ug/L		92	47 - 134	0	16
Methylcyclohexane	1.0	U	25.0	23.2		ug/L		93	39 - 144	1	35
Methylene Chloride	5.0	U	25.0	20.8		ug/L		83	62 - 129	1	17
Styrene	1.0	U	25.0	23.5		ug/L		94	70 - 139	0	18
Tetrachloroethene	1.0	U	25.0	22.9		ug/L		92	62 - 131	3	20
Toluene	1.0	U	25.0	23.1		ug/L		92	58 - 135	1	14
trans-1,2-Dichloroethene	1.0	U	25.0	22.2		ug/L		89	56 - 136	1	15
trans-1,3-Dichloropropene	1.0	U	25.0	24.1		ug/L		97	47 - 120	2	14
Trichloroethene	1.0	U	25.0	22.5		ug/L		90	61 - 124	1	15
Trichlorofluoromethane	1.0	U	12.5	11.2		ug/L		89	24 - 177	3	34
Vinyl chloride	1.0	U	12.5	13.4		ug/L		107	43 - 157	2	24
Xylenes, Total	2.0	U	50.0	49.6		ug/L		99	71 - 123	1	15
m-Xylene & p-Xylene	2.0	U	25.0	24.8		ug/L		99	71 - 123	2	16
o-Xylene	1.0	U	25.0	24.8		ug/L		99	70 - 125	1	15

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Toluene-d8 (Surr)	100		78 - 122
Dibromofluoromethane (Surr)	91		73 - 120
4-Bromofluorobenzene (Surr)	101		56 - 136
1,2-Dichloroethane-d4 (Surr)	92		62 - 137

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QC Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183576-1

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

Lab Sample ID: MB 240-570741/8

Matrix: Water

Analysis Batch: 570741

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
1,1,1-Trichloroethane	1.0	U	1.0	0.48	ug/L			04/25/23 14:13	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.60	ug/L			04/25/23 14:13	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			04/25/23 14:13	1
1,1,2-Trichloroethane	1.0	U	1.0	0.48	ug/L			04/25/23 14:13	1
1,1-Dichloroethane	1.0	U	1.0	0.47	ug/L			04/25/23 14:13	1
1,1-Dichloroethene	1.0	U	1.0	0.49	ug/L			04/25/23 14:13	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.77	ug/L			04/25/23 14:13	1
1,2-Dibromo-3-Chloropropane	2.0	U	2.0	0.91	ug/L			04/25/23 14:13	1
Ethylene Dibromide	1.0	U	1.0	0.41	ug/L			04/25/23 14:13	1
1,2-Dichlorobenzene	1.0	U	1.0	0.48	ug/L			04/25/23 14:13	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			04/25/23 14:13	1
1,2-Dichloropropane	1.0	U	1.0	0.47	ug/L			04/25/23 14:13	1
1,3-Dichlorobenzene	1.0	U	1.0	0.45	ug/L			04/25/23 14:13	1
1,4-Dichlorobenzene	1.0	U	1.0	0.41	ug/L			04/25/23 14:13	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			04/25/23 14:13	1
2-Hexanone	10	U	10	1.1	ug/L			04/25/23 14:13	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.99	ug/L			04/25/23 14:13	1
Acetone	10	U	10	5.4	ug/L			04/25/23 14:13	1
Benzene	1.0	U	1.0	0.42	ug/L			04/25/23 14:13	1
Dichlorobromomethane	1.0	U	1.0	0.17	ug/L			04/25/23 14:13	1
Bromoform	1.0	U	1.0	0.76	ug/L			04/25/23 14:13	1
Bromomethane	1.0	U	1.0	0.42	ug/L			04/25/23 14:13	1
Carbon disulfide	1.0	U	1.0	0.59	ug/L			04/25/23 14:13	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			04/25/23 14:13	1
Chlorobenzene	1.0	U	1.0	0.38	ug/L			04/25/23 14:13	1
Chloroethane	1.0	U	1.0	0.83	ug/L			04/25/23 14:13	1
Chloroform	1.0	U	1.0	0.47	ug/L			04/25/23 14:13	1
Chloromethane	1.0	U	1.0	0.63	ug/L			04/25/23 14:13	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.46	ug/L			04/25/23 14:13	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			04/25/23 14:13	1
Cyclohexane	1.0	U	1.0	0.48	ug/L			04/25/23 14:13	1
Chlorodibromomethane	1.0	U	1.0	0.39	ug/L			04/25/23 14:13	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			04/25/23 14:13	1
Ethylbenzene	1.0	U	1.0	0.42	ug/L			04/25/23 14:13	1
Isopropylbenzene	1.0	U	1.0	0.49	ug/L			04/25/23 14:13	1
Methyl acetate	10	U	10	1.7	ug/L			04/25/23 14:13	1
Methyl tert-butyl ether	1.0	U	1.0	0.47	ug/L			04/25/23 14:13	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			04/25/23 14:13	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			04/25/23 14:13	1
Styrene	1.0	U	1.0	0.45	ug/L			04/25/23 14:13	1
Tetrachloroethene	1.0	U	1.0	0.44	ug/L			04/25/23 14:13	1
Toluene	1.0	U	1.0	0.44	ug/L			04/25/23 14:13	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.51	ug/L			04/25/23 14:13	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			04/25/23 14:13	1
Trichloroethene	1.0	U	1.0	0.44	ug/L			04/25/23 14:13	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			04/25/23 14:13	1
Vinyl chloride	1.0	U	1.0	0.45	ug/L			04/25/23 14:13	1
Xylenes, Total	2.0	U	2.0	0.42	ug/L			04/25/23 14:13	1

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QC Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183576-1

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

Lab Sample ID: MB 240-570741/8

Matrix: Water

Analysis Batch: 570741

Client Sample ID: Method Blank

Prep Type: Total/NA

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	104		78 - 122		04/25/23 14:13	1
Dibromofluoromethane (Surr)	106		73 - 120		04/25/23 14:13	1
4-Bromofluorobenzene (Surr)	99		56 - 136		04/25/23 14:13	1
1,2-Dichloroethane-d4 (Surr)	105		62 - 137		04/25/23 14:13	1

Lab Sample ID: LCS 240-570741/5

Matrix: Water

Analysis Batch: 570741

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,1,1-Trichloroethane	25.0	24.3		ug/L		97	64 - 131
1,1,1,2-Tetrachloroethane	25.0	27.4		ug/L		110	58 - 157
1,1,1,2-Trichloro-1,2,2-trifluoroethane	25.0	25.1		ug/L		101	51 - 146
1,1,2-Trichloroethane	25.0	25.6		ug/L		102	70 - 138
1,1-Dichloroethane	25.0	23.8		ug/L		95	72 - 127
1,1-Dichloroethene	25.0	25.0		ug/L		100	63 - 134
1,2,4-Trichlorobenzene	25.0	27.0		ug/L		108	44 - 147
1,2-Dibromo-3-Chloropropane	25.0	25.2		ug/L		101	53 - 135
Ethylene Dibromide	25.0	25.5		ug/L		102	71 - 134
1,2-Dichlorobenzene	25.0	26.2		ug/L		105	78 - 120
1,2-Dichloroethane	25.0	21.7		ug/L		87	66 - 128
1,2-Dichloropropane	25.0	25.1		ug/L		100	75 - 133
1,3-Dichlorobenzene	25.0	26.5		ug/L		106	80 - 120
1,4-Dichlorobenzene	25.0	26.0		ug/L		104	80 - 120
2-Butanone (MEK)	50.0	49.4		ug/L		99	54 - 156
2-Hexanone	50.0	59.3		ug/L		119	43 - 167
4-Methyl-2-pentanone (MIBK)	50.0	54.0		ug/L		108	46 - 158
Acetone	50.0	47.9		ug/L		96	50 - 149
Benzene	25.0	25.3		ug/L		101	77 - 123
Dichlorobromomethane	25.0	23.0		ug/L		92	69 - 126
Bromoform	25.0	24.8		ug/L		99	57 - 129
Bromomethane	12.5	5.93		ug/L		47	36 - 142
Carbon disulfide	25.0	25.8		ug/L		103	43 - 140
Carbon tetrachloride	25.0	23.3		ug/L		93	55 - 137
Chlorobenzene	25.0	25.8		ug/L		103	80 - 121
Chloroethane	12.5	10.6		ug/L		84	38 - 152
Chloroform	25.0	23.4		ug/L		94	74 - 122
Chloromethane	12.5	11.0		ug/L		88	47 - 143
cis-1,2-Dichloroethene	25.0	24.1		ug/L		96	77 - 123
cis-1,3-Dichloropropene	25.0	25.0		ug/L		100	64 - 130
Cyclohexane	25.0	27.3		ug/L		109	58 - 146
Chlorodibromomethane	25.0	24.4		ug/L		98	70 - 124
Dichlorodifluoromethane	12.5	9.72		ug/L		78	34 - 153
Ethylbenzene	25.0	27.0		ug/L		108	80 - 121
Isopropylbenzene	25.0	29.2		ug/L		117	74 - 128
Methyl acetate	50.0	43.2		ug/L		86	42 - 169
Methyl tert-butyl ether	25.0	24.7		ug/L		99	65 - 126
Methylcyclohexane	25.0	27.9		ug/L		112	62 - 136

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QC Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183576-1

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

Lab Sample ID: LCS 240-570741/5

Matrix: Water

Analysis Batch: 570741

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Methylene Chloride	25.0	25.1		ug/L		100	71 - 125
Styrene	25.0	28.6		ug/L		114	80 - 135
Tetrachloroethene	25.0	25.5		ug/L		102	76 - 123
Toluene	25.0	25.9		ug/L		104	80 - 123
trans-1,2-Dichloroethene	25.0	24.3		ug/L		97	75 - 124
trans-1,3-Dichloropropene	25.0	27.0		ug/L		108	57 - 129
Trichloroethene	25.0	24.2		ug/L		97	70 - 122
Trichlorofluoromethane	12.5	10.4		ug/L		83	30 - 170
Vinyl chloride	12.5	10.5		ug/L		84	60 - 144
Xylenes, Total	50.0	55.6		ug/L		111	80 - 121
m-Xylene & p-Xylene	25.0	27.8		ug/L		111	80 - 120
o-Xylene	25.0	27.8		ug/L		111	80 - 123

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Toluene-d8 (Surr)	113		78 - 122
Dibromofluoromethane (Surr)	101		73 - 120
4-Bromofluorobenzene (Surr)	114		56 - 136
1,2-Dichloroethane-d4 (Surr)	98		62 - 137

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 240-569850/1-A

Matrix: Water

Analysis Batch: 570098

Client Sample ID: Method Blank

Prep Type: Total Recoverable

Prep Batch: 569850

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	50	U	50	34	ug/L		04/18/23 14:00	04/19/23 22:08	1
Lead	1.0	U	1.0	0.45	ug/L		04/18/23 14:00	04/19/23 22:08	1
Vanadium	4.0	U	4.0	0.82	ug/L		04/18/23 14:00	04/19/23 22:08	1

Lab Sample ID: LCS 240-569850/3-A

Matrix: Water

Analysis Batch: 570098

Client Sample ID: Lab Control Sample

Prep Type: Total Recoverable

Prep Batch: 569850

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Aluminum	5000	4630		ug/L		93	80 - 120
Lead	500	457		ug/L		91	80 - 120
Vanadium	500	479		ug/L		96	80 - 120

Lab Sample ID: 240-183576-6 MS

Matrix: Water

Analysis Batch: 570098

Client Sample ID: GW-11223416-041323-SK-019

Prep Type: Total Recoverable

Prep Batch: 569850

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Aluminum	180		5000	4820		ug/L		93	80 - 120
Lead	1.0	U	500	467		ug/L		93	80 - 120
Vanadium	4.0	U	500	490		ug/L		98	80 - 120

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QC Sample Results

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183576-1

Method: 6020B - Metals (ICP/MS) (Continued)

Lab Sample ID: 240-183576-6 MSD

Matrix: Water

Analysis Batch: 570098

Client Sample ID: GW-11223416-041323-SK-019

Prep Type: Total Recoverable

Prep Batch: 569850

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Aluminum	180		5000	4880		ug/L		94	80 - 120	1	20
Lead	1.0	U	500	467		ug/L		93	80 - 120	0	20
Vanadium	4.0	U	500	494		ug/L		99	80 - 120	1	20

Lab Sample ID: 240-183576-6 MS

Matrix: Water

Analysis Batch: 570098

Client Sample ID: GW-11223416-041323-SK-019

Prep Type: Dissolved

Prep Batch: 569850

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Aluminum	190		5000	4860		ug/L		93	80 - 120		
Lead	1.0	U	500	458		ug/L		92	80 - 120		
Vanadium	0.88	J	500	494		ug/L		99	80 - 120		

Lab Sample ID: 240-183576-6 MSD

Matrix: Water

Analysis Batch: 570098

Client Sample ID: GW-11223416-041323-SK-019

Prep Type: Dissolved

Prep Batch: 569850

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Aluminum	190		5000	4940		ug/L		95	80 - 120	2	20
Lead	1.0	U	500	472		ug/L		94	80 - 120	3	20
Vanadium	0.88	J	500	496		ug/L		99	80 - 120	0	20

Surrogate Summary

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183576-1

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		TOL (78-122)	DBFM (73-120)	BFB (56-136)	DCA (62-137)
240-183576-1	GW-11223416-041223-SK-014	99	94	85	101
240-183576-2	GW-11223416-041223-SK-015	99	94	86	101
240-183576-3	GW-11223416-041223-SK-016	99	92	84	98
240-183576-4	GW-11223416-041323-SK-017	99	92	86	99
240-183576-5	GW-11223416-041323-SK-018	102	109	96	108
240-183576-6	GW-11223416-041323-SK-019	100	91	83	97
240-183576-6 MS	GW-11223416-041323-SK-019	100	91	98	92
240-183576-6 MSD	GW-11223416-041323-SK-019	100	91	101	92
240-183576-7	TB-11223416-041323-SK	101	93	87	99
LCS 240-570155/4	Lab Control Sample	102	92	101	93
LCS 240-570741/5	Lab Control Sample	113	101	114	98
MB 240-570155/7	Method Blank	98	94	87	100
MB 240-570741/8	Method Blank	104	106	99	105

Surrogate Legend

TOL = Toluene-d8 (Surr)

DBFM = Dibromofluoromethane (Surr)

BFB = 4-Bromofluorobenzene (Surr)

DCA = 1,2-Dichloroethane-d4 (Surr)

Lab Chronicle

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183576-1

Client Sample ID: GW-11223416-041223-SK-014

Lab Sample ID: 240-183576-1

Date Collected: 04/12/23 12:10

Matrix: Water

Date Received: 04/14/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	570155	BAJ	EET CAN	04/20/23 21:35

Client Sample ID: GW-11223416-041223-SK-015

Lab Sample ID: 240-183576-2

Date Collected: 04/12/23 12:45

Matrix: Water

Date Received: 04/14/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	570155	BAJ	EET CAN	04/20/23 16:36
Dissolved	Prep	3005A			569850	AJC	EET CAN	04/18/23 14:00
Dissolved	Analysis	6020B		1	570098	DSH	EET CAN	04/19/23 23:00
Total Recoverable	Prep	3005A			569850	AJC	EET CAN	04/18/23 14:00
Total Recoverable	Analysis	6020B		1	570098	DSH	EET CAN	04/19/23 22:58

Client Sample ID: GW-11223416-041223-SK-016

Lab Sample ID: 240-183576-3

Date Collected: 04/12/23 13:50

Matrix: Water

Date Received: 04/14/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	570155	BAJ	EET CAN	04/20/23 17:01
Dissolved	Prep	3005A			569850	AJC	EET CAN	04/18/23 14:00
Dissolved	Analysis	6020B		1	570098	DSH	EET CAN	04/19/23 23:06
Total Recoverable	Prep	3005A			569850	AJC	EET CAN	04/18/23 14:00
Total Recoverable	Analysis	6020B		1	570098	DSH	EET CAN	04/19/23 23:03

Client Sample ID: GW-11223416-041323-SK-017

Lab Sample ID: 240-183576-4

Date Collected: 04/13/23 10:25

Matrix: Water

Date Received: 04/14/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	570155	BAJ	EET CAN	04/20/23 17:26

Client Sample ID: GW-11223416-041323-SK-018

Lab Sample ID: 240-183576-5

Date Collected: 04/13/23 11:35

Matrix: Water

Date Received: 04/14/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	570741	SAM	EET CAN	04/25/23 17:47

Client Sample ID: GW-11223416-041323-SK-019

Lab Sample ID: 240-183576-6

Date Collected: 04/13/23 12:50

Matrix: Water

Date Received: 04/14/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	570155	BAJ	EET CAN	04/20/23 18:16
Dissolved	Prep	3005A			569850	AJC	EET CAN	04/18/23 14:00
Dissolved	Analysis	6020B		1	570098	DSH	EET CAN	04/19/23 22:34

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Lab Chronicle

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183576-1

Client Sample ID: GW-11223416-041323-SK-019

Lab Sample ID: 240-183576-6

Date Collected: 04/13/23 12:50

Matrix: Water

Date Received: 04/14/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total Recoverable	Prep	3005A			569850	AJC	EET CAN	04/18/23 14:00
Total Recoverable	Analysis	6020B		1	570098	DSH	EET CAN	04/19/23 22:22

Client Sample ID: TB-11223416-041323-SK

Lab Sample ID: 240-183576-7

Date Collected: 04/13/23 00:00

Matrix: Water

Date Received: 04/14/23 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	570155	BAJ	EET CAN	04/20/23 15:22

Laboratory References:

EET CAN = Eurofins Canton, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: GHD Services Inc.
Project/Site: 11223416, PCC Validation

Job ID: 240-183576-1

Laboratory: Eurofins Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-27-23 *
Connecticut	State	PH-0590	06-29-23
Florida	NELAP	E87225	06-30-23
Georgia	State	4062	02-28-24
Illinois	NELAP	200004	07-31-23
Iowa	State	421	06-01-23
Kentucky (UST)	State	112225	02-27-23 *
Kentucky (WW)	State	KY98016	12-31-23
Michigan	State	9135	02-27-23 *
Minnesota	NELAP	039-999-348	12-31-23
Minnesota (Petrofund)	State	3506	08-01-23
New Jersey	NELAP	OH001	06-30-23
New York	NELAP	10975	04-01-24
Ohio	State	8303	02-27-24
Ohio VAP	State	ORELAP 4062	02-27-24
Oregon	NELAP	4062	02-28-24
Pennsylvania	NELAP	68-00340	08-31-23
Texas	NELAP	T104704517-22-17	08-31-23
Virginia	NELAP	460175	09-14-23
West Virginia DEP	State	210	12-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Eurofins Canton

4.4/4.6

[illegible]

Eurofins - Canton Sample Receipt Form/Narrative Login # : _____

Barberton Facility

Client GHA Site Name _____ Cooler unpacked by: Nancy Rye

Cooler Received on 4-14-23 Opened on 4-14-23

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off Eurofins Courier Other

Receipt After-hours Drop-off Date/Time _____ Storage Location _____

Eurofins Cooler # EC ~~Foam Box~~ Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form

IR GUN # 13 (CF +0.2 °C) Observed Cooler Temp. 4.4 °C Corrected Cooler Temp. 4.6 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1

-Were the seals on the outside of the cooler(s) signed & dated? Yes No NA

-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No NA

-Were tamper/custody seals intact and uncompromised? Yes No NA

3. Shippers' packing slip attached to the cooler(s)? Yes No

4. Did custody papers accompany the sample(s)? Yes No

5. Were the custody papers relinquished & signed in the appropriate place? Yes No

6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No

7. Did all bottles arrive in good condition (Unbroken)? Yes No

8. Could all bottle labels (ID/Date/Time) be reconciled with the COC? Yes No

9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)? Yes No

10. Were correct bottle(s) used for the test(s) indicated? Yes No

11. Sufficient quantity received to perform indicated analyses? Yes No

12. Are these work share samples and all listed on the COC? Yes No

If yes, Questions 13-17 have been checked at the originating laboratory.

13. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC203864

14. Were VOAs on the COC? Yes No

15. Were air bubbles >6 mm in any VOA vials? Yes Larger than this

16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 62070 Yes No

17. Was a LL Hg or Me Hg trip blank present? Yes No

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

☐ additional next page

Samples processed by: _____

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Temperature readings: _____

Client Sample ID	Lab ID	Container Type	Container		Preservative	
			pH	Temp	Added (mls)	Lot #
GW-11223416-041223-SK-014	240-183576-A-1	Voa Vial 40ml - Hydrochloric Acid	_____	_____	_____	_____
GW-11223416-041223-SK-014	240-183576-B-1	Voa Vial 40ml - Hydrochloric Acid	_____	_____	_____	_____
GW-11223416-041223-SK-014	240-183576-C-1	Voa Vial 40ml - Hydrochloric Acid	_____	_____	_____	_____
GW-11223416-041223-SK-015	240-183576-A-2	Voa Vial 40ml - Hydrochloric Acid	_____	_____	_____	_____
GW-11223416-041223-SK-015	240-183576-B-2	Voa Vial 40ml - Hydrochloric Acid	_____	_____	_____	_____
GW-11223416-041223-SK-015	240-183576-C-2	Voa Vial 40ml - Hydrochloric Acid	_____	_____	_____	_____
GW-11223416-041223-SK-015	240-183576-D-2	Plastic 500ml - with Nitric Acid	<2	_____	_____	_____
GW-11223416-041223-SK-015	240-183576-E-2	Plastic 500ml - w/ Nitric - Dis.	<2	_____	_____	_____
GW-11223416-041223-SK-016	240-183576-A-3	Voa Vial 40ml - Hydrochloric Acid	_____	_____	_____	_____
GW-11223416-041223-SK-016	240-183576-B-3	Voa Vial 40ml - Hydrochloric Acid	_____	_____	_____	_____
GW-11223416-041223-SK-016	240-183576-C-3	Voa Vial 40ml - Hydrochloric Acid	_____	_____	_____	_____
GW-11223416-041223-SK-016	240-183576-D-3	Plastic 500ml - with Nitric Acid	<2	_____	_____	_____
GW-11223416-041223-SK-016	240-183576-E-3	Plastic 500ml - w/ Nitric - Dis.	<2	_____	_____	_____
GW-11223416-041323-SK-017	240-183576-A-4	Voa Vial 40ml - Hydrochloric Acid	_____	_____	_____	_____
GW-11223416-041323-SK-017	240-183576-B-4	Voa Vial 40ml - Hydrochloric Acid	_____	_____	_____	_____
GW-11223416-041323-SK-017	240-183576-C-4	Voa Vial 40ml - Hydrochloric Acid	_____	_____	_____	_____
GW-11223416-041323-SK-018	240-183576-A-5	Voa Vial 40ml - Hydrochloric Acid	_____	_____	_____	_____
GW-11223416-041323-SK-018	240-183576-B-5	Voa Vial 40ml - Hydrochloric Acid	_____	_____	_____	_____
GW-11223416-041323-SK-018	240-183576-C-5	Voa Vial 40ml - Hydrochloric Acid	_____	_____	_____	_____
GW-11223416-041323-SK-019	240-183576-A-6	Voa Vial 40ml - Hydrochloric Acid	_____	_____	_____	_____
GW-11223416-041323-SK-019	240-183576-A-6 MS	No Container	_____	_____	_____	_____
GW-11223416-041323-SK-019	240-183576-A-6 MSD	No Container	_____	_____	_____	_____
GW-11223416-041323-SK-019	240-183576-B-6	Voa Vial 40ml - Hydrochloric Acid	_____	_____	_____	_____
GW-11223416-041323-SK-019	240-183576-C-6	Voa Vial 40ml - Hydrochloric Acid	_____	_____	_____	_____
GW-11223416-041323-SK-019	240-183576-D-6	Voa Vial 40ml - Hydrochloric Acid	_____	_____	_____	_____
GW-11223416-041323-SK-019	240-183576-E-6	Voa Vial 40ml - Hydrochloric Acid	_____	_____	_____	_____
GW-11223416-041323-SK-019	240-183576-F-6	Voa Vial 40ml - Hydrochloric Acid	_____	_____	_____	_____
GW-11223416-041323-SK-019	240-183576-G-6	Voa Vial 40ml - Hydrochloric Acid	_____	_____	_____	_____
GW-11223416-041323-SK-019	240-183576-H-6	Voa Vial 40ml - Hydrochloric Acid	_____	_____	_____	_____
GW-11223416-041323-SK-019	240-183576-I-6	Voa Vial 40ml - Hydrochloric Acid	_____	_____	_____	_____
GW-11223416-041323-SK-019	240-183576-J-6	Plastic 500ml - with Nitric Acid	<2	_____	_____	_____
GW-11223416-041323-SK-019	240-183576-K-6	Plastic 500ml - with Nitric Acid	<2	_____	_____	_____
GW-11223416-041323-SK-019	240-183576-L-6	Plastic 500ml - w/ Nitric - Dis.	<2	_____	_____	_____
GW-11223416-041323-SK-019	240-183576-M-6	Plastic 500ml - w/ Nitric - Dis.	<2	_____	_____	_____
TB-11223416-041323-SK	240-183576-A-7	Voa Vial 40ml - Hydrochloric Acid	_____	_____	_____	_____

Appendix D

**Historical Groundwater Analytical Results –
2018 through 2023**

DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY

INTEROFFICE COMMUNICATION

TO: Matt Williams, Vapor Intrusion Specialist, RRD

FROM: Shane Morrison, Senior Toxicologist, RRD

DATE: March 6, 2020

SUBJECT: M1 Concourse Phase 4 - Building 16 Site-Specific Criteria Evaluation

The following site-specific volatilization to indoor air criteria (VIAC) are the Michigan Department of Environment, Great Lakes, and Energy's (EGLE's) determination of values that reflect best available information regarding the toxicity and exposure risks posed by the hazardous substances present at the facility. These values are based upon the information provided with the request to develop site-specific VIAC for this facility. These values may be used provided it is documented that the conditions used to develop the site-specific criteria are met at the facility. Other values may be developed by a person consistent with the statutory provisions for development of site-specific criteria and provided for EGLE review and approval.

Correspondence transmitting these values to the submitter/consultant as part of a report, review, or other request must incorporate the appropriate sections of the volatilization to indoor air pathway (VIAP) model document language. As indicated in this document, when groundwater volatilization to indoor air inhalation criteria (GVIIC) and soil volatilization to indoor air inhalation criteria (SVIIC) are not applicable, the correspondence must include language indicating the requirement to satisfy the site-specific VIAC for all three media i.e., groundwater, soil, and soil gas. In addition, all of the following site-specific VIAC tables must be copied into the correspondence or letter as part of your response to the submitter/consultant.

Unrestricted residential site-specific criteria were included in the evaluation based on information provided and EGLE's residential conceptual site model. Exceedance of the site-specific unrestricted residential criteria will require restrictions or institutional controls for closure or aid in the determination of off-site migration.

Nonresidential site-specific criteria may be adjusted for some hazardous substances to reflect a reasonable maximum worker exposure of 12-hour per day; however, if a person does not exceed the provided nonresidential site-specific criteria, no adjustment is necessary.

The site-specific criteria were generated using the United States Department of Agriculture (USDA) soil type of sand. Other site-specific criteria can be generated using a different soil type by providing soil characterization results from department approved methods on soils collected at the site.

Additional hazardous substances were included in the site-specific evaluation that were not explicitly requested. These hazardous substances may be components of recent petroleum. The preemptive site-specific evaluation of these substances was provided to limit the potential need for future resubmittal for this facility.

Please contact me at MorrisonS5@michigan.gov or 517-284-5063 if you require any clarification of these comments and criterion or have additional questions.

cc: Eric Wildfang, Toxicology Unit Supervisor, RRD
Paul Owens, District Supervisor, RRD
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Table 1. Nonresidential Volatilization to Indoor Air Criteria (VIAC). The following are **restricted** site-specific criteria that apply to a nonresidential structure **< 50,000 ft²** with a **slab-on-grade**, the depth to groundwater submitted for this site (i.e. 15 ft), and USDA soil type of **sand**.

CAS#	Hazardous Substance	Groundwater Not In Contact (GWNIC) (µg/L)	Soil (µg/kg)	Soil Gas** (µg/m ³)
83329	Acenaphthene	3,900 (S) sol	3.6E+06 nc	11,000 nc
208968	Acenaphthylene	710 (CC) nc	DATA	11,000 nc
994058	t-Amyl methyl ether (TAME)	34,000 nc	600 nc	3,200 nc
120127	Anthracene	43 (S) sol	2.2E+08 nc	51,000 nc
71432	Benzene	520 ca	47 (M) ca	260 ca
56553	Benzo(a)anthracene	9.4 (S) sol	1.1E+07 ca	33 ca
75650	t-Butyl alcohol	4.0E+06 nc	57,000 nc	3,700 nc
104518	n-Butylbenzene	12,000 (S) sol	9,800 nc	10,000 nc
135988	sec-Butylbenzene	18,000 (S) sol	66,000 (C) nc (49,000)	20 nc
98066	t-Butylbenzene	31 nc	11 (M) nc	20 nc
108907	Chlorobenzene	13,000 nc	1,400 nc	2,600 nc
75003	Chloroethane	1.5E+05 nc	5,800 nc	2.0E+05 nc
67663	Chloroform	280 ca	7.4 (M) ca	87 ca
74873	Chloromethane	3,500 nc	120 (M) nc	4,600 nc
110827	Cyclohexane	25,000 nc	5,600 nc	3.1E+05 nc
75343	1,1-Dichloroethane	2,500 ca	74 ca	1,200 ca
107062	1,2-Dichloroethane	770 ca	23 (M) ca	77 ca
75354	1,1-Dichloroethylene	3,900 nc	220 nc	10,000 nc
156592	cis-1,2-Dichloroethylene	1,100 nc	37 (M) nc	410 nc
156605	trans-1,2-Dichloroethylene	4,600 nc	210 nc	4,100 nc
60297	Diethyl ether	4.2E+05 nc	6,200 nc	51,000 nc
108203	Diisopropyl ether	1.3E+05 (DD) dev	2,300 (DD) dev	23,000 (DD) dev
64175	Ethanol	9.7E+08 (EE) st	1.6E+07 (EE) st	6.3E+05 (EE) st
637923	Ethyl-tert-butyl ether (ETBE)	580 (CC) nc	DATA	19,000 nc
100414	Ethylbenzene	1,700 ca	340 ca	800 ca
106934	Ethylene dibromide	120 ca	2.1 (M) ca	3.3 ca

Table 1. Nonresidential Volatilization to Indoor Air Criteria (VIAC). The following are **restricted** site-specific criteria that apply to a nonresidential structure **< 50,000 ft²** with a **slab-on-grade**, the depth to groundwater submitted for this site (i.e. 15 ft), and USDA soil type of **sand**.

CAS#	Hazardous Substance	Groundwater Not In Contact (GWNIC) (µg/L)	Soil (µg/kg)	Soil Gas** (µg/m ³)
86737	Fluorene	1,700 (S) sol	8.3E+06 nc	7,200 nc
142825	n-Heptane	3,400 (S) (GW) sol	2,300 nc	1.8E+05 nc
110543	n-Hexane	1,000 (GW) nc	440 nc	36,000 nc
67630	Isopropyl alcohol	1.1E+07 nc	1.7E+05 nc	10,000 nc
98828	Isopropyl benzene	380 ca	110 (M) ca	190 ca
Varies	Mercury (Total)	34 nc	390 nc	15 nc
1634044	Methyl-tert-butyl ether (MTBE)	1.5E+05 ca	2,100 ca	7,700 ca
96377	Methylcyclopentane	1,200 nc	510 (M) nc	36,000 nc
91576	2-Methylnaphthalene	25,000 (S) sol	30,000 nc	510 nc
91203	Naphthalene	2,900 ca	1,900 ca	59 ca
109660	Pentane	1,400 (GW) nc	630 (M) nc	51,000 nc
85018	Phenanthrene	1,200 (S) sol	29,000 nc	5.1 nc
1336363	Polychlorinated biphenyls (PCBs)	0.97 (CC) (J) ca	DATA	20 (J) ca
103651	n-Propylbenzene	52,000 (S) (DD) sol	21,000 (DD) dev	33,000 (DD) dev
129000	Pyrene	140 (S) sol	4.4E+08 nc	5,100 nc
100425	Styrene	21,000 ca	4,300 ca	3,500 ca
630206	1,1,1,2-Tetrachloroethane	2,600 ca	91 (M) ca	270 ca
79345	1,1,2,2-Tetrachloroethane	1,900 ca	77 ca	34 ca
127184	Tetrachloroethylene	1,600 (EE) st	74 (EE) st	1,400 (EE) st
108883	Toluene	5.2E+05 (EE) st	64,000 (EE) st	2.5E+05 (EE) st
71556	1,1,1-Trichloroethane	1.9E+05 (EE) st	7,500 (EE) st	2.3E+05 (EE) st
79005	1,1,2-Trichloroethane	190 nc	6.6 (M) nc	10 nc
79016	Trichloroethylene	98 (DD) dev	4.0 (M) (DD) dev	67 (DD) dev
540841	2,2,4-Trimethyl pentane	2,400 (S) (GW) sol	2,200 (M) nc	1.8E+05 nc
526738	1,2,3-Trimethylbenzene	19,000 (JT) nc	4,800 (JT) nc	3,100 (JT) nc
95636	1,2,4-Trimethylbenzene	10,000 (JT) nc	2,600 (JT) nc	3,100 (JT) nc

Table 1. Nonresidential Volatilization to Indoor Air Criteria (VIAC). The following are **restricted** site-specific criteria that apply to a nonresidential structure **< 50,000 ft²** with a **slab-on-grade**, the depth to groundwater submitted for this site (i.e. 15 ft), and USDA soil type of **sand**.

CAS#	Hazardous Substance	Groundwater Not In Contact (GWNIC) (µg/L)	Soil (µg/kg)	Soil Gas** (µg/m ³)
108678	1,3,5-Trimethylbenzene	7,400 (JT) nc	1,800 (JT) nc	3,100 (JT) nc
75014	Vinyl chloride	120 ca	8.2 (M) ca	450 ca
1330207	Xylenes	28,000 (J) nc	5,000 (J) nc	11,000 (J) nc

Table 2. Residential Volatilization to Indoor Air Criteria (VIAC). The following are unrestricted site-specific criteria that apply to a residential house with a basement, the depth to groundwater submitted for this site (i.e. 15 ft), and USDA soil type of sand.

CAS#	Hazardous Substance	Groundwater Not In Contact (GWNIC) (µg/L)	Soil (µg/kg)	Soil Gas** (µg/m ³)
83329	Acenaphthene	3,900 (S) sol	2.0E+05 nc	7,300 nc
208968	Acenaphthylene	65 (CC) nc	DATA	7,300 nc
994058	t-Amyl methyl ether (TAME)	1,800 nc	34 (M) nc	2,200 nc
120127	Anthracene	43 (S) sol	1.3E+07 nc	35,000 nc
71432	Benzene	17 ca	1.7 (M) ca	110 ca
56553	Benzo(a)anthracene	9.4 (S) (MM) sol	1.6E+05 (MM) mut	5.8 (MM) mut
75650	t-Butyl alcohol	1.8E+05 nc	3,200 nc	2,500 nc
104518	n-Butylbenzene	970 nc	550 nc	7,000 nc
135988	sec-Butylbenzene	3,700 nc	3,800 nc	14 nc
98066	t-Butylbenzene	1.6 nc	0.64 (M) nc	14 nc
108907	Chlorobenzene	660 nc	82 nc	1,700 nc
75003	Chloroethane	8,000 nc	330 nc	1.4E+05 nc
67663	Chloroform	9.2 ca	0.26 (M) ca	37 ca
74873	Chloromethane	180 nc	6.9 (M) nc	3,100 nc
110827	Cyclohexane	1,300 nc	320 (M) nc	2.1E+05 nc
75343	1,1-Dichloroethane	81 ca	2.6 (M) ca	530 ca
107062	1,2-Dichloroethane	25 ca	0.82 (M) ca	33 ca
75354	1,1-Dichloroethylene	200 nc	12 (M) nc	7,000 nc
156592	cis-1,2-Dichloroethylene	58 nc	2.1 (M) nc	280 nc
156605	trans-1,2-Dichloroethylene	240 nc	12 (M) nc	2,800 nc
60297	Diethyl ether	22,000 nc	350 nc	35,000 nc
108203	Diisopropyl ether	9,700 (DD) dev	190 (M) (DD) dev	23,000 (DD) dev
64175	Ethanol	6.7E+07 (EE) st	1.3E+06 (EE) st	6.3E+05 (EE) st
637923	Ethyl-tert-butyl ether (ETBE)	22 (CC) nc	DATA	13,000 nc
100414	Ethylbenzene	55 ca	12 (M) ca	340 ca
106934	Ethylene dibromide	3.6 ca	7.4E-02 (M) ca	1.4 ca

Table 2. Residential Volatilization to Indoor Air Criteria (VIAC). The following are unrestricted site-specific criteria that apply to a residential house with a basement, the depth to groundwater submitted for this site (i.e. 15 ft), and USDA soil type of sand.

CAS#	Hazardous Substance	Groundwater Not In Contact (GWNIC) (µg/L)	Soil (µg/kg)	Soil Gas** (µg/m ³)
86737	Fluorene	1,700 (S) sol	4.7E+05 nc	4,900 nc
142825	n-Heptane	150 (GW) nc	130 nc	1.2E+05 nc
110543	n-Hexane	29 (GW) nc	25 nc	24,000 nc
67630	Isopropyl alcohol	5.3E+05 nc	9,800 nc	7,000 nc
98828	Isopropyl benzene	12 ca	3.8 (M) ca	81 ca
Varies	Mercury (Total)	1.8 nc	22 nc	10 nc
1634044	Methyl-tert-butyl ether (MTBE)	4,900 ca	74 (M) ca	3,300 ca
96377	Methylcyclopentane	62 nc	29 (M) nc	24,000 nc
91576	2-Methylnaphthalene	1,600 nc	1,700 nc	350 nc
91203	Naphthalene	92 ca	67 (M) ca	25 ca
109660	Pentane	40 (M) (GW) nc	36 (M) nc	35,000 nc
85018	Phenanthrene	180 nc	1,700 nc	3.5 nc
1336363	Polychlorinated biphenyls (PCBs)	3.1E-02 (M) (CC) (J) ca	DATA	8.5 (J) ca
103651	n-Propylbenzene	5,000 (DD) dev	1,800 (DD) dev	33,000 (DD) dev
129000	Pyrene	140 (S) sol	2.5E+07 nc	3,500 nc
100425	Styrene	680 ca	150 ca	1,500 ca
630206	1,1,1,2-Tetrachloroethane	85 ca	3.2 (M) ca	110 ca
79345	1,1,2,2-Tetrachloroethane	59 ca	2.7 (M) ca	15 ca
127184	Tetrachloroethylene	120 (EE) st	6.2 (M) (EE) st	1,400 (EE) st
108883	Toluene	28,000 nc	3,700 nc	1.7E+05 nc
71556	1,1,1-Trichloroethane	11,000 (EE) st	450 (EE) st	1.7E+05 (EE) st
79005	1,1,2-Trichloroethane	9.9 nc	0.37 (M) nc	7.0 nc
79016	Trichloroethylene	7.5 (DD) dev	0.33 (M) (DD) dev	67 (DD) dev
540841	2,2,4-Trimethyl pentane	160 (GW) nc	130 (M) nc	1.2E+05 nc
526738	1,2,3-Trimethylbenzene	980 (JT) nc	270 (JT) nc	2,100 (JT) nc
95636	1,2,4-Trimethylbenzene	540 (JT) nc	150 (JT) nc	2,100 (JT) nc

Table 2. Residential Volatilization to Indoor Air Criteria (VIAC). The following are unrestricted site-specific criteria that apply to a residential house with a basement, the depth to groundwater submitted for this site (i.e. 15 ft), and USDA soil type of sand.

CAS#	Hazardous Substance	Groundwater Not In Contact (GWNIC) (µg/L)	Soil (µg/kg)	Soil Gas** (µg/m ³)
108678	1,3,5-Trimethylbenzene	380 (JT) nc	100 (JT) nc	2,100 (JT) nc
75014	Vinyl chloride	1.1 (MM) mut	8.2E-02 (MM) (M) mut	54 (MM) mut
1330207	Xylenes	1,500 (J) nc	280 (J) nc	7,600 (J) nc

FOOTNOTES

****Soil gas site-specific volatilization to indoor air (SSVIAC) are applicable for all depths.**

- Acceptable Air Values (AAV) endpoint basis used for SSVIAC: (**ca**) = Carcinogenic; (**nc**) = Non-Carcinogenic; (**dev**) = Developmental; (**mut**) = Mutagenic cancer; (**st**) = Short-term (i.e., less than chronic exposure).
- Footnote (**#**): Acceptable air concentrations (AAC) cannot be adjusted to a 12-hour exposure time for hazardous substance.
- Footnote **AA**: Health-based groundwater SSVIAC are not available due to insufficient toxicological data. Dissolved-phase methane in groundwater is not explosive; however, if liberated and allowed to accumulate in an enclosed structure the principle health and safety concerns are explosive, flammable, and asphyxiant properties of gas phase methane. The acceptable groundwater concentration is the flammability and explosivity screening level (**FESL**) of 10,000 µg/L.
- Footnote **C**: The health-based SSVIAC exceeds the chemical-specific soil saturation screening level (**Csat**). The person proposing or implementing response activity must document whether additional response activity is required to control non aqueous phase liquid (**NAPL**) to protect against risks associated with NAPL by using methods appropriate for the NAPL present.
- Footnote **CC**: Insufficient chemical-physical input parameters have been identified to allow the development of a health-based SSVIAC using standard methods. The health based SSVIAC for groundwater is developed based solely on the approach that the department uses for shallow groundwater. If groundwater detections are present, soil vapor may be the most appropriate media to evaluate risk posed from the VIAP.
- Footnote **DATA**: Insufficient physical chemical parameters to calculate a health based SSVIAC for specified media. If detections are present in specified media, health-based soil vapor SSVIAC should be used to evaluate risk.
- Footnote **DD**: Hazardous substance causes developmental effects. Residential SSVIAC are protective of both prenatal exposure using a pregnant female receptor and postnatal exposure using a child receptor. Nonresidential SSVIAC are protective of prenatal exposure using a pregnant female receptor. Prenatal developmental effects may occur after an acute (i.e. short-term) or full-term exposure.
- Footnote **EE**: The acceptable air concentration (**AAC**) for the volatile hazardous substances is not derived using standard methods. The hazardous substance may cause adverse human health effects for less than chronic exposures (i.e. short-term or acute). The AAC for these hazardous substances is the acute or intermediate minimum risk level (MRL) developed by the Agency for Toxic Substances and Disease Registry (ATSDR), a United States Environmental Protection Agency Integrated Risk Information System (IRIS) acute reference concentration, or EGLE's Air Quality Division acute initial threshold screening level (ITSL).
- Footnote **FF**: The AAC for the volatile hazardous substances are based on toxicity values that have been identified to have the potential to cause adverse human health effects for less than chronic exposures (i.e. short-term or acute). The short-term exposure for shallow groundwater health based SSVIAC are based on modification of the standard methods by the department to develop applicable shallow groundwater values.
- Footnote **GG**: Health-based SSVIAC for soil vapor are not available due to insufficient toxicological data. The soil vapor value addresses the health and safety concerns of explosive, flammable, and asphyxiant properties of gas phase methane. The acceptable soil vapor concentration is derived based on 25% of the lower explosive level (**LEL**) for methane.
- Footnote **GW**: The calculated health based SSVIAC for a hazardous substance based upon shallow groundwater is considered protective when it is greater than the calculated value for groundwater.
- Footnote **ID**: Requires further evaluation to determine the appropriate media to sample.
- Footnote **J**: Hazardous substance may be present in several isomer forms. Isomer-specific concentrations must be added together for comparison to criteria.
- Footnote **JT**: Hazardous substance may be present in several isomer forms. The health-based SSVIAC may be used for the individual isomer provided that it is the sole isomer detected; however, when multiple isomers are detected in a medium, the isomer-specific concentrations must be added together and compared to the most restrictive health-based SSVIAC of the detected isomers.
- Footnote **M**: The health based SSVIAC may be below target detection limits (**TDL**). In accordance with Sec. 20120a(10) when the TDL for a hazardous substance is greater than the developed health-based SSVIAC, the TDL is used to evaluate the risk posed from the pathway.
- Footnote **MM**: Hazardous substance is a carcinogen with a mutagenic mode of action. The cancer potency values used in calculating health-based SSVIAC are modified using age-dependent adjustment factors for those carcinogenic chemicals identified as mutagenic.
- Footnote **NA**: The hazardous substance does not meet the department's definition of a volatile; therefore, no health based SSVIAC were developed.
- Footnote **NR**: The hazardous substance has not been previously evaluated by the Remediation and Redevelopment Division Toxicology Unit. The identification, collection, and evaluation of toxicological literature and chemical-physical data cannot be completed within the timeframe requested.
- Footnote **S**: Calculated health-based SSVIAC exceeds the hazardous substance-specific water solubility limit; therefore, the water solubility limit is used to evaluate the risk posed from the pathway.
- Footnote **TX**: The Remediation and Redevelopment Division Toxicology Unit has not identified an inhalation toxicity value for the hazardous substance.

Appendix E

Site Specific Volatilization to Indoor Air Criteria

DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY

INTEROFFICE COMMUNICATION

TO: Matt Williams, Vapor Intrusion Specialist, RRD

FROM: Shane Morrison, Senior Toxicologist, RRD

DATE: March 6, 2020

SUBJECT: M1 Concourse Phase 4 - Building 16 Site-Specific Criteria Evaluation

The following site-specific volatilization to indoor air criteria (VIAC) are the Michigan Department of Environment, Great Lakes, and Energy's (EGLE's) determination of values that reflect best available information regarding the toxicity and exposure risks posed by the hazardous substances present at the facility. These values are based upon the information provided with the request to develop site-specific VIAC for this facility. These values may be used provided it is documented that the conditions used to develop the site-specific criteria are met at the facility. Other values may be developed by a person consistent with the statutory provisions for development of site-specific criteria and provided for EGLE review and approval.

Correspondence transmitting these values to the submitter/consultant as part of a report, review, or other request must incorporate the appropriate sections of the volatilization to indoor air pathway (VIAP) model document language. As indicated in this document, when groundwater volatilization to indoor air inhalation criteria (GVIIC) and soil volatilization to indoor air inhalation criteria (SVIIC) are not applicable, the correspondence must include language indicating the requirement to satisfy the site-specific VIAC for all three media i.e., groundwater, soil, and soil gas. In addition, all of the following site-specific VIAC tables must be copied into the correspondence or letter as part of your response to the submitter/consultant.

Unrestricted residential site-specific criteria were included in the evaluation based on information provided and EGLE's residential conceptual site model. Exceedance of the site-specific unrestricted residential criteria will require restrictions or institutional controls for closure or aid in the determination of off-site migration.

Nonresidential site-specific criteria may be adjusted for some hazardous substances to reflect a reasonable maximum worker exposure of 12-hour per day; however, if a person does not exceed the provided nonresidential site-specific criteria, no adjustment is necessary.

The site-specific criteria were generated using the United States Department of Agriculture (USDA) soil type of sand. Other site-specific criteria can be generated using a different soil type by providing soil characterization results from department approved methods on soils collected at the site.

Additional hazardous substances were included in the site-specific evaluation that were not explicitly requested. These hazardous substances may be components of recent petroleum. The preemptive site-specific evaluation of these substances was provided to limit the potential need for future resubmittal for this facility.

Please contact me at MorrisonS5@michigan.gov or 517-284-5063 if you require any clarification of these comments and criterion or have additional questions.

cc: Eric Wildfang, Toxicology Unit Supervisor, RRD
Paul Owens, District Supervisor, RRD
Cheryl Wilson, Assistant District Supervisor, RRD
Kevin Wojciechowski, Senior Environmental Quality Analyst, RRD

Table 1. Nonresidential Volatilization to Indoor Air Criteria (VIAC). The following are **restricted** site-specific criteria that apply to a nonresidential structure **< 50,000 ft²** with a **slab-on-grade**, the depth to groundwater submitted for this site (i.e. 15 ft), and USDA soil type of **sand**.

CAS#	Hazardous Substance	Groundwater Not In Contact (GWNIC) (µg/L)	Soil (µg/kg)	Soil Gas** (µg/m ³)
83329	Acenaphthene	3,900 (S) sol	3.6E+06 nc	11,000 nc
208968	Acenaphthylene	710 (CC) nc	DATA	11,000 nc
994058	t-Amyl methyl ether (TAME)	34,000 nc	600 nc	3,200 nc
120127	Anthracene	43 (S) sol	2.2E+08 nc	51,000 nc
71432	Benzene	520 ca	47 (M) ca	260 ca
56553	Benzo(a)anthracene	9.4 (S) sol	1.1E+07 ca	33 ca
75650	t-Butyl alcohol	4.0E+06 nc	57,000 nc	3,700 nc
104518	n-Butylbenzene	12,000 (S) sol	9,800 nc	10,000 nc
135988	sec-Butylbenzene	18,000 (S) sol	66,000 (C) nc (49,000)	20 nc
98066	t-Butylbenzene	31 nc	11 (M) nc	20 nc
108907	Chlorobenzene	13,000 nc	1,400 nc	2,600 nc
75003	Chloroethane	1.5E+05 nc	5,800 nc	2.0E+05 nc
67663	Chloroform	280 ca	7.4 (M) ca	87 ca
74873	Chloromethane	3,500 nc	120 (M) nc	4,600 nc
110827	Cyclohexane	25,000 nc	5,600 nc	3.1E+05 nc
75343	1,1-Dichloroethane	2,500 ca	74 ca	1,200 ca
107062	1,2-Dichloroethane	770 ca	23 (M) ca	77 ca
75354	1,1-Dichloroethylene	3,900 nc	220 nc	10,000 nc
156592	cis-1,2-Dichloroethylene	1,100 nc	37 (M) nc	410 nc
156605	trans-1,2-Dichloroethylene	4,600 nc	210 nc	4,100 nc
60297	Diethyl ether	4.2E+05 nc	6,200 nc	51,000 nc
108203	Diisopropyl ether	1.3E+05 (DD) dev	2,300 (DD) dev	23,000 (DD) dev
64175	Ethanol	9.7E+08 (EE) st	1.6E+07 (EE) st	6.3E+05 (EE) st
637923	Ethyl-tert-butyl ether (ETBE)	580 (CC) nc	DATA	19,000 nc
100414	Ethylbenzene	1,700 ca	340 ca	800 ca
106934	Ethylene dibromide	120 ca	2.1 (M) ca	3.3 ca

Table 1. Nonresidential Volatilization to Indoor Air Criteria (VIAC). The following are **restricted** site-specific criteria that apply to a nonresidential structure **< 50,000 ft²** with a **slab-on-grade**, the depth to groundwater submitted for this site (i.e. 15 ft), and USDA soil type of **sand**.

CAS#	Hazardous Substance	Groundwater Not In Contact (GWNIC) (µg/L)	Soil (µg/kg)	Soil Gas** (µg/m ³)
86737	Fluorene	1,700 (S) sol	8.3E+06 nc	7,200 nc
142825	n-Heptane	3,400 (S) (GW) sol	2,300 nc	1.8E+05 nc
110543	n-Hexane	1,000 (GW) nc	440 nc	36,000 nc
67630	Isopropyl alcohol	1.1E+07 nc	1.7E+05 nc	10,000 nc
98828	Isopropyl benzene	380 ca	110 (M) ca	190 ca
Varies	Mercury (Total)	34 nc	390 nc	15 nc
1634044	Methyl-tert-butyl ether (MTBE)	1.5E+05 ca	2,100 ca	7,700 ca
96377	Methylcyclopentane	1,200 nc	510 (M) nc	36,000 nc
91576	2-Methylnaphthalene	25,000 (S) sol	30,000 nc	510 nc
91203	Naphthalene	2,900 ca	1,900 ca	59 ca
109660	Pentane	1,400 (GW) nc	630 (M) nc	51,000 nc
85018	Phenanthrene	1,200 (S) sol	29,000 nc	5.1 nc
1336363	Polychlorinated biphenyls (PCBs)	0.97 (CC) (J) ca	DATA	20 (J) ca
103651	n-Propylbenzene	52,000 (S) (DD) sol	21,000 (DD) dev	33,000 (DD) dev
129000	Pyrene	140 (S) sol	4.4E+08 nc	5,100 nc
100425	Styrene	21,000 ca	4,300 ca	3,500 ca
630206	1,1,1,2-Tetrachloroethane	2,600 ca	91 (M) ca	270 ca
79345	1,1,2,2-Tetrachloroethane	1,900 ca	77 ca	34 ca
127184	Tetrachloroethylene	1,600 (EE) st	74 (EE) st	1,400 (EE) st
108883	Toluene	5.2E+05 (EE) st	64,000 (EE) st	2.5E+05 (EE) st
71556	1,1,1-Trichloroethane	1.9E+05 (EE) st	7,500 (EE) st	2.3E+05 (EE) st
79005	1,1,2-Trichloroethane	190 nc	6.6 (M) nc	10 nc
79016	Trichloroethylene	98 (DD) dev	4.0 (M) (DD) dev	67 (DD) dev
540841	2,2,4-Trimethyl pentane	2,400 (S) (GW) sol	2,200 (M) nc	1.8E+05 nc
526738	1,2,3-Trimethylbenzene	19,000 (JT) nc	4,800 (JT) nc	3,100 (JT) nc
95636	1,2,4-Trimethylbenzene	10,000 (JT) nc	2,600 (JT) nc	3,100 (JT) nc

Table 1. Nonresidential Volatilization to Indoor Air Criteria (VIAC). The following are **restricted** site-specific criteria that apply to a nonresidential structure **< 50,000 ft²** with a **slab-on-grade**, the depth to groundwater submitted for this site (i.e. 15 ft), and USDA soil type of **sand**.

CAS#	Hazardous Substance	Groundwater Not In Contact (GWNIC) (µg/L)	Soil (µg/kg)	Soil Gas** (µg/m ³)
108678	1,3,5-Trimethylbenzene	7,400 (JT) nc	1,800 (JT) nc	3,100 (JT) nc
75014	Vinyl chloride	120 ca	8.2 (M) ca	450 ca
1330207	Xylenes	28,000 (J) nc	5,000 (J) nc	11,000 (J) nc

Table 2. Residential Volatilization to Indoor Air Criteria (VIAC). The following are unrestricted site-specific criteria that apply to a residential house with a basement, the depth to groundwater submitted for this site (i.e. 15 ft), and USDA soil type of sand.

CAS#	Hazardous Substance	Groundwater Not In Contact (GWNIC) (µg/L)	Soil (µg/kg)	Soil Gas** (µg/m ³)
83329	Acenaphthene	3,900 (S) sol	2.0E+05 nc	7,300 nc
208968	Acenaphthylene	65 (CC) nc	DATA	7,300 nc
994058	t-Amyl methyl ether (TAME)	1,800 nc	34 (M) nc	2,200 nc
120127	Anthracene	43 (S) sol	1.3E+07 nc	35,000 nc
71432	Benzene	17 ca	1.7 (M) ca	110 ca
56553	Benzo(a)anthracene	9.4 (S) (MM) sol	1.6E+05 (MM) mut	5.8 (MM) mut
75650	t-Butyl alcohol	1.8E+05 nc	3,200 nc	2,500 nc
104518	n-Butylbenzene	970 nc	550 nc	7,000 nc
135988	sec-Butylbenzene	3,700 nc	3,800 nc	14 nc
98066	t-Butylbenzene	1.6 nc	0.64 (M) nc	14 nc
108907	Chlorobenzene	660 nc	82 nc	1,700 nc
75003	Chloroethane	8,000 nc	330 nc	1.4E+05 nc
67663	Chloroform	9.2 ca	0.26 (M) ca	37 ca
74873	Chloromethane	180 nc	6.9 (M) nc	3,100 nc
110827	Cyclohexane	1,300 nc	320 (M) nc	2.1E+05 nc
75343	1,1-Dichloroethane	81 ca	2.6 (M) ca	530 ca
107062	1,2-Dichloroethane	25 ca	0.82 (M) ca	33 ca
75354	1,1-Dichloroethylene	200 nc	12 (M) nc	7,000 nc
156592	cis-1,2-Dichloroethylene	58 nc	2.1 (M) nc	280 nc
156605	trans-1,2-Dichloroethylene	240 nc	12 (M) nc	2,800 nc
60297	Diethyl ether	22,000 nc	350 nc	35,000 nc
108203	Diisopropyl ether	9,700 (DD) dev	190 (M) (DD) dev	23,000 (DD) dev
64175	Ethanol	6.7E+07 (EE) st	1.3E+06 (EE) st	6.3E+05 (EE) st
637923	Ethyl-tert-butyl ether (ETBE)	22 (CC) nc	DATA	13,000 nc
100414	Ethylbenzene	55 ca	12 (M) ca	340 ca
106934	Ethylene dibromide	3.6 ca	7.4E-02 (M) ca	1.4 ca

Table 2. Residential Volatilization to Indoor Air Criteria (VIAC). The following are unrestricted site-specific criteria that apply to a residential house with a basement, the depth to groundwater submitted for this site (i.e. 15 ft), and USDA soil type of sand.

CAS#	Hazardous Substance	Groundwater Not In Contact (GWNIC) (µg/L)	Soil (µg/kg)	Soil Gas** (µg/m ³)
86737	Fluorene	1,700 (S) sol	4.7E+05 nc	4,900 nc
142825	n-Heptane	150 (GW) nc	130 nc	1.2E+05 nc
110543	n-Hexane	29 (GW) nc	25 nc	24,000 nc
67630	Isopropyl alcohol	5.3E+05 nc	9,800 nc	7,000 nc
98828	Isopropyl benzene	12 ca	3.8 (M) ca	81 ca
Varies	Mercury (Total)	1.8 nc	22 nc	10 nc
1634044	Methyl-tert-butyl ether (MTBE)	4,900 ca	74 (M) ca	3,300 ca
96377	Methylcyclopentane	62 nc	29 (M) nc	24,000 nc
91576	2-Methylnaphthalene	1,600 nc	1,700 nc	350 nc
91203	Naphthalene	92 ca	67 (M) ca	25 ca
109660	Pentane	40 (M) (GW) nc	36 (M) nc	35,000 nc
85018	Phenanthrene	180 nc	1,700 nc	3.5 nc
1336363	Polychlorinated biphenyls (PCBs)	3.1E-02 (M) (CC) (J) ca	DATA	8.5 (J) ca
103651	n-Propylbenzene	5,000 (DD) dev	1,800 (DD) dev	33,000 (DD) dev
129000	Pyrene	140 (S) sol	2.5E+07 nc	3,500 nc
100425	Styrene	680 ca	150 ca	1,500 ca
630206	1,1,1,2-Tetrachloroethane	85 ca	3.2 (M) ca	110 ca
79345	1,1,2,2-Tetrachloroethane	59 ca	2.7 (M) ca	15 ca
127184	Tetrachloroethylene	120 (EE) st	6.2 (M) (EE) st	1,400 (EE) st
108883	Toluene	28,000 nc	3,700 nc	1.7E+05 nc
71556	1,1,1-Trichloroethane	11,000 (EE) st	450 (EE) st	1.7E+05 (EE) st
79005	1,1,2-Trichloroethane	9.9 nc	0.37 (M) nc	7.0 nc
79016	Trichloroethylene	7.5 (DD) dev	0.33 (M) (DD) dev	67 (DD) dev
540841	2,2,4-Trimethyl pentane	160 (GW) nc	130 (M) nc	1.2E+05 nc
526738	1,2,3-Trimethylbenzene	980 (JT) nc	270 (JT) nc	2,100 (JT) nc
95636	1,2,4-Trimethylbenzene	540 (JT) nc	150 (JT) nc	2,100 (JT) nc

Table 2. Residential Volatilization to Indoor Air Criteria (VIAC). The following are unrestricted site-specific criteria that apply to a residential house with a basement, the depth to groundwater submitted for this site (i.e. 15 ft), and USDA soil type of sand.

CAS#	Hazardous Substance	Groundwater Not In Contact (GWNIC) (µg/L)	Soil (µg/kg)	Soil Gas** (µg/m ³)
108678	1,3,5-Trimethylbenzene	380 (JT) nc	100 (JT) nc	2,100 (JT) nc
75014	Vinyl chloride	1.1 (MM) mut	8.2E-02 (MM) (M) mut	54 (MM) mut
1330207	Xylenes	1,500 (J) nc	280 (J) nc	7,600 (J) nc

FOOTNOTES

**Soil gas site-specific volatilization to indoor air (SSVIAC) are applicable for all depths.

- Acceptable Air Values (AAV) endpoint basis used for SSVIAC: (**ca**) = Carcinogenic; (**nc**) = Non-Carcinogenic; (**dev**) = Developmental; (**mut**) = Mutagenic cancer; (**st**) = Short-term (i.e., less than chronic exposure).
- Footnote (**#**): Acceptable air concentrations (AAC) cannot be adjusted to a 12-hour exposure time for hazardous substance.
- Footnote **AA**: Health-based groundwater SSVIAC are not available due to insufficient toxicological data. Dissolved-phase methane in groundwater is not explosive; however, if liberated and allowed to accumulate in an enclosed structure the principle health and safety concerns are explosive, flammable, and asphyxiant properties of gas phase methane. The acceptable groundwater concentration is the flammability and explosivity screening level (**FESL**) of 10,000 µg/L.
- Footnote **C**: The health-based SSVIAC exceeds the chemical-specific soil saturation screening level (**Csat**). The person proposing or implementing response activity must document whether additional response activity is required to control non aqueous phase liquid (**NAPL**) to protect against risks associated with NAPL by using methods appropriate for the NAPL present.
- Footnote **CC**: Insufficient chemical-physical input parameters have been identified to allow the development of a health-based SSVIAC using standard methods. The health based SSVIAC for groundwater is developed based solely on the approach that the department uses for shallow groundwater. If groundwater detections are present, soil vapor may be the most appropriate media to evaluate risk posed from the VIAP.
- Footnote **DATA**: Insufficient physical chemical parameters to calculate a health based SSVIAC for specified media. If detections are present in specified media, health-based soil vapor SSVIAC should be used to evaluate risk.
- Footnote **DD**: Hazardous substance causes developmental effects. Residential SSVIAC are protective of both prenatal exposure using a pregnant female receptor and postnatal exposure using a child receptor. Nonresidential SSVIAC are protective of prenatal exposure using a pregnant female receptor. Prenatal developmental effects may occur after an acute (i.e. short-term) or full-term exposure.
- Footnote **EE**: The acceptable air concentration (**AAC**) for the volatile hazardous substances is not derived using standard methods. The hazardous substance may cause adverse human health effects for less than chronic exposures (i.e. short-term or acute). The AAC for these hazardous substances is the acute or intermediate minimum risk level (MRL) developed by the Agency for Toxic Substances and Disease Registry (ATSDR), a United States Environmental Protection Agency Integrated Risk Information System (IRIS) acute reference concentration, or EGLE's Air Quality Division acute initial threshold screening level (ITSL).
- Footnote **FF**: The AAC for the volatile hazardous substances are based on toxicity values that have been identified to have the potential to cause adverse human health effects for less than chronic exposures (i.e. short-term or acute). The short-term exposure for shallow groundwater health based SSVIAC are based on modification of the standard methods by the department to develop applicable shallow groundwater values.
- Footnote **GG**: Health-based SSVIAC for soil vapor are not available due to insufficient toxicological data. The soil vapor value addresses the health and safety concerns of explosive, flammable, and asphyxiant properties of gas phase methane. The acceptable soil vapor concentration is derived based on 25% of the lower explosive level (**LEL**) for methane.
- Footnote **GW**: The calculated health based SSVIAC for a hazardous substance based upon shallow groundwater is considered protective when it is greater than the calculated value for groundwater.
- Footnote **ID**: Requires further evaluation to determine the appropriate media to sample.
- Footnote **J**: Hazardous substance may be present in several isomer forms. Isomer-specific concentrations must be added together for comparison to criteria.
- Footnote **JT**: Hazardous substance may be present in several isomer forms. The health-based SSVIAC may be used for the individual isomer provided that it is the sole isomer detected; however, when multiple isomers are detected in a medium, the isomer-specific concentrations must be added together and compared to the most restrictive health-based SSVIAC of the detected isomers.
- Footnote **M**: The health based SSVIAC may be below target detection limits (**TDL**). In accordance with Sec. 20120a(10) when the TDL for a hazardous substance is greater than the developed health-based SSVIAC, the TDL is used to evaluate the risk posed from the pathway.
- Footnote **MM**: Hazardous substance is a carcinogen with a mutagenic mode of action. The cancer potency values used in calculating health-based SSVIAC are modified using age-dependent adjustment factors for those carcinogenic chemicals identified as mutagenic.
- Footnote **NA**: The hazardous substance does not meet the department's definition of a volatile; therefore, no health based SSVIAC were developed.
- Footnote **NR**: The hazardous substance has not been previously evaluated by the Remediation and Redevelopment Division Toxicology Unit. The identification, collection, and evaluation of toxicological literature and chemical-physical data cannot be completed within the timeframe requested.
- Footnote **S**: Calculated health-based SSVIAC exceeds the hazardous substance-specific water solubility limit; therefore, the water solubility limit is used to evaluate the risk posed from the pathway.
- Footnote **TX**: The Remediation and Redevelopment Division Toxicology Unit has not identified an inhalation toxicity value for the hazardous substance.



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