



Memorandum

October 2, 2019

To: Peter Ramanauskas/U.S. EPA

Ref. No.: 017322A

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**Subject: First and Second Quarter 2019 Sampling Results
RACER Trust PCC-Validation
Pontiac, Michigan**

1. Introduction

GHD is providing this memorandum on behalf of Revitalizing Auto Communities Environmental Response (RACER) Trust for the former PCC-Validation property in Pontiac, Michigan (Site) (Figure 1). The purpose of this memorandum is to provide the results from the first and second quarter 2019 sampling events and to provide information regarding the re-installed monitoring wells on Site. The sampling activities were conducted as per the March 5, 2018 Interim Groundwater Monitoring Plan (IGWMP). The IGWMP amended the Sampling and Analysis (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 description of work completed below includes the first and second quarter 2019 sampling and analysis and additional information pertaining to the re-installed monitoring wells on Site.

2. Background

A second phase of monitoring well installation was completed in May 2019 as per the May 2018 IGWMP. In total, five monitoring wells (Figure 1) were installed and developed (MW21-07, MW68-08, MW79I-19, MW79D-19 and MW87-12). Wells were installed via hollow-stem auger and screens were installed at various intervals. Information regarding well installation can be found in the June 19th letter to M1 Concourse, Attachment A. Cross sections completed in 2015 were updated to reflect the reinstalled MW79I/D-19 and are shown in Figures 4-6. The newly installed monitoring wells were first sampled during the second quarterly 2019 groundwater sampling event. Additional proposed monitoring wells will be installed when redevelopment progresses in the southern-central portion of the Site.



3. First and Second Quarter 2019 Groundwater Sampling and Analytical Results

3.1 Sampling Methodology

Quarterly sampling events were conducted on March 19 and 20, 2019 and June 25 through 27, 2019. During the March 2019 quarterly event, ten monitoring wells were sampled (MW02-07, MW10-07, MW33-07, MW64-08, MW80-12, MW81-12, MW85-12, MW92S-13, MW92I-13, and MW93I-13). During the June 2019 Quarterly event, the newly installed monitoring wells (see Figure 1) were incorporated into the sampling scope of work. Therefore, during the June 2019 Quarterly event, fifteen (15) monitoring wells were sampled, which included (MW02-07, MW10-07, MW33-07, MW38-07, MW64-08, MW68-08, MW79I-19, MW79D-19, MW80-12, MW81-12, MW, 85-12, MW87-12, MW92S-12, MW92I-12, and MW93I-13). MW21-07 was dry; therefore, a sample could not be collected.

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 samples were analyzed using USEPA Method 8260 for VOCs and/or Method 6020 for Aluminum, Lead, and Vanadium. During the March 2019 sampling event, dissolved Aluminum was analyzed to allow for consideration of the impact of suspended solids on the results. The March and June 2019 groundwater samples were shipped under chain-of-custody protocol via courier to TestAmerica Laboratories in North Canon, Ohio for analysis. Table 2 presents the sample analysis summary. See Attachment B for the low-flow sampling field notes.

3.2 Analytical Results

Groundwater analytical results were compared to all EGLE Cleanup Criteria Requirements for Response Activity (RAA) (Formerly the Part 201 Generic Cleanup Criteria and Screening Levels). The following is a summary of the results:

- Trichloroethylene (TCE) was the only VOC detected above EGLE Cleanup Criteria RRA. MW79I-19 with a concentration of 8.2 ug/L exceeded the EGLE Cleanup Criteria RRA, Nonresidential and Residential Drinking Water Criteria (DWC) (June 2019) of 5 ug/L
- Aluminum exceeded the EGLE Cleanup Criteria RRA, Nonresidential and Residential DWC at MW10-07 (March and June 2019) and MW-33-07 (June 2019)
- Aluminum (dissolved) exceeded the EGLE Cleanup Criteria RRA, Nonresidential and Residential DWC at MW10-07 (June 2019)
- Vanadium exceeded the EGLE Cleanup Criteria RRA, Nonresidential DWC at MW10-07 (March and June 2019)



- All other analyzed constituents were not detected or detected at concentrations below EGLE Cleanup Criteria RRA

Groundwater results are shown in Figure 2 and a summary of results compared against EGLE Cleanup Criteria RRA is presented in Table 3. Laboratory Analytical Reports are presented in Attachment C.

4. Discussion

Groundwater levels were collected during the first and second quarter 2019 sampling events; however, no groundwater contour map is provided in this summary memorandum. A groundwater contour map with the limited well distribution is not anticipated to present an accurate representation of groundwater gradient or flow on-Site. Based on the known hydrogeology of the Site, the saturated units are generally limited in connectivity. Once all required monitoring wells are installed, a groundwater contour map will be created to identify the groundwater flow direction and hydraulic gradient.

Most groundwater levels were generally consistent with historic levels. However, as identified in Table 1, levels in monitoring wells MW10-07 and MW38-07 are inconsistent with historic water levels. MW10-07 appeared to normalize closer to historic levels compared with the previous two groundwater level events in 2018. The monitoring well at MW38-07 was re-installed near an area of utility runs which may affect groundwater in the area. During previous rounds of sampling, MW38-07 was dry and the Second Quarter 2019 was the first with groundwater able to be sampled. MW21-07 was dry during both sampling events; therefore, could not be sampled.

During the first quarter 2019 sampling events, no VOCs were detected above EGLE Cleanup Criteria RRA including MW92I-13, which is located off-Site to the north of the Site. TCE above EGLE Cleanup Criteria RRA was detected during the second quarter 2019 sampling event at newly installed monitoring well MW79I-19, located at the northern property boundary. TCE concentrations resulting from an unknown source associated with historic operations at the Site are consistent with historical data at the former MW79I-12 and are delineated down gradient within property boundaries at MW02-12, where data show non-detect results for TCE.

Aluminum (total and dissolved) in monitoring well MW10-07 exceeded the EGLE Cleanup Criteria RRA Nonresidential DWC for Aluminum, which is consistent with previous groundwater data. Dissolved aluminum exceeded EGLE Cleanup Criteria RRA but the reported concentration is nearly an order of magnitude lower than the reported total concentration. Based on information collected during low-flow purging procedures and documented on field forms provided in Attachment A, turbidity appears to significantly affect the concentration of aluminum.

Total vanadium in MW10-07 exceeded the EGLE Cleanup Criteria RRA Residential DWC. Dissolved vanadium at MW10-07 was below EGLE Cleanup Criteria RRA. Therefore, turbidity appears to significantly affect the concentration of vanadium. Going forward, both total and dissolved metals analyses will be collected at MW10-07, MW21-07, MW33-07, and MW38-07 to verify these interpretations.



It is anticipated the final round of groundwater monitoring well installation will be conducted in 2020, once construction of the new structures on the southern-central portion of M1's property is complete. See Figure 3 for a Site map with proposed monitoring well locations. Proposed monitoring well locations are subject to change based on final placement of on-Site structures and utilities.

5. Schedule

The following schedule is dependent upon access to the property and subcontractor availability.

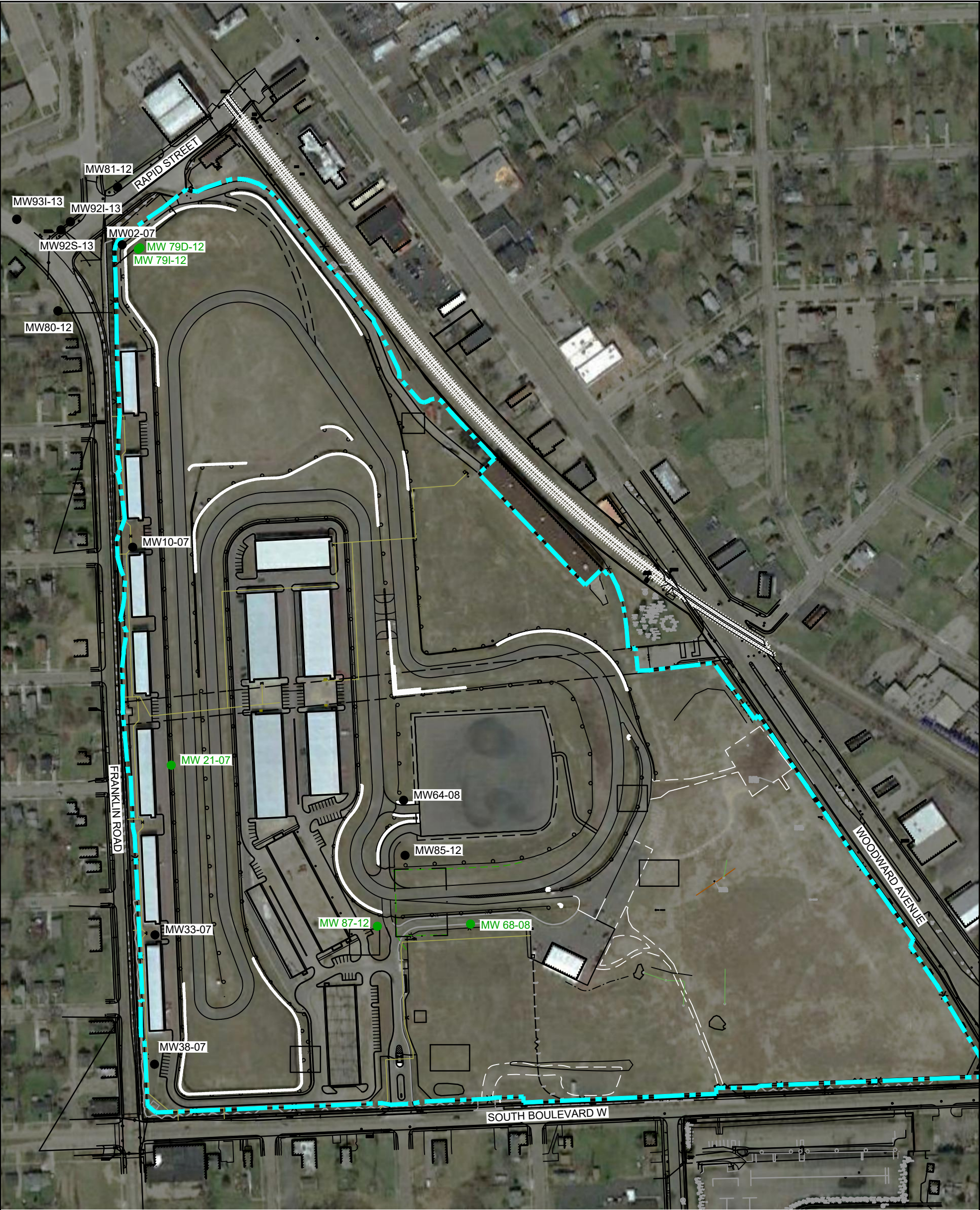
Task:

First and Second Quarter 2019 Sampling Results
Quarterly Groundwater Monitoring
Quarterly Groundwater Monitoring
Third and Fourth Quarter 2019 Sampling Results
Quarterly Groundwater Monitoring
Third Phase of Monitoring Well Installation
Quarterly Groundwater Monitoring
First and Second Quarter 2020 Sampling Results

Approximate Timeline:

August 2019 - Completed
September 2019
December 2019
February 2020
March 2020
Second Quarter 2020
June 2020
August 2020

Encl:	Figure 1:	Site Map with 2019 Monitoring Well Locations
	Figure 2:	Site Map with VOC and Metals Results
	Figure 3:	Site Map with Current and Proposed Monitoring Well Locations
	Table 1:	Groundwater Elevation Summary
	Table 2:	Sample Analysis Summary
	Table 3:	First and Second Quarter 2019 Groundwater Analytical Results 2019
	Attachment A:	Monitoring Well Installation Letter to M1 Concourse
	Attachment B:	Low-Flow Sampling Field Notes
	Attachment C:	Laboratory Analytical Reports



LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- RAILROAD
- MW80-12 MONITORING WELL LOCATION
- MW21-07 MONITORING WELL LOCATION (MAY, 2019)

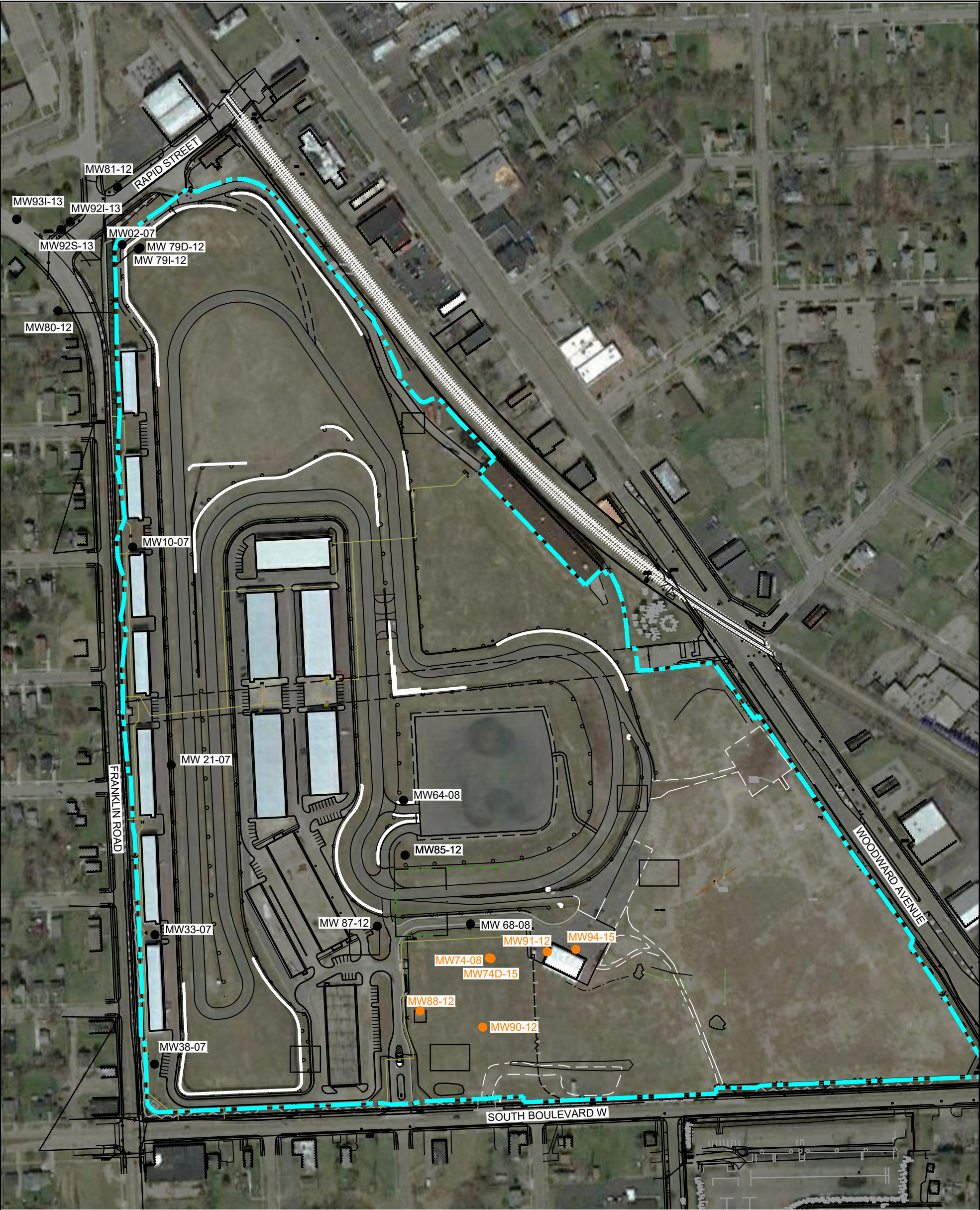
Source: GOOGLE EARTH (DIGITAL GLOBE 4/7/2017)



RACER
1 CONCOURSE DRIVE
PONTIAC, MICHIGAN
SITE MAP WITH
2019 MONITORING WELL LOCATIONS

017322A-T04
Sep 30, 2019

FIGURE 1



LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- RAILROAD
- MW80-12 MONITORING WELL LOCATION
- MW90-12 PROPOSED MONITORING WELL LOCATION

Source: GOOGLE EARTH (DIGITAL GLOBE 4/7/2017)



RACER
1 CONCOURSE DRIVE
PONTIAC, MICHIGAN
SITE MAP WITH CURRENT AND PROPOSED
MONITORING LOCATIONS

017322A-T04
Oct 1, 2019

FIGURE 3

Table 1

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

Sample Location	Current Ground Elevation (FT AMSL)	Current Screen Elevation (FT AMSL)			First Quarter 2019 Depth To Groundwater (FT BGS)	First Quarter 2019 Groundwater Elevation (FT AMSL)	Change in Groundwater Elevation: Previous Vs. Current (FT)	Second Quarter 2019 Depth To Groundwater (FT BGS)	Second Quarter 2019 Groundwater Elevation (FT AMSL)	Change in Groundwater Elevation: Previous Vs. Current (FT)
MW02-07	936.15	924.75	-	919.75	12.09	923.54	0.19	11.86	923.77	-0.04
MW10-07	943.34	930.79	-	925.79	15.02	928.07	9.49	11.82	931.27	6.29
MW21-07	950.67	939.67		934.67	NA	Dry	Dry	NA	Dry	Dry
MW33-07	947.89	930.65	-	925.65	18.48	929.02	1.59	16.80	930.70	-0.09
MW38-07	948.99	936.79	-	931.79	Dry	Dry	Dry	14.99	933.51	10.02
MW64-08	947.31	937.06	-	932.06	7.14	939.89	-0.10	6.06	940.97	-1.18
MW68-08	956.34	946.34		941.34	NA	NA	NA	12.71	943.34	1.37
MW79I-19*	936.43	919.43		914.43	NA	NA	NA	12.04	924.09	2.37
MW79D-19*	936.45	906.45		901.45	NA	NA	NA	10.68	925.53	0.93
MW85-12	948	944.80	-	939.80	5.44	942.28	1.45	3.42	944.30	-0.57
MW87-12	951.29	941.29		936.29	NA	NA	NA	8.81	942.18	0.06

Footnotes:

FT AMSL - Feet above mean sea level

FT BGS - Feet below ground surface

NA - No data available

Dry - No groundwater encountered

* - Both wells compared against historic MW79-12 data

Table 2

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

Matrix	Sample ID	Sample Location	Date	QA/QC	Analysis
March 2019 Groundwater Sampling Event (First Quarter)					
Groundwater	GW-17322A-031919-JY-001	MW64-08	3/19/2019	NA	TCL VOCs
Groundwater	GW-17322A-031919-JY-002	MW85-12	3/19/2019	MS/MSD	TCL VOCs
Groundwater	GW-17322A-031919-JY-003	MW02-07	3/19/2019	NA	TCL VOCs
Groundwater	GW-17322A-031919-JY-004	MW02-07	3/19/2019	Dupe	TCL VOCs
Groundwater	GW-17322A-031919-JY-005	MW33-07	3/19/2019	NA	AL, PB, V
Groundwater	GW-17322A-032019-JY-006	MW10-07	3/20/2019	NA	AL, PB, V + Dissolved
Groundwater	GW-17322A-032019-JY-007	MW93I-13	3/20/2019	NA	TCL VOCs
Groundwater	GW-17322A-032019-JY-008	MW81-12	3/20/2019	NA	TCL VOCs
Groundwater	GW-17322A-032019-JY-009	MW80-12	3/20/2019	NA	TCL VOCs
Groundwater	GW-17322A-032119-JY-010	MW92I-13	3/21/2019	NA	TCL VOCs
Groundwater	GW-17322A-032119-JY-011	MW92S-13	3/21/2019	NA	TCL VOCs
June 2019 Groundwater Sampling Event (Second Quarter)					
Groundwater	GW-17322-062519-SK-001	MW02-07	6/25/2019		TCL VOCs
Groundwater	GW-17322-062519-SK-005	MW10-07	6/25/2019		AL, PB, V
Groundwater	NA	MW21-07	NA		AL, PB, V
Groundwater	GW-17322-062519-SK-006	MW33-07	6/25/2019		AL, PB, V
Groundwater	GW-17322-062619-SK-011	MW38-07	6/26/2019		AL, PB, V
Groundwater	GW-17322-062619-SK-008	MW64-08	6/26/2019		TCL VOCs
Groundwater	GW-17322-062619-SK-010	MW68-08	6/26/2019	MS/MSD	TCL VOCs
Groundwater	GW-17322-062519-SK-002	MW79I-19	6/25/2019		TCL VOCs
Groundwater	GW-17322-062519-SK-003	MW79I-19	6/25/2019	Dupe	TCL VOCs
Groundwater	GW-17322-062519-SK-004	MW79D-19	6/25/2019		TCL VOCs
Groundwater	GW-17322-062719-SK-016	MW80-12	6/27/2019		TCL VOCs
Groundwater	GW-17322-062719-SK-015	MW81-12	6/27/2019		TCL VOCs
Groundwater	GW-17322-062619-SK-007	MW85-12	6/26/2019		TCL VOCs
Groundwater	GW-17322-062619-SK-009	MW87-12	6/26/2019		TCL VOCs
Groundwater	GW-17322-062719-SK-014	MW92S-12	6/27/2019		TCL VOCs
Groundwater	GW-17322-062719-SK-013	MW92I-12	6/27/2019		TCL VOCs
Groundwater	GW-17322-062719-SK-012	MW93I-13	6/27/2019		TCL VOCs

Footnotes:

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 3
First and Second Quarter 2019 Groundwater Analytical Results
RACER PCC - Validation
Pontiac, Michigan

Sample Location:					EGLE Generic Groundwater Cleanup Criteria: Residential and Nonresidential (1)																		MW02-07	MW02-07	MW02-07	MW10-07	MW10-07	MW33-07	MW33-07	MW38-07	MW64-08	MW64-08	MW68-08	MW79D-19	MW79i-19	MW79i-19	MW80-12	MW80-12	MW81-12	MW81-12	MW85-12	MW85-12	MW87-12																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
Sample Date:					Residential	Non-Residential	Groundwater	3/19/2019	3/19/2019	6/25/2019	3/20/2019	6/25/2019	3/19/2019	6/25/2019	6/26/2019	3/19/2019	6/26/2019	6/26/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019	6/25/2019

Table 3
First and Second Quarter 2019 Groundwater Analytical Results
RACER PCC - Validation
Pontiac, Michigan

Sample Location:	EGLE Generic Groundwater Cleanup Criteria:			MW92i-13	MW92i-13	MW92S-13	MW92S-13	MW93i-13	MW93i-13
	Residential and Nonresidential (1)			3/21/2019	6/27/2019	3/21/2019	6/27/2019	3/20/2019	6/27/2019
Sample Date:	Residential	Non-Residential	Groundwater						
Sample Type:	Drinking Water	Drinking Water	Surface Water Interface						
Metals	Units	a	b	c					
Aluminum	ug/L	50	50		--	--	--	--	--
Aluminum (dissolved)	ug/L	50	50		--	--	--	--	--
Lead	ug/L	4	4	4	--	--	--	--	--
Lead (dissolved)	ug/L	4	4	4	--	--	--	--	--
Vanadium	ug/L	4.5	62	27	--	--	--	--	--
Vanadium (dissolved)	ug/L	4.5	62	27	--	--	--	--	--
Volatile Organic Compounds (VOCs)									
1,1,1-Trichloroethane	ug/L	200	200	89	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	ug/L	8.5	35	78	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	ug/L	5	5	330	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	ug/L	880	2500	740	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	ug/L	7	7	130	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene	ug/L	70	70	99	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	0.2	0.2		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dibromoethane (Ethylene dibromide)	ug/L	0.05	0.05	5.7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene	ug/L	600	600	13	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	ug/L	5	5	360	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloropropane	ug/L	5	5	230	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene	ug/L	6.6	19	28	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	ug/L	75	75	17	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone (Methyl ethyl ketone) (MEK)	ug/L	13000	38000	2200	10 U	10 U	10 U	10 U	10 U
2-Hexanone	ug/L	1000	2900	ID	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone (Methyl isobutyl ketone) (MIBK)	ug/L	1800	5200	ID	10 U	10 U	10 U	10 U	10 U
Acetone	ug/L	730	2100	1700	10 U	10 U	10 U	10 U	10 U
Benzene	ug/L	5	5	200	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromodichloromethane	ug/L	80	80	ID	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromoform	ug/L	80	80	ID	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromomethane (Methyl bromide)	ug/L	10	29	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon disulfide	ug/L	800	2300	ID	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Carbon tetrachloride	ug/L	5	5	38	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	ug/L	100	100	25	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroethane	ug/L	430	1700	1100	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform (Trichloromethane)	ug/L	80	80	350	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane (Methyl chloride)	ug/L	260	1100	ID	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	ug/L	70	70	620	0.23 J	0.20 J	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
Cyclohexane	ug/L				1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dibromochloromethane	ug/L	80	80	ID	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dichlorodifluoromethane (CFC-12)	ug/L	1700	4800	ID	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	ug/L	74	74	18	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Isopropyl benzene	ug/L	800	2300	28	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
Methyl cyclohexane	ug/L				1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methyl tert butyl ether (MTBE)	ug/L	40	40	7100	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Methylene chloride	ug/L	5	5	1500	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Styrene	ug/L	100	100	80	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	ug/L	5	5	60	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	ug/L	790	790	270	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	ug/L	100	100	1500	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
Trichloroethene	ug/L	5	5	200	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichlorofluoromethane (CFC-11)	ug/L	2600	7300		1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trifluorotrichloroethane (CFC-113)	ug/L	170000	170000	32	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl chloride	ug/L	2	2	13	0.66 J	1.1	1.0 U	1.0 U	1.0 U
Xylenes (total)	ug/L	280	280	49	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U

Footnotes:
U The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J The associated value is qualified as an estimated quantity.
(1) EGLE (Michigan) Cleanup Criteria RRA, administrative rule R 299.44 effective December 30, 2013, formerly the Part 201 Generic Cleanup Criteria and Screening Levels
NA Criteria not available or not applicable

7.4^{ab}

 - Boxed cell denotes exceedance of cleanup criteria screening level identified by superscript.
-- Sample not analyzed
ID Insufficient data to develop criterion
NLV Not likely to volitilize under most conditions

Attachment A

Monitoring Well Installation Letter to M1 Concourse



June 19, 2019

Reference No. 017322A-01

Mr. Roger Zlotoff and Mr. Jordan Zlotoff
M1 Concourse, LLC.
280 Daines Street
Birmingham, MI 48009

Dear Mr. Zlotoff(s):

**Re: Summary of On-Site Activities
Monitoring Well Installation
PCC- Validation
Pontiac, Michigan**

1. Introduction

GHD Services Inc. (GHD) is providing this memorandum to summarize on-Site activities associated with monitoring well installation at the PCC-Validation Site (now M1 Concourse property) located in Pontiac, Michigan (Site). In 2014, M1 began re-development of the Site. During redevelopment, it was necessary to remove all groundwater monitoring wells. At the request of the U.S. Environmental Protection Agency (US EPA) and in accordance with the Remediation and Redevelopment Coordination Plan (RRCP) it was agreed certain monitoring wells would be re-installed following Site redevelopment. This letter report documents the coordination between M1 and RACER Trust (RACER) to re-install approved monitoring wells as per the U.S. EPA approved May 2018 interim groundwater monitoring plan (IGWMP).

2. Background

The monitoring wells were re-installed as per the May 2018 IGWMP that 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 summary of activities described in Section 3 is considered the Second Phase of monitoring well re-installation. Not all monitoring wells were re-installed due to continuing Site redevelopment. It is anticipated the remainder of monitoring wells will be re-installed following completion of Site redevelopment.

3. Summary of Activities

Monitoring Well Installation and Development

From May 21, 2019 through May 24, 2019, GHD mobilized to the Site to reinstall monitoring wells as per the May 2018 IGWMP. Prior to installation of monitoring wells, the US EPA requested an additional monitoring well near monitoring well MW79-12 due to the presence of a long screened interval in abandoned MW79-12 and the potential for intermediate and deep saturated sand units. Therefore,



monitoring wells MW79I-19 and MW79D-19 were installed to provide adequate characterization of the intermediate and deep saturated units. Since the additional well was out of scope, installation of the additional monitoring well MW79D-19 will not be changed to M1.

A total of five (5) monitoring wells (Figure 1) were installed and developed during this event (MW21-07, MW68-08, MW79I-19, MW79D-19 and MW87-12). Wells were installed via hollow-stem auger and screens were installed at various intervals (see below table and Attachment A). Wells were developed with a submersible pump and dedicated tubing. Well volume was calculated and 40 times the calculated well volume was removed at minimum during development activities. During installation of MW21-07, groundwater was encountered at approximately 10.60 feet below ground surface; however, during development the well was dry. It is possible the well is in a slow recharge unit and will be further assessed during the next sampling event. See table below for well construction information:

Well ID	Installation Date (mm/dd/yyyy)	Well Type	Top of Screen (feet bgs)	Bottom of Screen (feet bgs)	Screen Length (feet)	Depth to Water (feet bgs)
MW21-07	05/22/2019	flushmount	11.00	16.00	5.0	DRY
MW68-08	05/24/2019	flushmount	10.00	15.00	5.0	13.50
MW79I-19	05/21/2019	flushmount	17.00	22.00	5.0	17.80
MW79D-19	05/21/2019	flushmount	30.00	35.00	5.0	33.00
MW87-12	05/22/2019	flushmount	10.00	15.00	5.0	12.30

Please contact me if you would like to discuss this letter report further. Thank you.

Sincerely,

GHD

Michael Coram, C.P.G.

MC/ds/

Att: Figure 1 – Site Map with Monitoring Well Locations
Attachment A - Stratigraphic and Instrumentation Logs and Well Details



LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- - - RAILROAD
- MW80-12 MONITORING WELL LOCATION
- MW21-07 MONITORING WELL LOCATION (MAY, 2019)

Source: GOOGLE EARTH (DIGITAL GLOBE 4/7/2017)



RACER
1 CONCOURSE DRIVE
PONTIAC, MICHIGAN
SITE MAP WITH
2019 MONITORING WELL LOCATIONS

017322-T03
Jun 14, 2019

FIGURE 1

Attachment A

Stratigraphic and Instrumentation Logs and Well Details



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: PCC VALIDATION

HOLE DESIGNATION: MW21-07

PROJECT NUMBER: 017322

DATE COMPLETED: May 22, 2019

CLIENT: RACER

DRILLING METHOD: DIRECT PUSH/HOLLOW STEM AUGER

LOCATION: PONTIAC, MICHIGAN

FIELD PERSONNEL: S. KIPPEN

DRILLING COMPANY: GHD SERVICES

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft	MONITORING WELL	SAMPLE				
				NUMBER	INTERVAL	REC (%)	N' VALUE	PID (ppm)
	TOPSOIL	0.20	CONCRETE					
2	CL-SILTY CLAY (FILL), trace sand, with fine to coarse gravel, stiff, low plasticity, brown, moist		SAND	1DP		70		0.1
4	SP-GRAVELLY SAND (FILL), compact, fine to coarse sand and gravel, poorly graded, brown, moist	2.50	2" Ø PVC WELL CASING					2.2
6			BENTONITE CHIPS					
8	CL-SILTY CLAY (FILL), trace sand, with fine to coarse gravel, stiff, low plasticity, brown, moist	7.00		2DP		85		0.5
10	CL-SILTY CLAY, stiff, low plasticity, gray, moist	8.60						0.5
12	ML-SANDY SILT, compact, fine grained, light brown, wet	10.60	8" Ø BOREHOLE					
14	SM-SILTY SAND, compact, fine grained, poorly graded, brown, wet	12.40	SAND PACK	3DP		95		0.2
16	CL-SILTY CLAY, trace sand, firm. low plasticity, light brown, moist	12.70						0.8
18	SM-SILTY SAND, compact, fine grained, poorly graded, brown, moist	14.30	2" Ø PVC WELL SCREEN					
20	SP-GRAVELLY SAND, trace silt, compact, fine to coarse sand and gravel, poorly graded, brown, moist	15.00						
22	CL-SILTY CLAY, with sand, trace fine to coarse gravel, stiff, low plasticity, gray, moist	17.50		4DP		65		0.5
24	END OF BOREHOLE @ 20.0ft BGS	20.00						0.8

WELL DETAILS

Screened interval:

11.00 to 16.00ft BGS

Length: 5ft

Diameter: 2in

Slot Size: 0.010

Material: PVC

Seal:

2.00 to 8.80ft BGS

Material: BENTONITE CHIPS

Sand Pack:

8.80 to 16.00ft BGS

Material: #4 SAND

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

WATER FOUND ∇ 5/22/2019

OVERBURDEN LOG 017322-RACER-WI.GPJ GHD_Corp 6/6/19



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: PCC VALIDATION

HOLE DESIGNATION: MW68-08

PROJECT NUMBER: 017322

DATE COMPLETED: May 24, 2019

CLIENT: RACER

DRILLING METHOD: DIRECT PUSH/HOLLOW STEM AUGER

LOCATION: PONTIAC, MICHIGAN

FIELD PERSONNEL: S. KIPPEN

DRILLING COMPANY: GHD SERVICES

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft	MONITORING WELL	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' VALUE	PID (ppm)
	TOPSOIL	0.40	CONCRETE					
2	SM-SILTY SAND (FILL), trace clay, with fine to coarse angular gravel, compact, fine to coarse sand, poorly graded, browns/grays, moist - black slag material from 2.3 to 2.6ft BGS	2.60	SAND	1DP		75		6.0
4	CL-SILTY CLAY, trace sand, trace fine to coarse gravel, stiff, low plasticity, brown, moist		2" Ø PVC WELL CASING					
6			BENTONITE CHIPS					7.5
8				2DP		100		13.0
10	- brownish gray from 9.5 to 13.5ft BGS		8" Ø BOREHOLE					115.0
12	- sand seam, wet from 11.5 to 11.6ft BGS		SAND PACK					
14				3DP		95		1554.3
14	ML-CLAYEY SILT, loose, brown, wet	13.50	2" Ø PVC WELL SCREEN					
14	SP-SAND, trace silt, compact, fine grained, poorly graded, grayish brown, wet, odor	14.00						
16	ML-CLAYEY SILT, trace sand, compact, brown, moist	14.50						
16	END OF BOREHOLE @ 15.0ft BGS	15.00						34.6

WELL DETAILS

Screened interval:

10.00 to 15.00ft BGS

Length: 5ft

Diameter: 2in

Slot Size: 0.010

Material: PVC

Seal:

2.00 to 8.00ft BGS

Material: BENTONITE CHIPS

Sand Pack:

8.00 to 15.00ft BGS

Material: #4 SAND

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

WATER FOUND ∇ 5/24/2019

OVERBURDEN LOG 017322-RACER-WI.GPJ GHD_Corp 6/6/19



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 2

PROJECT NAME: PCC VALIDATION

PROJECT NUMBER: 017322

CLIENT: RACER

LOCATION: PONTIAC, MICHIGAN

DRILLING COMPANY: GHD SERVICES

HOLE DESIGNATION: MW79D-12

DATE COMPLETED: May 21, 2019

DRILLING METHOD: DIRECT PUSH/HOLLOW STEM AUGER

FIELD PERSONNEL: S. KIPPEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft	MONITORING WELL	SAMPLE				
				NUMBER	INTERVAL	REC (%)	N VALUE	
	TOPSOIL	0.50	CONCRETE					
2	CL-SILTY CLAY (FILL), trace sand, with fine to coarse angular gravel, stiff, low plasticity, brown, moist	2.30	SAND	1DP		85		
4	SP/GP-SAND/GRAVEL (FILL), trace silt, compact, fine to coarse sand and gravel, poorly graded, brown, moist							
6			2" Ø PVC WELL CASING					
8	CL-SILTY CLAY (FILL), trace sand, trace fine to coarse gravel, stiff, low plasticity, brown, moist - with sand from 7.5 to 8.9ft BGS	6.70		2DP		90		
10								
12	SP/GP-SAND/GRAVEL (FILL), trace silt, compact, fine to coarse sand and gravel, poorly graded, brown, moist	10.20 10.80						
14	CL-SILTY CLAY (FILL), with sand, trace fine gravel, firm, low plasticity, brown, moist - wet from 12.7 to 13.8ft BGS			3DP		90		
16	ML-CLAYEY SILT, trace sand, compact, mottled brown/gray, moist	13.80						
18	CL-SILTY CLAY, firm, low plasticity, brown, moist - soft, gray, wet from 17.0 to 17.8ft BGS	15.00	BENTONITE CHIPS	4DP		80		
20	SP-SAND, trace silt, trace fine gravel, compact, fine grained, poorly graded, gray, wet	17.80						
22	CL-SILTY CLAY, trace sand, trace fine to coarse gravel, firm, low plasticity, gray, moist	19.70		5DP		70		
24								
26	- stiff from 25.0 to 29.3ft BGS							
28				6DP		85		
	SM-SILTY SAND, compact, fine grained, poorly	29.30	8" Ø BOREHOLE					

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ∇ 5/21/2019

OVERBURDEN LOG 017322-RACER-WI.GPJ GHD_Corp 6/6/19



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 2 of 2

PROJECT NAME: PCC VALIDATION

PROJECT NUMBER: 017322

CLIENT: RACER

LOCATION: PONTIAC, MICHIGAN

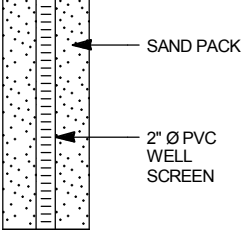
DRILLING COMPANY: GHD SERVICES

HOLE DESIGNATION: MW79D-19

DATE COMPLETED: May 21, 2019

DRILLING METHOD: DIRECT PUSH/HOLLOW STEM AUGER

FIELD PERSONNEL: S. KIPPEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft	MONITORING WELL	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' VALUE	
32	graded, gray, wet		 WELL DETAILS Screened interval: 30.00 to 35.00ft BGS Length: 5ft Diameter: 2in Slot Size: 0.010 Material: PVC Seal: 2.00 to 27.50ft BGS Material: BENTONITE CHIPS Sand Pack: 27.50 to 35.00ft BGS Material: #4 SAND	7DP		80		
32.40	CL-SILTY CLAY, firm, low plasticity, gray, moist	32.40						
33.00	ML-SILT, trace clay, compact, gray, wet	33.00						
34	CL-SILTY CLAY, stiff, low plasticity, gray, moist	34.40		8DP		75		
40	END OF BOREHOLE @ 40.0ft BGS	40.00						
42								
44								
46								
48								
50								
52								
54								
56								
58								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ 5/21/2019

OVERBURDEN LOG 017322-RACER-WI.GPJ GHD_Corp 6/6/19



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: PCC VALIDATION

PROJECT NUMBER: 017322

CLIENT: RACER

LOCATION: PONTIAC, MICHIGAN

DRILLING COMPANY: GHD SERVICES

HOLE DESIGNATION: MW79I-19

DATE COMPLETED: May 21, 2019

DRILLING METHOD: DIRECT PUSH/HOLLOW STEM AUGER

FIELD PERSONNEL: S. KIPPEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft	MONITORING WELL	SAMPLE				
				NUMBER	INTERVAL	REC (%)	N' VALUE	
2	TOPSOIL	0.50	CONCRETE					
	CL-SILTY CLAY (FILL), trace sand, with fine to coarse angular gravel, stiff, low plasticity, brown, moist	2.30	SAND					
4	SP/GP-SAND/GRAVEL (FILL), trace silt, compact, fine to coarse sand and gravel, poorly graded, brown, moist		2" Ø PVC WELL CASING					
6		6.70	BENTONITE CHIPS					
8	CL-SILTY CLAY (FILL), trace sand, trace fine to coarse gravel, stiff, low plasticity, brown, moist - with sand from 7.5 to 8.9ft BGS							
10	SP/GP-SAND/GRAVEL (FILL), trace silt, compact, fine to coarse sand and gravel, poorly graded, brown, moist	10.20						
12	CL-SILTY CLAY (FILL), with and, trace fine gravel, firm, low plasticity, brown, moist - wet from 12.7 to 13.8ft BGS	10.80						
14	ML-CLAYEY SILT, trace sand, compact, mottled brown/gray, moist	13.80						
16	CL-SILTY CLAY, firm, low plasticity, brown, moist - soft, gray, wet from 17.0 to 17.8ft BGS	15.00	8" Ø BOREHOLE					
18	SP-SAND, trace silt, trace fine gravel, compact, fine grained, poorly graded, gray, wet	17.80	SAND PACK					
20	CL-SILTY CLAY, trace sand, trace fine to coarse gravel, firm, low plasticity, gray, moist	19.70	2" Ø PVC WELL SCREEN					
22	END OF BOREHOLE @ 22.0ft BGS	22.00						

WELL DETAILS

Screened interval:

17.00 to 22.00ft BGS

Length: 5ft

Diameter: 2in

Slot Size: 0.010

Material: PVC

Seal:

2.00 to 14.80ft BGS

Material: BENTONITE CHIPS

Sand Pack:

14.80 to 22.00ft BGS

Material: #4 SAND

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ∇ 5/21/2019

OVERBURDEN LOG 017322-RACER-WI.GPJ GHD_Corp 6/6/19



STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: PCC VALIDATION

HOLE DESIGNATION: MW87-12

PROJECT NUMBER: 017322

DATE COMPLETED: May 22, 2019

CLIENT: RACER

DRILLING METHOD: DIRECT PUSH/HOLLOW STEM AUGER

LOCATION: PONTIAC, MICHIGAN

FIELD PERSONNEL: S. KIPPEN

DRILLING COMPANY: GHD SERVICES

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	DEPTH ft	MONITORING WELL	SAMPLE				
				NUMBER	INTERVAL	REC (%)	N VALUE	PID (ppm)
2	CL-SILTY CLAY (FILL), with sand, with fine to coarse gravel, stiff, low plasticity, brown, moist	1.00	CONCRETE SAND 2" Ø PVC WELL CASING BENTONITE CHIPS 8" Ø BOREHOLE SAND PACK 2" Ø PVC WELL SCREEN	1DP		80		0.5
4	GP-GRAVEL (FILL), with sand, dense rock, fine to coarse angular gravel/aggregate, poorly graded, gray to whites, moist	1.50						
6	CL-SILTY CLAY (FILL), with sand, with fine to coarse gravel, stiff, low plasticity, brown, moist	3.30						
8	GP-GRAVEL (FILL), aggregate, with sand, fine to coarse angular gravel, poorly graded, gray to whites, moist	6.50		2DP		65		2.6
10	CL-SILTY CLAY (FILL), with sand, trace slag material, compact, fine to coarse angular gravel, poorly graded, gray, moist	8.00						
12	CL-SILTY CLAY, with sand, trace fine gravel, stiff, low plasticity, brown, moist - firm from 10.3 to 12.3ft BGS	9.00						1.3
14	SP-SAND, trace silt, trace clay, compact, fine grained, poorly graded, brown, wet	12.30		3DP		85		1.3
16	END OF BOREHOLE @ 15.0ft BGS	15.00						1.1
18								
20								

WELL DETAILS

Screened interval:

10.00 to 15.00ft BGS

Length: 5ft

Diameter: 2in

Slot Size: 0.010

Material: PVC

Seal:

4.00 to 8.00ft BGS

Material: BENTONITE CHIPS

Sand Pack:

8.00 to 15.00ft BGS

Material: #4 SAND

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

WATER FOUND ∇ 5/22/2019

OVERBURDEN LOG 017322-RACER-WI.GPJ GHD_Corp 6/6/19

Attachment B

Low Flow Sampling Field Notes

Project Data:

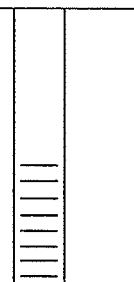
Project Name: PCC
Ref. No.: 017322A

Date: 9-17-18
Personnel: D. Saliba

Monitoring Well Data:

Well No.: MW 08-07
Vapour PID (ppm): _____
Measurement Point: _____
Constructed Well Depth (m/ft): _____
Measured Well Depth (m/ft): 15.87
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)⁽²⁾: _____
Initial Depth to Water (m/ft): 13.39



Start: 1110

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:				±3 %	±0.005 or 0.01 ⁽⁵⁾	±10 %	±10 %	±0.1 Units	±10 mV		
1140	150	14.71	~~14.71~~	17.65	1.403	25.9	0.96	7.49	-30		
1145		14.84	~~14.84~~	17.89	1.398	3.98	0.89	7.50	-30		
~~1150~~											

- Water drawing down - will sample.

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, $V_s = \pi \cdot (r^2) \cdot L$ 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.
- 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.

gw - 17322A - 09/17/18 - DS - 003 @ 1145

Dyke - 004 @ 1150

TCL VOC's

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

Project Data:

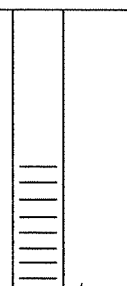
Project Name: PCC
Ref. No.: 017322A

Date: 9-12-18
Personnel: D Saliba

Monitoring Well Data:

Well No.: ~~17322A~~ MW33-07
Vapour PID (ppm): _____
Measurement Point: _____
Constructed Well Depth (m/ft): _____
Measured Well Depth (m/ft): 21.80
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)⁽²⁾: _____
Initial Depth to Water (m/ft): 12.40



start: 0855

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:				±3 %	±0.005 or 0.01 ⁽⁵⁾	±10 %	±10 %	±0.1 Units	±10 mV		
0935	150	18.21		15.70	6.49	8.38	1.18	7.61	158		
0930		18.21		15.75	6.36	3.23	1.39	7.66	107		
0935		18.21		15.80	6.24	/	1.40	7.62	60		
0940				15.87	6.13	/	1.34	7.62	37		
0945				15.92	6.05	/	1.20	7.58	25		
0950				15.92	5.98	/	1.17	7.55	19		
0955				15.85	5.90	/	1.25	7.55	15		
1000	✓	✓		15.77	5.90	2.00	1.06	7.48	13		

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, $V_s = \pi \cdot (r^2) \cdot L$ 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
- 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.

gw-17322A-091718-DS-001 @ 1000

A1, P6, ✓

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

Project Data:

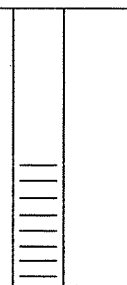
Project Name: PCC
Ref. No.: 017322A

Date: 9-18-18
Personnel: D. J. J. J.

Monitoring Well Data:

Well No.: MW64-08
Vapour PID (ppm): _____
Measurement Point: _____
Constructed Well Depth (m/ft): _____
Measured Well Depth (m/ft): 15.09
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)⁽²⁾: _____
Initial Depth to Water (m/ft): 6.96



Start: 0935

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:				±3 %	±0.005 or 0.01 ⁽⁵⁾	±10 %	±10 %	±0.1 Units	±10 mV		
1005	150	10.40		18.56	0.875	6.31	1.37	7.55	-28		
1010		10.55		18.62	0.917	4.80	1.09	7.50	-22		
1015		10.71		18.69	0.944	3.33	0.99	7.51	-17		
1020		10.86		18.70	0.947	3.18	0.95	7.51	-15		
1025		11.07		18.67	0.937	3.04	0.83	7.51	-15		
1030											

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, $V_s = \pi \cdot (r^2) \cdot L$ 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.

gw-17322A-091818-DS-008 @ 1025

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

Project Data:

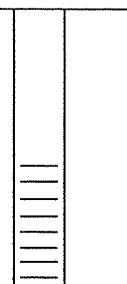
Project Name: PCC
Ref. No.: 017322A

Date: 9-17-18
Personnel: D. Saliba

Monitoring Well Data:

Well No.: MW 50-12
Vapour PID (ppm): _____
Measurement Point: _____
Constructed Well Depth (m/ft): _____
Measured Well Depth (m/ft): 11.80
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)⁽²⁾: _____
Initial Depth to Water (m/ft): 7.31



Start: 1200

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:				±3 %	±0.005 or 0.01 ⁽⁵⁾	±10 %	±10 %	±0.1 Units	±10 mV		
~~1200~~ 1230	150	7.81		18.18	1.82	4.82	1.21	7.36	58		
1235	↓	7.83		18.18	1.83	2.29	1.06	7.35	55		
1240	↓	7.95		18.79	1.84	2.11	0.95	7.34	51		

Notes:

- (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 $r = (D/2)$ 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.

gw-17322A-091718-DS-005 @ 1240

TCL VOC's

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

Project Data:

Project Name: PCC
Ref. No.: 17322A

Date: 9-18-18
Personnel: D. Saliba

Monitoring Well Data:

Well No.: MW 81-12
Vapour PID (ppm): _____
Measurement Point: _____
Constructed Well Depth (m/ft): _____
Measured Well Depth (m/ft): 18.70
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)⁽²⁾: _____
Initial Depth to Water (m/ft): 8.09



Start 1/1250

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:				±3 %	±0.005 or 0.01 ⁽⁵⁾	±10 %	±10 %	±0.1 Units	±10 mV		
1300	150	8.87		16.23	2.99	23.5	2.50	6.93	-8		
1305		9.12		16.83	3.00	13.5	1.51	7.17	-15		
1330		9.01		17.39	3.00	8.31	0.68	7.07	-19		
1335		9.28		17.55	3.01	5.22	0.58	7.08	-24		

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, $V_s = \pi \cdot (r^2) \cdot L$ 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.

gw-17322A-091818-DS-011

@1335

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

Project Data:

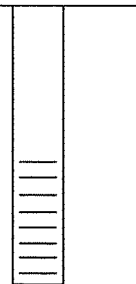
Project Name: PCC
Ref. No.: 017322A

Date: 4-18-18
Personnel: D. Salibi

Monitoring Well Data:

Well No.: MW85-19
Vapour PID (ppm): _____
Measurement Point: _____
Constructed Well Depth (m/ft): _____
Measured Well Depth (m/ft): 8.20
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)⁽²⁾: _____
Initial Depth to Water (m/ft): 6.01



Start: 0805

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:				±3 %	±0.005 or 0.01 ⁽⁵⁾	±10 %	±10 %	±0.1 Units	±10 mV		
0855	150	7.25		19.41	0.632	106	0.89	8.91	141		
0900	150	7.80		19.35	0.634	336	0.96	8.97	135		
~~0905~~											

Water drawing down - collecting sample

Notes:

gw-17322A-091818-DS-007 @ 0900

- 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 $r = (D/2)$ 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.

MS/MSD

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

Project Data:

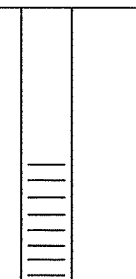
Project Name: PCC
Ref. No.: 17320-A

Date: 9-18-15
Personnel: D. Saliba

Monitoring Well Data:

Well No.: MW925-13
Vapour PID (ppm): _____
Measurement Point: _____
Constructed Well Depth (m/ft): _____
Measured Well Depth (m/ft): 9.65
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)⁽²⁾: _____
Initial Depth to Water (m/ft): 7.55



Start 1155

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:				±3 %	±0.005 or 0.01 ⁽⁵⁾	±10 %	±10 %	±0.1 Units	±10 mV		
1225	150	8.52		18.25	1.63	6.71	0.36	7.05	-78		
1230	1	8.59		18.15	1.63	5.44	0.70	7.05	-78		
1235	1	8.65		18.01	1.63	4.21	0.48	7.05	-78		

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, $V_s = \pi \cdot (r^2) \cdot L$ 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.

gw-17320-A-091818-DS-010
@ 1235

Project Name: PCL
Ref. No.: 17320A

Date: 9-18-18
Personnel: D. Saliba

Well No.: MW 92F-13

Vapour PID (ppm): _____

Measurement Point: _____

Constructed Well Depth (m/ft): _____

Measured Well Depth (m/ft): 16.27

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)⁽²⁾: _____

Initial Depth to Water (m/ft): 2.40

Start: 1059

[illegible]

gu-17322A-091818-DS-009

- (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 $>1 \text{ mS/cm} \pm 0.01 \text{ mS/cm}$.

⑧ 1145

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

Project Data:

Project Name: PCC
Ref. No.: 017322A

Date: 9-17-18
Personnel: D. Saliba

Monitoring Well Data:

Well No.: MW 93 I-13
Vapour PID (ppm): _____
Measurement Point: _____
Constructed Well Depth (m/ft): _____
Measured Well Depth (m/ft): 12.11
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)⁽²⁾: _____
Initial Depth to Water (m/ft): 8.25

Start: 1255

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:				±3 %	±0.005 or 0.01 ⁽⁵⁾	±10 %	±10 %	±0.1 Units	±10 mV		
1325	150	9.09		17.23	1.52	2.01	0.28	7.10	65		
1330	↓	↓		16.89	1.53	1.52	0.28	7.12	51		
1335	↓	↓		16.68	1.53	1.31	0.26	7.14	50		
1340	✓	↓		17.08	1.53	1.22	0.27	7.14	49		
									44		

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, $V_s = \pi \cdot (r^2) \cdot L$ 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
- 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.

gw-17322A-091718 DS-006 @ 1340
TCL VOC's

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

Project Data:

Project Name: PCC
Ref. No.: 017322A

Date: 12-9-18
Personnel: D. Saliba

Monitoring Well Data:

Well No.: MW02-07
Vapour PID (ppm): _____
Measurement Point: _____
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)⁽²⁾: _____
Initial Depth to Water (m/ft): 12.04

Start: 1120

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		
<u>1150</u>	<u>150</u>	<u>14.03</u>		<u>12.46</u>	<u>1.81</u>	<u>4.18</u>	<u>0.63</u>	<u>7.76</u>	<u>0.1</u>		
<u>1155</u>		<u>14.28</u>		<u>12.52</u>	<u>1.84</u>	<u>2.81</u>	<u>0.61</u>	<u>7.76</u>	<u>12</u>		
<u>1200</u>		<u>14.57</u>		<u>12.53</u>	<u>1.81</u>	<u>2.13</u>	<u>0.59</u>	<u>7.77</u>	<u>13</u>		

Sample ID: gw-17322-120918-DS-003 Sample Time: 1200

Notes: 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 500 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= Vp/Vs.
- 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:

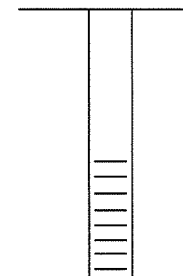
Project Name: PLC
Ref. No.: 012302A

Date: 12-4-15
Personnel: D. S. 15a

Monitoring Well Data:

Well No.: MLW 10-07
Vapour PID (ppm): _____
Measurement Point: _____
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): 14.30



Start: 0915

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											
0945	150	15.60		12.76	1.168	13.4	0.80	9.18	-23		
0950	1	15.83		12.97	1.168	13.8	1.28	9.16	-27		
0955	1	16.03		13.06	1.172	14.0	1.24	9.15	-31		

Sample ID:

gm-17322-120418-DS-007

Sample Time:

0955

Notes:

- Select Metals

- 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 500 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
Ref. No.: 017322A

Date: 12-4-18
Personnel: D. S. 1600

Monitoring Well Data:

Well No.: MW 33-07
Vapour PID (ppm): _____
Measurement Point: _____
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)⁽²⁾: _____
Initial Depth to Water (m/ft): 18.45

Start: 0810

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		
0840	150	18.45		11.01	4.28	3.84	1.27	7.46	125		
0845				10.85	4.23	3.66	1.54	7.52	116		
0850				11.09	4.25	3.21	1.66	7.52	108		
0855				11.03	4.25	3.08	1.54	7.54	100		
0900				10.83	4.24	2.77	1.53	7.53	98		

Sample ID: gpc-17322-120418-DS-006

Sample Time: 0900

Notes:

Select Metals

- 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 500 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
Ref. No.: 017322A

Date: 12/3/18
Personnel: D. Salazar

Monitoring Well Data:

Well No.: MW 67-08
Vapour PID (ppm): _____
Measurement Point: _____
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): 6.65

Start 0915

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		
0445	150	10.70		11.35	1.081	16.0	1.14	7.63	111		
0450		10.91		11.31	1.064	5.58	1.06	7.59	90		
0455		11.28		11.12	1.061	2.91	0.86	7.60	85		
1000		11.21		11.08	1.059	2.32	0.88	7.60	81		

Sample ID: gpc-17322-120318-DS-001

Sample Time: 1000

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, $V_s = \pi \cdot (r^2) \cdot L$ 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 500 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: _____
Ref. No.: _____

Date: 12-4-18
Personnel: D. S. 1/2/20

Monitoring Well Data:

Well No.: MW 80-12
 Vapour PID (ppm): _____
 Measurement Point: _____
 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)⁽²⁾: _____
 Initial Depth to Water (m/ft): 5.85

[illegible]

Sample ID:

gr-17322-120418-DS-011

Sample Time:

1245

Notes:

- (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 500 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: 12-4-18
Personnel: D. S. 06a

Well No.: MW 81-12

Vapour PID (ppm): _____

Measurement Point:

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): _____

Initial Depth to Water (m/ft): 7.1/9

Sample ID: gr-17392-120418-DS-008 Dfr-009

Sample Time: 1105 Days - 1110

- (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 500 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 $> 1 \text{ mS/cm} \pm 0.01 \text{ mS/cm}$.

(Form SP-09)

Project Name: PLE
Ref. No.: 0.7322 A

Date: 12-3-18
Personnel: D. Seaborn

Well No.: MW 85-17

Measurement Point: _____

Measured Well Depth (m/ft): _____

Depth of Sediment (m/ft): _____

Depth to Pump Intake (m/ft)⁽¹⁾: _____Well Screen Volume, V_s (L)^{12/}: _____

Initial Depth to Water (m/ft): 11.4/1

Start: 1015

Sample Time: 1035

- (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 500 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 $\pm$ 0.005 mS/cm or where conductivity >1 mS/cm $\pm$ 0.01 mS/cm.

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

Project Data:

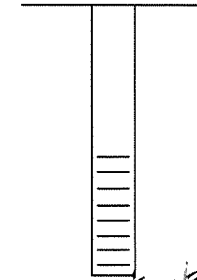
Project Name: PCC
Ref. No.: 01722A

Date: 12-3-18
Personnel: D. Salazar

Monitoring Well Data:

Well No.: MW 905-13
Vapour PID (ppm): _____
Measurement Point: _____
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)⁽²⁾: _____
Initial Depth to Water (m/ft): 6.45



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		
<u>1250</u>	<u>150</u>	<u>7.28</u>		<u>11.38</u>	<u>2.34</u>	<u>15.0</u>	<u>0.60</u>	<u>7.28</u>	<u>-37</u>		
<u>1255</u>	<u>1</u>	<u>7.36</u>		<u>11.38</u>	<u>2.31</u>	<u>16.0</u>	<u>0.62</u>	<u>7.28</u>	<u>-39</u>		
<u>1300</u>	<u>1</u>	<u>7.41</u>		<u>11.40</u>	<u>2.33</u>	<u>13.3</u>	<u>0.59</u>	<u>7.29</u>	<u>-41</u>		

Sample ID: gm-17372-120318-DS-004

Sample Time: 1300

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, $V_s = \pi \cdot (r^2) \cdot L$ 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 500 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= Vp/Vs.
- 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:

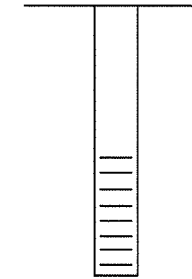
Project Name: PCC
Ref. No.: 0173224

Date: 12-3-18
Personnel: D. Seibert

Monitoring Well Data:

Well No.: MW 92I-13
Vapour PID (ppm): _____
Measurement Point: _____
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)⁽²⁾: _____
Initial Depth to Water (m/ft): 6.35



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		
1335	130	6.61		11.45	2.38	3.40	0.66	7.63	-65		
1340		6.62		11.48	2.38	3.33	0.55	7.66	-67		
1345		6.62		11.66	2.38	3.24	0.54	7.67	-68		

Sample ID: gw-17322-120318-DS-005

Sample Time: 1345

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, $V_s = \pi \cdot (r^2) \cdot L$ 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 500 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= Vp/Vs.
- 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: PLC
Ref. No.: 017322 L

Date: 12-4-18
Personnel: D. Sandoz

Monitoring Well Data:

Well No.: MW 93E-13
 Vapour PID (ppm): _____
 Measurement Point: _____
 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)⁽²⁾: _____
 Initial Depth to Water (m/ft): 2.82

[illegible]

Sample ID: gm-17322-120418-DS-010

Sample Time: 1155

Notes:

- (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 500 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 $> 1 \text{ mS/cm} \pm 0.01 \text{ mS/cm}$.

Attachment C Analytical Report

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Canton

4101 Shuffel Street NW

North Canton, OH 44720

Tel: (330)497-9396

TestAmerica Job ID: 240-105129-1

Client Project/Site: 17322A-T06, PCC Validation

For:

GHD Services Inc.

26850 Haggerty Rd.

Farmington Hills, Michigan 48331

Attn: James Abston



Authorized for release by:

12/17/2018 11:48:59 AM

Denise Heckler, Project Manager II

(330)966-9477

denise.heckler@testamericainc.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: 17322A-T06, PCC Validation

TestAmerica Job ID: 240-105129-1

Job ID: 240-105129-1

Laboratory: TestAmerica Canton

Narrative

Job Narrative 240-105129-1

Comments

No additional comments.

Receipt

The samples were received on 12/4/2018 10:05 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.2° C.

GC/MS VOA

Method(s) 8260B: Surrogate recovery for the following sample(s) was outside the upper control limit: This sample did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed:

TB-17322-120318 (240-105129-1), GW-17322-120318-DS-001 (240-105129-2), GW-17322-120318-DS-002 (240-105129-3), GW-17322-120318-DS-003 (240-105129-4), GW-17322-120318-DS-004 (240-105129-5) and (MB 240-359485/6)

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

VOA Prep

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

Definitions/Glossary

Client: GHD Services Inc.
Project/Site: 17322A-T06, PCC Validation

TestAmerica Job ID: 240-105129-1

Qualifiers

GC/MS VOA

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

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
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

Sample Summary

Client: GHD Services Inc.
Project/Site: 17322A-T06, PCC Validation

TestAmerica Job ID: 240-105129-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-105129-1	TB-17322-120318	Water	12/03/18 00:00	12/04/18 10:05
240-105129-2	GW-17322-120318-DS-001	Water	12/03/18 10:00	12/04/18 10:05
240-105129-3	GW-17322-120318-DS-002	Water	12/03/18 10:55	12/04/18 10:05
240-105129-4	GW-17322-120318-DS-003	Water	12/03/18 12:00	12/04/18 10:05
240-105129-5	GW-17322-120318-DS-004	Water	12/03/18 13:00	12/04/18 10:05
240-105129-6	GW-17322-120318-DS-005	Water	12/03/18 13:45	12/04/18 10:05

Detection Summary

Client: GHD Services Inc.
Project/Site: 17322A-T06, PCC Validation

TestAmerica Job ID: 240-105129-1

Client Sample ID: TB-17322-120318

Lab Sample ID: 240-105129-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Toluene	0.18	J	1.0	0.14	ug/L	1		8260B	Total/NA

Client Sample ID: GW-17322-120318-DS-001

Lab Sample ID: 240-105129-2

No Detections.

Client Sample ID: GW-17322-120318-DS-002

Lab Sample ID: 240-105129-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloroform	0.13	J	1.0	0.13	ug/L	1		8260B	Total/NA
Trichlorofluoromethane	0.69	J	1.0	0.45	ug/L	1		8260B	Total/NA

Client Sample ID: GW-17322-120318-DS-003

Lab Sample ID: 240-105129-4

No Detections.

Client Sample ID: GW-17322-120318-DS-004

Lab Sample ID: 240-105129-5

No Detections.

Client Sample ID: GW-17322-120318-DS-005

Lab Sample ID: 240-105129-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	1.4		1.0	0.20	ug/L	1		8260B	Total/NA
cis-1,2-Dichloroethene	0.33	J	1.0	0.16	ug/L	1		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Canton

Method Summary

Client: GHD Services Inc.
Project/Site: 17322A-T06, PCC Validation

TestAmerica Job ID: 240-105129-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
5030B	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 = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Client Sample Results

Client: GHD Services Inc.
Project/Site: 17322A-T06, PCC Validation

TestAmerica Job ID: 240-105129-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: TB-17322-120318

Date Collected: 12/03/18 00:00

Date Received: 12/04/18 10:05

Lab Sample ID: 240-105129-1

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	10	U	10	5.4	ug/L			12/12/18 16:51	1
Benzene	1.0	U	1.0	0.13	ug/L			12/12/18 16:51	1
Bromodichloromethane	1.0	U	1.0	0.17	ug/L			12/12/18 16:51	1
Bromoform	1.0	U	1.0	0.76	ug/L			12/12/18 16:51	1
Bromomethane	1.0	U	1.0	0.42	ug/L			12/12/18 16:51	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			12/12/18 16:51	1
Carbon disulfide	5.0	U	5.0	0.28	ug/L			12/12/18 16:51	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			12/12/18 16:51	1
Chlorobenzene	1.0	U	1.0	0.14	ug/L			12/12/18 16:51	1
Chloroethane	1.0	U	1.0	0.83	ug/L			12/12/18 16:51	1
Chloroform	1.0	U	1.0	0.13	ug/L			12/12/18 16:51	1
Chloromethane	1.0	U	1.0	0.20	ug/L			12/12/18 16:51	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			12/12/18 16:51	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			12/12/18 16:51	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/12/18 16:51	1
1,2-Dichloropropane	1.0	U	1.0	0.15	ug/L			12/12/18 16:51	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			12/12/18 16:51	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			12/12/18 16:51	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			12/12/18 16:51	1
2-Hexanone	10	U	10	0.54	ug/L			12/12/18 16:51	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			12/12/18 16:51	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.42	ug/L			12/12/18 16:51	1
Styrene	1.0	U	1.0	0.10	ug/L			12/12/18 16:51	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.13	ug/L			12/12/18 16:51	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			12/12/18 16:51	1
Toluene	0.18	J	1.0	0.14	ug/L			12/12/18 16:51	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			12/12/18 16:51	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			12/12/18 16:51	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			12/12/18 16:51	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			12/12/18 16:51	1
1,1,2-Trichloroethane	1.0	U	1.0	0.090	ug/L			12/12/18 16:51	1
Cyclohexane	1.0	U	1.0	0.24	ug/L			12/12/18 16:51	1
1,2-Dibromo-3-Chloropropane	1.0	U	1.0	0.91	ug/L			12/12/18 16:51	1
1,2-Dibromoethane	1.0	U	1.0	0.12	ug/L			12/12/18 16:51	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			12/12/18 16:51	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			12/12/18 16:51	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/12/18 16:51	1
Isopropylbenzene	1.0	U	1.0	0.090	ug/L			12/12/18 16:51	1
Methyl acetate	10	U	10	1.7	ug/L			12/12/18 16:51	1
Methyl tert-butyl ether	1.0	U	1.0	0.070	ug/L			12/12/18 16:51	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			12/12/18 16:51	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.26	ug/L			12/12/18 16:51	1
1,2-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			12/12/18 16:51	1
1,3-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			12/12/18 16:51	1
1,4-Dichlorobenzene	1.0	U	1.0	0.16	ug/L			12/12/18 16:51	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			12/12/18 16:51	1
Dibromochloromethane	1.0	U	1.0	0.39	ug/L			12/12/18 16:51	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			12/12/18 16:51	1

TestAmerica Canton

Client Sample Results

Client: GHD Services Inc.
Project/Site: 17322A-T06, PCC Validation

TestAmerica Job ID: 240-105129-1

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	134	X	70 - 121		12/12/18 16:51	1
4-Bromofluorobenzene (Surr)	78		59 - 120		12/12/18 16:51	1
Toluene-d8 (Surr)	87		70 - 123		12/12/18 16:51	1
Dibromofluoromethane (Surr)	131	X	75 - 128		12/12/18 16:51	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 17322A-T06, PCC Validation

TestAmerica Job ID: 240-105129-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-17322-120318-DS-001

Date Collected: 12/03/18 10:00

Date Received: 12/04/18 10:05

Lab Sample ID: 240-105129-2

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	10	U	10	5.4	ug/L			12/12/18 17:15	1
Benzene	1.0	U	1.0	0.13	ug/L			12/12/18 17:15	1
Bromodichloromethane	1.0	U	1.0	0.17	ug/L			12/12/18 17:15	1
Bromoform	1.0	U	1.0	0.76	ug/L			12/12/18 17:15	1
Bromomethane	1.0	U	1.0	0.42	ug/L			12/12/18 17:15	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			12/12/18 17:15	1
Carbon disulfide	5.0	U	5.0	0.28	ug/L			12/12/18 17:15	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			12/12/18 17:15	1
Chlorobenzene	1.0	U	1.0	0.14	ug/L			12/12/18 17:15	1
Chloroethane	1.0	U	1.0	0.83	ug/L			12/12/18 17:15	1
Chloroform	1.0	U	1.0	0.13	ug/L			12/12/18 17:15	1
Chloromethane	1.0	U	1.0	0.20	ug/L			12/12/18 17:15	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			12/12/18 17:15	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			12/12/18 17:15	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/12/18 17:15	1
1,2-Dichloropropane	1.0	U	1.0	0.15	ug/L			12/12/18 17:15	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			12/12/18 17:15	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			12/12/18 17:15	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			12/12/18 17:15	1
2-Hexanone	10	U	10	0.54	ug/L			12/12/18 17:15	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			12/12/18 17:15	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.42	ug/L			12/12/18 17:15	1
Styrene	1.0	U	1.0	0.10	ug/L			12/12/18 17:15	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.13	ug/L			12/12/18 17:15	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			12/12/18 17:15	1
Toluene	1.0	U	1.0	0.14	ug/L			12/12/18 17:15	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			12/12/18 17:15	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			12/12/18 17:15	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			12/12/18 17:15	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			12/12/18 17:15	1
1,1,2-Trichloroethane	1.0	U	1.0	0.090	ug/L			12/12/18 17:15	1
Cyclohexane	1.0	U	1.0	0.24	ug/L			12/12/18 17:15	1
1,2-Dibromo-3-Chloropropane	1.0	U	1.0	0.91	ug/L			12/12/18 17:15	1
1,2-Dibromoethane	1.0	U	1.0	0.12	ug/L			12/12/18 17:15	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			12/12/18 17:15	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			12/12/18 17:15	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/12/18 17:15	1
Isopropylbenzene	1.0	U	1.0	0.090	ug/L			12/12/18 17:15	1
Methyl acetate	10	U	10	1.7	ug/L			12/12/18 17:15	1
Methyl tert-butyl ether	1.0	U	1.0	0.070	ug/L			12/12/18 17:15	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			12/12/18 17:15	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.26	ug/L			12/12/18 17:15	1
1,2-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			12/12/18 17:15	1
1,3-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			12/12/18 17:15	1
1,4-Dichlorobenzene	1.0	U	1.0	0.16	ug/L			12/12/18 17:15	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			12/12/18 17:15	1
Dibromochloromethane	1.0	U	1.0	0.39	ug/L			12/12/18 17:15	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			12/12/18 17:15	1

TestAmerica Canton

Client Sample Results

Client: GHD Services Inc.
Project/Site: 17322A-T06, PCC Validation

TestAmerica Job ID: 240-105129-1

Method: 8260B - Volatile Organic Compounds (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>
1,2-Dichloroethane-d4 (Surr)	130	X	70 - 121		12/12/18 17:15	1
4-Bromofluorobenzene (Surr)	75		59 - 120		12/12/18 17:15	1
Toluene-d8 (Surr)	86		70 - 123		12/12/18 17:15	1
Dibromofluoromethane (Surr)	126		75 - 128		12/12/18 17:15	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 17322A-T06, PCC Validation

TestAmerica Job ID: 240-105129-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-17322-120318-DS-002

Date Collected: 12/03/18 10:55

Date Received: 12/04/18 10:05

Lab Sample ID: 240-105129-3

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	10	U	10	5.4	ug/L			12/12/18 17:42	1
Benzene	1.0	U	1.0	0.13	ug/L			12/12/18 17:42	1
Bromodichloromethane	1.0	U	1.0	0.17	ug/L			12/12/18 17:42	1
Bromoform	1.0	U	1.0	0.76	ug/L			12/12/18 17:42	1
Bromomethane	1.0	U	1.0	0.42	ug/L			12/12/18 17:42	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			12/12/18 17:42	1
Carbon disulfide	5.0	U	5.0	0.28	ug/L			12/12/18 17:42	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			12/12/18 17:42	1
Chlorobenzene	1.0	U	1.0	0.14	ug/L			12/12/18 17:42	1
Chloroethane	1.0	U	1.0	0.83	ug/L			12/12/18 17:42	1
Chloroform	0.13	J	1.0	0.13	ug/L			12/12/18 17:42	1
Chloromethane	1.0	U	1.0	0.20	ug/L			12/12/18 17:42	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			12/12/18 17:42	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			12/12/18 17:42	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/12/18 17:42	1
1,2-Dichloropropane	1.0	U	1.0	0.15	ug/L			12/12/18 17:42	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			12/12/18 17:42	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			12/12/18 17:42	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			12/12/18 17:42	1
2-Hexanone	10	U	10	0.54	ug/L			12/12/18 17:42	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			12/12/18 17:42	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.42	ug/L			12/12/18 17:42	1
Styrene	1.0	U	1.0	0.10	ug/L			12/12/18 17:42	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.13	ug/L			12/12/18 17:42	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			12/12/18 17:42	1
Toluene	1.0	U	1.0	0.14	ug/L			12/12/18 17:42	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			12/12/18 17:42	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			12/12/18 17:42	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			12/12/18 17:42	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			12/12/18 17:42	1
1,1,2-Trichloroethane	1.0	U	1.0	0.090	ug/L			12/12/18 17:42	1
Cyclohexane	1.0	U	1.0	0.24	ug/L			12/12/18 17:42	1
1,2-Dibromo-3-Chloropropane	1.0	U	1.0	0.91	ug/L			12/12/18 17:42	1
1,2-Dibromoethane	1.0	U	1.0	0.12	ug/L			12/12/18 17:42	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			12/12/18 17:42	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			12/12/18 17:42	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/12/18 17:42	1
Isopropylbenzene	1.0	U	1.0	0.090	ug/L			12/12/18 17:42	1
Methyl acetate	10	U	10	1.7	ug/L			12/12/18 17:42	1
Methyl tert-butyl ether	1.0	U	1.0	0.070	ug/L			12/12/18 17:42	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			12/12/18 17:42	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.26	ug/L			12/12/18 17:42	1
1,2-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			12/12/18 17:42	1
1,3-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			12/12/18 17:42	1
1,4-Dichlorobenzene	1.0	U	1.0	0.16	ug/L			12/12/18 17:42	1
Trichlorofluoromethane	0.69	J	1.0	0.45	ug/L			12/12/18 17:42	1
Dibromochloromethane	1.0	U	1.0	0.39	ug/L			12/12/18 17:42	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			12/12/18 17:42	1

TestAmerica Canton

Client Sample Results

Client: GHD Services Inc.
Project/Site: 17322A-T06, PCC Validation

TestAmerica Job ID: 240-105129-1

Method: 8260B - Volatile Organic Compounds (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>
1,2-Dichloroethane-d4 (Surr)	137	X	70 - 121		12/12/18 17:42	1
4-Bromofluorobenzene (Surr)	78		59 - 120		12/12/18 17:42	1
Toluene-d8 (Surr)	89		70 - 123		12/12/18 17:42	1
Dibromofluoromethane (Surr)	128		75 - 128		12/12/18 17:42	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 17322A-T06, PCC Validation

TestAmerica Job ID: 240-105129-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-17322-120318-DS-003

Date Collected: 12/03/18 12:00

Date Received: 12/04/18 10:05

Lab Sample ID: 240-105129-4

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	10	U	10	5.4	ug/L			12/12/18 18:06	1
Benzene	1.0	U	1.0	0.13	ug/L			12/12/18 18:06	1
Bromodichloromethane	1.0	U	1.0	0.17	ug/L			12/12/18 18:06	1
Bromoform	1.0	U	1.0	0.76	ug/L			12/12/18 18:06	1
Bromomethane	1.0	U	1.0	0.42	ug/L			12/12/18 18:06	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			12/12/18 18:06	1
Carbon disulfide	5.0	U	5.0	0.28	ug/L			12/12/18 18:06	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			12/12/18 18:06	1
Chlorobenzene	1.0	U	1.0	0.14	ug/L			12/12/18 18:06	1
Chloroethane	1.0	U	1.0	0.83	ug/L			12/12/18 18:06	1
Chloroform	1.0	U	1.0	0.13	ug/L			12/12/18 18:06	1
Chloromethane	1.0	U	1.0	0.20	ug/L			12/12/18 18:06	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			12/12/18 18:06	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			12/12/18 18:06	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/12/18 18:06	1
1,2-Dichloropropane	1.0	U	1.0	0.15	ug/L			12/12/18 18:06	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			12/12/18 18:06	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			12/12/18 18:06	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			12/12/18 18:06	1
2-Hexanone	10	U	10	0.54	ug/L			12/12/18 18:06	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			12/12/18 18:06	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.42	ug/L			12/12/18 18:06	1
Styrene	1.0	U	1.0	0.10	ug/L			12/12/18 18:06	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.13	ug/L			12/12/18 18:06	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			12/12/18 18:06	1
Toluene	1.0	U	1.0	0.14	ug/L			12/12/18 18:06	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			12/12/18 18:06	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			12/12/18 18:06	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			12/12/18 18:06	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			12/12/18 18:06	1
1,1,2-Trichloroethane	1.0	U	1.0	0.090	ug/L			12/12/18 18:06	1
Cyclohexane	1.0	U	1.0	0.24	ug/L			12/12/18 18:06	1
1,2-Dibromo-3-Chloropropane	1.0	U	1.0	0.91	ug/L			12/12/18 18:06	1
1,2-Dibromoethane	1.0	U	1.0	0.12	ug/L			12/12/18 18:06	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			12/12/18 18:06	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			12/12/18 18:06	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/12/18 18:06	1
Isopropylbenzene	1.0	U	1.0	0.090	ug/L			12/12/18 18:06	1
Methyl acetate	10	U	10	1.7	ug/L			12/12/18 18:06	1
Methyl tert-butyl ether	1.0	U	1.0	0.070	ug/L			12/12/18 18:06	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			12/12/18 18:06	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.26	ug/L			12/12/18 18:06	1
1,2-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			12/12/18 18:06	1
1,3-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			12/12/18 18:06	1
1,4-Dichlorobenzene	1.0	U	1.0	0.16	ug/L			12/12/18 18:06	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			12/12/18 18:06	1
Dibromochloromethane	1.0	U	1.0	0.39	ug/L			12/12/18 18:06	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			12/12/18 18:06	1

TestAmerica Canton

Client Sample Results

Client: GHD Services Inc.
Project/Site: 17322A-T06, PCC Validation

TestAmerica Job ID: 240-105129-1

Method: 8260B - Volatile Organic Compounds (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>
1,2-Dichloroethane-d4 (Surr)	134	X	70 - 121		12/12/18 18:06	1
4-Bromofluorobenzene (Surr)	73		59 - 120		12/12/18 18:06	1
Toluene-d8 (Surr)	86		70 - 123		12/12/18 18:06	1
Dibromofluoromethane (Surr)	129	X	75 - 128		12/12/18 18:06	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 17322A-T06, PCC Validation

TestAmerica Job ID: 240-105129-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-17322-120318-DS-004

Date Collected: 12/03/18 13:00

Date Received: 12/04/18 10:05

Lab Sample ID: 240-105129-5

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	10	U	10	5.4	ug/L			12/12/18 18:29	1
Benzene	1.0	U	1.0	0.13	ug/L			12/12/18 18:29	1
Bromodichloromethane	1.0	U	1.0	0.17	ug/L			12/12/18 18:29	1
Bromoform	1.0	U	1.0	0.76	ug/L			12/12/18 18:29	1
Bromomethane	1.0	U	1.0	0.42	ug/L			12/12/18 18:29	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			12/12/18 18:29	1
Carbon disulfide	5.0	U	5.0	0.28	ug/L			12/12/18 18:29	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			12/12/18 18:29	1
Chlorobenzene	1.0	U	1.0	0.14	ug/L			12/12/18 18:29	1
Chloroethane	1.0	U	1.0	0.83	ug/L			12/12/18 18:29	1
Chloroform	1.0	U	1.0	0.13	ug/L			12/12/18 18:29	1
Chloromethane	1.0	U	1.0	0.20	ug/L			12/12/18 18:29	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			12/12/18 18:29	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			12/12/18 18:29	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/12/18 18:29	1
1,2-Dichloropropane	1.0	U	1.0	0.15	ug/L			12/12/18 18:29	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			12/12/18 18:29	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			12/12/18 18:29	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			12/12/18 18:29	1
2-Hexanone	10	U	10	0.54	ug/L			12/12/18 18:29	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			12/12/18 18:29	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.42	ug/L			12/12/18 18:29	1
Styrene	1.0	U	1.0	0.10	ug/L			12/12/18 18:29	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.13	ug/L			12/12/18 18:29	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			12/12/18 18:29	1
Toluene	1.0	U	1.0	0.14	ug/L			12/12/18 18:29	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			12/12/18 18:29	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			12/12/18 18:29	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			12/12/18 18:29	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			12/12/18 18:29	1
1,1,2-Trichloroethane	1.0	U	1.0	0.090	ug/L			12/12/18 18:29	1
Cyclohexane	1.0	U	1.0	0.24	ug/L			12/12/18 18:29	1
1,2-Dibromo-3-Chloropropane	1.0	U	1.0	0.91	ug/L			12/12/18 18:29	1
1,2-Dibromoethane	1.0	U	1.0	0.12	ug/L			12/12/18 18:29	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			12/12/18 18:29	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			12/12/18 18:29	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/12/18 18:29	1
Isopropylbenzene	1.0	U	1.0	0.090	ug/L			12/12/18 18:29	1
Methyl acetate	10	U	10	1.7	ug/L			12/12/18 18:29	1
Methyl tert-butyl ether	1.0	U	1.0	0.070	ug/L			12/12/18 18:29	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			12/12/18 18:29	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.26	ug/L			12/12/18 18:29	1
1,2-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			12/12/18 18:29	1
1,3-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			12/12/18 18:29	1
1,4-Dichlorobenzene	1.0	U	1.0	0.16	ug/L			12/12/18 18:29	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			12/12/18 18:29	1
Dibromochloromethane	1.0	U	1.0	0.39	ug/L			12/12/18 18:29	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			12/12/18 18:29	1

TestAmerica Canton

Client Sample Results

Client: GHD Services Inc.
Project/Site: 17322A-T06, PCC Validation

TestAmerica Job ID: 240-105129-1

Method: 8260B - Volatile Organic Compounds (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>
1,2-Dichloroethane-d4 (Surr)	134	X	70 - 121		12/12/18 18:29	1
4-Bromofluorobenzene (Surr)	77		59 - 120		12/12/18 18:29	1
Toluene-d8 (Surr)	87		70 - 123		12/12/18 18:29	1
Dibromofluoromethane (Surr)	135	X	75 - 128		12/12/18 18:29	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 17322A-T06, PCC Validation

TestAmerica Job ID: 240-105129-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-17322-120318-DS-005

Date Collected: 12/03/18 13:45

Date Received: 12/04/18 10:05

Lab Sample ID: 240-105129-6

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	10	U	10	5.4	ug/L			12/13/18 14:42	1
Benzene	1.0	U	1.0	0.13	ug/L			12/13/18 14:42	1
Bromodichloromethane	1.0	U	1.0	0.17	ug/L			12/13/18 14:42	1
Bromoform	1.0	U	1.0	0.76	ug/L			12/13/18 14:42	1
Bromomethane	1.0	U	1.0	0.42	ug/L			12/13/18 14:42	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			12/13/18 14:42	1
Carbon disulfide	5.0	U	5.0	0.28	ug/L			12/13/18 14:42	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			12/13/18 14:42	1
Chlorobenzene	1.0	U	1.0	0.14	ug/L			12/13/18 14:42	1
Chloroethane	1.0	U	1.0	0.83	ug/L			12/13/18 14:42	1
Chloroform	1.0	U	1.0	0.13	ug/L			12/13/18 14:42	1
Chloromethane	1.0	U	1.0	0.20	ug/L			12/13/18 14:42	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			12/13/18 14:42	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			12/13/18 14:42	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/13/18 14:42	1
1,2-Dichloropropane	1.0	U	1.0	0.15	ug/L			12/13/18 14:42	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			12/13/18 14:42	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			12/13/18 14:42	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			12/13/18 14:42	1
2-Hexanone	10	U	10	0.54	ug/L			12/13/18 14:42	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			12/13/18 14:42	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.42	ug/L			12/13/18 14:42	1
Styrene	1.0	U	1.0	0.10	ug/L			12/13/18 14:42	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.13	ug/L			12/13/18 14:42	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			12/13/18 14:42	1
Toluene	1.0	U	1.0	0.14	ug/L			12/13/18 14:42	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			12/13/18 14:42	1
Vinyl chloride	1.4		1.0	0.20	ug/L			12/13/18 14:42	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			12/13/18 14:42	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			12/13/18 14:42	1
1,1,2-Trichloroethane	1.0	U	1.0	0.090	ug/L			12/13/18 14:42	1
Cyclohexane	1.0	U	1.0	0.24	ug/L			12/13/18 14:42	1
1,2-Dibromo-3-Chloropropane	1.0	U	1.0	0.91	ug/L			12/13/18 14:42	1
1,2-Dibromoethane	1.0	U	1.0	0.12	ug/L			12/13/18 14:42	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			12/13/18 14:42	1
cis-1,2-Dichloroethene	0.33	J	1.0	0.16	ug/L			12/13/18 14:42	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/13/18 14:42	1
Isopropylbenzene	1.0	U	1.0	0.090	ug/L			12/13/18 14:42	1
Methyl acetate	10	U	10	1.7	ug/L			12/13/18 14:42	1
Methyl tert-butyl ether	1.0	U	1.0	0.070	ug/L			12/13/18 14:42	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			12/13/18 14:42	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.26	ug/L			12/13/18 14:42	1
1,2-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			12/13/18 14:42	1
1,3-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			12/13/18 14:42	1
1,4-Dichlorobenzene	1.0	U	1.0	0.16	ug/L			12/13/18 14:42	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			12/13/18 14:42	1
Dibromochloromethane	1.0	U	1.0	0.39	ug/L			12/13/18 14:42	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			12/13/18 14:42	1

TestAmerica Canton

Client Sample Results

Client: GHD Services Inc.
Project/Site: 17322A-T06, PCC Validation

TestAmerica Job ID: 240-105129-1

Method: 8260B - Volatile Organic Compounds (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>
1,2-Dichloroethane-d4 (Surr)	86		70 - 121		12/13/18 14:42	1
4-Bromofluorobenzene (Surr)	90		59 - 120		12/13/18 14:42	1
Toluene-d8 (Surr)	97		70 - 123		12/13/18 14:42	1
Dibromofluoromethane (Surr)	91		75 - 128		12/13/18 14:42	1

QC Association Summary

Client: GHD Services Inc.
Project/Site: 17322A-T06, PCC Validation

TestAmerica Job ID: 240-105129-1

GC/MS VOA

Analysis Batch: 359485

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-105129-1	TB-17322-120318	Total/NA	Water	8260B	
240-105129-2	GW-17322-120318-DS-001	Total/NA	Water	8260B	
240-105129-3	GW-17322-120318-DS-002	Total/NA	Water	8260B	
240-105129-4	GW-17322-120318-DS-003	Total/NA	Water	8260B	
240-105129-5	GW-17322-120318-DS-004	Total/NA	Water	8260B	
MB 240-359485/6	Method Blank	Total/NA	Water	8260B	
LCS 240-359485/4	Lab Control Sample	Total/NA	Water	8260B	
240-105129-4 MS	GW-17322-120318-DS-003	Total/NA	Water	8260B	
240-105129-4 MSD	GW-17322-120318-DS-003	Total/NA	Water	8260B	

Analysis Batch: 359752

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-105129-6	GW-17322-120318-DS-005	Total/NA	Water	8260B	
MB 240-359752/6	Method Blank	Total/NA	Water	8260B	
LCS 240-359752/4	Lab Control Sample	Total/NA	Water	8260B	

QC Sample Results

Client: GHD Services Inc.
Project/Site: 17322A-T06, PCC Validation

TestAmerica Job ID: 240-105129-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-359485/6

Matrix: Water

Analysis Batch: 359485

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	10	U	10	5.4	ug/L			12/12/18 14:45	1
Benzene	1.0	U	1.0	0.13	ug/L			12/12/18 14:45	1
Bromodichloromethane	1.0	U	1.0	0.17	ug/L			12/12/18 14:45	1
Bromoform	1.0	U	1.0	0.76	ug/L			12/12/18 14:45	1
Bromomethane	1.0	U	1.0	0.42	ug/L			12/12/18 14:45	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			12/12/18 14:45	1
Carbon disulfide	5.0	U	5.0	0.28	ug/L			12/12/18 14:45	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			12/12/18 14:45	1
Chlorobenzene	1.0	U	1.0	0.14	ug/L			12/12/18 14:45	1
Chloroethane	1.0	U	1.0	0.83	ug/L			12/12/18 14:45	1
Chloroform	1.0	U	1.0	0.13	ug/L			12/12/18 14:45	1
Chloromethane	1.0	U	1.0	0.20	ug/L			12/12/18 14:45	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			12/12/18 14:45	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			12/12/18 14:45	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/12/18 14:45	1
1,2-Dichloropropane	1.0	U	1.0	0.15	ug/L			12/12/18 14:45	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			12/12/18 14:45	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			12/12/18 14:45	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			12/12/18 14:45	1
2-Hexanone	10	U	10	0.54	ug/L			12/12/18 14:45	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			12/12/18 14:45	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.42	ug/L			12/12/18 14:45	1
Styrene	1.0	U	1.0	0.10	ug/L			12/12/18 14:45	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.13	ug/L			12/12/18 14:45	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			12/12/18 14:45	1
Toluene	1.0	U	1.0	0.14	ug/L			12/12/18 14:45	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			12/12/18 14:45	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			12/12/18 14:45	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			12/12/18 14:45	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			12/12/18 14:45	1
1,1,2-Trichloroethane	1.0	U	1.0	0.090	ug/L			12/12/18 14:45	1
Cyclohexane	1.0	U	1.0	0.24	ug/L			12/12/18 14:45	1
1,2-Dibromo-3-Chloropropane	1.0	U	1.0	0.91	ug/L			12/12/18 14:45	1
1,2-Dibromoethane	1.0	U	1.0	0.12	ug/L			12/12/18 14:45	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			12/12/18 14:45	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			12/12/18 14:45	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/12/18 14:45	1
Isopropylbenzene	1.0	U	1.0	0.090	ug/L			12/12/18 14:45	1
Methyl acetate	10	U	10	1.7	ug/L			12/12/18 14:45	1
Methyl tert-butyl ether	1.0	U	1.0	0.070	ug/L			12/12/18 14:45	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			12/12/18 14:45	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.26	ug/L			12/12/18 14:45	1
1,2-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			12/12/18 14:45	1
1,3-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			12/12/18 14:45	1
1,4-Dichlorobenzene	1.0	U	1.0	0.16	ug/L			12/12/18 14:45	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			12/12/18 14:45	1
Dibromochloromethane	1.0	U	1.0	0.39	ug/L			12/12/18 14:45	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			12/12/18 14:45	1

TestAmerica Canton

QC Sample Results

Client: GHD Services Inc.
Project/Site: 17322A-T06, PCC Validation

TestAmerica Job ID: 240-105129-1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	128	X	70 - 121		12/12/18 14:45	1
4-Bromofluorobenzene (Surr)	77		59 - 120		12/12/18 14:45	1
Toluene-d8 (Surr)	89		70 - 123		12/12/18 14:45	1
Dibromofluoromethane (Surr)	118		75 - 128		12/12/18 14:45	1

Lab Sample ID: LCS 240-359485/4

Matrix: Water

Analysis Batch: 359485

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	20.0	19.6		ug/L		98	21 - 162
Benzene	10.0	10.4		ug/L		104	80 - 123
Bromodichloromethane	10.0	11.0		ug/L		110	77 - 125
Bromoform	10.0	11.2		ug/L		112	49 - 141
Bromomethane	10.0	9.80		ug/L		98	41 - 175
2-Butanone (MEK)	20.0	18.5		ug/L		93	39 - 163
Carbon disulfide	10.0	10.4		ug/L		104	60 - 138
Carbon tetrachloride	10.0	12.9		ug/L		129	63 - 140
Chlorobenzene	10.0	10.2		ug/L		102	80 - 121
Chloroethane	10.0	8.11		ug/L		81	33 - 173
Chloroform	10.0	11.9		ug/L		119	79 - 127
Chloromethane	10.0	11.8		ug/L		118	54 - 143
1,1-Dichloroethane	10.0	10.6		ug/L		106	75 - 133
1,2-Dichloroethane	10.0	11.7		ug/L		117	71 - 135
1,1-Dichloroethene	10.0	11.1		ug/L		111	65 - 139
1,2-Dichloropropane	10.0	10.6		ug/L		106	78 - 133
cis-1,3-Dichloropropene	10.0	10.1		ug/L		101	64 - 132
trans-1,3-Dichloropropene	10.0	9.95		ug/L		100	55 - 128
Ethylbenzene	10.0	10.2		ug/L		102	80 - 120
2-Hexanone	20.0	18.7		ug/L		93	43 - 148
Methylene Chloride	10.0	11.1		ug/L		111	70 - 134
4-Methyl-2-pentanone (MIBK)	20.0	18.5		ug/L		93	49 - 143
Styrene	10.0	10.3		ug/L		103	79 - 120
1,1,2,2-Tetrachloroethane	10.0	9.40		ug/L		94	65 - 139
Tetrachloroethene	10.0	11.7		ug/L		117	74 - 130
Toluene	10.0	10.6		ug/L		106	78 - 129
Trichloroethene	10.0	10.5		ug/L		105	76 - 125
Vinyl chloride	10.0	11.0		ug/L		110	58 - 143
Xylenes, Total	20.0	21.1		ug/L		106	80 - 120
1,1,1-Trichloroethane	10.0	12.4		ug/L		124	69 - 134
1,1,2-Trichloroethane	10.0	11.4		ug/L		114	78 - 133
Cyclohexane	10.0	10.1		ug/L		101	58 - 145
1,2-Dibromo-3-Chloropropane	10.0	9.03		ug/L		90	46 - 132
1,2-Dibromoethane	10.0	10.9		ug/L		109	77 - 123
Dichlorodifluoromethane	10.0	12.0		ug/L		120	29 - 148
cis-1,2-Dichloroethene	10.0	10.6		ug/L		106	76 - 128
trans-1,2-Dichloroethene	10.0	11.1		ug/L		111	78 - 133
Isopropylbenzene	10.0	10.4		ug/L		104	74 - 120
Methyl acetate	20.0	20.3		ug/L		102	52 - 145
Methyl tert-butyl ether	10.0	10.4		ug/L		104	51 - 133
1,1,2-Trichloro-1,2,2-trifluoroethane	10.0	12.7		ug/L		127	50 - 156
1,2,4-Trichlorobenzene	10.0	8.57		ug/L		86	42 - 133
1,2-Dichlorobenzene	10.0	10.2		ug/L		102	78 - 120

TestAmerica Canton

QC Sample Results

Client: GHD Services Inc.
Project/Site: 17322A-T06, PCC Validation

TestAmerica Job ID: 240-105129-1

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

Lab Sample ID: LCS 240-359485/4

Matrix: Water

Analysis Batch: 359485

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	10.0	9.77		ug/L		98	78 - 120
1,4-Dichlorobenzene	10.0	9.58		ug/L		96	78 - 120
Trichlorofluoromethane	10.0	14.5		ug/L		145	51 - 164
Dibromochloromethane	10.0	11.1		ug/L		111	70 - 132
Methylcyclohexane	10.0	9.65		ug/L		96	60 - 125

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	111		70 - 121
4-Bromofluorobenzene (Surr)	101		59 - 120
Toluene-d8 (Surr)	97		70 - 123
Dibromofluoromethane (Surr)	107		75 - 128

Lab Sample ID: 240-105129-4 MS

Matrix: Water

Analysis Batch: 359485

Client Sample ID: GW-17322-120318-DS-003

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	10	U	20.0	15.3		ug/L		77	10 - 168
Benzene	1.0	U	10.0	9.67		ug/L		97	71 - 122
Bromodichloromethane	1.0	U	10.0	10.3		ug/L		103	64 - 125
Bromoform	1.0	U	10.0	9.85		ug/L		99	44 - 129
Bromomethane	1.0	U	10.0	11.0		ug/L		110	19 - 187
2-Butanone (MEK)	10	U	20.0	15.6		ug/L		78	37 - 156
Carbon disulfide	5.0	U	10.0	9.72		ug/L		97	43 - 144
Carbon tetrachloride	1.0	U	10.0	11.6		ug/L		116	41 - 143
Chlorobenzene	1.0	U	10.0	9.73		ug/L		97	70 - 123
Chloroethane	1.0	U	10.0	8.38		ug/L		84	11 - 189
Chloroform	1.0	U	10.0	11.1		ug/L		111	68 - 130
Chloromethane	1.0	U	10.0	11.4		ug/L		114	31 - 154
1,1-Dichloroethane	1.0	U	10.0	10.0		ug/L		100	63 - 136
1,2-Dichloroethane	1.0	U	10.0	11.1		ug/L		111	65 - 135
1,1-Dichloroethene	1.0	U	10.0	10.3		ug/L		103	53 - 140
1,2-Dichloropropane	1.0	U	10.0	9.40		ug/L		94	70 - 132
cis-1,3-Dichloropropene	1.0	U	10.0	8.11		ug/L		81	48 - 127
trans-1,3-Dichloropropene	1.0	U	10.0	8.68		ug/L		87	40 - 125
Ethylbenzene	1.0	U	10.0	9.23		ug/L		92	66 - 120
2-Hexanone	10	U	20.0	16.0		ug/L		80	42 - 150
Methylene Chloride	5.0	U	10.0	10.5		ug/L		105	61 - 130
4-Methyl-2-pentanone (MIBK)	10	U	20.0	15.1		ug/L		76	44 - 143
Styrene	1.0	U	10.0	9.77		ug/L		98	68 - 120
1,1,2,2-Tetrachloroethane	1.0	U	10.0	8.10		ug/L		81	60 - 137
Tetrachloroethene	1.0	U	10.0	10.5		ug/L		105	51 - 136
Toluene	1.0	U	10.0	9.85		ug/L		98	62 - 132
Trichloroethene	1.0	U	10.0	9.60		ug/L		96	55 - 131
Vinyl chloride	1.0	U	10.0	11.3		ug/L		113	43 - 154
Xylenes, Total	2.0	U	20.0	19.3		ug/L		96	67 - 120
1,1,1-Trichloroethane	1.0	U	10.0	11.7		ug/L		117	51 - 138
1,1,2-Trichloroethane	1.0	U	10.0	10.6		ug/L		106	76 - 132

TestAmerica Canton

QC Sample Results

Client: GHD Services Inc.
Project/Site: 17322A-T06, PCC Validation

TestAmerica Job ID: 240-105129-1

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

Lab Sample ID: 240-105129-4 MS

Matrix: Water

Analysis Batch: 359485

Client Sample ID: GW-17322-120318-DS-003

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyclohexane	1.0	U	10.0	8.22		ug/L		82	42 - 135
1,2-Dibromo-3-Chloropropane	1.0	U	10.0	6.83		ug/L		68	38 - 124
1,2-Dibromoethane	1.0	U	10.0	9.83		ug/L		98	71 - 123
Dichlorodifluoromethane	1.0	U	10.0	11.3		ug/L		113	28 - 136
cis-1,2-Dichloroethene	1.0	U	10.0	9.57		ug/L		96	64 - 130
trans-1,2-Dichloroethene	1.0	U	10.0	10.2		ug/L		102	68 - 133
Isopropylbenzene	1.0	U	10.0	9.44		ug/L		94	59 - 120
Methyl acetate	10	U	20.0	15.3		ug/L		76	41 - 142
Methyl tert-butyl ether	1.0	U	10.0	8.95		ug/L		89	41 - 136
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	10.0	11.6		ug/L		116	31 - 156
1,2,4-Trichlorobenzene	1.0	U	10.0	6.86		ug/L		69	30 - 126
1,2-Dichlorobenzene	1.0	U	10.0	9.12		ug/L		91	64 - 120
1,3-Dichlorobenzene	1.0	U	10.0	8.85		ug/L		88	62 - 120
1,4-Dichlorobenzene	1.0	U	10.0	8.90		ug/L		89	63 - 120
Trichlorofluoromethane	1.0	U	10.0	14.7		ug/L		147	37 - 174
Dibromochloromethane	1.0	U	10.0	10.5		ug/L		105	60 - 129
Methylcyclohexane	1.0	U	10.0	7.73		ug/L		77	37 - 123

Surrogate	MS %Recovery	MS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	111		70 - 121
4-Bromofluorobenzene (Surr)	102		59 - 120
Toluene-d8 (Surr)	96		70 - 123
Dibromofluoromethane (Surr)	109		75 - 128

Lab Sample ID: 240-105129-4 MSD

Matrix: Water

Analysis Batch: 359485

Client Sample ID: GW-17322-120318-DS-003

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acetone	10	U	20.0	16.5		ug/L		83	10 - 168	8	35
Benzene	1.0	U	10.0	9.77		ug/L		98	71 - 122	1	22
Bromodichloromethane	1.0	U	10.0	10.5		ug/L		105	64 - 125	2	27
Bromoform	1.0	U	10.0	10.0		ug/L		100	44 - 129	2	28
Bromomethane	1.0	U	10.0	10.5		ug/L		105	19 - 187	5	35
2-Butanone (MEK)	10	U	20.0	15.6		ug/L		78	37 - 156	0	35
Carbon disulfide	5.0	U	10.0	9.80		ug/L		98	43 - 144	1	33
Carbon tetrachloride	1.0	U	10.0	11.5		ug/L		115	41 - 143	1	30
Chlorobenzene	1.0	U	10.0	9.66		ug/L		97	70 - 123	1	23
Chloroethane	1.0	U	10.0	8.66		ug/L		87	11 - 189	3	35
Chloroform	1.0	U	10.0	11.4		ug/L		114	68 - 130	2	23
Chloromethane	1.0	U	10.0	11.4		ug/L		114	31 - 154	0	35
1,1-Dichloroethane	1.0	U	10.0	9.95		ug/L		99	63 - 136	1	23
1,2-Dichloroethane	1.0	U	10.0	10.9		ug/L		109	65 - 135	2	24
1,1-Dichloroethene	1.0	U	10.0	10.2		ug/L		102	53 - 140	1	35
1,2-Dichloropropane	1.0	U	10.0	9.44		ug/L		94	70 - 132	0	26
cis-1,3-Dichloropropene	1.0	U	10.0	8.27		ug/L		83	48 - 127	2	30
trans-1,3-Dichloropropene	1.0	U	10.0	8.41		ug/L		84	40 - 125	3	27

TestAmerica Canton

QC Sample Results

Client: GHD Services Inc.
Project/Site: 17322A-T06, PCC Validation

TestAmerica Job ID: 240-105129-1

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

Lab Sample ID: 240-105129-4 MSD

Matrix: Water

Analysis Batch: 359485

Client Sample ID: GW-17322-120318-DS-003

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ethylbenzene	1.0	U	10.0	9.15		ug/L		91	66 - 120	1	24
2-Hexanone	10	U	20.0	17.0		ug/L		85	42 - 150	6	35
Methylene Chloride	5.0	U	10.0	10.9		ug/L		109	61 - 130	3	29
4-Methyl-2-pentanone (MIBK)	10	U	20.0	16.0		ug/L		80	44 - 143	5	35
Styrene	1.0	U	10.0	9.58		ug/L		96	68 - 120	2	26
1,1,2,2-Tetrachloroethane	1.0	U	10.0	8.08		ug/L		81	60 - 137	0	31
Tetrachloroethene	1.0	U	10.0	10.3		ug/L		103	51 - 136	2	23
Toluene	1.0	U	10.0	9.68		ug/L		97	62 - 132	2	23
Trichloroethene	1.0	U	10.0	9.72		ug/L		97	55 - 131	1	23
Vinyl chloride	1.0	U	10.0	11.3		ug/L		113	43 - 154	0	29
Xylenes, Total	2.0	U	20.0	18.9		ug/L		95	67 - 120	2	25
1,1,1-Trichloroethane	1.0	U	10.0	11.7		ug/L		117	51 - 138	0	27
1,1,2-Trichloroethane	1.0	U	10.0	10.7		ug/L		107	76 - 132	1	25
Cyclohexane	1.0	U	10.0	8.27		ug/L		83	42 - 135	1	35
1,2-Dibromo-3-Chloropropane	1.0	U	10.0	7.86		ug/L		79	38 - 124	14	35
1,2-Dibromoethane	1.0	U	10.0	10.2		ug/L		102	71 - 123	4	27
Dichlorodifluoromethane	1.0	U	10.0	11.1		ug/L		111	28 - 136	2	35
cis-1,2-Dichloroethene	1.0	U	10.0	9.96		ug/L		100	64 - 130	4	21
trans-1,2-Dichloroethene	1.0	U	10.0	10.2		ug/L		102	68 - 133	0	24
Isopropylbenzene	1.0	U	10.0	9.07		ug/L		91	59 - 120	4	31
Methyl acetate	10	U	20.0	17.1		ug/L		85	41 - 142	11	35
Methyl tert-butyl ether	1.0	U	10.0	9.44		ug/L		94	41 - 136	5	29
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	10.0	11.3		ug/L		113	31 - 156	3	35
1,2,4-Trichlorobenzene	1.0	U	10.0	7.49		ug/L		75	30 - 126	9	35
1,2-Dichlorobenzene	1.0	U	10.0	9.07		ug/L		91	64 - 120	0	30
1,3-Dichlorobenzene	1.0	U	10.0	8.82		ug/L		88	62 - 120	0	31
1,4-Dichlorobenzene	1.0	U	10.0	8.81		ug/L		88	63 - 120	1	28
Trichlorofluoromethane	1.0	U	10.0	14.1		ug/L		141	37 - 174	4	35
Dibromochloromethane	1.0	U	10.0	10.2		ug/L		102	60 - 129	2	26
Methylcyclohexane	1.0	U	10.0	7.73		ug/L		77	37 - 123	0	35

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	111		70 - 121
4-Bromofluorobenzene (Surr)	102		59 - 120
Toluene-d8 (Surr)	98		70 - 123
Dibromofluoromethane (Surr)	106		75 - 128

Lab Sample ID: MB 240-359752/6

Matrix: Water

Analysis Batch: 359752

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	10	U	10	5.4	ug/L			12/13/18 13:53	1
Benzene	1.0	U	1.0	0.13	ug/L			12/13/18 13:53	1
Bromodichloromethane	1.0	U	1.0	0.17	ug/L			12/13/18 13:53	1
Bromoform	1.0	U	1.0	0.76	ug/L			12/13/18 13:53	1
Bromomethane	1.0	U	1.0	0.42	ug/L			12/13/18 13:53	1

TestAmerica Canton

QC Sample Results

Client: GHD Services Inc.
Project/Site: 17322A-T06, PCC Validation

TestAmerica Job ID: 240-105129-1

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

Lab Sample ID: MB 240-359752/6

Matrix: Water

Analysis Batch: 359752

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Butanone (MEK)	10	U	10	1.2	ug/L			12/13/18 13:53	1
Carbon disulfide	5.0	U	5.0	0.28	ug/L			12/13/18 13:53	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			12/13/18 13:53	1
Chlorobenzene	1.0	U	1.0	0.14	ug/L			12/13/18 13:53	1
Chloroethane	1.0	U	1.0	0.83	ug/L			12/13/18 13:53	1
Chloroform	1.0	U	1.0	0.13	ug/L			12/13/18 13:53	1
Chloromethane	1.0	U	1.0	0.20	ug/L			12/13/18 13:53	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			12/13/18 13:53	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			12/13/18 13:53	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/13/18 13:53	1
1,2-Dichloropropane	1.0	U	1.0	0.15	ug/L			12/13/18 13:53	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			12/13/18 13:53	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			12/13/18 13:53	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			12/13/18 13:53	1
2-Hexanone	10	U	10	0.54	ug/L			12/13/18 13:53	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			12/13/18 13:53	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.42	ug/L			12/13/18 13:53	1
Styrene	1.0	U	1.0	0.10	ug/L			12/13/18 13:53	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.13	ug/L			12/13/18 13:53	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			12/13/18 13:53	1
Toluene	1.0	U	1.0	0.14	ug/L			12/13/18 13:53	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			12/13/18 13:53	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			12/13/18 13:53	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			12/13/18 13:53	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			12/13/18 13:53	1
1,1,2-Trichloroethane	1.0	U	1.0	0.090	ug/L			12/13/18 13:53	1
Cyclohexane	1.0	U	1.0	0.24	ug/L			12/13/18 13:53	1
1,2-Dibromo-3-Chloropropane	1.0	U	1.0	0.91	ug/L			12/13/18 13:53	1
1,2-Dibromoethane	1.0	U	1.0	0.12	ug/L			12/13/18 13:53	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			12/13/18 13:53	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			12/13/18 13:53	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/13/18 13:53	1
Isopropylbenzene	1.0	U	1.0	0.090	ug/L			12/13/18 13:53	1
Methyl acetate	10	U	10	1.7	ug/L			12/13/18 13:53	1
Methyl tert-butyl ether	1.0	U	1.0	0.070	ug/L			12/13/18 13:53	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			12/13/18 13:53	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.26	ug/L			12/13/18 13:53	1
1,2-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			12/13/18 13:53	1
1,3-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			12/13/18 13:53	1
1,4-Dichlorobenzene	1.0	U	1.0	0.16	ug/L			12/13/18 13:53	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			12/13/18 13:53	1
Dibromochloromethane	1.0	U	1.0	0.39	ug/L			12/13/18 13:53	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			12/13/18 13:53	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	87		70 - 121		12/13/18 13:53	1
4-Bromofluorobenzene (Surr)	90		59 - 120		12/13/18 13:53	1
Toluene-d8 (Surr)	92		70 - 123		12/13/18 13:53	1

TestAmerica Canton

QC Sample Results

Client: GHD Services Inc.
Project/Site: 17322A-T06, PCC Validation

TestAmerica Job ID: 240-105129-1

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

Lab Sample ID: MB 240-359752/6

Matrix: Water

Analysis Batch: 359752

Client Sample ID: Method Blank

Prep Type: Total/NA

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	96		75 - 128		12/13/18 13:53	1

Lab Sample ID: LCS 240-359752/4

Matrix: Water

Analysis Batch: 359752

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	20.0	22.3		ug/L		111	21 - 162
Benzene	10.0	10.2		ug/L		102	80 - 123
Bromodichloromethane	10.0	9.71		ug/L		97	77 - 125
Bromoform	10.0	9.19		ug/L		92	49 - 141
Bromomethane	10.0	10.7		ug/L		107	41 - 175
2-Butanone (MEK)	20.0	20.1		ug/L		100	39 - 163
Carbon disulfide	10.0	10.1		ug/L		101	60 - 138
Carbon tetrachloride	10.0	9.67		ug/L		97	63 - 140
Chlorobenzene	10.0	9.87		ug/L		99	80 - 121
Chloroethane	10.0	11.3		ug/L		113	33 - 173
Chloroform	10.0	10.1		ug/L		101	79 - 127
Chloromethane	10.0	11.3		ug/L		113	54 - 143
1,1-Dichloroethane	10.0	10.8		ug/L		108	75 - 133
1,2-Dichloroethane	10.0	9.40		ug/L		94	71 - 135
1,1-Dichloroethene	10.0	10.3		ug/L		103	65 - 139
1,2-Dichloropropane	10.0	10.8		ug/L		108	78 - 133
cis-1,3-Dichloropropene	10.0	9.91		ug/L		99	64 - 132
trans-1,3-Dichloropropene	10.0	9.22		ug/L		92	55 - 128
Ethylbenzene	10.0	10.0		ug/L		100	80 - 120
2-Hexanone	20.0	22.1		ug/L		110	43 - 148
Methylene Chloride	10.0	10.5		ug/L		105	70 - 134
4-Methyl-2-pentanone (MIBK)	20.0	20.1		ug/L		100	49 - 143
Styrene	10.0	9.56		ug/L		96	79 - 120
1,1,2,2-Tetrachloroethane	10.0	9.89		ug/L		99	65 - 139
Tetrachloroethene	10.0	9.88		ug/L		99	74 - 130
Toluene	10.0	9.99		ug/L		100	78 - 129
Trichloroethene	10.0	9.65		ug/L		97	76 - 125
Vinyl chloride	10.0	11.3		ug/L		113	58 - 143
Xylenes, Total	20.0	19.7		ug/L		99	80 - 120
1,1,1-Trichloroethane	10.0	10.1		ug/L		101	69 - 134
1,1,2-Trichloroethane	10.0	9.97		ug/L		100	78 - 133
Cyclohexane	10.0	11.0		ug/L		110	58 - 145
1,2-Dibromo-3-Chloropropane	10.0	8.45		ug/L		84	46 - 132
1,2-Dibromoethane	10.0	9.91		ug/L		99	77 - 123
Dichlorodifluoromethane	10.0	9.46		ug/L		95	29 - 148
cis-1,2-Dichloroethene	10.0	10.2		ug/L		102	76 - 128
trans-1,2-Dichloroethene	10.0	10.4		ug/L		104	78 - 133
Isopropylbenzene	10.0	9.72		ug/L		97	74 - 120
Methyl acetate	20.0	20.1		ug/L		100	52 - 145
Methyl tert-butyl ether	10.0	9.28		ug/L		93	51 - 133

TestAmerica Canton

QC Sample Results

Client: GHD Services Inc.
Project/Site: 17322A-T06, PCC Validation

TestAmerica Job ID: 240-105129-1

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

Lab Sample ID: LCS 240-359752/4

Matrix: Water

Analysis Batch: 359752

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,2-Trichloro-1,2,2-trifluoroethane	10.0	10.9		ug/L		109	50 - 156
1,2,4-Trichlorobenzene	10.0	8.73		ug/L		87	42 - 133
1,2-Dichlorobenzene	10.0	9.69		ug/L		97	78 - 120
1,3-Dichlorobenzene	10.0	9.47		ug/L		95	78 - 120
1,4-Dichlorobenzene	10.0	9.66		ug/L		97	78 - 120
Trichlorofluoromethane	10.0	10.9		ug/L		109	51 - 164
Dibromochloromethane	10.0	9.71		ug/L		97	70 - 132
Methylcyclohexane	10.0	9.27		ug/L		93	60 - 125

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	89		70 - 121
4-Bromofluorobenzene (Surr)	95		59 - 120
Toluene-d8 (Surr)	98		70 - 123
Dibromofluoromethane (Surr)	96		75 - 128

Surrogate Summary

Client: GHD Services Inc.
Project/Site: 17322A-T06, PCC Validation

TestAmerica Job ID: 240-105129-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)			
		DCA (70-121)	BFB (59-120)	TOL (70-123)	DBFM (75-128)
240-105129-1	TB-17322-120318	134 X	78	87	131 X
240-105129-2	GW-17322-120318-DS-001	130 X	75	86	126
240-105129-3	GW-17322-120318-DS-002	137 X	78	89	128
240-105129-4	GW-17322-120318-DS-003	134 X	73	86	129 X
240-105129-4 MS	GW-17322-120318-DS-003	111	102	96	109
240-105129-4 MSD	GW-17322-120318-DS-003	111	102	98	106
240-105129-5	GW-17322-120318-DS-004	134 X	77	87	135 X
240-105129-6	GW-17322-120318-DS-005	86	90	97	91
LCS 240-359485/4	Lab Control Sample	111	101	97	107
LCS 240-359752/4	Lab Control Sample	89	95	98	96
MB 240-359485/6	Method Blank	128 X	77	89	118
MB 240-359752/6	Method Blank	87	90	92	96

Surrogate Legend

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

BFB = 4-Bromofluorobenzene (Surr)

TOL = Toluene-d8 (Surr)

DBFM = Dibromofluoromethane (Surr)

Lab Chronicle

Client: GHD Services Inc.
Project/Site: 17322A-T06, PCC Validation

TestAmerica Job ID: 240-105129-1

Client Sample ID: TB-17322-120318

Date Collected: 12/03/18 00:00

Date Received: 12/04/18 10:05

Lab Sample ID: 240-105129-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	359485	12/12/18 16:51	LRW	TAL CAN

Client Sample ID: GW-17322-120318-DS-001

Date Collected: 12/03/18 10:00

Date Received: 12/04/18 10:05

Lab Sample ID: 240-105129-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	359485	12/12/18 17:15	LRW	TAL CAN

Client Sample ID: GW-17322-120318-DS-002

Date Collected: 12/03/18 10:55

Date Received: 12/04/18 10:05

Lab Sample ID: 240-105129-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	359485	12/12/18 17:42	LRW	TAL CAN

Client Sample ID: GW-17322-120318-DS-003

Date Collected: 12/03/18 12:00

Date Received: 12/04/18 10:05

Lab Sample ID: 240-105129-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	359485	12/12/18 18:06	LRW	TAL CAN

Client Sample ID: GW-17322-120318-DS-004

Date Collected: 12/03/18 13:00

Date Received: 12/04/18 10:05

Lab Sample ID: 240-105129-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	359485	12/12/18 18:29	LRW	TAL CAN

Client Sample ID: GW-17322-120318-DS-005

Date Collected: 12/03/18 13:45

Date Received: 12/04/18 10:05

Lab Sample ID: 240-105129-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	359752	12/13/18 14:42	LRW	TAL CAN

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

TestAmerica Canton

Accreditation/Certification Summary

Client: GHD Services Inc.
Project/Site: 17322A-T06, PCC Validation

TestAmerica Job ID: 240-105129-1

Laboratory: TestAmerica Canton

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

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2927	02-23-19
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-19
Illinois	NELAP	5	200004	07-31-19
Kansas	NELAP	7	E-10336	01-31-19
Kentucky (UST)	State Program	4	58	02-23-19
Kentucky (WW)	State Program	4	98016	12-31-18 *
Minnesota	NELAP	5	039-999-348	12-31-18 *
Minnesota (Petrofund)	State Program	1	3506	07-31-19
Nevada	State Program	9	OH00048	07-31-19
New Jersey	NELAP	2	OH001	06-30-19
New York	NELAP	2	10975	03-31-19
Ohio VAP	State Program	5	CL0024	09-06-19
Oregon	NELAP	10	4062	02-23-19
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Texas	NELAP	6	T104704517-18-10	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19
Washington	State Program	10	C971	01-12-19
West Virginia DEP	State Program	3	210	12-31-18 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

TestAmerica Canton

TestAmerica Michigan

10448 Citation Drive
Suite 200

Brighton, MI 48116

Phone: 810.229.2763 Fax:

MICHIGAN

190

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Chain of Custody Record

302891

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.

TAL-8210 (0713)

Client Contact		Project Manager: Tom Kinney		Site Contact: M. Lopez		Date: 12/3/18		COC No:	
Company Name: GHD		Tel/Fax: 248-893-3400		Lab Contact: D. Heckler		Carrier: Fed Ex		COCs: 1 of 1	
Address: 26850 Harperly Rd.		Analysis Turnaround Time		Filtered Sample (Y/N) ☒ Perform MS/MSD (Y/N) ☒ 1201-B-0928 1201-B-0929 1201-B-0930 1201-B-0931 1201-B-0932 1201-B-0933 1201-B-0934 1201-B-0935 1201-B-0936 1201-B-0937 1201-B-0938 1201-B-0939 1201-B-0940 1201-B-0941 1201-B-0942 1201-B-0943 1201-B-0944 1201-B-0945 1201-B-0946 1201-B-0947 1201-B-0948 1201-B-0949 1201-B-0950 1201-B-0951 1201-B-0952 1201-B-0953 1201-B-0954 1201-B-0955 1201-B-0956 1201-B-0957 1201-B-0958 1201-B-0959 1201-B-0960 1201-B-0961 1201-B-0962 1201-B-0963 1201-B-0964 1201-B-0965 1201-B-0966 1201-B-0967 1201-B-0968 1201-B-0969 1201-B-0970 1201-B-0971 1201-B-0972 1201-B-0973 1201-B-0974 1201-B-0975 1201-B-0976 1201-B-0977 1201-B-0978 1201-B-0979 1201-B-0980 1201-B-0981 1201-B-0982 1201-B-0983 1201-B-0984 1201-B-0985 1201-B-0986 1201-B-0987 1201-B-0988 1201-B-0989 1201-B-0990 1201-B-0991 1201-B-0992 1201-B-0993 1201-B-0994 1201-B-0995 1201-B-0996 1201-B-0997 1201-B-0998 1201-B-0999 1201-B-1000		Sampler: D. Saliba			
City/State/Zip: Farmington Hills, MI 48331		☐ CALENDAR DAYS ☒ WORKING DAYS				For Lab Use Only:			
Phone: 248-893-3400		TAT if different from Below				Walk-in Client:			
Fax:		☒ 2 weeks				Lab Sampling:			
Project Name: 17322A, ACC Validation		☐ 1 week				Job / SDG No.:			
Site: Pontiac, MI		☐ 2 days							
P O # 24030124		☐ 1 day							
Sample Identification		Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Sample Specific Notes: 240-105129 Chain of Custody		
TB-17322-120318		12/3/18	/	/	TB	1			
6W-17322-120318-05-001			1000	G	GW	3			
-002			1055			3			
-003			1200			9			
-004			1300			3			
-005			1345			3			
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. ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown					Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) ☐ Return to Client ☐ Disposal by Lab ☐ Archive for _____ Months				
Special Instructions/QC Requirements & Comments:									
Custody Seals Intact: ☐ Yes ☐ No		Custody Seal No.:		Cooler Temp. (°C): Obs'd: _____		Therm ID No.:			
Relinquished by: Derek Saliba		Company: GHD		Date/Time: 12/3/18 1500		Received by: [Signature]		Company: TAC	
Relinquished by:		Company:		Date/Time:		Received by:		Company:	
Relinquished by:		Company:		Date/Time:		Received in Laboratory by:		Company:	

TestAmerica Canton Sample Receipt Form/Narrative Login # : 105129

Canton Facility

Client GHD Site Name _____ Cooler unpacked by: [Signature]

Cooler Received on 12-4-18 Opened on 12-4-18

FedEx: 1st Grd (Exp) UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # _____ 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-8 (CF -0.2 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
 IR GUN #36 (CF +0°C) Observed Cooler Temp. 3.2 °C Corrected Cooler Temp. 3.2 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity _____ 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
 -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 be reconciled with the COC? Yes No

9. Were correct bottle(s) used for the test(s) indicated? Yes No

10. Sufficient quantity received to perform indicated analyses? Yes No

11. Are these work share samples? Yes No

If yes, Questions 12-16 have been checked at the originating laboratory.

12. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC854592

13. Were VOAs on the COC? Yes No

14. Were air bubbles >6 mm in any VOA vials? Yes No NA

15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered Yes No

16. Was a LL Hg or Me Hg trip blank present? Yes No

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other _____

Concerning _____

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES Samples processed by: [Signature]

18. 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)

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Canton

4101 Shuffel Street NW

North Canton, OH 44720

Tel: (330)497-9396

TestAmerica Job ID: 240-105187-1

Client Project/Site: 17322A-T06, PCC Validation

For:

GHD Services Inc.

26850 Haggerty Rd.

Farmington Hills, Michigan 48331

Attn: James Abston



Authorized for release by:

12/18/2018 9:34:38 AM

Denise Heckler, Project Manager II

(330)966-9477

denise.heckler@testamericainc.com

LINKS

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www.testamericainc.com

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: 17322A-T06, PCC Validation

TestAmerica Job ID: 240-105187-1

Job ID: 240-105187-1

Laboratory: TestAmerica Canton

Narrative

Job Narrative 240-105187-1

Comments

No additional comments.

Receipt

The samples were received on 12/5/2018 9:50 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.0° C.

GC/MS VOA

Method(s) 8260B: Surrogate recovery for the following sample(s) was outside the upper control limit: This sample did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

TB-17322-120418 (240-105187-1), GW-17322-120418-DS-008 (240-105187-4), GW-17322-120418-DS-009 (240-105187-5), GW-17322-120418-DS-010 (240-105187-6), GW-17322-120418-DS-011 (240-105187-7) and (240-105183-B-13)

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

Metals

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

VOA Prep

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

Definitions/Glossary

Client: GHD Services Inc.
Project/Site: 17322A-T06, PCC Validation

TestAmerica Job ID: 240-105187-1

Qualifiers

GC/MS VOA

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

Metals

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

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
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

Sample Summary

Client: GHD Services Inc.
Project/Site: 17322A-T06, PCC Validation

TestAmerica Job ID: 240-105187-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-105187-1	TB-17322-120418	Water	12/04/18 00:00	12/05/18 09:50
240-105187-2	GW-17322-120418-DS-006	Water	12/04/18 09:00	12/05/18 09:50
240-105187-3	GW-17322-120418-DS-007	Water	12/04/18 09:55	12/05/18 09:50
240-105187-4	GW-17322-120418-DS-008	Water	12/04/18 11:00	12/05/18 09:50
240-105187-5	GW-17322-120418-DS-009	Water	12/04/18 11:05	12/05/18 09:50
240-105187-6	GW-17322-120418-DS-010	Water	12/04/18 11:55	12/05/18 09:50
240-105187-7	GW-17322-120418-DS-011	Water	12/04/18 12:45	12/05/18 09:50

Detection Summary

Client: GHD Services Inc.
Project/Site: 17322A-T06, PCC Validation

TestAmerica Job ID: 240-105187-1

Client Sample ID: TB-17322-120418

Lab Sample ID: 240-105187-1

No Detections.

Client Sample ID: GW-17322-120418-DS-006

Lab Sample ID: 240-105187-2

No Detections.

Client Sample ID: GW-17322-120418-DS-007

Lab Sample ID: 240-105187-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	740		50	34	ug/L	1		6020	Total
Vanadium	1.9	J	5.0	0.82	ug/L	1		6020	Recoverable
									Total
									Recoverable

Client Sample ID: GW-17322-120418-DS-008

Lab Sample ID: 240-105187-4

No Detections.

Client Sample ID: GW-17322-120418-DS-009

Lab Sample ID: 240-105187-5

No Detections.

Client Sample ID: GW-17322-120418-DS-010

Lab Sample ID: 240-105187-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	0.27	J	1.0	0.20	ug/L	1		8260B	Total/NA

Client Sample ID: GW-17322-120418-DS-011

Lab Sample ID: 240-105187-7

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Canton

Method Summary

Client: GHD Services Inc.
Project/Site: 17322A-T06, PCC Validation

TestAmerica Job ID: 240-105187-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
6020	Metals (ICP/MS)	SW846	TAL CAN
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL CAN
5030B	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 = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Client Sample Results

Client: GHD Services Inc.
Project/Site: 17322A-T06, PCC Validation

TestAmerica Job ID: 240-105187-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: TB-17322-120418

Date Collected: 12/04/18 00:00

Date Received: 12/05/18 09:50

Lab Sample ID: 240-105187-1

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	10	U	10	5.4	ug/L			12/13/18 16:43	1
Benzene	1.0	U	1.0	0.13	ug/L			12/13/18 16:43	1
Bromodichloromethane	1.0	U	1.0	0.17	ug/L			12/13/18 16:43	1
Bromoform	1.0	U	1.0	0.76	ug/L			12/13/18 16:43	1
Bromomethane	1.0	U	1.0	0.42	ug/L			12/13/18 16:43	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			12/13/18 16:43	1
Carbon disulfide	5.0	U	5.0	0.28	ug/L			12/13/18 16:43	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			12/13/18 16:43	1
Chlorobenzene	1.0	U	1.0	0.14	ug/L			12/13/18 16:43	1
Chloroethane	1.0	U	1.0	0.83	ug/L			12/13/18 16:43	1
Chloroform	1.0	U	1.0	0.13	ug/L			12/13/18 16:43	1
Chloromethane	1.0	U	1.0	0.20	ug/L			12/13/18 16:43	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			12/13/18 16:43	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			12/13/18 16:43	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/13/18 16:43	1
1,2-Dichloropropane	1.0	U	1.0	0.15	ug/L			12/13/18 16:43	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			12/13/18 16:43	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			12/13/18 16:43	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			12/13/18 16:43	1
2-Hexanone	10	U	10	0.54	ug/L			12/13/18 16:43	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			12/13/18 16:43	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.42	ug/L			12/13/18 16:43	1
Styrene	1.0	U	1.0	0.10	ug/L			12/13/18 16:43	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.13	ug/L			12/13/18 16:43	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			12/13/18 16:43	1
Toluene	1.0	U	1.0	0.14	ug/L			12/13/18 16:43	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			12/13/18 16:43	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			12/13/18 16:43	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			12/13/18 16:43	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			12/13/18 16:43	1
1,1,2-Trichloroethane	1.0	U	1.0	0.090	ug/L			12/13/18 16:43	1
Cyclohexane	1.0	U	1.0	0.24	ug/L			12/13/18 16:43	1
1,2-Dibromo-3-Chloropropane	1.0	U	1.0	0.91	ug/L			12/13/18 16:43	1
1,2-Dibromoethane	1.0	U	1.0	0.12	ug/L			12/13/18 16:43	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			12/13/18 16:43	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			12/13/18 16:43	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/13/18 16:43	1
Isopropylbenzene	1.0	U	1.0	0.090	ug/L			12/13/18 16:43	1
Methyl acetate	10	U	10	1.7	ug/L			12/13/18 16:43	1
Methyl tert-butyl ether	1.0	U	1.0	0.070	ug/L			12/13/18 16:43	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			12/13/18 16:43	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.26	ug/L			12/13/18 16:43	1
1,2-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			12/13/18 16:43	1
1,3-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			12/13/18 16:43	1
1,4-Dichlorobenzene	1.0	U	1.0	0.16	ug/L			12/13/18 16:43	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			12/13/18 16:43	1
Dibromochloromethane	1.0	U	1.0	0.39	ug/L			12/13/18 16:43	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			12/13/18 16:43	1

TestAmerica Canton

Client Sample Results

Client: GHD Services Inc.
Project/Site: 17322A-T06, PCC Validation

TestAmerica Job ID: 240-105187-1

Method: 8260B - Volatile Organic Compounds (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>
1,2-Dichloroethane-d4 (Surr)	139	X	70 - 121		12/13/18 16:43	1
4-Bromofluorobenzene (Surr)	74		59 - 120		12/13/18 16:43	1
Toluene-d8 (Surr)	85		70 - 123		12/13/18 16:43	1
Dibromofluoromethane (Surr)	134	X	75 - 128		12/13/18 16:43	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 17322A-T06, PCC Validation

TestAmerica Job ID: 240-105187-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-17322-120418-DS-008

Date Collected: 12/04/18 11:00

Date Received: 12/05/18 09:50

Lab Sample ID: 240-105187-4

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	10	U	10	5.4	ug/L			12/13/18 17:07	1
Benzene	1.0	U	1.0	0.13	ug/L			12/13/18 17:07	1
Bromodichloromethane	1.0	U	1.0	0.17	ug/L			12/13/18 17:07	1
Bromoform	1.0	U	1.0	0.76	ug/L			12/13/18 17:07	1
Bromomethane	1.0	U	1.0	0.42	ug/L			12/13/18 17:07	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			12/13/18 17:07	1
Carbon disulfide	5.0	U	5.0	0.28	ug/L			12/13/18 17:07	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			12/13/18 17:07	1
Chlorobenzene	1.0	U	1.0	0.14	ug/L			12/13/18 17:07	1
Chloroethane	1.0	U	1.0	0.83	ug/L			12/13/18 17:07	1
Chloroform	1.0	U	1.0	0.13	ug/L			12/13/18 17:07	1
Chloromethane	1.0	U	1.0	0.20	ug/L			12/13/18 17:07	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			12/13/18 17:07	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			12/13/18 17:07	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/13/18 17:07	1
1,2-Dichloropropane	1.0	U	1.0	0.15	ug/L			12/13/18 17:07	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			12/13/18 17:07	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			12/13/18 17:07	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			12/13/18 17:07	1
2-Hexanone	10	U	10	0.54	ug/L			12/13/18 17:07	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			12/13/18 17:07	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.42	ug/L			12/13/18 17:07	1
Styrene	1.0	U	1.0	0.10	ug/L			12/13/18 17:07	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.13	ug/L			12/13/18 17:07	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			12/13/18 17:07	1
Toluene	1.0	U	1.0	0.14	ug/L			12/13/18 17:07	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			12/13/18 17:07	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			12/13/18 17:07	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			12/13/18 17:07	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			12/13/18 17:07	1
1,1,2-Trichloroethane	1.0	U	1.0	0.090	ug/L			12/13/18 17:07	1
Cyclohexane	1.0	U	1.0	0.24	ug/L			12/13/18 17:07	1
1,2-Dibromo-3-Chloropropane	1.0	U	1.0	0.91	ug/L			12/13/18 17:07	1
1,2-Dibromoethane	1.0	U	1.0	0.12	ug/L			12/13/18 17:07	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			12/13/18 17:07	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			12/13/18 17:07	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/13/18 17:07	1
Isopropylbenzene	1.0	U	1.0	0.090	ug/L			12/13/18 17:07	1
Methyl acetate	10	U	10	1.7	ug/L			12/13/18 17:07	1
Methyl tert-butyl ether	1.0	U	1.0	0.070	ug/L			12/13/18 17:07	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			12/13/18 17:07	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.26	ug/L			12/13/18 17:07	1
1,2-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			12/13/18 17:07	1
1,3-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			12/13/18 17:07	1
1,4-Dichlorobenzene	1.0	U	1.0	0.16	ug/L			12/13/18 17:07	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			12/13/18 17:07	1
Dibromochloromethane	1.0	U	1.0	0.39	ug/L			12/13/18 17:07	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			12/13/18 17:07	1

TestAmerica Canton

Client Sample Results

Client: GHD Services Inc.
Project/Site: 17322A-T06, PCC Validation

TestAmerica Job ID: 240-105187-1

Method: 8260B - Volatile Organic Compounds (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>
1,2-Dichloroethane-d4 (Surr)	141	X	70 - 121		12/13/18 17:07	1
4-Bromofluorobenzene (Surr)	78		59 - 120		12/13/18 17:07	1
Toluene-d8 (Surr)	88		70 - 123		12/13/18 17:07	1
Dibromofluoromethane (Surr)	132	X	75 - 128		12/13/18 17:07	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 17322A-T06, PCC Validation

TestAmerica Job ID: 240-105187-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-17322-120418-DS-009

Date Collected: 12/04/18 11:05

Date Received: 12/05/18 09:50

Lab Sample ID: 240-105187-5

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	10	U	10	5.4	ug/L			12/13/18 17:30	1
Benzene	1.0	U	1.0	0.13	ug/L			12/13/18 17:30	1
Bromodichloromethane	1.0	U	1.0	0.17	ug/L			12/13/18 17:30	1
Bromoform	1.0	U	1.0	0.76	ug/L			12/13/18 17:30	1
Bromomethane	1.0	U	1.0	0.42	ug/L			12/13/18 17:30	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			12/13/18 17:30	1
Carbon disulfide	5.0	U	5.0	0.28	ug/L			12/13/18 17:30	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			12/13/18 17:30	1
Chlorobenzene	1.0	U	1.0	0.14	ug/L			12/13/18 17:30	1
Chloroethane	1.0	U	1.0	0.83	ug/L			12/13/18 17:30	1
Chloroform	1.0	U	1.0	0.13	ug/L			12/13/18 17:30	1
Chloromethane	1.0	U	1.0	0.20	ug/L			12/13/18 17:30	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			12/13/18 17:30	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			12/13/18 17:30	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/13/18 17:30	1
1,2-Dichloropropane	1.0	U	1.0	0.15	ug/L			12/13/18 17:30	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			12/13/18 17:30	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			12/13/18 17:30	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			12/13/18 17:30	1
2-Hexanone	10	U	10	0.54	ug/L			12/13/18 17:30	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			12/13/18 17:30	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.42	ug/L			12/13/18 17:30	1
Styrene	1.0	U	1.0	0.10	ug/L			12/13/18 17:30	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.13	ug/L			12/13/18 17:30	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			12/13/18 17:30	1
Toluene	1.0	U	1.0	0.14	ug/L			12/13/18 17:30	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			12/13/18 17:30	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			12/13/18 17:30	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			12/13/18 17:30	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			12/13/18 17:30	1
1,1,2-Trichloroethane	1.0	U	1.0	0.090	ug/L			12/13/18 17:30	1
Cyclohexane	1.0	U	1.0	0.24	ug/L			12/13/18 17:30	1
1,2-Dibromo-3-Chloropropane	1.0	U	1.0	0.91	ug/L			12/13/18 17:30	1
1,2-Dibromoethane	1.0	U	1.0	0.12	ug/L			12/13/18 17:30	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			12/13/18 17:30	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			12/13/18 17:30	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/13/18 17:30	1
Isopropylbenzene	1.0	U	1.0	0.090	ug/L			12/13/18 17:30	1
Methyl acetate	10	U	10	1.7	ug/L			12/13/18 17:30	1
Methyl tert-butyl ether	1.0	U	1.0	0.070	ug/L			12/13/18 17:30	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			12/13/18 17:30	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.26	ug/L			12/13/18 17:30	1
1,2-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			12/13/18 17:30	1
1,3-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			12/13/18 17:30	1
1,4-Dichlorobenzene	1.0	U	1.0	0.16	ug/L			12/13/18 17:30	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			12/13/18 17:30	1
Dibromochloromethane	1.0	U	1.0	0.39	ug/L			12/13/18 17:30	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			12/13/18 17:30	1

TestAmerica Canton

Client Sample Results

Client: GHD Services Inc.
Project/Site: 17322A-T06, PCC Validation

TestAmerica Job ID: 240-105187-1

Method: 8260B - Volatile Organic Compounds (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>
1,2-Dichloroethane-d4 (Surr)	141	X	70 - 121		12/13/18 17:30	1
4-Bromofluorobenzene (Surr)	78		59 - 120		12/13/18 17:30	1
Toluene-d8 (Surr)	88		70 - 123		12/13/18 17:30	1
Dibromofluoromethane (Surr)	135	X	75 - 128		12/13/18 17:30	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 17322A-T06, PCC Validation

TestAmerica Job ID: 240-105187-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-17322-120418-DS-010

Date Collected: 12/04/18 11:55

Date Received: 12/05/18 09:50

Lab Sample ID: 240-105187-6

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	10	U	10	5.4	ug/L			12/13/18 17:54	1
Benzene	1.0	U	1.0	0.13	ug/L			12/13/18 17:54	1
Bromodichloromethane	1.0	U	1.0	0.17	ug/L			12/13/18 17:54	1
Bromoform	1.0	U	1.0	0.76	ug/L			12/13/18 17:54	1
Bromomethane	1.0	U	1.0	0.42	ug/L			12/13/18 17:54	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			12/13/18 17:54	1
Carbon disulfide	5.0	U	5.0	0.28	ug/L			12/13/18 17:54	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			12/13/18 17:54	1
Chlorobenzene	1.0	U	1.0	0.14	ug/L			12/13/18 17:54	1
Chloroethane	1.0	U	1.0	0.83	ug/L			12/13/18 17:54	1
Chloroform	1.0	U	1.0	0.13	ug/L			12/13/18 17:54	1
Chloromethane	1.0	U	1.0	0.20	ug/L			12/13/18 17:54	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			12/13/18 17:54	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			12/13/18 17:54	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/13/18 17:54	1
1,2-Dichloropropane	1.0	U	1.0	0.15	ug/L			12/13/18 17:54	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			12/13/18 17:54	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			12/13/18 17:54	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			12/13/18 17:54	1
2-Hexanone	10	U	10	0.54	ug/L			12/13/18 17:54	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			12/13/18 17:54	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.42	ug/L			12/13/18 17:54	1
Styrene	1.0	U	1.0	0.10	ug/L			12/13/18 17:54	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.13	ug/L			12/13/18 17:54	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			12/13/18 17:54	1
Toluene	1.0	U	1.0	0.14	ug/L			12/13/18 17:54	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			12/13/18 17:54	1
Vinyl chloride	0.27	J	1.0	0.20	ug/L			12/13/18 17:54	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			12/13/18 17:54	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			12/13/18 17:54	1
1,1,2-Trichloroethane	1.0	U	1.0	0.090	ug/L			12/13/18 17:54	1
Cyclohexane	1.0	U	1.0	0.24	ug/L			12/13/18 17:54	1
1,2-Dibromo-3-Chloropropane	1.0	U	1.0	0.91	ug/L			12/13/18 17:54	1
1,2-Dibromoethane	1.0	U	1.0	0.12	ug/L			12/13/18 17:54	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			12/13/18 17:54	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			12/13/18 17:54	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/13/18 17:54	1
Isopropylbenzene	1.0	U	1.0	0.090	ug/L			12/13/18 17:54	1
Methyl acetate	10	U	10	1.7	ug/L			12/13/18 17:54	1
Methyl tert-butyl ether	1.0	U	1.0	0.070	ug/L			12/13/18 17:54	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			12/13/18 17:54	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.26	ug/L			12/13/18 17:54	1
1,2-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			12/13/18 17:54	1
1,3-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			12/13/18 17:54	1
1,4-Dichlorobenzene	1.0	U	1.0	0.16	ug/L			12/13/18 17:54	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			12/13/18 17:54	1
Dibromochloromethane	1.0	U	1.0	0.39	ug/L			12/13/18 17:54	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			12/13/18 17:54	1

TestAmerica Canton

Client Sample Results

Client: GHD Services Inc.
Project/Site: 17322A-T06, PCC Validation

TestAmerica Job ID: 240-105187-1

Method: 8260B - Volatile Organic Compounds (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>
1,2-Dichloroethane-d4 (Surr)	138	X	70 - 121		12/13/18 17:54	1
4-Bromofluorobenzene (Surr)	79		59 - 120		12/13/18 17:54	1
Toluene-d8 (Surr)	88		70 - 123		12/13/18 17:54	1
Dibromofluoromethane (Surr)	139	X	75 - 128		12/13/18 17:54	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 17322A-T06, PCC Validation

TestAmerica Job ID: 240-105187-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Client Sample ID: GW-17322-120418-DS-011

Date Collected: 12/04/18 12:45

Date Received: 12/05/18 09:50

Lab Sample ID: 240-105187-7

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	10	U	10	5.4	ug/L			12/13/18 18:18	1
Benzene	1.0	U	1.0	0.13	ug/L			12/13/18 18:18	1
Bromodichloromethane	1.0	U	1.0	0.17	ug/L			12/13/18 18:18	1
Bromoform	1.0	U	1.0	0.76	ug/L			12/13/18 18:18	1
Bromomethane	1.0	U	1.0	0.42	ug/L			12/13/18 18:18	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			12/13/18 18:18	1
Carbon disulfide	5.0	U	5.0	0.28	ug/L			12/13/18 18:18	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			12/13/18 18:18	1
Chlorobenzene	1.0	U	1.0	0.14	ug/L			12/13/18 18:18	1
Chloroethane	1.0	U	1.0	0.83	ug/L			12/13/18 18:18	1
Chloroform	1.0	U	1.0	0.13	ug/L			12/13/18 18:18	1
Chloromethane	1.0	U	1.0	0.20	ug/L			12/13/18 18:18	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			12/13/18 18:18	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			12/13/18 18:18	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/13/18 18:18	1
1,2-Dichloropropane	1.0	U	1.0	0.15	ug/L			12/13/18 18:18	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			12/13/18 18:18	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			12/13/18 18:18	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			12/13/18 18:18	1
2-Hexanone	10	U	10	0.54	ug/L			12/13/18 18:18	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			12/13/18 18:18	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.42	ug/L			12/13/18 18:18	1
Styrene	1.0	U	1.0	0.10	ug/L			12/13/18 18:18	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.13	ug/L			12/13/18 18:18	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			12/13/18 18:18	1
Toluene	1.0	U	1.0	0.14	ug/L			12/13/18 18:18	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			12/13/18 18:18	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			12/13/18 18:18	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			12/13/18 18:18	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			12/13/18 18:18	1
1,1,2-Trichloroethane	1.0	U	1.0	0.090	ug/L			12/13/18 18:18	1
Cyclohexane	1.0	U	1.0	0.24	ug/L			12/13/18 18:18	1
1,2-Dibromo-3-Chloropropane	1.0	U	1.0	0.91	ug/L			12/13/18 18:18	1
1,2-Dibromoethane	1.0	U	1.0	0.12	ug/L			12/13/18 18:18	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			12/13/18 18:18	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			12/13/18 18:18	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/13/18 18:18	1
Isopropylbenzene	1.0	U	1.0	0.090	ug/L			12/13/18 18:18	1
Methyl acetate	10	U	10	1.7	ug/L			12/13/18 18:18	1
Methyl tert-butyl ether	1.0	U	1.0	0.070	ug/L			12/13/18 18:18	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			12/13/18 18:18	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.26	ug/L			12/13/18 18:18	1
1,2-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			12/13/18 18:18	1
1,3-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			12/13/18 18:18	1
1,4-Dichlorobenzene	1.0	U	1.0	0.16	ug/L			12/13/18 18:18	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			12/13/18 18:18	1
Dibromochloromethane	1.0	U	1.0	0.39	ug/L			12/13/18 18:18	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			12/13/18 18:18	1

TestAmerica Canton

Client Sample Results

Client: GHD Services Inc.
Project/Site: 17322A-T06, PCC Validation

TestAmerica Job ID: 240-105187-1

Method: 8260B - Volatile Organic Compounds (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>
1,2-Dichloroethane-d4 (Surr)	138	X	70 - 121		12/13/18 18:18	1
4-Bromofluorobenzene (Surr)	76		59 - 120		12/13/18 18:18	1
Toluene-d8 (Surr)	88		70 - 123		12/13/18 18:18	1
Dibromofluoromethane (Surr)	134	X	75 - 128		12/13/18 18:18	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 17322A-T06, PCC Validation

TestAmerica Job ID: 240-105187-1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Client Sample ID: GW-17322-120418-DS-006

Date Collected: 12/04/18 09:00

Date Received: 12/05/18 09:50

Lab Sample ID: 240-105187-2

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	50	U	50	34	ug/L		12/06/18 14:00	12/07/18 16:37	1
Lead	1.0	U	1.0	0.45	ug/L		12/06/18 14:00	12/07/18 16:37	1
Vanadium	5.0	U	5.0	0.82	ug/L		12/06/18 14:00	12/07/18 16:37	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 17322A-T06, PCC Validation

TestAmerica Job ID: 240-105187-1

Method: 6020 - Metals (ICP/MS) - Total Recoverable

Client Sample ID: GW-17322-120418-DS-007

Date Collected: 12/04/18 09:55

Date Received: 12/05/18 09:50

Lab Sample ID: 240-105187-3

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	740		50	34	ug/L		12/06/18 14:00	12/07/18 16:39	1
Lead	1.0	U	1.0	0.45	ug/L		12/06/18 14:00	12/07/18 16:39	1
Vanadium	1.9	J	5.0	0.82	ug/L		12/06/18 14:00	12/07/18 16:39	1

QC Association Summary

Client: GHD Services Inc.
Project/Site: 17322A-T06, PCC Validation

TestAmerica Job ID: 240-105187-1

GC/MS VOA

Analysis Batch: 359754

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-105187-1	TB-17322-120418	Total/NA	Water	8260B	
240-105187-4	GW-17322-120418-DS-008	Total/NA	Water	8260B	
240-105187-5	GW-17322-120418-DS-009	Total/NA	Water	8260B	
240-105187-6	GW-17322-120418-DS-010	Total/NA	Water	8260B	
240-105187-7	GW-17322-120418-DS-011	Total/NA	Water	8260B	
MB 240-359754/6	Method Blank	Total/NA	Water	8260B	
LCS 240-359754/4	Lab Control Sample	Total/NA	Water	8260B	

Metals

Prep Batch: 358638

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-105187-2	GW-17322-120418-DS-006	Total Recoverable	Water	3005A	
240-105187-3	GW-17322-120418-DS-007	Total Recoverable	Water	3005A	
MB 240-358638/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-358638/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 359037

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-105187-2	GW-17322-120418-DS-006	Total Recoverable	Water	6020	358638
240-105187-3	GW-17322-120418-DS-007	Total Recoverable	Water	6020	358638
MB 240-358638/1-A	Method Blank	Total Recoverable	Water	6020	358638
LCS 240-358638/2-A	Lab Control Sample	Total Recoverable	Water	6020	358638

QC Sample Results

Client: GHD Services Inc.
Project/Site: 17322A-T06, PCC Validation

TestAmerica Job ID: 240-105187-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-359754/6

Matrix: Water

Analysis Batch: 359754

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	10	U	10	5.4	ug/L			12/13/18 14:09	1
Benzene	1.0	U	1.0	0.13	ug/L			12/13/18 14:09	1
Bromodichloromethane	1.0	U	1.0	0.17	ug/L			12/13/18 14:09	1
Bromoform	1.0	U	1.0	0.76	ug/L			12/13/18 14:09	1
Bromomethane	1.0	U	1.0	0.42	ug/L			12/13/18 14:09	1
2-Butanone (MEK)	10	U	10	1.2	ug/L			12/13/18 14:09	1
Carbon disulfide	5.0	U	5.0	0.28	ug/L			12/13/18 14:09	1
Carbon tetrachloride	1.0	U	1.0	0.26	ug/L			12/13/18 14:09	1
Chlorobenzene	1.0	U	1.0	0.14	ug/L			12/13/18 14:09	1
Chloroethane	1.0	U	1.0	0.83	ug/L			12/13/18 14:09	1
Chloroform	1.0	U	1.0	0.13	ug/L			12/13/18 14:09	1
Chloromethane	1.0	U	1.0	0.20	ug/L			12/13/18 14:09	1
1,1-Dichloroethane	1.0	U	1.0	0.17	ug/L			12/13/18 14:09	1
1,2-Dichloroethane	1.0	U	1.0	0.21	ug/L			12/13/18 14:09	1
1,1-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/13/18 14:09	1
1,2-Dichloropropane	1.0	U	1.0	0.15	ug/L			12/13/18 14:09	1
cis-1,3-Dichloropropene	1.0	U	1.0	0.61	ug/L			12/13/18 14:09	1
trans-1,3-Dichloropropene	1.0	U	1.0	0.67	ug/L			12/13/18 14:09	1
Ethylbenzene	1.0	U	1.0	0.11	ug/L			12/13/18 14:09	1
2-Hexanone	10	U	10	0.54	ug/L			12/13/18 14:09	1
Methylene Chloride	5.0	U	5.0	2.6	ug/L			12/13/18 14:09	1
4-Methyl-2-pentanone (MIBK)	10	U	10	0.42	ug/L			12/13/18 14:09	1
Styrene	1.0	U	1.0	0.10	ug/L			12/13/18 14:09	1
1,1,2,2-Tetrachloroethane	1.0	U	1.0	0.13	ug/L			12/13/18 14:09	1
Tetrachloroethene	1.0	U	1.0	0.15	ug/L			12/13/18 14:09	1
Toluene	1.0	U	1.0	0.14	ug/L			12/13/18 14:09	1
Trichloroethene	1.0	U	1.0	0.10	ug/L			12/13/18 14:09	1
Vinyl chloride	1.0	U	1.0	0.20	ug/L			12/13/18 14:09	1
Xylenes, Total	2.0	U	2.0	0.15	ug/L			12/13/18 14:09	1
1,1,1-Trichloroethane	1.0	U	1.0	0.24	ug/L			12/13/18 14:09	1
1,1,2-Trichloroethane	1.0	U	1.0	0.090	ug/L			12/13/18 14:09	1
Cyclohexane	1.0	U	1.0	0.24	ug/L			12/13/18 14:09	1
1,2-Dibromo-3-Chloropropane	1.0	U	1.0	0.91	ug/L			12/13/18 14:09	1
1,2-Dibromoethane	1.0	U	1.0	0.12	ug/L			12/13/18 14:09	1
Dichlorodifluoromethane	1.0	U	1.0	0.35	ug/L			12/13/18 14:09	1
cis-1,2-Dichloroethene	1.0	U	1.0	0.16	ug/L			12/13/18 14:09	1
trans-1,2-Dichloroethene	1.0	U	1.0	0.19	ug/L			12/13/18 14:09	1
Isopropylbenzene	1.0	U	1.0	0.090	ug/L			12/13/18 14:09	1
Methyl acetate	10	U	10	1.7	ug/L			12/13/18 14:09	1
Methyl tert-butyl ether	1.0	U	1.0	0.070	ug/L			12/13/18 14:09	1
1,1,2-Trichloro-1,2,2-trifluoroethane	1.0	U	1.0	0.41	ug/L			12/13/18 14:09	1
1,2,4-Trichlorobenzene	1.0	U	1.0	0.26	ug/L			12/13/18 14:09	1
1,2-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			12/13/18 14:09	1
1,3-Dichlorobenzene	1.0	U	1.0	0.15	ug/L			12/13/18 14:09	1
1,4-Dichlorobenzene	1.0	U	1.0	0.16	ug/L			12/13/18 14:09	1
Trichlorofluoromethane	1.0	U	1.0	0.45	ug/L			12/13/18 14:09	1
Dibromochloromethane	1.0	U	1.0	0.39	ug/L			12/13/18 14:09	1
Methylcyclohexane	1.0	U	1.0	0.33	ug/L			12/13/18 14:09	1

TestAmerica Canton

QC Sample Results

Client: GHD Services Inc.
Project/Site: 17322A-T06, PCC Validation

TestAmerica Job ID: 240-105187-1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	117		70 - 121		12/13/18 14:09	1
4-Bromofluorobenzene (Surr)	67		59 - 120		12/13/18 14:09	1
Toluene-d8 (Surr)	78		70 - 123		12/13/18 14:09	1
Dibromofluoromethane (Surr)	109		75 - 128		12/13/18 14:09	1

Lab Sample ID: LCS 240-359754/4
Matrix: Water
Analysis Batch: 359754

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetone	20.0	17.1		ug/L		86	21 - 162
Benzene	10.0	10.0		ug/L		100	80 - 123
Bromodichloromethane	10.0	10.4		ug/L		104	77 - 125
Bromoform	10.0	10.4		ug/L		104	49 - 141
Bromomethane	10.0	9.11		ug/L		91	41 - 175
2-Butanone (MEK)	20.0	17.3		ug/L		87	39 - 163
Carbon disulfide	10.0	9.97		ug/L		100	60 - 138
Carbon tetrachloride	10.0	12.3		ug/L		123	63 - 140
Chlorobenzene	10.0	9.92		ug/L		99	80 - 121
Chloroethane	10.0	7.70		ug/L		77	33 - 173
Chloroform	10.0	11.2		ug/L		112	79 - 127
Chloromethane	10.0	11.2		ug/L		112	54 - 143
1,1-Dichloroethane	10.0	10.2		ug/L		102	75 - 133
1,2-Dichloroethane	10.0	11.1		ug/L		111	71 - 135
1,1-Dichloroethene	10.0	10.4		ug/L		104	65 - 139
1,2-Dichloropropane	10.0	9.82		ug/L		98	78 - 133
cis-1,3-Dichloropropene	10.0	9.47		ug/L		95	64 - 132
trans-1,3-Dichloropropene	10.0	9.13		ug/L		91	55 - 128
Ethylbenzene	10.0	9.65		ug/L		96	80 - 120
2-Hexanone	20.0	16.3		ug/L		81	43 - 148
Methylene Chloride	10.0	11.3		ug/L		113	70 - 134
4-Methyl-2-pentanone (MIBK)	20.0	16.5		ug/L		82	49 - 143
Styrene	10.0	9.88		ug/L		99	79 - 120
1,1,2,2-Tetrachloroethane	10.0	8.50		ug/L		85	65 - 139
Tetrachloroethene	10.0	10.9		ug/L		109	74 - 130
Toluene	10.0	10.0		ug/L		100	78 - 129
Trichloroethene	10.0	10.1		ug/L		101	76 - 125
Vinyl chloride	10.0	11.0		ug/L		110	58 - 143
Xylenes, Total	20.0	19.9		ug/L		99	80 - 120
1,1,1-Trichloroethane	10.0	12.1		ug/L		121	69 - 134
1,1,2-Trichloroethane	10.0	10.5		ug/L		105	78 - 133
Cyclohexane	10.0	9.41		ug/L		94	58 - 145
1,2-Dibromo-3-Chloropropane	10.0	8.31		ug/L		83	46 - 132
1,2-Dibromoethane	10.0	10.2		ug/L		102	77 - 123
Dichlorodifluoromethane	10.0	11.8		ug/L		118	29 - 148
cis-1,2-Dichloroethene	10.0	9.76		ug/L		98	76 - 128
trans-1,2-Dichloroethene	10.0	10.2		ug/L		102	78 - 133
Isopropylbenzene	10.0	9.94		ug/L		99	74 - 120
Methyl acetate	20.0	18.0		ug/L		90	52 - 145
Methyl tert-butyl ether	10.0	9.56		ug/L		96	51 - 133
1,1,2-Trichloro-1,2,2-trifluoroethane	10.0	12.5		ug/L		125	50 - 156
1,2,4-Trichlorobenzene	10.0	7.95		ug/L		80	42 - 133
1,2-Dichlorobenzene	10.0	9.55		ug/L		96	78 - 120

TestAmerica Canton

QC Sample Results

Client: GHD Services Inc.
Project/Site: 17322A-T06, PCC Validation

TestAmerica Job ID: 240-105187-1

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

Lab Sample ID: LCS 240-359754/4

Matrix: Water

Analysis Batch: 359754

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	10.0	9.42		ug/L		94	78 - 120
1,4-Dichlorobenzene	10.0	9.18		ug/L		92	78 - 120
Trichlorofluoromethane	10.0	14.8		ug/L		148	51 - 164
Dibromochloromethane	10.0	10.5		ug/L		105	70 - 132
Methylcyclohexane	10.0	9.06		ug/L		91	60 - 125

Surrogate	LCS %Recovery	LCS Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	110		70 - 121
4-Bromofluorobenzene (Surr)	102		59 - 120
Toluene-d8 (Surr)	97		70 - 123
Dibromofluoromethane (Surr)	107		75 - 128

Method: 6020 - Metals (ICP/MS)

Lab Sample ID: MB 240-358638/1-A

Matrix: Water

Analysis Batch: 359037

Client Sample ID: Method Blank

Prep Type: Total Recoverable

Prep Batch: 358638

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aluminum	50	U	50	34	ug/L		12/06/18 14:00	12/07/18 15:42	1
Lead	1.0	U	1.0	0.45	ug/L		12/06/18 14:00	12/07/18 15:42	1
Vanadium	5.0	U	5.0	0.82	ug/L		12/06/18 14:00	12/07/18 15:42	1

Lab Sample ID: LCS 240-358638/2-A

Matrix: Water

Analysis Batch: 359037

Client Sample ID: Lab Control Sample

Prep Type: Total Recoverable

Prep Batch: 358638

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aluminum	10000	9800		ug/L		98	80 - 120
Lead	1000	1010		ug/L		101	80 - 120
Vanadium	1000	971		ug/L		97	80 - 120

TestAmerica Canton

Surrogate Summary

Client: GHD Services Inc.
Project/Site: 17322A-T06, PCC Validation

TestAmerica Job ID: 240-105187-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCA (70-121)	BFB (59-120)	TOL (70-123)	DBFM (75-128)
240-105187-1	TB-17322-120418	139 X	74	85	134 X
240-105187-4	GW-17322-120418-DS-008	141 X	78	88	132 X
240-105187-5	GW-17322-120418-DS-009	141 X	78	88	135 X
240-105187-6	GW-17322-120418-DS-010	138 X	79	88	139 X
240-105187-7	GW-17322-120418-DS-011	138 X	76	88	134 X
LCS 240-359754/4	Lab Control Sample	110	102	97	107
MB 240-359754/6	Method Blank	117	67	78	109

Surrogate Legend

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

BFB = 4-Bromofluorobenzene (Surr)

TOL = Toluene-d8 (Surr)

DBFM = Dibromofluoromethane (Surr)

Lab Chronicle

Client: GHD Services Inc.
Project/Site: 17322A-T06, PCC Validation

TestAmerica Job ID: 240-105187-1

Client Sample ID: TB-17322-120418

Date Collected: 12/04/18 00:00

Date Received: 12/05/18 09:50

Lab Sample ID: 240-105187-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	359754	12/13/18 16:43	LRW	TAL CAN

Client Sample ID: GW-17322-120418-DS-006

Date Collected: 12/04/18 09:00

Date Received: 12/05/18 09:50

Lab Sample ID: 240-105187-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			358638	12/06/18 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020		1	359037	12/07/18 16:37	DSH	TAL CAN

Client Sample ID: GW-17322-120418-DS-007

Date Collected: 12/04/18 09:55

Date Received: 12/05/18 09:50

Lab Sample ID: 240-105187-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			358638	12/06/18 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020		1	359037	12/07/18 16:39	DSH	TAL CAN

Client Sample ID: GW-17322-120418-DS-008

Date Collected: 12/04/18 11:00

Date Received: 12/05/18 09:50

Lab Sample ID: 240-105187-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	359754	12/13/18 17:07	LRW	TAL CAN

Client Sample ID: GW-17322-120418-DS-009

Date Collected: 12/04/18 11:05

Date Received: 12/05/18 09:50

Lab Sample ID: 240-105187-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	359754	12/13/18 17:30	LRW	TAL CAN

Client Sample ID: GW-17322-120418-DS-010

Date Collected: 12/04/18 11:55

Date Received: 12/05/18 09:50

Lab Sample ID: 240-105187-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	359754	12/13/18 17:54	LRW	TAL CAN

TestAmerica Canton

Lab Chronicle

Client: GHD Services Inc.
Project/Site: 17322A-T06, PCC Validation

TestAmerica Job ID: 240-105187-1

Client Sample ID: GW-17322-120418-DS-011

Lab Sample ID: 240-105187-7

Date Collected: 12/04/18 12:45

Matrix: Water

Date Received: 12/05/18 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	359754	12/13/18 18:18	LRW	TAL CAN

Laboratory References:

TAL CAN = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Accreditation/Certification Summary

Client: GHD Services Inc.
Project/Site: 17322A-T06, PCC Validation

TestAmerica Job ID: 240-105187-1

Laboratory: TestAmerica Canton

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

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2927	02-23-19
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-19
Illinois	NELAP	5	200004	07-31-19
Kansas	NELAP	7	E-10336	01-31-19
Kentucky (UST)	State Program	4	58	02-23-19
Kentucky (WW)	State Program	4	98016	12-31-18 *
Minnesota	NELAP	5	039-999-348	12-31-18 *
Minnesota (Petrofund)	State Program	1	3506	07-31-19
Nevada	State Program	9	OH00048	07-31-19
New Jersey	NELAP	2	OH001	06-30-19
New York	NELAP	2	10975	03-31-19
Ohio VAP	State Program	5	CL0024	09-06-19
Oregon	NELAP	10	4062	02-23-19
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Texas	NELAP	6	T104704517-18-10	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19
Washington	State Program	10	C971	01-12-19
West Virginia DEP	State Program	3	210	12-31-18 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

TestAmerica Canton

TestAmerica Michigan

10448 Citation Drive
Suite 200

Brighton, MI 48116

Phone: 810.229.2763 Fax:

MICHIGAN
190

Chain of Custody Record

3.0 / C3.0

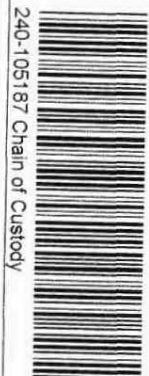
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TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.

TAL-8210 (0713)

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact		Project Manager: <u>Tom Kinney</u>		Site Contact: <u>M. Loran</u>		Date: <u>12-4-18</u>		COC No:	
Company Name: <u>1740</u>		Tel/Fax: <u>248-893-3400</u>		Lab Contact: <u>D. Heckler</u>		Carrier: <u>Fed Ex</u>		1 of 1 COCs	
Address: <u>26850 Haggerty Rd</u>		Analysis Turnaround Time		240-105187 Chain of Custody 		Sampler: <u>D. Saliba</u>		For Lab Use Only:	
City/State/Zip: <u>Farmington Hills, MI 48331</u>		☐ CALENDAR DAYS ☒ WORKING DAYS				Walk-in Client:		Lab Sampling:	
Phone: <u>248-893-3400</u>		TAT if different from Below				Job / SDG No.:			
Fax:		☒ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day							
Project Name: <u>17322A, PLC Validation</u>		Sample Date		Sample Time		Sample Type (C=Comp, G=Grab)		# of Cont.	
Site: <u>Pontiac, MI</u>		TB-17322-120418		12/4/18		TB		1	
PO# <u>24022174</u>		GW-17322-120418-DS-006		0900		GW		3	
		-007		0955					
		-008		1100					
		-009		1105					
		-010		1155					
		-011		1245					
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:									
Custody Seals Intact: ☐ Yes ☐ No		Custody Seal No.:		Cooler Temp. (°C): Obs'd: _____		Therm ID No.:			
Relinquished by: <u>Derk Saliba</u>		Company: <u>GAID</u>		Date/Time: <u>12/4/18 11420</u>		Received by: <u>[Signature]</u>		Company: <u>TAC</u>	
Relinquished by:		Company:		Date/Time:		Received by:		Company:	
Relinquished by:		Company:		Date/Time:		Received in Laboratory by:		Company:	

TestAmerica Canton Sample Receipt Form/Narrative
Canton Facility

Login # : 105187

Client CHD Site Name _____ Cooler unpacked by: [Signature]
 Cooler Received on 12-5-18 Opened on 12-5-18
 FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # 2A 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-8 (CF -0.2 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
 IR GUN #36 (CF +0°C) Observed Cooler Temp. 3.0 °C Corrected Cooler Temp. 3.0 °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
 -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 be reconciled with the COC? Yes No
 9. Were correct bottle(s) used for the test(s) indicated? Yes No
 10. Sufficient quantity received to perform indicated analyses? Yes No
 11. Are these work share samples? Yes No
 If yes, Questions 12-16 have been checked at the originating laboratory.
12. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC854592
 13. Were VOAs on the COC? Yes No
 14. Were air bubbles >6 mm in any VOA vials?  Larger than this. Yes No NA
 15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Covered Yes No
 16. 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 _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by:

MS

18. 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)

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
 Time preserved: _____ Preservative(s) added/Lot number(s): _____

Temperature readings: _____

<u>Client Sample ID</u>	<u>Lab ID</u>	<u>Container Type</u>	<u>Container</u> <u>pH</u>	<u>Preservative</u> <u>Added (mls)</u>	<u>Lot #</u>
GW-17322-120418-DS-006	240-105187-A-2	Plastic 250ml - with Nitric Acid	<2	_____	_____
GW-17322-120418-DS-007	240-105187-A-3	Plastic 250ml - with Nitric Acid	<2	_____	_____

September 26, 2018

James Abston
GHD-Farmington Hills, Michigan
26850 Haggerty Road
Farmington, MI 48331

RE: Project: PCC Validation
Pace Project No.: 4617735

Dear James Abston:

Enclosed are the analytical results for sample(s) received by the laboratory on September 18, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

051710-E201072-028

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Will Cole
will.cole@pacelabs.com
(616)975-4500
Project Manager

Enclosures

cc: Detroit Chemistry, GHD



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: PCC Validation

Pace Project No.: 4617735

Grand Rapids Certification ID's

5560 Corporate Exchange Ct SE, Grand Rapids, MI 49512

Minnesota Department of Health, Certificate #1385941

Arkansas Department of Environmental Quality, Certificate
#18-046-0

Georgia Environmental Protection Division, Stipulation

Illinois Environmental Protection Agency, Certificate

#004325

Michigan Department of Environmental Quality, Laboratory

#0034

New York State Department of Health, Serial #57971 and
57972

North Carolina Division of Water Resources, Certificate
#659

Virginia Department of General Services, Certificate #9780

Wisconsin Department of Natural Resources, Laboratory
#999472650

U.S. Department of Agriculture Permit to Receive Soil,
Permit #P330-17-00278

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: PCC Validation

Pace Project No.: 4617735

Lab ID	Sample ID	Matrix	Date Collected	Date Received
4617735001	TB-17322A-091718	Water	09/17/18 00:00	09/18/18 08:30
4617735002	GW-17322A-091719-DS-001	Water	09/17/18 10:00	09/18/18 08:30
4617735003	GW-17322A-091719-DS-002	Water	09/17/18 11:00	09/18/18 08:30
4617735004	GW-17322A-091719-DS-003	Water	09/17/18 11:45	09/18/18 08:30
4617735005	GW-17322A-091719-DS-004	Water	09/17/18 11:50	09/18/18 08:30
4617735006	GW-17322A-091719-DS-005	Water	09/17/18 12:40	09/18/18 08:30
4617735007	GW-17322A-091719-DS-006	Water	09/17/18 13:40	09/18/18 08:30

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SAMPLE ANALYTE COUNT

Project: PCC Validation

Pace Project No.: 4617735

Lab ID	Sample ID	Method	Analysts	Analytes Reported
4617735001	TB-17322A-091718	EPA 8260B	BAG	52
4617735002	GW-17322A-091719-DS-001	EPA 6010C	AWS	3
		EPA 6010C	AWS	3
4617735003	GW-17322A-091719-DS-002	EPA 6010C	AWS	3
		EPA 6010C	AWS	3
4617735004	GW-17322A-091719-DS-003	EPA 8260B	BAG	52
4617735005	GW-17322A-091719-DS-004	EPA 8260B	BAG	52
4617735006	GW-17322A-091719-DS-005	EPA 8260B	BAG	52
4617735007	GW-17322A-091719-DS-006	EPA 8260B	BAG	52

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PCC Validation

Pace Project No.: 4617735

Sample: TB-17322A-091718		Lab ID: 4617735001		Collected: 09/17/18 00:00		Received: 09/18/18 08:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV		Analytical Method: EPA 8260B							
Acetone	5.0 U	ug/L	5.0	1.9	1		09/20/18 14:44	67-64-1	
Benzene	1.0 U	ug/L	1.0	0.23	1		09/20/18 14:44	71-43-2	
Bromodichloromethane	1.0 U	ug/L	1.0	0.21	1		09/20/18 14:44	75-27-4	
Bromoform	1.0 U	ug/L	1.0	0.23	1		09/20/18 14:44	75-25-2	
Bromomethane	1.0 U	ug/L	1.0	0.29	1		09/20/18 14:44	74-83-9	
2-Butanone (MEK)	5.0 U	ug/L	5.0	1.4	1		09/20/18 14:44	78-93-3	
Carbon disulfide	5.0 U	ug/L	5.0	0.24	1		09/20/18 14:44	75-15-0	CH
Carbon tetrachloride	1.0 U	ug/L	1.0	0.28	1		09/20/18 14:44	56-23-5	
Chlorobenzene	1.0 U	ug/L	1.0	0.20	1		09/20/18 14:44	108-90-7	
Chloroethane	1.0 U	ug/L	1.0	0.27	1		09/20/18 14:44	75-00-3	
Chloroform	1.0 U	ug/L	1.0	0.23	1		09/20/18 14:44	67-66-3	
Chloromethane	1.0 U	ug/L	1.0	0.24	1		09/20/18 14:44	74-87-3	
Cyclohexane	5.0 U	ug/L	5.0	0.27	1		09/20/18 14:44	110-82-7	
1,2-Dibromo-3-chloropropane	1.0 U	ug/L	1.0	0.23	1		09/20/18 14:44	96-12-8	
Dibromochloromethane	1.0 U	ug/L	1.0	0.26	1		09/20/18 14:44	124-48-1	
1,2-Dibromoethane (EDB)	1.0 U	ug/L	1.0	0.22	1		09/20/18 14:44	106-93-4	
1,2-Dichlorobenzene	1.0 U	ug/L	1.0	0.11	1		09/20/18 14:44	95-50-1	
1,3-Dichlorobenzene	1.0 U	ug/L	1.0	0.27	1		09/20/18 14:44	541-73-1	
1,4-Dichlorobenzene	1.0 U	ug/L	1.0	0.16	1		09/20/18 14:44	106-46-7	
Dichlorodifluoromethane	1.0 U	ug/L	1.0	0.24	1		09/20/18 14:44	75-71-8	
1,1-Dichloroethane	1.0 U	ug/L	1.0	0.20	1		09/20/18 14:44	75-34-3	
1,2-Dichloroethane	1.0 U	ug/L	1.0	0.27	1		09/20/18 14:44	107-06-2	
1,1-Dichloroethene	1.0 U	ug/L	1.0	0.22	1		09/20/18 14:44	75-35-4	
cis-1,2-Dichloroethene	1.0 U	ug/L	1.0	0.25	1		09/20/18 14:44	156-59-2	
trans-1,2-Dichloroethene	1.0 U	ug/L	1.0	0.26	1		09/20/18 14:44	156-60-5	
1,2-Dichloropropane	1.0 U	ug/L	1.0	0.22	1		09/20/18 14:44	78-87-5	
cis-1,3-Dichloropropene	1.0 U	ug/L	1.0	0.13	1		09/20/18 14:44	10061-01-5	
trans-1,3-Dichloropropene	1.0 U	ug/L	1.0	0.26	1		09/20/18 14:44	10061-02-6	
Ethylbenzene	1.0 U	ug/L	1.0	0.13	1		09/20/18 14:44	100-41-4	
2-Hexanone	5.0 U	ug/L	5.0	0.61	1		09/20/18 14:44	591-78-6	
Isopropylbenzene (Cumene)	1.0 U	ug/L	1.0	0.12	1		09/20/18 14:44	98-82-8	
Methyl acetate	5.0 U	ug/L	5.0	0.24	1		09/20/18 14:44	79-20-9	N2
Methylcyclohexane	5.0 U	ug/L	5.0	0.22	1		09/20/18 14:44	108-87-2	
Methylene Chloride	1.0 U	ug/L	1.0	0.24	1		09/20/18 14:44	75-09-2	
4-Methyl-2-pentanone (MIBK)	5.0 U	ug/L	5.0	1.4	1		09/20/18 14:44	108-10-1	
Methyl-tert-butyl ether	1.0 U	ug/L	1.0	0.24	1		09/20/18 14:44	1634-04-4	
Styrene	1.0 U	ug/L	1.0	0.16	1		09/20/18 14:44	100-42-5	
1,1,2,2-Tetrachloroethane	1.0 U	ug/L	1.0	0.22	1		09/20/18 14:44	79-34-5	
Tetrachloroethene	1.0 U	ug/L	1.0	0.26	1		09/20/18 14:44	127-18-4	
Toluene	1.0 U	ug/L	1.0	0.13	1		09/20/18 14:44	108-88-3	
1,2,4-Trichlorobenzene	1.0 U	ug/L	1.0	0.17	1		09/20/18 14:44	120-82-1	
1,1,1-Trichloroethane	1.0 U	ug/L	1.0	0.28	1		09/20/18 14:44	71-55-6	
1,1,2-Trichloroethane	1.0 U	ug/L	1.0	0.24	1		09/20/18 14:44	79-00-5	
Trichloroethene	1.0 U	ug/L	1.0	0.26	1		09/20/18 14:44	79-01-6	
Trichlorofluoromethane	1.0 U	ug/L	1.0	0.20	1		09/20/18 14:44	75-69-4	
1,1,2-Trichlorotrifluoroethane	1.0 U	ug/L	1.0	0.24	1		09/20/18 14:44	76-13-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PCC Validation

Pace Project No.: 4617735

Sample: TB-17322A-091718		Lab ID: 4617735001		Collected: 09/17/18 00:00		Received: 09/18/18 08:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV									
Analytical Method: EPA 8260B									
Vinyl chloride	1.0 U	ug/L	1.0	0.27	1		09/20/18 14:44	75-01-4	
Xylene (Total)	3.0 U	ug/L	3.0	0.44	1		09/20/18 14:44	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	97	%.	87-122		1		09/20/18 14:44	17060-07-0	
Dibromofluoromethane (S)	94	%.	85-118		1		09/20/18 14:44	1868-53-7	
4-Bromofluorobenzene (S)	99	%.	82-110		1		09/20/18 14:44	460-00-4	
Toluene-d8 (S)	100	%.	85-113		1		09/20/18 14:44	2037-26-5	

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ANALYTICAL RESULTS

Project: PCC Validation

Pace Project No.: 4617735

Sample: GW-17322A-091719-DS-001 Lab ID: 4617735002 Collected: 09/17/18 10:00 Received: 09/18/18 08:30 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010C MET ICP Analytical Method: EPA 6010C Preparation Method: EPA 3010A									
Aluminum	50.0 U	ug/L	50.0	31.0	1	09/20/18 06:23	09/24/18 16:04	7429-90-5	
Lead	50.0 U	ug/L	50.0	28.0	1	09/20/18 06:23	09/24/18 16:04	7439-92-1	
Vanadium	10.0 U	ug/L	10.0	6.1	1	09/20/18 06:23	09/24/18 16:04	7440-62-2	
6010C MET ICP, Lab Filtered Analytical Method: EPA 6010C Preparation Method: EPA 3010A									
Aluminum, Dissolved	50.0 U	ug/L	50.0	31.0	1	09/20/18 07:10	09/21/18 09:58	7429-90-5	
Lead, Dissolved	50.0 U	ug/L	50.0	28.0	1	09/20/18 07:10	09/21/18 09:58	7439-92-1	
Vanadium, Dissolved	10.0 U	ug/L	10.0	6.1	1	09/20/18 07:10	09/21/18 09:58	7440-62-2	

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ANALYTICAL RESULTS

Project: PCC Validation

Pace Project No.: 4617735

Sample: GW-17322A-091719-DS-002		Lab ID: 4617735003		Collected: 09/17/18 11:00		Received: 09/18/18 08:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010C MET ICP Analytical Method: EPA 6010C Preparation Method: EPA 3010A									
Aluminum	1270	ug/L	50.0	31.0	1	09/20/18 06:23	09/24/18 16:36	7429-90-5	
Lead	50.0 U	ug/L	50.0	28.0	1	09/20/18 06:23	09/24/18 16:36	7439-92-1	
Vanadium	10.0 U	ug/L	10.0	6.1	1	09/20/18 06:23	09/24/18 16:36	7440-62-2	
6010C MET ICP, Lab Filtered Analytical Method: EPA 6010C Preparation Method: EPA 3010A									
Aluminum, Dissolved	116	ug/L	50.0	31.0	1	09/20/18 07:10	09/21/18 10:05	7429-90-5	
Lead, Dissolved	50.0 U	ug/L	50.0	28.0	1	09/20/18 07:10	09/21/18 10:05	7439-92-1	
Vanadium, Dissolved	10.0 U	ug/L	10.0	6.1	1	09/20/18 07:10	09/21/18 10:05	7440-62-2	

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ANALYTICAL RESULTS

Project: PCC Validation

Pace Project No.: 4617735

Sample: GW-17322A-091719-DS-003 **Lab ID:** 4617735004 **Collected:** 09/17/18 11:45 **Received:** 09/18/18 08:30 **Matrix:** Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV		Analytical Method: EPA 8260B							
Acetone	5.0 U	ug/L	5.0	1.9	1		09/20/18 20:24	67-64-1	
Benzene	1.0 U	ug/L	1.0	0.23	1		09/20/18 20:24	71-43-2	
Bromodichloromethane	1.0 U	ug/L	1.0	0.21	1		09/20/18 20:24	75-27-4	
Bromoform	1.0 U	ug/L	1.0	0.23	1		09/20/18 20:24	75-25-2	
Bromomethane	1.0 U	ug/L	1.0	0.29	1		09/20/18 20:24	74-83-9	
2-Butanone (MEK)	5.0 U	ug/L	5.0	1.4	1		09/20/18 20:24	78-93-3	
Carbon disulfide	5.0 U	ug/L	5.0	0.24	1		09/20/18 20:24	75-15-0	CH
Carbon tetrachloride	1.0 U	ug/L	1.0	0.28	1		09/20/18 20:24	56-23-5	
Chlorobenzene	1.0 U	ug/L	1.0	0.20	1		09/20/18 20:24	108-90-7	
Chloroethane	1.0 U	ug/L	1.0	0.27	1		09/20/18 20:24	75-00-3	
Chloroform	1.0 U	ug/L	1.0	0.23	1		09/20/18 20:24	67-66-3	
Chloromethane	1.0 U	ug/L	1.0	0.24	1		09/20/18 20:24	74-87-3	
Cyclohexane	5.0 U	ug/L	5.0	0.27	1		09/20/18 20:24	110-82-7	
1,2-Dibromo-3-chloropropane	1.0 U	ug/L	1.0	0.23	1		09/20/18 20:24	96-12-8	
Dibromochloromethane	1.0 U	ug/L	1.0	0.26	1		09/20/18 20:24	124-48-1	
1,2-Dibromoethane (EDB)	1.0 U	ug/L	1.0	0.22	1		09/20/18 20:24	106-93-4	
1,2-Dichlorobenzene	1.0 U	ug/L	1.0	0.11	1		09/20/18 20:24	95-50-1	
1,3-Dichlorobenzene	1.0 U	ug/L	1.0	0.27	1		09/20/18 20:24	541-73-1	
1,4-Dichlorobenzene	1.0 U	ug/L	1.0	0.16	1		09/20/18 20:24	106-46-7	
Dichlorodifluoromethane	1.0 U	ug/L	1.0	0.24	1		09/20/18 20:24	75-71-8	
1,1-Dichloroethane	1.0 U	ug/L	1.0	0.20	1		09/20/18 20:24	75-34-3	
1,2-Dichloroethane	1.0 U	ug/L	1.0	0.27	1		09/20/18 20:24	107-06-2	
1,1-Dichloroethene	1.0 U	ug/L	1.0	0.22	1		09/20/18 20:24	75-35-4	
cis-1,2-Dichloroethene	1.0 U	ug/L	1.0	0.25	1		09/20/18 20:24	156-59-2	
trans-1,2-Dichloroethene	1.0 U	ug/L	1.0	0.26	1		09/20/18 20:24	156-60-5	
1,2-Dichloropropane	1.0 U	ug/L	1.0	0.22	1		09/20/18 20:24	78-87-5	
cis-1,3-Dichloropropene	1.0 U	ug/L	1.0	0.13	1		09/20/18 20:24	10061-01-5	
trans-1,3-Dichloropropene	1.0 U	ug/L	1.0	0.26	1		09/20/18 20:24	10061-02-6	
Ethylbenzene	1.0 U	ug/L	1.0	0.13	1		09/20/18 20:24	100-41-4	
2-Hexanone	5.0 U	ug/L	5.0	0.61	1		09/20/18 20:24	591-78-6	
Isopropylbenzene (Cumene)	1.0 U	ug/L	1.0	0.12	1		09/20/18 20:24	98-82-8	
Methyl acetate	5.0 U	ug/L	5.0	0.24	1		09/20/18 20:24	79-20-9	N2
Methylcyclohexane	5.0 U	ug/L	5.0	0.22	1		09/20/18 20:24	108-87-2	
Methylene Chloride	1.0 U	ug/L	1.0	0.24	1		09/20/18 20:24	75-09-2	
4-Methyl-2-pentanone (MIBK)	5.0 U	ug/L	5.0	1.4	1		09/20/18 20:24	108-10-1	
Methyl-tert-butyl ether	1.0 U	ug/L	1.0	0.24	1		09/20/18 20:24	1634-04-4	
Styrene	1.0 U	ug/L	1.0	0.16	1		09/20/18 20:24	100-42-5	
1,1,2,2-Tetrachloroethane	1.0 U	ug/L	1.0	0.22	1		09/20/18 20:24	79-34-5	
Tetrachloroethene	1.0 U	ug/L	1.0	0.26	1		09/20/18 20:24	127-18-4	
Toluene	1.0 U	ug/L	1.0	0.13	1		09/20/18 20:24	108-88-3	
1,2,4-Trichlorobenzene	1.0 U	ug/L	1.0	0.17	1		09/20/18 20:24	120-82-1	
1,1,1-Trichloroethane	1.0 U	ug/L	1.0	0.28	1		09/20/18 20:24	71-55-6	
1,1,2-Trichloroethane	1.0 U	ug/L	1.0	0.24	1		09/20/18 20:24	79-00-5	
Trichloroethene	1.0 U	ug/L	1.0	0.26	1		09/20/18 20:24	79-01-6	
Trichlorofluoromethane	1.0 U	ug/L	1.0	0.20	1		09/20/18 20:24	75-69-4	
1,1,2-Trichlorotrifluoroethane	1.0 U	ug/L	1.0	0.24	1		09/20/18 20:24	76-13-1	

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ANALYTICAL RESULTS

Project: PCC Validation

Pace Project No.: 4617735

Sample: GW-17322A-091719-DS-003		Lab ID: 4617735004		Collected: 09/17/18 11:45		Received: 09/18/18 08:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV									
Analytical Method: EPA 8260B									
Vinyl chloride	1.0 U	ug/L	1.0	0.27	1		09/20/18 20:24	75-01-4	
Xylene (Total)	3.0 U	ug/L	3.0	0.44	1		09/20/18 20:24	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	98	%.	87-122		1		09/20/18 20:24	17060-07-0	
Dibromofluoromethane (S)	93	%.	85-118		1		09/20/18 20:24	1868-53-7	
4-Bromofluorobenzene (S)	99	%.	82-110		1		09/20/18 20:24	460-00-4	
Toluene-d8 (S)	101	%.	85-113		1		09/20/18 20:24	2037-26-5	

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ANALYTICAL RESULTS

Project: PCC Validation

Pace Project No.: 4617735

Sample: GW-17322A-091719-DS-004 **Lab ID:** 4617735005 **Collected:** 09/17/18 11:50 **Received:** 09/18/18 08:30 **Matrix:** Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV		Analytical Method: EPA 8260B							
Acetone	5.0 U	ug/L	5.0	1.9	1		09/20/18 20:49	67-64-1	
Benzene	1.0 U	ug/L	1.0	0.23	1		09/20/18 20:49	71-43-2	
Bromodichloromethane	1.0 U	ug/L	1.0	0.21	1		09/20/18 20:49	75-27-4	
Bromoform	1.0 U	ug/L	1.0	0.23	1		09/20/18 20:49	75-25-2	
Bromomethane	1.0 U	ug/L	1.0	0.29	1		09/20/18 20:49	74-83-9	
2-Butanone (MEK)	5.0 U	ug/L	5.0	1.4	1		09/20/18 20:49	78-93-3	
Carbon disulfide	5.0 U	ug/L	5.0	0.24	1		09/20/18 20:49	75-15-0	CH
Carbon tetrachloride	1.0 U	ug/L	1.0	0.28	1		09/20/18 20:49	56-23-5	
Chlorobenzene	1.0 U	ug/L	1.0	0.20	1		09/20/18 20:49	108-90-7	
Chloroethane	1.0 U	ug/L	1.0	0.27	1		09/20/18 20:49	75-00-3	
Chloroform	1.0 U	ug/L	1.0	0.23	1		09/20/18 20:49	67-66-3	
Chloromethane	1.0 U	ug/L	1.0	0.24	1		09/20/18 20:49	74-87-3	
Cyclohexane	5.0 U	ug/L	5.0	0.27	1		09/20/18 20:49	110-82-7	
1,2-Dibromo-3-chloropropane	1.0 U	ug/L	1.0	0.23	1		09/20/18 20:49	96-12-8	
Dibromochloromethane	1.0 U	ug/L	1.0	0.26	1		09/20/18 20:49	124-48-1	
1,2-Dibromoethane (EDB)	1.0 U	ug/L	1.0	0.22	1		09/20/18 20:49	106-93-4	
1,2-Dichlorobenzene	1.0 U	ug/L	1.0	0.11	1		09/20/18 20:49	95-50-1	
1,3-Dichlorobenzene	1.0 U	ug/L	1.0	0.27	1		09/20/18 20:49	541-73-1	
1,4-Dichlorobenzene	1.0 U	ug/L	1.0	0.16	1		09/20/18 20:49	106-46-7	
Dichlorodifluoromethane	1.0 U	ug/L	1.0	0.24	1		09/20/18 20:49	75-71-8	
1,1-Dichloroethane	1.0 U	ug/L	1.0	0.20	1		09/20/18 20:49	75-34-3	
1,2-Dichloroethane	1.0 U	ug/L	1.0	0.27	1		09/20/18 20:49	107-06-2	
1,1-Dichloroethene	1.0 U	ug/L	1.0	0.22	1		09/20/18 20:49	75-35-4	
cis-1,2-Dichloroethene	1.0 U	ug/L	1.0	0.25	1		09/20/18 20:49	156-59-2	
trans-1,2-Dichloroethene	1.0 U	ug/L	1.0	0.26	1		09/20/18 20:49	156-60-5	
1,2-Dichloropropane	1.0 U	ug/L	1.0	0.22	1		09/20/18 20:49	78-87-5	
cis-1,3-Dichloropropene	1.0 U	ug/L	1.0	0.13	1		09/20/18 20:49	10061-01-5	
trans-1,3-Dichloropropene	1.0 U	ug/L	1.0	0.26	1		09/20/18 20:49	10061-02-6	
Ethylbenzene	1.0 U	ug/L	1.0	0.13	1		09/20/18 20:49	100-41-4	
2-Hexanone	5.0 U	ug/L	5.0	0.61	1		09/20/18 20:49	591-78-6	
Isopropylbenzene (Cumene)	1.0 U	ug/L	1.0	0.12	1		09/20/18 20:49	98-82-8	
Methyl acetate	5.0 U	ug/L	5.0	0.24	1		09/20/18 20:49	79-20-9	N2
Methylcyclohexane	5.0 U	ug/L	5.0	0.22	1		09/20/18 20:49	108-87-2	
Methylene Chloride	1.0 U	ug/L	1.0	0.24	1		09/20/18 20:49	75-09-2	
4-Methyl-2-pentanone (MIBK)	5.0 U	ug/L	5.0	1.4	1		09/20/18 20:49	108-10-1	
Methyl-tert-butyl ether	1.0 U	ug/L	1.0	0.24	1		09/20/18 20:49	1634-04-4	
Styrene	1.0 U	ug/L	1.0	0.16	1		09/20/18 20:49	100-42-5	
1,1,2,2-Tetrachloroethane	1.0 U	ug/L	1.0	0.22	1		09/20/18 20:49	79-34-5	
Tetrachloroethene	1.0 U	ug/L	1.0	0.26	1		09/20/18 20:49	127-18-4	
Toluene	1.0 U	ug/L	1.0	0.13	1		09/20/18 20:49	108-88-3	
1,2,4-Trichlorobenzene	1.0 U	ug/L	1.0	0.17	1		09/20/18 20:49	120-82-1	
1,1,1-Trichloroethane	1.0 U	ug/L	1.0	0.28	1		09/20/18 20:49	71-55-6	
1,1,2-Trichloroethane	1.0 U	ug/L	1.0	0.24	1		09/20/18 20:49	79-00-5	
Trichloroethene	1.0 U	ug/L	1.0	0.26	1		09/20/18 20:49	79-01-6	
Trichlorofluoromethane	1.0 U	ug/L	1.0	0.20	1		09/20/18 20:49	75-69-4	
1,1,2-Trichlorotrifluoroethane	1.0 U	ug/L	1.0	0.24	1		09/20/18 20:49	76-13-1	

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ANALYTICAL RESULTS

Project: PCC Validation

Pace Project No.: 4617735

Sample: GW-17322A-091719-DS-004		Lab ID: 4617735005		Collected: 09/17/18 11:50		Received: 09/18/18 08:30		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV									
Analytical Method: EPA 8260B									
Vinyl chloride	1.0 U	ug/L	1.0	0.27	1		09/20/18 20:49	75-01-4	
Xylene (Total)	3.0 U	ug/L	3.0	0.44	1		09/20/18 20:49	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	98	%.	87-122		1		09/20/18 20:49	17060-07-0	
Dibromofluoromethane (S)	93	%.	85-118		1		09/20/18 20:49	1868-53-7	
4-Bromofluorobenzene (S)	98	%.	82-110		1		09/20/18 20:49	460-00-4	
Toluene-d8 (S)	101	%.	85-113		1		09/20/18 20:49	2037-26-5	

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ANALYTICAL RESULTS

Project: PCC Validation

Pace Project No.: 4617735

Sample: GW-17322A-091719-DS-005 **Lab ID:** 4617735006 **Collected:** 09/17/18 12:40 **Received:** 09/18/18 08:30 **Matrix:** Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV		Analytical Method: EPA 8260B							
Acetone	5.0 U	ug/L	5.0	1.9	1		09/20/18 21:13	67-64-1	
Benzene	1.0 U	ug/L	1.0	0.23	1		09/20/18 21:13	71-43-2	
Bromodichloromethane	1.0 U	ug/L	1.0	0.21	1		09/20/18 21:13	75-27-4	
Bromoform	1.0 U	ug/L	1.0	0.23	1		09/20/18 21:13	75-25-2	
Bromomethane	1.0 U	ug/L	1.0	0.29	1		09/20/18 21:13	74-83-9	
2-Butanone (MEK)	5.0 U	ug/L	5.0	1.4	1		09/20/18 21:13	78-93-3	
Carbon disulfide	5.0 U	ug/L	5.0	0.24	1		09/20/18 21:13	75-15-0	CH
Carbon tetrachloride	1.0 U	ug/L	1.0	0.28	1		09/20/18 21:13	56-23-5	
Chlorobenzene	1.0 U	ug/L	1.0	0.20	1		09/20/18 21:13	108-90-7	
Chloroethane	1.0 U	ug/L	1.0	0.27	1		09/20/18 21:13	75-00-3	
Chloroform	1.0 U	ug/L	1.0	0.23	1		09/20/18 21:13	67-66-3	
Chloromethane	1.0 U	ug/L	1.0	0.24	1		09/20/18 21:13	74-87-3	
Cyclohexane	5.0 U	ug/L	5.0	0.27	1		09/20/18 21:13	110-82-7	
1,2-Dibromo-3-chloropropane	1.0 U	ug/L	1.0	0.23	1		09/20/18 21:13	96-12-8	
Dibromochloromethane	1.0 U	ug/L	1.0	0.26	1		09/20/18 21:13	124-48-1	
1,2-Dibromoethane (EDB)	1.0 U	ug/L	1.0	0.22	1		09/20/18 21:13	106-93-4	
1,2-Dichlorobenzene	1.0 U	ug/L	1.0	0.11	1		09/20/18 21:13	95-50-1	
1,3-Dichlorobenzene	1.0 U	ug/L	1.0	0.27	1		09/20/18 21:13	541-73-1	
1,4-Dichlorobenzene	1.0 U	ug/L	1.0	0.16	1		09/20/18 21:13	106-46-7	
Dichlorodifluoromethane	0.55J	ug/L	1.0	0.24	1		09/20/18 21:13	75-71-8	
1,1-Dichloroethane	1.0 U	ug/L	1.0	0.20	1		09/20/18 21:13	75-34-3	
1,2-Dichloroethane	1.0 U	ug/L	1.0	0.27	1		09/20/18 21:13	107-06-2	
1,1-Dichloroethene	1.0 U	ug/L	1.0	0.22	1		09/20/18 21:13	75-35-4	
cis-1,2-Dichloroethene	1.0 U	ug/L	1.0	0.25	1		09/20/18 21:13	156-59-2	
trans-1,2-Dichloroethene	1.0 U	ug/L	1.0	0.26	1		09/20/18 21:13	156-60-5	
1,2-Dichloropropane	1.0 U	ug/L	1.0	0.22	1		09/20/18 21:13	78-87-5	
cis-1,3-Dichloropropene	1.0 U	ug/L	1.0	0.13	1		09/20/18 21:13	10061-01-5	
trans-1,3-Dichloropropene	1.0 U	ug/L	1.0	0.26	1		09/20/18 21:13	10061-02-6	
Ethylbenzene	1.0 U	ug/L	1.0	0.13	1		09/20/18 21:13	100-41-4	
2-Hexanone	5.0 U	ug/L	5.0	0.61	1		09/20/18 21:13	591-78-6	
Isopropylbenzene (Cumene)	1.0 U	ug/L	1.0	0.12	1		09/20/18 21:13	98-82-8	
Methyl acetate	5.0 U	ug/L	5.0	0.24	1		09/20/18 21:13	79-20-9	N2
Methylcyclohexane	5.0 U	ug/L	5.0	0.22	1		09/20/18 21:13	108-87-2	
Methylene Chloride	1.0 U	ug/L	1.0	0.24	1		09/20/18 21:13	75-09-2	
4-Methyl-2-pentanone (MIBK)	5.0 U	ug/L	5.0	1.4	1		09/20/18 21:13	108-10-1	
Methyl-tert-butyl ether	1.0 U	ug/L	1.0	0.24	1		09/20/18 21:13	1634-04-4	
Styrene	1.0 U	ug/L	1.0	0.16	1		09/20/18 21:13	100-42-5	
1,1,2,2-Tetrachloroethane	1.0 U	ug/L	1.0	0.22	1		09/20/18 21:13	79-34-5	
Tetrachloroethene	1.0 U	ug/L	1.0	0.26	1		09/20/18 21:13	127-18-4	
Toluene	1.0 U	ug/L	1.0	0.13	1		09/20/18 21:13	108-88-3	
1,2,4-Trichlorobenzene	1.0 U	ug/L	1.0	0.17	1		09/20/18 21:13	120-82-1	
1,1,1-Trichloroethane	1.0 U	ug/L	1.0	0.28	1		09/20/18 21:13	71-55-6	
1,1,2-Trichloroethane	1.0 U	ug/L	1.0	0.24	1		09/20/18 21:13	79-00-5	
Trichloroethene	1.0 U	ug/L	1.0	0.26	1		09/20/18 21:13	79-01-6	
Trichlorofluoromethane	1.0 U	ug/L	1.0	0.20	1		09/20/18 21:13	75-69-4	
1,1,2-Trichlorotrifluoroethane	1.0 U	ug/L	1.0	0.24	1		09/20/18 21:13	76-13-1	

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ANALYTICAL RESULTS

Project: PCC Validation

Pace Project No.: 4617735

Sample: GW-17322A-091719-DS-005 Lab ID: 4617735006 Collected: 09/17/18 12:40 Received: 09/18/18 08:30 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B									
Vinyl chloride	1.0 U	ug/L	1.0	0.27	1		09/20/18 21:13	75-01-4	
Xylene (Total)	3.0 U	ug/L	3.0	0.44	1		09/20/18 21:13	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	99	%.	87-122		1		09/20/18 21:13	17060-07-0	
Dibromofluoromethane (S)	94	%.	85-118		1		09/20/18 21:13	1868-53-7	
4-Bromofluorobenzene (S)	99	%.	82-110		1		09/20/18 21:13	460-00-4	
Toluene-d8 (S)	102	%.	85-113		1		09/20/18 21:13	2037-26-5	

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ANALYTICAL RESULTS

Project: PCC Validation

Pace Project No.: 4617735

Sample: GW-17322A-091719-DS-006 **Lab ID:** 4617735007 **Collected:** 09/17/18 13:40 **Received:** 09/18/18 08:30 **Matrix:** Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV		Analytical Method: EPA 8260B							
Acetone	5.0 U	ug/L	5.0	1.9	1		09/20/18 21:37	67-64-1	
Benzene	1.0 U	ug/L	1.0	0.23	1		09/20/18 21:37	71-43-2	
Bromodichloromethane	1.0 U	ug/L	1.0	0.21	1		09/20/18 21:37	75-27-4	
Bromoform	1.0 U	ug/L	1.0	0.23	1		09/20/18 21:37	75-25-2	
Bromomethane	1.0 U	ug/L	1.0	0.29	1		09/20/18 21:37	74-83-9	
2-Butanone (MEK)	5.0 U	ug/L	5.0	1.4	1		09/20/18 21:37	78-93-3	
Carbon disulfide	5.0 U	ug/L	5.0	0.24	1		09/20/18 21:37	75-15-0	CH
Carbon tetrachloride	1.0 U	ug/L	1.0	0.28	1		09/20/18 21:37	56-23-5	
Chlorobenzene	1.0 U	ug/L	1.0	0.20	1		09/20/18 21:37	108-90-7	
Chloroethane	1.0 U	ug/L	1.0	0.27	1		09/20/18 21:37	75-00-3	
Chloroform	1.0 U	ug/L	1.0	0.23	1		09/20/18 21:37	67-66-3	
Chloromethane	1.0 U	ug/L	1.0	0.24	1		09/20/18 21:37	74-87-3	
Cyclohexane	5.0 U	ug/L	5.0	0.27	1		09/20/18 21:37	110-82-7	
1,2-Dibromo-3-chloropropane	1.0 U	ug/L	1.0	0.23	1		09/20/18 21:37	96-12-8	
Dibromochloromethane	1.0 U	ug/L	1.0	0.26	1		09/20/18 21:37	124-48-1	
1,2-Dibromoethane (EDB)	1.0 U	ug/L	1.0	0.22	1		09/20/18 21:37	106-93-4	
1,2-Dichlorobenzene	1.0 U	ug/L	1.0	0.11	1		09/20/18 21:37	95-50-1	
1,3-Dichlorobenzene	1.0 U	ug/L	1.0	0.27	1		09/20/18 21:37	541-73-1	
1,4-Dichlorobenzene	1.0 U	ug/L	1.0	0.16	1		09/20/18 21:37	106-46-7	
Dichlorodifluoromethane	1.0 U	ug/L	1.0	0.24	1		09/20/18 21:37	75-71-8	
1,1-Dichloroethane	1.0 U	ug/L	1.0	0.20	1		09/20/18 21:37	75-34-3	
1,2-Dichloroethane	1.0 U	ug/L	1.0	0.27	1		09/20/18 21:37	107-06-2	
1,1-Dichloroethene	1.0 U	ug/L	1.0	0.22	1		09/20/18 21:37	75-35-4	
cis-1,2-Dichloroethene	1.0 U	ug/L	1.0	0.25	1		09/20/18 21:37	156-59-2	
trans-1,2-Dichloroethene	1.0 U	ug/L	1.0	0.26	1		09/20/18 21:37	156-60-5	
1,2-Dichloropropane	1.0 U	ug/L	1.0	0.22	1		09/20/18 21:37	78-87-5	
cis-1,3-Dichloropropene	1.0 U	ug/L	1.0	0.13	1		09/20/18 21:37	10061-01-5	
trans-1,3-Dichloropropene	1.0 U	ug/L	1.0	0.26	1		09/20/18 21:37	10061-02-6	
Ethylbenzene	1.0 U	ug/L	1.0	0.13	1		09/20/18 21:37	100-41-4	
2-Hexanone	5.0 U	ug/L	5.0	0.61	1		09/20/18 21:37	591-78-6	
Isopropylbenzene (Cumene)	1.0 U	ug/L	1.0	0.12	1		09/20/18 21:37	98-82-8	
Methyl acetate	5.0 U	ug/L	5.0	0.24	1		09/20/18 21:37	79-20-9	N2
Methylcyclohexane	5.0 U	ug/L	5.0	0.22	1		09/20/18 21:37	108-87-2	
Methylene Chloride	1.0 U	ug/L	1.0	0.24	1		09/20/18 21:37	75-09-2	
4-Methyl-2-pentanone (MIBK)	5.0 U	ug/L	5.0	1.4	1		09/20/18 21:37	108-10-1	
Methyl-tert-butyl ether	1.0 U	ug/L	1.0	0.24	1		09/20/18 21:37	1634-04-4	
Styrene	1.0 U	ug/L	1.0	0.16	1		09/20/18 21:37	100-42-5	
1,1,2,2-Tetrachloroethane	1.0 U	ug/L	1.0	0.22	1		09/20/18 21:37	79-34-5	
Tetrachloroethene	1.0 U	ug/L	1.0	0.26	1		09/20/18 21:37	127-18-4	
Toluene	1.0 U	ug/L	1.0	0.13	1		09/20/18 21:37	108-88-3	
1,2,4-Trichlorobenzene	1.0 U	ug/L	1.0	0.17	1		09/20/18 21:37	120-82-1	
1,1,1-Trichloroethane	1.0 U	ug/L	1.0	0.28	1		09/20/18 21:37	71-55-6	
1,1,2-Trichloroethane	1.0 U	ug/L	1.0	0.24	1		09/20/18 21:37	79-00-5	
Trichloroethene	1.0 U	ug/L	1.0	0.26	1		09/20/18 21:37	79-01-6	
Trichlorofluoromethane	1.0 U	ug/L	1.0	0.20	1		09/20/18 21:37	75-69-4	
1,1,2-Trichlorotrifluoroethane	1.0 U	ug/L	1.0	0.24	1		09/20/18 21:37	76-13-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PCC Validation

Pace Project No.: 4617735

Sample: GW-17322A-091719-DS-006 Lab ID: 4617735007 Collected: 09/17/18 13:40 Received: 09/18/18 08:30 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B									
Vinyl chloride	1.0 U	ug/L	1.0	0.27	1		09/20/18 21:37	75-01-4	
Xylene (Total)	3.0 U	ug/L	3.0	0.44	1		09/20/18 21:37	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	100	%.	87-122		1		09/20/18 21:37	17060-07-0	
Dibromofluoromethane (S)	93	%.	85-118		1		09/20/18 21:37	1868-53-7	
4-Bromofluorobenzene (S)	98	%.	82-110		1		09/20/18 21:37	460-00-4	
Toluene-d8 (S)	102	%.	85-113		1		09/20/18 21:37	2037-26-5	

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QUALITY CONTROL DATA

Project: PCC Validation

Pace Project No.: 4617735

QC Batch: 33545

Analysis Method: EPA 6010C

QC Batch Method: EPA 3010A

Analysis Description: 6010C MET

Associated Lab Samples: 4617735002, 4617735003

METHOD BLANK: 135413

Matrix: Water

Associated Lab Samples: 4617735002, 4617735003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Aluminum	ug/L	50.0 U	50.0	31.0	09/24/18 15:48	
Lead	ug/L	50.0 U	50.0	28.0	09/24/18 15:48	
Vanadium	ug/L	10.0 U	10.0	6.1	09/24/18 15:48	

LABORATORY CONTROL SAMPLE: 135414

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum	ug/L	2000	1950	97	80-120	
Lead	ug/L	400	392	98	80-120	
Vanadium	ug/L	400	397	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 135415 135416

Parameter	Units	4617735002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum	ug/L	50.0 U	2000	2000	2030	2010	102	101	75-125	1	20	
Lead	ug/L	50.0 U	400	400	386	388	95	96	75-125	1	20	
Vanadium	ug/L	10.0 U	400	400	399	399	100	100	75-125	0	20	

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QUALITY CONTROL DATA

Project: PCC Validation

Pace Project No.: 4617735

QC Batch:	33551	Analysis Method:	EPA 6010C
QC Batch Method:	EPA 3010A	Analysis Description:	6010C MET Dissolved
Associated Lab Samples:	4617735002, 4617735003		

METHOD BLANK: 135436 Matrix: Water

Associated Lab Samples: 4617735002, 4617735003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Aluminum, Dissolved	ug/L	50.0 U	50.0	31.0	09/21/18 09:42	
Lead, Dissolved	ug/L	50.0 U	50.0	28.0	09/21/18 09:42	
Vanadium, Dissolved	ug/L	10.0 U	10.0	6.1	09/21/18 09:42	

LABORATORY CONTROL SAMPLE: 135437

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Aluminum, Dissolved	ug/L	2000	1890	95	80-120	
Lead, Dissolved	ug/L	400	380	95	80-120	
Vanadium, Dissolved	ug/L	400	395	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 135438 135439

Parameter	Units	4617759011 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Aluminum, Dissolved	ug/L	ND	2000	2000	1890	1870	95	94	75-125	1	20	
Lead, Dissolved	ug/L	ND	400	400	382	384	96	96	75-125	0	20	
Vanadium, Dissolved	ug/L	ND	400	400	391	391	97	97	75-125	0	20	

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QUALITY CONTROL DATA

Project: PCC Validation
Pace Project No.: 4617735

QC Batch: 33705 Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B Analysis Description: 8260B MSV
Associated Lab Samples: 4617735001, 4617735004, 4617735005, 4617735006, 4617735007

METHOD BLANK: 136046 Matrix: Water
Associated Lab Samples: 4617735001, 4617735004, 4617735005, 4617735006, 4617735007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/L	1.0 U	1.0	0.28	09/20/18 14:19	
1,1,2,2-Tetrachloroethane	ug/L	1.0 U	1.0	0.22	09/20/18 14:19	
1,1,2-Trichloroethane	ug/L	1.0 U	1.0	0.24	09/20/18 14:19	
1,1,2-Trichlorotrifluoroethane	ug/L	1.0 U	1.0	0.24	09/20/18 14:19	
1,1-Dichloroethane	ug/L	1.0 U	1.0	0.20	09/20/18 14:19	
1,1-Dichloroethene	ug/L	1.0 U	1.0	0.22	09/20/18 14:19	
1,2,4-Trichlorobenzene	ug/L	1.0 U	1.0	0.17	09/20/18 14:19	
1,2-Dibromo-3-chloropropane	ug/L	1.0 U	1.0	0.23	09/20/18 14:19	
1,2-Dibromoethane (EDB)	ug/L	1.0 U	1.0	0.22	09/20/18 14:19	
1,2-Dichlorobenzene	ug/L	1.0 U	1.0	0.11	09/20/18 14:19	
1,2-Dichloroethane	ug/L	1.0 U	1.0	0.27	09/20/18 14:19	
1,2-Dichloropropane	ug/L	1.0 U	1.0	0.22	09/20/18 14:19	
1,3-Dichlorobenzene	ug/L	1.0 U	1.0	0.27	09/20/18 14:19	
1,4-Dichlorobenzene	ug/L	1.0 U	1.0	0.16	09/20/18 14:19	
2-Butanone (MEK)	ug/L	5.0 U	5.0	1.4	09/20/18 14:19	
2-Hexanone	ug/L	5.0 U	5.0	0.61	09/20/18 14:19	
4-Methyl-2-pentanone (MIBK)	ug/L	5.0 U	5.0	1.4	09/20/18 14:19	
Acetone	ug/L	5.0 U	5.0	1.9	09/20/18 14:19	
Benzene	ug/L	1.0 U	1.0	0.23	09/20/18 14:19	
Bromodichloromethane	ug/L	1.0 U	1.0	0.21	09/20/18 14:19	
Bromoform	ug/L	1.0 U	1.0	0.23	09/20/18 14:19	
Bromomethane	ug/L	1.0 U	1.0	0.29	09/20/18 14:19	
Carbon disulfide	ug/L	5.0 U	5.0	0.24	09/20/18 14:19	
Carbon tetrachloride	ug/L	1.0 U	1.0	0.28	09/20/18 14:19	
Chlorobenzene	ug/L	1.0 U	1.0	0.20	09/20/18 14:19	
Chloroethane	ug/L	1.0 U	1.0	0.27	09/20/18 14:19	
Chloroform	ug/L	0.37J	1.0	0.23	09/20/18 14:19	
Chloromethane	ug/L	1.0 U	1.0	0.24	09/20/18 14:19	
cis-1,2-Dichloroethene	ug/L	1.0 U	1.0	0.25	09/20/18 14:19	
cis-1,3-Dichloropropene	ug/L	1.0 U	1.0	0.13	09/20/18 14:19	
Cyclohexane	ug/L	5.0 U	5.0	0.27	09/20/18 14:19	
Dibromochloromethane	ug/L	1.0 U	1.0	0.26	09/20/18 14:19	
Dichlorodifluoromethane	ug/L	1.0 U	1.0	0.24	09/20/18 14:19	
Ethylbenzene	ug/L	1.0 U	1.0	0.13	09/20/18 14:19	
Isopropylbenzene (Cumene)	ug/L	1.0 U	1.0	0.12	09/20/18 14:19	
Methyl acetate	ug/L	5.0 U	5.0	0.24	09/20/18 14:19	N2
Methyl-tert-butyl ether	ug/L	1.0 U	1.0	0.24	09/20/18 14:19	
Methylcyclohexane	ug/L	5.0 U	5.0	0.22	09/20/18 14:19	
Methylene Chloride	ug/L	1.0 U	1.0	0.24	09/20/18 14:19	
Styrene	ug/L	1.0 U	1.0	0.16	09/20/18 14:19	
Tetrachloroethene	ug/L	1.0 U	1.0	0.26	09/20/18 14:19	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PCC Validation

Pace Project No.: 4617735

METHOD BLANK: 136046

Matrix: Water

Associated Lab Samples: 4617735001, 4617735004, 4617735005, 4617735006, 4617735007

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Toluene	ug/L	1.0 U	1.0	0.13	09/20/18 14:19	
trans-1,2-Dichloroethene	ug/L	1.0 U	1.0	0.26	09/20/18 14:19	
trans-1,3-Dichloropropene	ug/L	1.0 U	1.0	0.26	09/20/18 14:19	
Trichloroethene	ug/L	1.0 U	1.0	0.26	09/20/18 14:19	
Trichlorofluoromethane	ug/L	1.0 U	1.0	0.20	09/20/18 14:19	
Vinyl chloride	ug/L	1.0 U	1.0	0.27	09/20/18 14:19	
Xylene (Total)	ug/L	3.0 U	3.0	0.44	09/20/18 14:19	
1,2-Dichloroethane-d4 (S)	%	97	87-122		09/20/18 14:19	
4-Bromofluorobenzene (S)	%	99	82-110		09/20/18 14:19	
Dibromofluoromethane (S)	%	96	85-118		09/20/18 14:19	
Toluene-d8 (S)	%	101	85-113		09/20/18 14:19	

LABORATORY CONTROL SAMPLE: 136047

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	40	43.5	109	81-122	
1,1,2,2-Tetrachloroethane	ug/L	40	40.9	102	70-137	
1,1,2-Trichloroethane	ug/L	40	42.2	105	83-121	
1,1,2-Trichlorotrifluoroethane	ug/L	40	40.8	102	76-126	
1,1-Dichloroethane	ug/L	40	41.9	105	80-118	
1,1-Dichloroethene	ug/L	40	41.4	104	77-123	
1,2,4-Trichlorobenzene	ug/L	40	40.1	100	75-125	
1,2-Dibromo-3-chloropropane	ug/L	40	38.8	97	58-130	
1,2-Dibromoethane (EDB)	ug/L	40	41.5	104	84-125	
1,2-Dichlorobenzene	ug/L	40	39.2	98	81-124	
1,2-Dichloroethane	ug/L	40	39.5	99	81-122	
1,2-Dichloropropane	ug/L	40	43.1	108	82-122	
1,3-Dichlorobenzene	ug/L	40	39.5	99	81-124	
1,4-Dichlorobenzene	ug/L	40	38.9	97	79-122	
2-Butanone (MEK)	ug/L	40	45.5	114	52-142	
2-Hexanone	ug/L	40	45.4	114	55-141	
4-Methyl-2-pentanone (MIBK)	ug/L	40	46.0	115	60-142	
Acetone	ug/L	40	45.7	114	53-138	
Benzene	ug/L	40	41.9	105	84-119	
Bromodichloromethane	ug/L	40	39.3	98	82-124	
Bromoform	ug/L	40	38.5	96	65-123	
Bromomethane	ug/L	40	40.9	102	55-142	
Carbon disulfide	ug/L	40	50.3	126	70-131	
Carbon tetrachloride	ug/L	40	36.8	92	79-127	
Chlorobenzene	ug/L	40	39.7	99	84-118	
Chloroethane	ug/L	40	41.0	102	76-124	
Chloroform	ug/L	40	39.7	99	82-119	
Chloromethane	ug/L	40	37.1	93	73-125	
cis-1,2-Dichloroethene	ug/L	40	41.9	105	84-119	

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QUALITY CONTROL DATA

Project: PCC Validation

Pace Project No.: 4617735

LABORATORY CONTROL SAMPLE: 136047

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
cis-1,3-Dichloropropene	ug/L	40	39.8	100	77-120	
Cyclohexane	ug/L	40	42.7	107	70-129	
Dibromochloromethane	ug/L	40	36.6	92	74-121	
Dichlorodifluoromethane	ug/L	40	35.1	88	68-130	
Ethylbenzene	ug/L	40	40.6	101	87-119	
Isopropylbenzene (Cumene)	ug/L	40	41.0	103	76-126	
Methyl acetate	ug/L	40	35.7	89	67-129	N2
Methyl-tert-butyl ether	ug/L	40	42.1	105	72-128	
Methylcyclohexane	ug/L	40	42.9	107	78-126	
Methylene Chloride	ug/L	40	42.5	106	75-129	
Styrene	ug/L	40	40.7	102	84-120	
Tetrachloroethene	ug/L	40	40.3	101	81-117	
Toluene	ug/L	40	41.8	104	85-118	
trans-1,2-Dichloroethene	ug/L	40	42.0	105	76-126	
trans-1,3-Dichloropropene	ug/L	40	39.2	98	73-116	
Trichloroethene	ug/L	40	41.8	104	82-119	
Trichlorofluoromethane	ug/L	40	40.8	102	76-128	
Vinyl chloride	ug/L	40	40.3	101	77-123	
Xylene (Total)	ug/L	120	121	101	86-119	
1,2-Dichloroethane-d4 (S)	%			96	87-122	
4-Bromofluorobenzene (S)	%			99	82-110	
Dibromofluoromethane (S)	%			99	85-118	
Toluene-d8 (S)	%			101	85-113	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 136048 136049

Parameter	Units	4617679001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,1,1-Trichloroethane	ug/L	1.0 U	40	40	43.5	46.0	109	115	79-131	5	10	
1,1,2,2-Tetrachloroethane	ug/L	1.0 U	40	40	42.6	42.7	106	107	71-129	0	10	
1,1,2-Trichloroethane	ug/L	1.0 U	40	40	43.5	43.8	109	109	76-127	1	10	
1,1,2-Trichlorotrifluoroethane	ug/L	1.0 U	40	40	41.1	41.0	103	102	67-135	0	14	
1,1-Dichloroethane	ug/L	1.0 U	40	40	43.1	44.3	108	111	76-129	3	13	
1,1-Dichloroethene	ug/L	1.0 U	40	40	42.0	42.6	105	106	74-134	1	11	
1,2,4-Trichlorobenzene	ug/L	1.0 U	40	40	40.1	40.5	100	101	66-131	1	15	
1,2-Dibromo-3-chloropropane	ug/L	1.0 U	40	40	38.1	39.1	95	98	55-126	3	16	
1,2-Dibromoethane (EDB)	ug/L	1.0 U	40	40	42.6	42.9	107	107	78-125	1	9	
1,2-Dichlorobenzene	ug/L	1.0 U	40	40	40.3	40.6	101	102	76-124	1	10	
1,2-Dichloroethane	ug/L	1.0 U	40	40	41.4	41.6	104	104	74-131	1	9	
1,2-Dichloropropane	ug/L	1.0 U	40	40	43.7	45.0	109	112	79-128	3	9	
1,3-Dichlorobenzene	ug/L	1.0 U	40	40	40.7	40.9	102	102	76-123	1	10	
1,4-Dichlorobenzene	ug/L	1.0 U	40	40	40.1	40.5	100	101	75-121	1	10	
2-Butanone (MEK)	ug/L	5.0 U	40	40	46.6	46.7	116	117	52-134	0	17	
2-Hexanone	ug/L	5.0 U	40	40	46.9	47.1	117	118	53-134	0	15	

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QUALITY CONTROL DATA

Project: PCC Validation

Pace Project No.: 4617735

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 136048											
136049											
Parameter	Units	4617679001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
4-Methyl-2-pentanone (MIBK)	ug/L	5.0 U	40	40	47.4	47.0	119	118	55-139	1	15
Acetone	ug/L	5.0 U	40	40	46.6	46.8	116	117	46-145	1	17
Benzene	ug/L	1.0 U	40	40	43.2	44.0	108	110	80-129	2	9
Bromodichloromethane	ug/L	1.0 U	40	40	39.0	40.7	97	102	81-130	4	10
Bromoform	ug/L	1.0 U	40	40	38.1	39.4	95	99	60-122	3	12
Bromomethane	ug/L	1.0 U	40	40	29.5	36.1	74	90	44-140	20	35
Carbon disulfide	ug/L	5.0 U	40	40	47.2	51.2	118	128	69-144	8	15
Carbon tetrachloride	ug/L	1.0 U	40	40	37.4	39.1	94	98	78-137	4	11
Chlorobenzene	ug/L	1.0 U	40	40	41.0	41.7	103	104	80-121	2	8
Chloroethane	ug/L	1.0 U	40	40	40.7	42.4	102	106	72-137	4	14
Chloroform	ug/L	1.0 U	40	40	41.0	41.9	102	105	79-128	2	9
Chloromethane	ug/L	1.0 U	40	40	36.2	37.2	90	93	72-134	3	11
cis-1,2-Dichloroethene	ug/L	1.0 U	40	40	43.5	44.3	109	111	76-129	2	12
cis-1,3-Dichloropropene	ug/L	1.0 U	40	40	37.7	39.0	94	97	68-122	3	11
Cyclohexane	ug/L	5.0 U	40	40	44.4	45.4	111	114	65-131	2	11
Dibromochloromethane	ug/L	1.0 U	40	40	36.3	37.7	91	94	70-126	4	10
Dichlorodifluoromethane	ug/L	1.0 U	40	40	34.4	34.8	86	87	64-138	1	13
Ethylbenzene	ug/L	1.0 U	40	40	42.1	42.6	105	106	82-127	1	10
Isopropylbenzene (Cumene)	ug/L	1.0 U	40	40	42.4	43.0	106	108	73-131	1	12
Methyl acetate	ug/L	5.0 U	40	40	35.2	34.6	88	87	40-133	2	16 N2
Methyl-tert-butyl ether	ug/L	1.0 U	40	40	41.6	42.8	104	107	65-131	3	15
Methylcyclohexane	ug/L	5.0 U	40	40	43.7	44.9	109	112	70-137	3	14
Methylene Chloride	ug/L	1.0 U	40	40	42.8	43.0	107	108	75-133	1	10
Styrene	ug/L	1.0 U	40	40	41.7	42.1	104	105	75-129	1	10
Tetrachloroethene	ug/L	1.0 U	40	40	41.4	41.8	103	105	75-126	1	10
Toluene	ug/L	1.0 U	40	40	43.1	44.0	108	110	79-129	2	9
trans-1,2-Dichloroethene	ug/L	1.0 U	40	40	43.2	44.8	108	112	71-137	4	15
trans-1,3-Dichloropropene	ug/L	1.0 U	40	40	37.4	38.8	93	97	66-117	4	12
Trichloroethene	ug/L	1.0 U	40	40	43.0	43.7	108	109	75-127	2	10
Trichlorofluoromethane	ug/L	1.0 U	40	40	41.4	42.8	103	107	70-141	3	11
Vinyl chloride	ug/L	1.0 U	40	40	40.0	41.2	100	103	73-136	3	12
Xylene (Total)	ug/L	3.0 U	120	120	125	127	104	106	78-130	2	9
1,2-Dichloroethane-d4 (S)	%						97	97	87-122		
4-Bromofluorobenzene (S)	%						100	100	82-110		
Dibromofluoromethane (S)	%						99	100	85-118		
Toluene-d8 (S)	%						102	101	85-113		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: PCC Validation
Pace Project No.: 4617735

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

CH	The continuing calibration for this compound is outside of Pace Analytical acceptance limits. The results may be biased high.
N2	The lab does not hold NELAC/TNI accreditation for this parameter.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PCC Validation

Pace Project No.: 4617735

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
4617735002	GW-17322A-091719-DS-001	EPA 3010A	33545	EPA 6010C	33971
4617735003	GW-17322A-091719-DS-002	EPA 3010A	33545	EPA 6010C	33971
4617735002	GW-17322A-091719-DS-001	EPA 3010A	33551	EPA 6010C	33791
4617735003	GW-17322A-091719-DS-002	EPA 3010A	33551	EPA 6010C	33791
4617735001	TB-17322A-091718	EPA 8260B	33705		
4617735004	GW-17322A-091719-DS-003	EPA 8260B	33705		
4617735005	GW-17322A-091719-DS-004	EPA 8260B	33705		
4617735006	GW-17322A-091719-DS-005	EPA 8260B	33705		
4617735007	GW-17322A-091719-DS-006	EPA 8260B	33705		

REPORT OF LABORATORY ANALYSIS

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WO#: 4617735



4617735

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

P1787

Section

Required Client Information:

Company: GHD - Farmington Hills, Michigan
 Address: 26850 Haggerty Road
 Farmington Hills, MI 48331
 Email: james.abston@ghd.com
 Phone: 478-843-3700 Fax:
 Requested Due Date: Standard TAT

Required Project Information:

Report To: Abston, James
 Copy To:
 Purchase Order #: 017322-008-702-118
 Project Name: PCC-Validation
 Project #: 017322A-702

Section C

Invoice Information:

Attention: Accounts Receivable
 Company Name: GHD
 Address: 26850 Haggerty
 Pace Quote:
 Pace Project Manager: will.cole@pacelabs.com
 Pace Profile #: 1787

Page: 1 Of 1

Regulatory Agency

State / Location

MI

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID One Character per box. (A-Z, 0-9 /, -) Sample Ids must be unique	MATRIX Drinking Water Water Waste Water Product Soil/Solid Oil Wipe Air Other Tissue	CODE DW/ WT/ WW/ P/ SL/ OL/ WP/ AR/ OT/ TS	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED				SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives								Analyses Test	Y/N	Residual Chlorine (Y/N)										
						START		END				Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other													
						DATE	TIME	DATE	TIME																							
1	TB-17322A-091718			TB	1	9-17-18	/				1				X							X										L4
2	gw-17322A-091718-DS-001			GW	6		1000				2		X									X	X									L5
3			-002				1100				2		X									X	X									L5
4			-003				1145				3			X								X										L4
5			-004				1150				3			X								X										
6			-005				1240				3			X								X										
7			-006				1340				3			X								X										
8																																
9																																
10																																
11																																
12																																9-7

ADDITIONAL COMMENTS

RELINQUISHED BY / AFFILIATION

DATE

TIME

ACCEPTED BY / AFFILIATION

DATE

TIME

SAMPLE CONDITIONS

- Lab to filter Dissolved Metals

m m

GHD

9-17-18

1430

Derek Saliba

9/18/18

0830

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER:

Derek Saliba

SIGNATURE of SAMPLER:

m m

DATE Signed:

9-17-18

TEMP in C

Received on

Ice

(Y/N)

Custody

Sealed

Cooler

(Y/N)

Samples

Intact

(Y/N)



Sample Conditions Upon Rec

WO# : 4617735

Date: <u>9/18/18</u>	Evaluated by: <u>ICB</u>	PM: WDC Due Date: 09/28/18 CLIENT: GHD-PLYMOUTH
Client: <u>GHD</u>	<u>9-7</u>	
Profile ID: <u>-</u>	Project Manager: <u>-</u>	
Sample Receiving Non Conformance Form Required: <u>YES</u> NO		Rush Turn Around Time Requested: YES <u>NO</u> Due Date: <u>-</u>
Page <u>1</u> Of <u>1</u>	Lab Notified of Rush or Short Holds: YES <u>NO</u>	

Lab Sample Receipt Checklist:

Samples Received Via:	<u>FEDEX</u>	UPS	CLIENT	PACE COURIER
Custody Seals Present and Intact:	YES	<u>NO</u>	NA	
USDA Regulated Soils:	YES	<u>NO</u>	NA	
Short Holds Present (< 72 Hours):	YES	<u>NO</u>	NA	
Samples Received in Hold:	<u>YES</u>	NO	NA	
Custody Signatures Present:	<u>YES</u>	NO	NA	
Collector Signature Present:	<u>YES</u>	NO	NA	
Samples Received On Ice:	<u>YES</u>	NO	NA	
Type of Ice: <u>WET</u> BLUE DRY NONE				
Packing Material Used:	<u>YES</u>	NO	NA	
IR Gun #: 202 <u>402</u> Temp should be 0-6°C	Cooler Temp Upon Receipt: <u>2.8</u> °C			
Temp Blank Received:	<u>YES</u>	NO	NA	<u>3.9°C</u>
Trip Blank Received: Type: <u>HCL</u> MeOH TSP OTHER	<u>YES</u>	NO	NA	
Bottles Intact:	<u>YES</u>	NO	NA	
Correct Bottles:	<u>YES</u>	NO	NA	
Sufficient Volume:	<u>YES</u>	NO	NA	
Sample pH Acceptable: All containers needing preservation are found to be in compliance with EPA recommendation Exceptions are VOA, coliform, TOC, O & G, HEM, DRO	<u>YES</u>	NO	NA	pH Strip Lot Number: <u>HC739245</u>
VOA Headspace Acceptable (<6mm):	<u>YES</u>	NO	NA	
Comments:				



Sample Receiving Non-Conformance Form (NCF)

Date: 9/18/18	Evaluated by: ICB
Client: GHD	9-7

Affix Workorder/Login Label Here or List Pace Workorder Number or MTJL Log-in Number Here

1. If Chain-of-Custody (COC) is not received: contact client and if necessary, fill out a COC and indicate that it was filled out by lab personnel. Note issues on this NCF.

2. If COC is incomplete, check applicable issues below and add details where appropriate:

Collection date/time missing or incorrect	Analyses or analytes: missing or clarification needed	Samples listed on COC do not match samples received (missing, additional, etc.)
Sample IDs on COC do not match sample labels	Required trip blanks were not received	Required signatures are missing

Comments/Details/Other Issues not listed above:

3. Sample integrity issues: check applicable issues below and add details where appropriate:

Samples: Past holding time	Samples: Condition needs to be brought to lab personnel's attention (details below)	Preservation: Improper
Samples: Not field filtered	Containers: Broken or compromised	Temperature: not within acceptance criteria (typically 0-6C)
Samples: Insufficient volume received	Containers: Incorrect	Temperature: Samples arrived frozen
Samples: Cooler damaged or compromised	Custody Seals: Missing or compromised on samples, trip blanks or coolers	Vials received with improper headspace
Samples: contain chlorine or sulfides	Packing Material: Insufficient/Improper	Other:

Comments/Details:

TB-17322A has headspace

4. If Samples not preserved properly and Sample Receiving adjusts pH, add details below:

Sample ID:	Date/Time:	Amount/type pres added:
Preserved by:	Initial and Final pH:	Lot # of pres added:
Sample ID:	Date/Time:	Amount/type pres added:
Preserved by:	Initial and Final pH:	Lot # of pres added:
Sample ID:	Date/Time:	Amount/type pres added:
Preserved by:	Initial and Final pH:	Lot # of pres added:

5. Client Contact: If client is contacted for any issue listed above, fill in details below:

Client:	Contacted per:	
PM Initials:	Date/Time:	

Client Comments/Instructions:

September 24, 2018

James Abston
GHD-Farmington Hills, Michigan
26850 Haggerty Road
Farmington, MI 48331

RE: Project: PCC Validation
Pace Project No.: 4617820

Dear James Abston:

Enclosed are the analytical results for sample(s) received by the laboratory on September 19, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

051710-E201072-028

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Will Cole
will.cole@pacelabs.com
(616)975-4500
Project Manager

Enclosures

cc: Detroit Chemistry, GHD



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: PCC Validation

Pace Project No.: 4617820

Grand Rapids Certification ID's

5560 Corporate Exchange Ct SE, Grand Rapids, MI 49512

Minnesota Department of Health, Certificate #1385941

Arkansas Department of Environmental Quality, Certificate
#18-046-0

Georgia Environmental Protection Division, Stipulation

Illinois Environmental Protection Agency, Certificate

#004325

Michigan Department of Environmental Quality, Laboratory

#0034

New York State Department of Health, Serial #57971 and
57972

North Carolina Division of Water Resources, Certificate
#659

Virginia Department of General Services, Certificate #9780

Wisconsin Department of Natural Resources, Laboratory
#999472650

U.S. Department of Agriculture Permit to Receive Soil,
Permit #P330-17-00278

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: PCC Validation

Pace Project No.: 4617820

Lab ID	Sample ID	Matrix	Date Collected	Date Received
4617820001	TB-17322A-091818	Water	09/18/18 00:00	09/19/18 09:40
4617820002	GW-17322A-091818-DS-007	Water	09/18/18 09:00	09/19/18 09:40
4617820003	GW-17322A-091818-DS-008	Water	09/18/18 10:25	09/19/18 09:40
4617820004	GW-17322A-091818-DS-009	Water	09/18/18 11:45	09/19/18 13:15
4617820005	GW-17322A-091818-DS-010	Water	09/18/18 12:35	09/19/18 13:15
4617820006	GW-17322A-091818-DS-011	Water	09/18/18 13:35	09/19/18 13:15

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: PCC Validation

Pace Project No.: 4617820

Lab ID	Sample ID	Method	Analysts	Analytes Reported
4617820001	TB-17322A-091818	EPA 8260B	BAG	52
4617820002	GW-17322A-091818-DS-007	EPA 8260B	BAG	52
4617820003	GW-17322A-091818-DS-008	EPA 8260B	BAG	52
4617820004	GW-17322A-091818-DS-009	EPA 8260B	BAG	52
4617820005	GW-17322A-091818-DS-010	EPA 8260B	BAG	52
4617820006	GW-17322A-091818-DS-011	EPA 8260B	BAG	52

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PCC Validation

Pace Project No.: 4617820

Sample: TB-17322A-091818		Lab ID: 4617820001		Collected: 09/18/18 00:00		Received: 09/19/18 09:40		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV		Analytical Method: EPA 8260B							
Acetone	5.0 U	ug/L	5.0	1.9	1		09/21/18 22:49	67-64-1	
Benzene	1.0 U	ug/L	1.0	0.23	1		09/21/18 22:49	71-43-2	
Bromodichloromethane	1.0 U	ug/L	1.0	0.21	1		09/21/18 22:49	75-27-4	
Bromoform	1.0 U	ug/L	1.0	0.23	1		09/21/18 22:49	75-25-2	
Bromomethane	1.0 U	ug/L	1.0	0.29	1		09/21/18 22:49	74-83-9	CL
2-Butanone (MEK)	5.0 U	ug/L	5.0	1.4	1		09/21/18 22:49	78-93-3	
Carbon disulfide	5.0 U	ug/L	5.0	0.24	1		09/21/18 22:49	75-15-0	CH
Carbon tetrachloride	1.0 U	ug/L	1.0	0.28	1		09/21/18 22:49	56-23-5	
Chlorobenzene	1.0 U	ug/L	1.0	0.20	1		09/21/18 22:49	108-90-7	
Chloroethane	1.0 U	ug/L	1.0	0.27	1		09/21/18 22:49	75-00-3	
Chloroform	1.0 U	ug/L	1.0	0.23	1		09/21/18 22:49	67-66-3	
Chloromethane	1.0 U	ug/L	1.0	0.24	1		09/21/18 22:49	74-87-3	
Cyclohexane	5.0 U	ug/L	5.0	0.27	1		09/21/18 22:49	110-82-7	
1,2-Dibromo-3-chloropropane	1.0 U	ug/L	1.0	0.23	1		09/21/18 22:49	96-12-8	
Dibromochloromethane	1.0 U	ug/L	1.0	0.26	1		09/21/18 22:49	124-48-1	
1,2-Dibromoethane (EDB)	1.0 U	ug/L	1.0	0.22	1		09/21/18 22:49	106-93-4	
1,2-Dichlorobenzene	1.0 U	ug/L	1.0	0.11	1		09/21/18 22:49	95-50-1	
1,3-Dichlorobenzene	1.0 U	ug/L	1.0	0.27	1		09/21/18 22:49	541-73-1	
1,4-Dichlorobenzene	1.0 U	ug/L	1.0	0.16	1		09/21/18 22:49	106-46-7	
Dichlorodifluoromethane	1.0 U	ug/L	1.0	0.24	1		09/21/18 22:49	75-71-8	
1,1-Dichloroethane	1.0 U	ug/L	1.0	0.20	1		09/21/18 22:49	75-34-3	
1,2-Dichloroethane	1.0 U	ug/L	1.0	0.27	1		09/21/18 22:49	107-06-2	
1,1-Dichloroethene	1.0 U	ug/L	1.0	0.22	1		09/21/18 22:49	75-35-4	
cis-1,2-Dichloroethene	1.0 U	ug/L	1.0	0.25	1		09/21/18 22:49	156-59-2	
trans-1,2-Dichloroethene	1.0 U	ug/L	1.0	0.26	1		09/21/18 22:49	156-60-5	
1,2-Dichloropropane	1.0 U	ug/L	1.0	0.22	1		09/21/18 22:49	78-87-5	
cis-1,3-Dichloropropene	1.0 U	ug/L	1.0	0.13	1		09/21/18 22:49	10061-01-5	
trans-1,3-Dichloropropene	1.0 U	ug/L	1.0	0.26	1		09/21/18 22:49	10061-02-6	
Ethylbenzene	1.0 U	ug/L	1.0	0.13	1		09/21/18 22:49	100-41-4	
2-Hexanone	5.0 U	ug/L	5.0	0.61	1		09/21/18 22:49	591-78-6	
Isopropylbenzene (Cumene)	1.0 U	ug/L	1.0	0.12	1		09/21/18 22:49	98-82-8	
Methyl acetate	5.0 U	ug/L	5.0	0.24	1		09/21/18 22:49	79-20-9	N2
Methylcyclohexane	5.0 U	ug/L	5.0	0.22	1		09/21/18 22:49	108-87-2	
Methylene Chloride	2.4	ug/L	1.0	0.24	1		09/21/18 22:49	75-09-2	B
4-Methyl-2-pentanone (MIBK)	5.0 U	ug/L	5.0	1.4	1		09/21/18 22:49	108-10-1	
Methyl-tert-butyl ether	1.0 U	ug/L	1.0	0.24	1		09/21/18 22:49	1634-04-4	
Styrene	1.0 U	ug/L	1.0	0.16	1		09/21/18 22:49	100-42-5	
1,1,2,2-Tetrachloroethane	1.0 U	ug/L	1.0	0.22	1		09/21/18 22:49	79-34-5	
Tetrachloroethene	1.0 U	ug/L	1.0	0.26	1		09/21/18 22:49	127-18-4	
Toluene	1.0 U	ug/L	1.0	0.13	1		09/21/18 22:49	108-88-3	
1,2,4-Trichlorobenzene	1.0 U	ug/L	1.0	0.17	1		09/21/18 22:49	120-82-1	
1,1,1-Trichloroethane	1.0 U	ug/L	1.0	0.28	1		09/21/18 22:49	71-55-6	
1,1,2-Trichloroethane	1.0 U	ug/L	1.0	0.24	1		09/21/18 22:49	79-00-5	
Trichloroethene	1.0 U	ug/L	1.0	0.26	1		09/21/18 22:49	79-01-6	
Trichlorofluoromethane	1.0 U	ug/L	1.0	0.20	1		09/21/18 22:49	75-69-4	
1,1,2-Trichlorotrifluoroethane	1.0 U	ug/L	1.0	0.24	1		09/21/18 22:49	76-13-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PCC Validation

Pace Project No.: 4617820

Sample: TB-17322A-091818		Lab ID: 4617820001		Collected: 09/18/18 00:00		Received: 09/19/18 09:40		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV		Analytical Method: EPA 8260B							
Vinyl chloride	1.0 U	ug/L	1.0	0.27	1		09/21/18 22:49	75-01-4	
Xylene (Total)	3.0 U	ug/L	3.0	0.44	1		09/21/18 22:49	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	100	%.	87-122		1		09/21/18 22:49	17060-07-0	
Dibromofluoromethane (S)	98	%.	85-118		1		09/21/18 22:49	1868-53-7	
4-Bromofluorobenzene (S)	99	%.	82-110		1		09/21/18 22:49	460-00-4	
Toluene-d8 (S)	102	%.	85-113		1		09/21/18 22:49	2037-26-5	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PCC Validation

Pace Project No.: 4617820

Sample: **GW-17322A-091818-DS-007** Lab ID: **4617820002** Collected: 09/18/18 09:00 Received: 09/19/18 09:40 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV		Analytical Method: EPA 8260B							
Acetone	5.0 U	ug/L	5.0	1.9	1		09/21/18 23:13	67-64-1	
Benzene	1.0 U	ug/L	1.0	0.23	1		09/21/18 23:13	71-43-2	
Bromodichloromethane	1.0 U	ug/L	1.0	0.21	1		09/21/18 23:13	75-27-4	
Bromoform	1.0 U	ug/L	1.0	0.23	1		09/21/18 23:13	75-25-2	
Bromomethane	1.0 U	ug/L	1.0	0.29	1		09/21/18 23:13	74-83-9	CL
2-Butanone (MEK)	5.0 U	ug/L	5.0	1.4	1		09/21/18 23:13	78-93-3	
Carbon disulfide	5.0 U	ug/L	5.0	0.24	1		09/21/18 23:13	75-15-0	CH
Carbon tetrachloride	1.0 U	ug/L	1.0	0.28	1		09/21/18 23:13	56-23-5	
Chlorobenzene	1.0 U	ug/L	1.0	0.20	1		09/21/18 23:13	108-90-7	
Chloroethane	1.0 U	ug/L	1.0	0.27	1		09/21/18 23:13	75-00-3	
Chloroform	1.0 U	ug/L	1.0	0.23	1		09/21/18 23:13	67-66-3	
Chloromethane	1.0 U	ug/L	1.0	0.24	1		09/21/18 23:13	74-87-3	
Cyclohexane	5.0 U	ug/L	5.0	0.27	1		09/21/18 23:13	110-82-7	
1,2-Dibromo-3-chloropropane	1.0 U	ug/L	1.0	0.23	1		09/21/18 23:13	96-12-8	
Dibromochloromethane	1.0 U	ug/L	1.0	0.26	1		09/21/18 23:13	124-48-1	
1,2-Dibromoethane (EDB)	1.0 U	ug/L	1.0	0.22	1		09/21/18 23:13	106-93-4	
1,2-Dichlorobenzene	1.0 U	ug/L	1.0	0.11	1		09/21/18 23:13	95-50-1	
1,3-Dichlorobenzene	1.0 U	ug/L	1.0	0.27	1		09/21/18 23:13	541-73-1	
1,4-Dichlorobenzene	1.0 U	ug/L	1.0	0.16	1		09/21/18 23:13	106-46-7	
Dichlorodifluoromethane	1.0 U	ug/L	1.0	0.24	1		09/21/18 23:13	75-71-8	
1,1-Dichloroethane	1.0 U	ug/L	1.0	0.20	1		09/21/18 23:13	75-34-3	
1,2-Dichloroethane	1.0 U	ug/L	1.0	0.27	1		09/21/18 23:13	107-06-2	
1,1-Dichloroethene	1.0 U	ug/L	1.0	0.22	1		09/21/18 23:13	75-35-4	
cis-1,2-Dichloroethene	1.0 U	ug/L	1.0	0.25	1		09/21/18 23:13	156-59-2	
trans-1,2-Dichloroethene	1.0 U	ug/L	1.0	0.26	1		09/21/18 23:13	156-60-5	
1,2-Dichloropropane	1.0 U	ug/L	1.0	0.22	1		09/21/18 23:13	78-87-5	
cis-1,3-Dichloropropene	1.0 U	ug/L	1.0	0.13	1		09/21/18 23:13	10061-01-5	
trans-1,3-Dichloropropene	1.0 U	ug/L	1.0	0.26	1		09/21/18 23:13	10061-02-6	
Ethylbenzene	1.0 U	ug/L	1.0	0.13	1		09/21/18 23:13	100-41-4	
2-Hexanone	5.0 U	ug/L	5.0	0.61	1		09/21/18 23:13	591-78-6	
Isopropylbenzene (Cumene)	1.0 U	ug/L	1.0	0.12	1		09/21/18 23:13	98-82-8	
Methyl acetate	5.0 U	ug/L	5.0	0.24	1		09/21/18 23:13	79-20-9	N2
Methylcyclohexane	5.0 U	ug/L	5.0	0.22	1		09/21/18 23:13	108-87-2	
Methylene Chloride	1.0 U	ug/L	1.0	0.24	1		09/21/18 23:13	75-09-2	
4-Methyl-2-pentanone (MIBK)	5.0 U	ug/L	5.0	1.4	1		09/21/18 23:13	108-10-1	
Methyl-tert-butyl ether	1.0 U	ug/L	1.0	0.24	1		09/21/18 23:13	1634-04-4	
Styrene	1.0 U	ug/L	1.0	0.16	1		09/21/18 23:13	100-42-5	
1,1,2,2-Tetrachloroethane	1.0 U	ug/L	1.0	0.22	1		09/21/18 23:13	79-34-5	
Tetrachloroethene	1.0 U	ug/L	1.0	0.26	1		09/21/18 23:13	127-18-4	
Toluene	1.0 U	ug/L	1.0	0.13	1		09/21/18 23:13	108-88-3	
1,2,4-Trichlorobenzene	1.0 U	ug/L	1.0	0.17	1		09/21/18 23:13	120-82-1	
1,1,1-Trichloroethane	1.0 U	ug/L	1.0	0.28	1		09/21/18 23:13	71-55-6	
1,1,2-Trichloroethane	1.0 U	ug/L	1.0	0.24	1		09/21/18 23:13	79-00-5	
Trichloroethene	1.0 U	ug/L	1.0	0.26	1		09/21/18 23:13	79-01-6	
Trichlorofluoromethane	0.23J	ug/L	1.0	0.20	1		09/21/18 23:13	75-69-4	
1,1,2-Trichlorotrifluoroethane	1.0 U	ug/L	1.0	0.24	1		09/21/18 23:13	76-13-1	

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ANALYTICAL RESULTS

Project: PCC Validation

Pace Project No.: 4617820

Sample: GW-17322A-091818-DS-007		Lab ID: 4617820002		Collected: 09/18/18 09:00		Received: 09/19/18 09:40		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV									
Analytical Method: EPA 8260B									
Vinyl chloride	1.0 U	ug/L	1.0	0.27	1		09/21/18 23:13	75-01-4	
Xylene (Total)	3.0 U	ug/L	3.0	0.44	1		09/21/18 23:13	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	101	%.	87-122		1		09/21/18 23:13	17060-07-0	
Dibromofluoromethane (S)	98	%.	85-118		1		09/21/18 23:13	1868-53-7	
4-Bromofluorobenzene (S)	99	%.	82-110		1		09/21/18 23:13	460-00-4	
Toluene-d8 (S)	102	%.	85-113		1		09/21/18 23:13	2037-26-5	

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ANALYTICAL RESULTS

Project: PCC Validation

Pace Project No.: 4617820

Sample: **GW-17322A-091818-DS-008** Lab ID: **4617820003** Collected: 09/18/18 10:25 Received: 09/19/18 09:40 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV		Analytical Method: EPA 8260B							
Acetone	5.0 U	ug/L	5.0	1.9	1		09/21/18 23:38	67-64-1	
Benzene	1.0 U	ug/L	1.0	0.23	1		09/21/18 23:38	71-43-2	
Bromodichloromethane	1.0 U	ug/L	1.0	0.21	1		09/21/18 23:38	75-27-4	
Bromoform	1.0 U	ug/L	1.0	0.23	1		09/21/18 23:38	75-25-2	
Bromomethane	1.0 U	ug/L	1.0	0.29	1		09/21/18 23:38	74-83-9	CL
2-Butanone (MEK)	5.0 U	ug/L	5.0	1.4	1		09/21/18 23:38	78-93-3	
Carbon disulfide	5.0 U	ug/L	5.0	0.24	1		09/21/18 23:38	75-15-0	CH
Carbon tetrachloride	1.0 U	ug/L	1.0	0.28	1		09/21/18 23:38	56-23-5	
Chlorobenzene	1.0 U	ug/L	1.0	0.20	1		09/21/18 23:38	108-90-7	
Chloroethane	1.0 U	ug/L	1.0	0.27	1		09/21/18 23:38	75-00-3	
Chloroform	1.0 U	ug/L	1.0	0.23	1		09/21/18 23:38	67-66-3	
Chloromethane	1.0 U	ug/L	1.0	0.24	1		09/21/18 23:38	74-87-3	
Cyclohexane	5.0 U	ug/L	5.0	0.27	1		09/21/18 23:38	110-82-7	
1,2-Dibromo-3-chloropropane	1.0 U	ug/L	1.0	0.23	1		09/21/18 23:38	96-12-8	
Dibromochloromethane	1.0 U	ug/L	1.0	0.26	1		09/21/18 23:38	124-48-1	
1,2-Dibromoethane (EDB)	1.0 U	ug/L	1.0	0.22	1		09/21/18 23:38	106-93-4	
1,2-Dichlorobenzene	1.0 U	ug/L	1.0	0.11	1		09/21/18 23:38	95-50-1	
1,3-Dichlorobenzene	1.0 U	ug/L	1.0	0.27	1		09/21/18 23:38	541-73-1	
1,4-Dichlorobenzene	1.0 U	ug/L	1.0	0.16	1		09/21/18 23:38	106-46-7	
Dichlorodifluoromethane	1.0 U	ug/L	1.0	0.24	1		09/21/18 23:38	75-71-8	
1,1-Dichloroethane	1.0 U	ug/L	1.0	0.20	1		09/21/18 23:38	75-34-3	
1,2-Dichloroethane	1.0 U	ug/L	1.0	0.27	1		09/21/18 23:38	107-06-2	
1,1-Dichloroethene	1.0 U	ug/L	1.0	0.22	1		09/21/18 23:38	75-35-4	
cis-1,2-Dichloroethene	1.0 U	ug/L	1.0	0.25	1		09/21/18 23:38	156-59-2	
trans-1,2-Dichloroethene	1.0 U	ug/L	1.0	0.26	1		09/21/18 23:38	156-60-5	
1,2-Dichloropropane	1.0 U	ug/L	1.0	0.22	1		09/21/18 23:38	78-87-5	
cis-1,3-Dichloropropene	1.0 U	ug/L	1.0	0.13	1		09/21/18 23:38	10061-01-5	
trans-1,3-Dichloropropene	1.0 U	ug/L	1.0	0.26	1		09/21/18 23:38	10061-02-6	
Ethylbenzene	1.0 U	ug/L	1.0	0.13	1		09/21/18 23:38	100-41-4	
2-Hexanone	5.0 U	ug/L	5.0	0.61	1		09/21/18 23:38	591-78-6	
Isopropylbenzene (Cumene)	1.0 U	ug/L	1.0	0.12	1		09/21/18 23:38	98-82-8	
Methyl acetate	5.0 U	ug/L	5.0	0.24	1		09/21/18 23:38	79-20-9	N2
Methylcyclohexane	5.0 U	ug/L	5.0	0.22	1		09/21/18 23:38	108-87-2	
Methylene Chloride	1.0 U	ug/L	1.0	0.24	1		09/21/18 23:38	75-09-2	
4-Methyl-2-pentanone (MIBK)	5.0 U	ug/L	5.0	1.4	1		09/21/18 23:38	108-10-1	
Methyl-tert-butyl ether	1.0 U	ug/L	1.0	0.24	1		09/21/18 23:38	1634-04-4	
Styrene	1.0 U	ug/L	1.0	0.16	1		09/21/18 23:38	100-42-5	
1,1,2,2-Tetrachloroethane	1.0 U	ug/L	1.0	0.22	1		09/21/18 23:38	79-34-5	
Tetrachloroethene	1.0 U	ug/L	1.0	0.26	1		09/21/18 23:38	127-18-4	
Toluene	1.0 U	ug/L	1.0	0.13	1		09/21/18 23:38	108-88-3	
1,2,4-Trichlorobenzene	1.0 U	ug/L	1.0	0.17	1		09/21/18 23:38	120-82-1	
1,1,1-Trichloroethane	1.0 U	ug/L	1.0	0.28	1		09/21/18 23:38	71-55-6	
1,1,2-Trichloroethane	1.0 U	ug/L	1.0	0.24	1		09/21/18 23:38	79-00-5	
Trichloroethene	1.0 U	ug/L	1.0	0.26	1		09/21/18 23:38	79-01-6	
Trichlorofluoromethane	1.0 U	ug/L	1.0	0.20	1		09/21/18 23:38	75-69-4	
1,1,2-Trichlorotrifluoroethane	1.0 U	ug/L	1.0	0.24	1		09/21/18 23:38	76-13-1	

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ANALYTICAL RESULTS

Project: PCC Validation

Pace Project No.: 4617820

Sample: GW-17322A-091818-DS-008		Lab ID: 4617820003		Collected: 09/18/18 10:25		Received: 09/19/18 09:40		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV									
Analytical Method: EPA 8260B									
Vinyl chloride	1.0 U	ug/L	1.0	0.27	1		09/21/18 23:38	75-01-4	
Xylene (Total)	3.0 U	ug/L	3.0	0.44	1		09/21/18 23:38	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	100	%.	87-122		1		09/21/18 23:38	17060-07-0	
Dibromofluoromethane (S)	97	%.	85-118		1		09/21/18 23:38	1868-53-7	
4-Bromofluorobenzene (S)	100	%.	82-110		1		09/21/18 23:38	460-00-4	
Toluene-d8 (S)	102	%.	85-113		1		09/21/18 23:38	2037-26-5	

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ANALYTICAL RESULTS

Project: PCC Validation

Pace Project No.: 4617820

Sample: GW-17322A-091818-DS-009 **Lab ID:** 4617820004 **Collected:** 09/18/18 11:45 **Received:** 09/19/18 13:15 **Matrix:** Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV		Analytical Method: EPA 8260B							
Acetone	5.0 U	ug/L	5.0	1.9	1		09/22/18 00:02	67-64-1	
Benzene	1.0 U	ug/L	1.0	0.23	1		09/22/18 00:02	71-43-2	
Bromodichloromethane	1.0 U	ug/L	1.0	0.21	1		09/22/18 00:02	75-27-4	
Bromoform	1.0 U	ug/L	1.0	0.23	1		09/22/18 00:02	75-25-2	
Bromomethane	1.0 U	ug/L	1.0	0.29	1		09/22/18 00:02	74-83-9	CL
2-Butanone (MEK)	5.0 U	ug/L	5.0	1.4	1		09/22/18 00:02	78-93-3	
Carbon disulfide	5.0 U	ug/L	5.0	0.24	1		09/22/18 00:02	75-15-0	CH
Carbon tetrachloride	1.0 U	ug/L	1.0	0.28	1		09/22/18 00:02	56-23-5	
Chlorobenzene	1.0 U	ug/L	1.0	0.20	1		09/22/18 00:02	108-90-7	
Chloroethane	1.0 U	ug/L	1.0	0.27	1		09/22/18 00:02	75-00-3	
Chloroform	1.0 U	ug/L	1.0	0.23	1		09/22/18 00:02	67-66-3	
Chloromethane	1.0 U	ug/L	1.0	0.24	1		09/22/18 00:02	74-87-3	
Cyclohexane	5.0 U	ug/L	5.0	0.27	1		09/22/18 00:02	110-82-7	
1,2-Dibromo-3-chloropropane	1.0 U	ug/L	1.0	0.23	1		09/22/18 00:02	96-12-8	
Dibromochloromethane	1.0 U	ug/L	1.0	0.26	1		09/22/18 00:02	124-48-1	
1,2-Dibromoethane (EDB)	1.0 U	ug/L	1.0	0.22	1		09/22/18 00:02	106-93-4	
1,2-Dichlorobenzene	1.0 U	ug/L	1.0	0.11	1		09/22/18 00:02	95-50-1	
1,3-Dichlorobenzene	1.0 U	ug/L	1.0	0.27	1		09/22/18 00:02	541-73-1	
1,4-Dichlorobenzene	1.0 U	ug/L	1.0	0.16	1		09/22/18 00:02	106-46-7	
Dichlorodifluoromethane	1.0 U	ug/L	1.0	0.24	1		09/22/18 00:02	75-71-8	
1,1-Dichloroethane	1.0 U	ug/L	1.0	0.20	1		09/22/18 00:02	75-34-3	
1,2-Dichloroethane	1.0 U	ug/L	1.0	0.27	1		09/22/18 00:02	107-06-2	
1,1-Dichloroethene	1.0 U	ug/L	1.0	0.22	1		09/22/18 00:02	75-35-4	
cis-1,2-Dichloroethene	0.33J	ug/L	1.0	0.25	1		09/22/18 00:02	156-59-2	
trans-1,2-Dichloroethene	1.0 U	ug/L	1.0	0.26	1		09/22/18 00:02	156-60-5	
1,2-Dichloropropane	1.0 U	ug/L	1.0	0.22	1		09/22/18 00:02	78-87-5	
cis-1,3-Dichloropropene	1.0 U	ug/L	1.0	0.13	1		09/22/18 00:02	10061-01-5	
trans-1,3-Dichloropropene	1.0 U	ug/L	1.0	0.26	1		09/22/18 00:02	10061-02-6	
Ethylbenzene	1.0 U	ug/L	1.0	0.13	1		09/22/18 00:02	100-41-4	
2-Hexanone	5.0 U	ug/L	5.0	0.61	1		09/22/18 00:02	591-78-6	
Isopropylbenzene (Cumene)	1.0 U	ug/L	1.0	0.12	1		09/22/18 00:02	98-82-8	
Methyl acetate	5.0 U	ug/L	5.0	0.24	1		09/22/18 00:02	79-20-9	N2
Methylcyclohexane	5.0 U	ug/L	5.0	0.22	1		09/22/18 00:02	108-87-2	
Methylene Chloride	1.0 U	ug/L	1.0	0.24	1		09/22/18 00:02	75-09-2	
4-Methyl-2-pentanone (MIBK)	5.0 U	ug/L	5.0	1.4	1		09/22/18 00:02	108-10-1	
Methyl-tert-butyl ether	1.0 U	ug/L	1.0	0.24	1		09/22/18 00:02	1634-04-4	
Styrene	1.0 U	ug/L	1.0	0.16	1		09/22/18 00:02	100-42-5	
1,1,2,2-Tetrachloroethane	1.0 U	ug/L	1.0	0.22	1		09/22/18 00:02	79-34-5	
Tetrachloroethene	1.0 U	ug/L	1.0	0.26	1		09/22/18 00:02	127-18-4	
Toluene	1.0 U	ug/L	1.0	0.13	1		09/22/18 00:02	108-88-3	
1,2,4-Trichlorobenzene	1.0 U	ug/L	1.0	0.17	1		09/22/18 00:02	120-82-1	
1,1,1-Trichloroethane	1.0 U	ug/L	1.0	0.28	1		09/22/18 00:02	71-55-6	
1,1,2-Trichloroethane	1.0 U	ug/L	1.0	0.24	1		09/22/18 00:02	79-00-5	
Trichloroethene	1.0 U	ug/L	1.0	0.26	1		09/22/18 00:02	79-01-6	
Trichlorofluoromethane	1.0 U	ug/L	1.0	0.20	1		09/22/18 00:02	75-69-4	
1,1,2-Trichlorotrifluoroethane	1.0 U	ug/L	1.0	0.24	1		09/22/18 00:02	76-13-1	

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ANALYTICAL RESULTS

Project: PCC Validation

Pace Project No.: 4617820

Sample: GW-17322A-091818-DS-009 Lab ID: 4617820004 Collected: 09/18/18 11:45 Received: 09/19/18 13:15 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B									
Vinyl chloride	1.4	ug/L	1.0	0.27	1		09/22/18 00:02	75-01-4	
Xylene (Total)	3.0 U	ug/L	3.0	0.44	1		09/22/18 00:02	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	100	%.	87-122		1		09/22/18 00:02	17060-07-0	
Dibromofluoromethane (S)	97	%.	85-118		1		09/22/18 00:02	1868-53-7	
4-Bromofluorobenzene (S)	99	%.	82-110		1		09/22/18 00:02	460-00-4	
Toluene-d8 (S)	102	%.	85-113		1		09/22/18 00:02	2037-26-5	

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ANALYTICAL RESULTS

Project: PCC Validation

Pace Project No.: 4617820

Sample: GW-17322A-091818-DS-010 **Lab ID:** 4617820005 **Collected:** 09/18/18 12:35 **Received:** 09/19/18 13:15 **Matrix:** Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV		Analytical Method: EPA 8260B							
Acetone	5.0 U	ug/L	5.0	1.9	1		09/22/18 00:26	67-64-1	
Benzene	1.0 U	ug/L	1.0	0.23	1		09/22/18 00:26	71-43-2	
Bromodichloromethane	1.0 U	ug/L	1.0	0.21	1		09/22/18 00:26	75-27-4	
Bromoform	1.0 U	ug/L	1.0	0.23	1		09/22/18 00:26	75-25-2	
Bromomethane	1.0 U	ug/L	1.0	0.29	1		09/22/18 00:26	74-83-9	CL
2-Butanone (MEK)	5.0 U	ug/L	5.0	1.4	1		09/22/18 00:26	78-93-3	
Carbon disulfide	5.0 U	ug/L	5.0	0.24	1		09/22/18 00:26	75-15-0	CH
Carbon tetrachloride	1.0 U	ug/L	1.0	0.28	1		09/22/18 00:26	56-23-5	
Chlorobenzene	1.0 U	ug/L	1.0	0.20	1		09/22/18 00:26	108-90-7	
Chloroethane	1.0 U	ug/L	1.0	0.27	1		09/22/18 00:26	75-00-3	
Chloroform	1.0 U	ug/L	1.0	0.23	1		09/22/18 00:26	67-66-3	
Chloromethane	1.0 U	ug/L	1.0	0.24	1		09/22/18 00:26	74-87-3	
Cyclohexane	5.0 U	ug/L	5.0	0.27	1		09/22/18 00:26	110-82-7	
1,2-Dibromo-3-chloropropane	1.0 U	ug/L	1.0	0.23	1		09/22/18 00:26	96-12-8	
Dibromochloromethane	1.0 U	ug/L	1.0	0.26	1		09/22/18 00:26	124-48-1	
1,2-Dibromoethane (EDB)	1.0 U	ug/L	1.0	0.22	1		09/22/18 00:26	106-93-4	
1,2-Dichlorobenzene	1.0 U	ug/L	1.0	0.11	1		09/22/18 00:26	95-50-1	
1,3-Dichlorobenzene	1.0 U	ug/L	1.0	0.27	1		09/22/18 00:26	541-73-1	
1,4-Dichlorobenzene	1.0 U	ug/L	1.0	0.16	1		09/22/18 00:26	106-46-7	
Dichlorodifluoromethane	1.0 U	ug/L	1.0	0.24	1		09/22/18 00:26	75-71-8	
1,1-Dichloroethane	1.0 U	ug/L	1.0	0.20	1		09/22/18 00:26	75-34-3	
1,2-Dichloroethane	1.0 U	ug/L	1.0	0.27	1		09/22/18 00:26	107-06-2	
1,1-Dichloroethene	1.0 U	ug/L	1.0	0.22	1		09/22/18 00:26	75-35-4	
cis-1,2-Dichloroethene	1.0 U	ug/L	1.0	0.25	1		09/22/18 00:26	156-59-2	
trans-1,2-Dichloroethene	1.0 U	ug/L	1.0	0.26	1		09/22/18 00:26	156-60-5	
1,2-Dichloropropane	1.0 U	ug/L	1.0	0.22	1		09/22/18 00:26	78-87-5	
cis-1,3-Dichloropropene	1.0 U	ug/L	1.0	0.13	1		09/22/18 00:26	10061-01-5	
trans-1,3-Dichloropropene	1.0 U	ug/L	1.0	0.26	1		09/22/18 00:26	10061-02-6	
Ethylbenzene	1.0 U	ug/L	1.0	0.13	1		09/22/18 00:26	100-41-4	
2-Hexanone	5.0 U	ug/L	5.0	0.61	1		09/22/18 00:26	591-78-6	
Isopropylbenzene (Cumene)	1.0 U	ug/L	1.0	0.12	1		09/22/18 00:26	98-82-8	
Methyl acetate	5.0 U	ug/L	5.0	0.24	1		09/22/18 00:26	79-20-9	N2
Methylcyclohexane	5.0 U	ug/L	5.0	0.22	1		09/22/18 00:26	108-87-2	
Methylene Chloride	1.0 U	ug/L	1.0	0.24	1		09/22/18 00:26	75-09-2	
4-Methyl-2-pentanone (MIBK)	5.0 U	ug/L	5.0	1.4	1		09/22/18 00:26	108-10-1	
Methyl-tert-butyl ether	1.0 U	ug/L	1.0	0.24	1		09/22/18 00:26	1634-04-4	
Styrene	1.0 U	ug/L	1.0	0.16	1		09/22/18 00:26	100-42-5	
1,1,2,2-Tetrachloroethane	1.0 U	ug/L	1.0	0.22	1		09/22/18 00:26	79-34-5	
Tetrachloroethene	1.0 U	ug/L	1.0	0.26	1		09/22/18 00:26	127-18-4	
Toluene	1.0 U	ug/L	1.0	0.13	1		09/22/18 00:26	108-88-3	
1,2,4-Trichlorobenzene	1.0 U	ug/L	1.0	0.17	1		09/22/18 00:26	120-82-1	
1,1,1-Trichloroethane	1.0 U	ug/L	1.0	0.28	1		09/22/18 00:26	71-55-6	
1,1,2-Trichloroethane	1.0 U	ug/L	1.0	0.24	1		09/22/18 00:26	79-00-5	
Trichloroethene	1.0 U	ug/L	1.0	0.26	1		09/22/18 00:26	79-01-6	
Trichlorofluoromethane	1.0 U	ug/L	1.0	0.20	1		09/22/18 00:26	75-69-4	
1,1,2-Trichlorotrifluoroethane	1.0 U	ug/L	1.0	0.24	1		09/22/18 00:26	76-13-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PCC Validation

Pace Project No.: 4617820

Sample: GW-17322A-091818-DS-010		Lab ID: 4617820005		Collected: 09/18/18 12:35		Received: 09/19/18 13:15		Matrix: Water	
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV									
Analytical Method: EPA 8260B									
Vinyl chloride	1.0 U	ug/L	1.0	0.27	1		09/22/18 00:26	75-01-4	
Xylene (Total)	3.0 U	ug/L	3.0	0.44	1		09/22/18 00:26	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	100	%.	87-122		1		09/22/18 00:26	17060-07-0	
Dibromofluoromethane (S)	96	%.	85-118		1		09/22/18 00:26	1868-53-7	
4-Bromofluorobenzene (S)	100	%.	82-110		1		09/22/18 00:26	460-00-4	
Toluene-d8 (S)	102	%.	85-113		1		09/22/18 00:26	2037-26-5	

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ANALYTICAL RESULTS

Project: PCC Validation

Pace Project No.: 4617820

Sample: GW-17322A-091818-DS-011 **Lab ID:** 4617820006 **Collected:** 09/18/18 13:35 **Received:** 09/19/18 13:15 **Matrix:** Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV		Analytical Method: EPA 8260B							
Acetone	5.0 U	ug/L	5.0	1.9	1		09/22/18 00:50	67-64-1	
Benzene	1.0 U	ug/L	1.0	0.23	1		09/22/18 00:50	71-43-2	
Bromodichloromethane	1.0 U	ug/L	1.0	0.21	1		09/22/18 00:50	75-27-4	
Bromoform	1.0 U	ug/L	1.0	0.23	1		09/22/18 00:50	75-25-2	
Bromomethane	1.0 U	ug/L	1.0	0.29	1		09/22/18 00:50	74-83-9	CL
2-Butanone (MEK)	5.0 U	ug/L	5.0	1.4	1		09/22/18 00:50	78-93-3	
Carbon disulfide	5.0 U	ug/L	5.0	0.24	1		09/22/18 00:50	75-15-0	CH
Carbon tetrachloride	1.0 U	ug/L	1.0	0.28	1		09/22/18 00:50	56-23-5	
Chlorobenzene	1.0 U	ug/L	1.0	0.20	1		09/22/18 00:50	108-90-7	
Chloroethane	1.0 U	ug/L	1.0	0.27	1		09/22/18 00:50	75-00-3	
Chloroform	1.0 U	ug/L	1.0	0.23	1		09/22/18 00:50	67-66-3	
Chloromethane	1.0 U	ug/L	1.0	0.24	1		09/22/18 00:50	74-87-3	
Cyclohexane	5.0 U	ug/L	5.0	0.27	1		09/22/18 00:50	110-82-7	
1,2-Dibromo-3-chloropropane	1.0 U	ug/L	1.0	0.23	1		09/22/18 00:50	96-12-8	
Dibromochloromethane	1.0 U	ug/L	1.0	0.26	1		09/22/18 00:50	124-48-1	
1,2-Dibromoethane (EDB)	1.0 U	ug/L	1.0	0.22	1		09/22/18 00:50	106-93-4	
1,2-Dichlorobenzene	1.0 U	ug/L	1.0	0.11	1		09/22/18 00:50	95-50-1	
1,3-Dichlorobenzene	1.0 U	ug/L	1.0	0.27	1		09/22/18 00:50	541-73-1	
1,4-Dichlorobenzene	1.0 U	ug/L	1.0	0.16	1		09/22/18 00:50	106-46-7	
Dichlorodifluoromethane	1.0 U	ug/L	1.0	0.24	1		09/22/18 00:50	75-71-8	
1,1-Dichloroethane	1.0 U	ug/L	1.0	0.20	1		09/22/18 00:50	75-34-3	
1,2-Dichloroethane	1.0 U	ug/L	1.0	0.27	1		09/22/18 00:50	107-06-2	
1,1-Dichloroethene	1.0 U	ug/L	1.0	0.22	1		09/22/18 00:50	75-35-4	
cis-1,2-Dichloroethene	1.0 U	ug/L	1.0	0.25	1		09/22/18 00:50	156-59-2	
trans-1,2-Dichloroethene	1.0 U	ug/L	1.0	0.26	1		09/22/18 00:50	156-60-5	
1,2-Dichloropropane	1.0 U	ug/L	1.0	0.22	1		09/22/18 00:50	78-87-5	
cis-1,3-Dichloropropene	1.0 U	ug/L	1.0	0.13	1		09/22/18 00:50	10061-01-5	
trans-1,3-Dichloropropene	1.0 U	ug/L	1.0	0.26	1		09/22/18 00:50	10061-02-6	
Ethylbenzene	1.0 U	ug/L	1.0	0.13	1		09/22/18 00:50	100-41-4	
2-Hexanone	5.0 U	ug/L	5.0	0.61	1		09/22/18 00:50	591-78-6	
Isopropylbenzene (Cumene)	1.0 U	ug/L	1.0	0.12	1		09/22/18 00:50	98-82-8	
Methyl acetate	5.0 U	ug/L	5.0	0.24	1		09/22/18 00:50	79-20-9	N2
Methylcyclohexane	5.0 U	ug/L	5.0	0.22	1		09/22/18 00:50	108-87-2	
Methylene Chloride	1.0 U	ug/L	1.0	0.24	1		09/22/18 00:50	75-09-2	
4-Methyl-2-pentanone (MIBK)	5.0 U	ug/L	5.0	1.4	1		09/22/18 00:50	108-10-1	
Methyl-tert-butyl ether	1.0 U	ug/L	1.0	0.24	1		09/22/18 00:50	1634-04-4	
Styrene	1.0 U	ug/L	1.0	0.16	1		09/22/18 00:50	100-42-5	
1,1,2,2-Tetrachloroethane	1.0 U	ug/L	1.0	0.22	1		09/22/18 00:50	79-34-5	
Tetrachloroethene	1.0 U	ug/L	1.0	0.26	1		09/22/18 00:50	127-18-4	
Toluene	1.0 U	ug/L	1.0	0.13	1		09/22/18 00:50	108-88-3	
1,2,4-Trichlorobenzene	1.0 U	ug/L	1.0	0.17	1		09/22/18 00:50	120-82-1	
1,1,1-Trichloroethane	1.0 U	ug/L	1.0	0.28	1		09/22/18 00:50	71-55-6	
1,1,2-Trichloroethane	1.0 U	ug/L	1.0	0.24	1		09/22/18 00:50	79-00-5	
Trichloroethene	1.0 U	ug/L	1.0	0.26	1		09/22/18 00:50	79-01-6	
Trichlorofluoromethane	1.0 U	ug/L	1.0	0.20	1		09/22/18 00:50	75-69-4	
1,1,2-Trichlorotrifluoroethane	1.0 U	ug/L	1.0	0.24	1		09/22/18 00:50	76-13-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PCC Validation

Pace Project No.: 4617820

Sample: GW-17322A-091818-DS-011 Lab ID: 4617820006 Collected: 09/18/18 13:35 Received: 09/19/18 13:15 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260B MSV Analytical Method: EPA 8260B									
Vinyl chloride	1.0 U	ug/L	1.0	0.27	1		09/22/18 00:50	75-01-4	
Xylene (Total)	3.0 U	ug/L	3.0	0.44	1		09/22/18 00:50	1330-20-7	
Surrogates									
1,2-Dichloroethane-d4 (S)	101	%.	87-122		1		09/22/18 00:50	17060-07-0	
Dibromofluoromethane (S)	97	%.	85-118		1		09/22/18 00:50	1868-53-7	
4-Bromofluorobenzene (S)	99	%.	82-110		1		09/22/18 00:50	460-00-4	
Toluene-d8 (S)	103	%.	85-113		1		09/22/18 00:50	2037-26-5	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PCC Validation
Pace Project No.: 4617820

QC Batch: 33830 Analysis Method: EPA 8260B
QC Batch Method: EPA 8260B Analysis Description: 8260B MSV
Associated Lab Samples: 4617820001, 4617820002, 4617820003, 4617820004, 4617820005, 4617820006

METHOD BLANK: 136574 Matrix: Water
Associated Lab Samples: 4617820001, 4617820002, 4617820003, 4617820004, 4617820005, 4617820006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/L	1.0 U	1.0	0.28	09/21/18 22:25	
1,1,2,2-Tetrachloroethane	ug/L	1.0 U	1.0	0.22	09/21/18 22:25	
1,1,2-Trichloroethane	ug/L	1.0 U	1.0	0.24	09/21/18 22:25	
1,1,2-Trichlorotrifluoroethane	ug/L	1.0 U	1.0	0.24	09/21/18 22:25	
1,1-Dichloroethane	ug/L	1.0 U	1.0	0.20	09/21/18 22:25	
1,1-Dichloroethene	ug/L	1.0 U	1.0	0.22	09/21/18 22:25	
1,2,4-Trichlorobenzene	ug/L	1.0 U	1.0	0.17	09/21/18 22:25	
1,2-Dibromo-3-chloropropane	ug/L	1.0 U	1.0	0.23	09/21/18 22:25	
1,2-Dibromoethane (EDB)	ug/L	1.0 U	1.0	0.22	09/21/18 22:25	
1,2-Dichlorobenzene	ug/L	1.0 U	1.0	0.11	09/21/18 22:25	
1,2-Dichloroethane	ug/L	1.0 U	1.0	0.27	09/21/18 22:25	
1,2-Dichloropropane	ug/L	1.0 U	1.0	0.22	09/21/18 22:25	
1,3-Dichlorobenzene	ug/L	1.0 U	1.0	0.27	09/21/18 22:25	
1,4-Dichlorobenzene	ug/L	1.0 U	1.0	0.16	09/21/18 22:25	
2-Butanone (MEK)	ug/L	5.0 U	5.0	1.4	09/21/18 22:25	
2-Hexanone	ug/L	5.0 U	5.0	0.61	09/21/18 22:25	
4-Methyl-2-pentanone (MIBK)	ug/L	5.0 U	5.0	1.4	09/21/18 22:25	
Acetone	ug/L	5.0 U	5.0	1.9	09/21/18 22:25	
Benzene	ug/L	1.0 U	1.0	0.23	09/21/18 22:25	
Bromodichloromethane	ug/L	1.0 U	1.0	0.21	09/21/18 22:25	
Bromoform	ug/L	1.0 U	1.0	0.23	09/21/18 22:25	
Bromomethane	ug/L	1.0 U	1.0	0.29	09/21/18 22:25	
Carbon disulfide	ug/L	5.0 U	5.0	0.24	09/21/18 22:25	
Carbon tetrachloride	ug/L	1.0 U	1.0	0.28	09/21/18 22:25	
Chlorobenzene	ug/L	1.0 U	1.0	0.20	09/21/18 22:25	
Chloroethane	ug/L	1.0 U	1.0	0.27	09/21/18 22:25	
Chloroform	ug/L	0.48J	1.0	0.23	09/21/18 22:25	
Chloromethane	ug/L	1.0 U	1.0	0.24	09/21/18 22:25	
cis-1,2-Dichloroethene	ug/L	1.0 U	1.0	0.25	09/21/18 22:25	
cis-1,3-Dichloropropene	ug/L	1.0 U	1.0	0.13	09/21/18 22:25	
Cyclohexane	ug/L	5.0 U	5.0	0.27	09/21/18 22:25	
Dibromochloromethane	ug/L	1.0 U	1.0	0.26	09/21/18 22:25	
Dichlorodifluoromethane	ug/L	1.0 U	1.0	0.24	09/21/18 22:25	
Ethylbenzene	ug/L	1.0 U	1.0	0.13	09/21/18 22:25	
Isopropylbenzene (Cumene)	ug/L	1.0 U	1.0	0.12	09/21/18 22:25	
Methyl acetate	ug/L	5.0 U	5.0	0.24	09/21/18 22:25	N2
Methyl-tert-butyl ether	ug/L	1.0 U	1.0	0.24	09/21/18 22:25	
Methylcyclohexane	ug/L	5.0 U	5.0	0.22	09/21/18 22:25	
Methylene Chloride	ug/L	0.96J	1.0	0.24	09/21/18 22:25	
Styrene	ug/L	1.0 U	1.0	0.16	09/21/18 22:25	
Tetrachloroethene	ug/L	1.0 U	1.0	0.26	09/21/18 22:25	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PCC Validation

Pace Project No.: 4617820

METHOD BLANK: 136574

Matrix: Water

Associated Lab Samples: 4617820001, 4617820002, 4617820003, 4617820004, 4617820005, 4617820006

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Toluene	ug/L	1.0 U	1.0	0.13	09/21/18 22:25	
trans-1,2-Dichloroethene	ug/L	1.0 U	1.0	0.26	09/21/18 22:25	
trans-1,3-Dichloropropene	ug/L	1.0 U	1.0	0.26	09/21/18 22:25	
Trichloroethene	ug/L	1.0 U	1.0	0.26	09/21/18 22:25	
Trichlorofluoromethane	ug/L	1.0 U	1.0	0.20	09/21/18 22:25	
Vinyl chloride	ug/L	1.0 U	1.0	0.27	09/21/18 22:25	
Xylene (Total)	ug/L	3.0 U	3.0	0.44	09/21/18 22:25	
1,2-Dichloroethane-d4 (S)	%	99	87-122		09/21/18 22:25	
4-Bromofluorobenzene (S)	%	100	82-110		09/21/18 22:25	
Dibromofluoromethane (S)	%	98	85-118		09/21/18 22:25	
Toluene-d8 (S)	%	101	85-113		09/21/18 22:25	

LABORATORY CONTROL SAMPLE: 136575

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	40	46.1	115	81-122	
1,1,2,2-Tetrachloroethane	ug/L	40	41.2	103	70-137	
1,1,2-Trichloroethane	ug/L	40	44.2	111	83-121	
1,1,2-Trichlorotrifluoroethane	ug/L	40	39.7	99	76-126	
1,1-Dichloroethane	ug/L	40	44.4	111	80-118	
1,1-Dichloroethene	ug/L	40	41.8	105	77-123	
1,2,4-Trichlorobenzene	ug/L	40	40.5	101	75-125	
1,2-Dibromo-3-chloropropane	ug/L	40	40.6	101	58-130	
1,2-Dibromoethane (EDB)	ug/L	40	42.8	107	84-125	
1,2-Dichlorobenzene	ug/L	40	39.7	99	81-124	
1,2-Dichloroethane	ug/L	40	42.8	107	81-122	
1,2-Dichloropropane	ug/L	40	45.2	113	82-122	
1,3-Dichlorobenzene	ug/L	40	39.9	100	81-124	
1,4-Dichlorobenzene	ug/L	40	39.7	99	79-122	
2-Butanone (MEK)	ug/L	40	48.5	121	52-142	
2-Hexanone	ug/L	40	47.3	118	55-141	
4-Methyl-2-pentanone (MIBK)	ug/L	40	48.2	121	60-142	
Acetone	ug/L	40	50.2	126	53-138	
Benzene	ug/L	40	43.7	109	84-119	
Bromodichloromethane	ug/L	40	42.4	106	82-124	
Bromoform	ug/L	40	42.0	105	65-123	
Bromomethane	ug/L	40	29.9	75	55-142	
Carbon disulfide	ug/L	40	49.5	124	70-131	
Carbon tetrachloride	ug/L	40	39.6	99	79-127	
Chlorobenzene	ug/L	40	41.1	103	84-118	
Chloroethane	ug/L	40	41.9	105	76-124	
Chloroform	ug/L	40	42.5	106	82-119	
Chloromethane	ug/L	40	34.6	86	73-125	
cis-1,2-Dichloroethene	ug/L	40	44.1	110	84-119	

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QUALITY CONTROL DATA

Project: PCC Validation

Pace Project No.: 4617820

LABORATORY CONTROL SAMPLE: 136575

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
cis-1,3-Dichloropropene	ug/L	40	40.9	102	77-120	
Cyclohexane	ug/L	40	43.1	108	70-129	
Dibromochloromethane	ug/L	40	39.1	98	74-121	
Dichlorodifluoromethane	ug/L	40	34.7	87	68-130	
Ethylbenzene	ug/L	40	41.7	104	87-119	
Isopropylbenzene (Cumene)	ug/L	40	41.4	104	76-126	
Methyl acetate	ug/L	40	44.8	112	67-129	N2
Methyl-tert-butyl ether	ug/L	40	43.5	109	72-128	
Methylcyclohexane	ug/L	40	42.5	106	78-126	
Methylene Chloride	ug/L	40	46.1	115	75-129	
Styrene	ug/L	40	41.6	104	84-120	
Tetrachloroethene	ug/L	40	41.0	103	81-117	
Toluene	ug/L	40	43.9	110	85-118	
trans-1,2-Dichloroethene	ug/L	40	44.1	110	76-126	
trans-1,3-Dichloropropene	ug/L	40	40.1	100	73-116	
Trichloroethene	ug/L	40	44.7	112	82-119	
Trichlorofluoromethane	ug/L	40	41.7	104	76-128	
Vinyl chloride	ug/L	40	39.6	99	77-123	
Xylene (Total)	ug/L	120	124	103	86-119	
1,2-Dichloroethane-d4 (S)	%			98	87-122	
4-Bromofluorobenzene (S)	%			100	82-110	
Dibromofluoromethane (S)	%			102	85-118	
Toluene-d8 (S)	%			102	85-113	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 136576 136577

Parameter	Units	4617820002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,1,1-Trichloroethane	ug/L	1.0 U	40	40	45.5	48.1	114	120	79-131	6	10	
1,1,2,2-Tetrachloroethane	ug/L	1.0 U	40	40	40.6	41.6	101	104	71-129	2	10	
1,1,2-Trichloroethane	ug/L	1.0 U	40	40	44.1	45.1	110	113	76-127	2	10	
1,1,2-Trichlorotrifluoroethane	ug/L	1.0 U	40	40	41.5	42.9	104	107	67-135	3	14	
1,1-Dichloroethane	ug/L	1.0 U	40	40	44.3	45.9	111	115	76-129	4	13	
1,1-Dichloroethene	ug/L	1.0 U	40	40	43.0	44.2	107	111	74-134	3	11	
1,2,4-Trichlorobenzene	ug/L	1.0 U	40	40	37.5	39.0	94	97	66-131	4	15	
1,2-Dibromo-3-chloropropane	ug/L	1.0 U	40	40	36.9	38.9	92	97	55-126	6	16	
1,2-Dibromoethane (EDB)	ug/L	1.0 U	40	40	41.1	42.5	103	106	78-125	3	9	
1,2-Dichlorobenzene	ug/L	1.0 U	40	40	38.3	39.5	96	99	76-124	3	10	
1,2-Dichloroethane	ug/L	1.0 U	40	40	43.4	43.9	108	110	74-131	1	9	
1,2-Dichloropropane	ug/L	1.0 U	40	40	45.0	46.3	112	116	79-128	3	9	
1,3-Dichlorobenzene	ug/L	1.0 U	40	40	38.6	39.5	96	99	76-123	2	10	
1,4-Dichlorobenzene	ug/L	1.0 U	40	40	37.8	39.1	94	98	75-121	3	10	
2-Butanone (MEK)	ug/L	5.0 U	40	40	46.7	47.5	117	119	52-134	2	17	
2-Hexanone	ug/L	5.0 U	40	40	45.3	45.8	113	115	53-134	1	15	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PCC Validation

Pace Project No.: 4617820

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 136576 136577											
Parameter	Units	4617820002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
4-Methyl-2-pentanone (MIBK)	ug/L	5.0 U	40	40	47.9	48.3	120	121	55-139	1	15
Acetone	ug/L	5.0 U	40	40	51.9	52.1	130	130	46-145	0	17
Benzene	ug/L	1.0 U	40	40	44.2	45.4	110	114	80-129	3	9
Bromodichloromethane	ug/L	1.0 U	40	40	40.4	42.5	101	106	81-130	5	10
Bromoform	ug/L	1.0 U	40	40	38.2	40.3	96	101	60-122	5	12
Bromomethane	ug/L	1.0 U	40	40	22.9	30.3	57	76	44-140	28	35
Carbon disulfide	ug/L	5.0 U	40	40	49.7	53.3	124	133	69-144	7	15
Carbon tetrachloride	ug/L	1.0 U	40	40	39.2	41.7	98	104	78-137	6	11
Chlorobenzene	ug/L	1.0 U	40	40	39.9	41.3	100	103	80-121	3	8
Chloroethane	ug/L	1.0 U	40	40	42.4	43.8	106	110	72-137	3	14
Chloroform	ug/L	1.0 U	40	40	42.4	43.7	106	109	79-128	3	9
Chloromethane	ug/L	1.0 U	40	40	34.3	35.4	86	88	72-134	3	11
cis-1,2-Dichloroethene	ug/L	1.0 U	40	40	44.0	45.1	110	113	76-129	3	12
cis-1,3-Dichloropropene	ug/L	1.0 U	40	40	37.5	39.3	94	98	68-122	5	11
Cyclohexane	ug/L	5.0 U	40	40	45.1	46.2	113	116	65-131	2	11
Dibromochloromethane	ug/L	1.0 U	40	40	36.4	38.3	91	96	70-126	5	10
Dichlorodifluoromethane	ug/L	1.0 U	40	40	34.9	35.6	87	89	64-138	2	13
Ethylbenzene	ug/L	1.0 U	40	40	40.9	42.4	102	106	82-127	3	10
Isopropylbenzene (Cumene)	ug/L	1.0 U	40	40	40.4	41.6	101	104	73-131	3	12
Methyl acetate	ug/L	5.0 U	40	40	30.5	30.3	76	76	40-133	1	16 N2
Methyl-tert-butyl ether	ug/L	1.0 U	40	40	42.1	44.0	105	110	65-131	4	15
Methylcyclohexane	ug/L	5.0 U	40	40	44.0	45.2	110	113	70-137	3	14
Methylene Chloride	ug/L	1.0 U	40	40	45.0	45.8	112	115	75-133	2	10
Styrene	ug/L	1.0 U	40	40	40.6	41.7	102	104	75-129	3	10
Tetrachloroethene	ug/L	1.0 U	40	40	40.3	41.6	101	104	75-126	3	10
Toluene	ug/L	1.0 U	40	40	44.1	45.2	110	113	79-129	2	9
trans-1,2-Dichloroethene	ug/L	1.0 U	40	40	44.4	46.0	111	115	71-137	3	15
trans-1,3-Dichloropropene	ug/L	1.0 U	40	40	36.6	38.8	91	97	66-117	6	12
Trichloroethene	ug/L	1.0 U	40	40	44.0	45.7	110	114	75-127	4	10
Trichlorofluoromethane	ug/L	0.23J	40	40	43.8	45.2	109	113	70-141	3	11
Vinyl chloride	ug/L	1.0 U	40	40	40.1	41.5	100	104	73-136	3	12
Xylene (Total)	ug/L	3.0 U	120	120	121	125	101	105	78-130	3	9
1,2-Dichloroethane-d4 (S)	%						101	99	87-122		
4-Bromofluorobenzene (S)	%						100	102	82-110		
Dibromofluoromethane (S)	%						103	103	85-118		
Toluene-d8 (S)	%						104	104	85-113		

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: PCC Validation
Pace Project No.: 4617820

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.
ND - Not Detected at or above adjusted reporting limit.
TNTC - Too Numerous To Count
J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.
MDL - Adjusted Method Detection Limit.
PQL - Practical Quantitation Limit.
RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.
S - Surrogate
1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.
Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.
LCS(D) - Laboratory Control Sample (Duplicate)
MS(D) - Matrix Spike (Duplicate)
DUP - Sample Duplicate
RPD - Relative Percent Difference
NC - Not Calculable.
SG - Silica Gel - Clean-Up
U - Indicates the compound was analyzed for, but not detected.
N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.
Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.
TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B	Analyte was detected in the associated method blank.
CH	The continuing calibration for this compound is outside of Pace Analytical acceptance limits. The results may be biased high.
CL	The continuing calibration for this compound is outside of Pace Analytical acceptance limits. The results may be biased low.
N2	The lab does not hold NELAC/TNI accreditation for this parameter.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PCC Validation

Pace Project No.: 4617820

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
4617820001	TB-17322A-091818	EPA 8260B	33830		
4617820002	GW-17322A-091818-DS-007	EPA 8260B	33830		
4617820003	GW-17322A-091818-DS-008	EPA 8260B	33830		
4617820004	GW-17322A-091818-DS-009	EPA 8260B	33830		
4617820005	GW-17322A-091818-DS-010	EPA 8260B	33830		
4617820006	GW-17322A-091818-DS-011	EPA 8260B	33830		

REPORT OF LABORATORY ANALYSIS

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Sample Conditions Upon Receipt

WO#: 4617820

Date: 9/19/18	Evaluated by: ICB	Affiliations: PM: WDC	Due Date: 10/01/18
Client: GHD	Project Manager: 11-17	CLIENT: GHD-PLYMOUTH	
Profile ID: -	Project Manager: -		
Sample Receiving Non Conformance Form Required: YES ☒ NO ☐		Rush Turn Around Time Requested: YES ☒ NO ☐ Due Date: -	
Page 1	Of 1	Lab Notified of Rush or Short Holds: YES ☒ NO ☐	

Lab Sample Receipt Checklist:

Samples Received Via:	☒ FEDEX	☐ UPS	☐ CLIENT	☐ PACE COURIER
Custody Seals Present and Intact:	YES	☒ NO	NA	
USDA Regulated Soils:	YES	☒ NO	NA	
Short Holds Present (< 72 Hours):	YES	☒ NO	NA	
Samples Received in Hold:	☒ YES	NO	NA	
Custody Signatures Present:	☒ YES	NO	NA	
Collector Signature Present:	☒ YES	NO	NA	
Samples Received On Ice:	☒ YES	NO	NA	
Type of Ice: ☒ WET ☐ BLUE ☐ DRY ☐ NONE	☒ YES	NO	NA	
Packing Material Used:	☒ YES	NO	NA	
IR Gun #: 202 ☒ 402 Temp should be 0-6°C	Cooler Temp Upon Receipt: 3.1 °C			
Temp Blank Received:	YES	☒ NO	NA	
Trip Blank Received: Type: ☒ HCL ☐ MeOH ☐ TSP ☐ OTHER	☒ YES	NO	NA	
Bottles Intact:	☒ YES	NO	NA	
Correct Bottles:	☒ YES	NO	NA	
Sufficient Volume:	☒ YES	NO	NA	
Sample pH Acceptable: All containers needing preservation are found to be in compliance with EPA recommendation Exceptions are VOA, coliform, TOC, O & G, HEM, DRO	YES	NO	☒ NA	pH Strip Lot Number: -
VOA Headspace Acceptable (<6mm):	☒ YES	NO	NA	
Comments:				