



January 12, 2018

Reference No. 012610

Ms. Amanda Armbruster
Michigan Department of Environmental Quality
Remediation and Redevelopment Division
Saginaw Bay District Office
401 Ketchum Street, Suite B
Bay City, Michigan
U.S.A. 48708

Dear Ms. Armbruster:

**Re: 2017 Annual Technical Progress Report Submittal
RACER Trust Bay City Powertrain Industrial Lands**

GHD has prepared this 2017 Annual Technical Progress Report (Annual Report) for the Revitalizing Auto Communities Environmental Response Trust (RACER) Bay City Powertrain Industrial Lands (Site) located in Bay City, Michigan.

This Annual Report covers the RACER Site for the time period from November 16, 2016 through November 15, 2017, unless otherwise noted in the report. Included as part of this submittal, as applicable, are descriptions of actions related to the implementation of the Feasibility Study/Remedial Action Plan (FS/RAP), supplemental response actions and operation, maintenance, and monitoring activities. This annual report summarizes activities related to these action plans, outlines project status, and details any difficulties encountered during the implementation of the action plans.

1. Summary of On-Going Activities and Project Status

The following sections summarize the activities performed related to implementation of the RAP, supplemental response actions, and operation, maintenance, and monitoring, and details any difficulties encountered during the implementation of the action plans.

1.1 Remedial Action Plan

RAP operation and maintenance activities are being implemented for the Site.

A groundwater treatment system has been designed to provide operational independence from the treatment system at the neighboring General Motors LLC facility which previously treated groundwater and stormwater from the RACER Site. The need for this system resulted from the outcome of the General Motors Corporation (GMC) June 2009 bankruptcy (i.e., RACER received ownership of the Site and GM



LLC obtained ownership of the adjacent operating facility). The construction of the system was initiated in November 2012 and was fully commissioned in April 2015. New groundwater extraction pumps and associated well upgrades were completed as part of the new groundwater treatment system construction.

1.1.1 Operation and Maintenance Activities

An initial Operation, Maintenance, and Monitoring Plan (OM&M Plan) was submitted on behalf of GMC in November 2000 to MDEQ. Revised O&M Plan sections were submitted on behalf of GMC to MDEQ in June 2001, conditionally approved by MDEQ on November 27, 2001, and the final O&M Plan was submitted on behalf of GMC in January 2002 and subsequently approved by MDEQ. Specific O&M activities for the new RACER groundwater treatment system were added to the existing OM&M Plan after the commissioning of the treatment system in April 2015 and a revised OM&M manual was submitted on behalf of RACER to MDEQ for review on November 14, 2016.

1.1.2 Operation and Maintenance Activities—Groundwater Extraction System

Table 1 presents Saginaw River daily, weekly, and monthly river water level averages recorded at the United States Geological Survey (USGS) station – 04157060 Saginaw River at Midland Road in Bay City, Michigan (approximately 1 mile upstream of the Site). Extraction well details and water elevations are presented in Table 2. Groundwater Monitoring well details and water elevations are presented in Table 3. Monthly maintenance activity checklists are presented in Attachment A.

The groundwater treatment system operated regularly during the 12-month period covered by this report. Groundwater levels in the entire Crotty Street Channel (CSC) are lowered through the operation of a pump in CSC extraction well EW-15, since the entire CSC is hydraulically well connected due to the porous nature of the soils (backfill was pea gravel and sand) in the CSC. In addition, groundwater levels in the Machine Storage Area (MSA) are lowered through the operation of pumps in MSA extraction wells EW-6, EW-8, and EW12, which discharge to EW-15. The pump in EW-15 directs water to the RACER groundwater treatment system where the extracted water is treated before being discharged to the City of Bay City sanitary sewer system.

1.1.3 Operation and Maintenance Activities – Groundwater Treatment System

From February 2015, when the groundwater treatment system was fully commissioned, through November 15, 2017 approximately 651,772 gallons of groundwater were treated and discharged to the City of Bay City under Industrial User Discharge Permit (120807). Semi-annual discharge compliance sampling was completed on January 16, 2017 and May 9, 2017. There were no exceedances of permit discharge standards observed, as presented in Table 4.



1.1.4 Saginaw River Levels at Essexville, Michigan

Saginaw River water levels have been recorded downstream from the RACER Property at Essexville by the National Oceanic and Atmospheric Administration (NOAA) from 1977 until 2005. Due to the unavailability of the data from the NOAA website, data was obtained from USGS station (04157065 Saginaw River at Weadock Road at Essexville, MI) and used for water elevation data of the Saginaw River, as of November 1, 2005. On December 4, 2013 USGS station 04157065 was removed from service so data was obtained from USGS station (04157060 Saginaw River at Midland Road at Bay City, MI) and used for water elevation data of the Saginaw River, as of November 16, 2013. On September 3, 2017 USGS station 04157060 was destroyed. GHD is currently exploring other options for measuring the Saginaw River water levels, and plans to include manual measurements in their monthly inspections going forward until another USGS station is installed or another source of Saginaw River water levels is identified.

Based on the combined NOAA and USGS data from 1977 to September 2, 2017, the average Saginaw River water level is approximately 578.89 feet (ft) above mean sea level (AMSL). Recent water levels were above the average, as the current water level at Midland Road measured on September 2, 2017 2017 was 580.73 ft AMSL.

1.1.5 Extraction System/Groundwater Monitoring Activities

Table 5 presents the sample results for the extraction system discharge samples (i.e., the groundwater treatment system influent). The seventeenth annual groundwater sampling event (August 2017) was also conducted during this reporting period. Table 6 presents the seventeenth annual groundwater sampling event analytical results summary. Table 4 presents the analytical results for the semi-annual samples collected from the groundwater treatment system effluent. Figure 1 presents the locations sampled for chemical analysis. Figure 2 presents the location where depth-to-water measurements for groundwater are monitored. Groundwater elevations, based on depth-to-water measurements are presented in Tables 2 and 3 for extraction wells and monitoring wells, respectively. Groundwater elevations, based on the depth-to-water measurements collected on August 23, 2017 are presented on Figure 3.

A summary of the last 10 years of analytical groundwater data is presented in Attachment B. The laboratory data reports for all chemical analysis conducted in 2017 and data validation for the 2017 annual sampling event are presented in Attachment C.

A review of past 10 years of groundwater sample results reveals that only one monitoring well location reported concentrations above the MDEQ Part 201 Residential and Non-Residential Drinking Water Criteria for PCBs of 0.5 (parts per billion) ppb and the groundwater results for the past two years reported only one monitoring well location above the MDEQ Part 201 Groundwater Surface Water Interface Criteria for PCBs of 0.2 ppb.



1.2 Supplemental Response Actions

A Declaration of Restrictive Covenant for the Site was recorded with the Bay County Register of Deeds on November 17, 2015. Permanent markers were reviewed and approved by the MDEQ on November 4, 2015. The permanent markers have been manufactured and will be installed following the completion of pending stormwater work that is necessary as a result of the GMC bankruptcy process.

A Corrective Measures Remedial Action Plan Completion Report was prepared and submitted to the MDEQ for review on September 23, 2016. MDEQ approved RCRA Corrective Action Complete with Controls (RCRA Corrective Action Event Code CA900CR) on September 28, 2016.

2. Proposed Modifications to the Monitoring Program

Once the stormwater work is completed, which will be the last of the planned modifications needed as a result of the bankruptcy process that resulted in RACER receiving ownership of the Site and GM LLC obtaining ownership of the adjacent operating facility, RACER will update the November 14, 2016 OM&M Plan and submit to MDEQ.

3. Schedule

All activities have been completed within the required time frames.

As part of the 2018 monitoring program, RACER will continue to perform monthly extraction and treatment system inspections and regular pump maintenance, as necessary. RACER will also collect semi-annual groundwater treatment system influent samples (to be completed in April and August 2018) and semi-annual effluent samples. The 2018 annual groundwater monitoring event will be completed in August 2018.



Permanent markers will be installed following the completion of the pending stormwater work.

Should you have any questions on the above, please do not hesitate to contact us.

Sincerely,

GHD

A handwritten signature in black ink that reads 'J. Pardys'.

John-Eric Pardys, P.Eng.

GM/kf/2

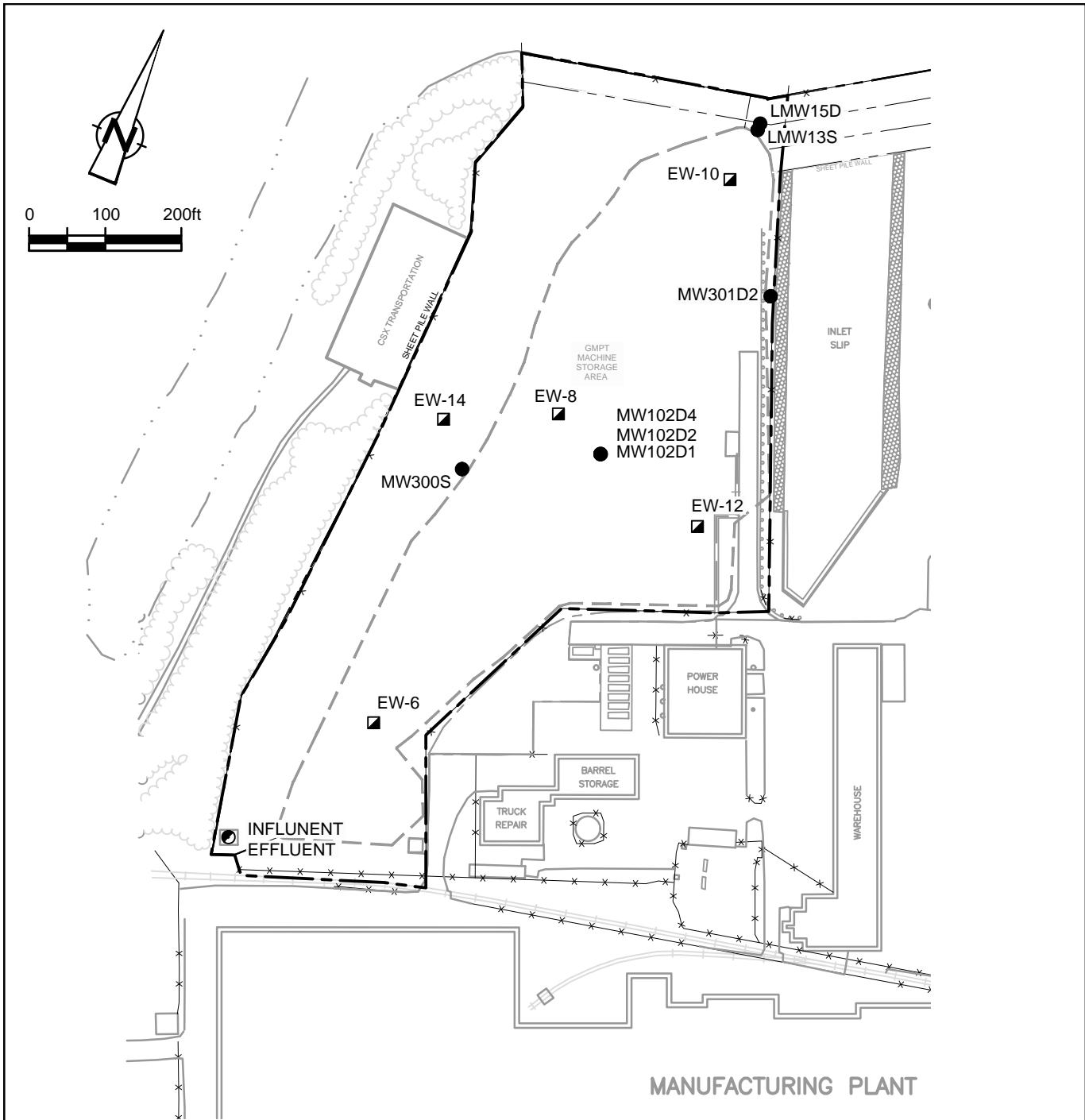
Encl.

- Figure 1 Chemical Analysis Monitoring Locations
- Figure 2 Water Elevation Monitoring Locations
- Figure 3 Shallow Groundwater Elevations – August 23, 2017

- Table 1 Saginaw River Water Levels
- Table 2 Groundwater Extraction System Water Elevations
- Table 3 Monitoring Well Completion Details and Groundwater Elevations
- Table 4 Analytical Results Summary–Groundwater Treatment System Effluent Sampling
- Table 5 Analytical Results Summary–Extraction System Sampling
- Table 6 Analytical Results Summary–Annual Sampling
- Table 7 Summary of Long-Term Groundwater and Stormwater Monitoring Activities

- Attachment A Maintenance Activity Checklists
- Attachment B Analytical Results Summary (2008 to 2017)
- Attachment C Analytical Results and Reduced Validation–2017 Annual Sampling Event

cc: Richard Finn, City of Bay City
Thomas McDowell, MDEQ
Grant Trigger, RACER Trust
Dave Favero, RACER Trust
Michael Tomka, GHD



MANUFACTURING PLANT

LEGEND

- FENCE
- GUARDRAIL
- RAILROAD
- TREELINE
- SHORELINE
- DEEP SOIL MIXING WALL
- SHEET PILE WALL
- APPROXIMATE RACER PROPERTY BOUNDARY

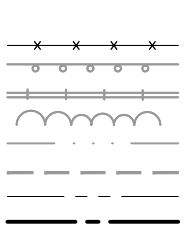
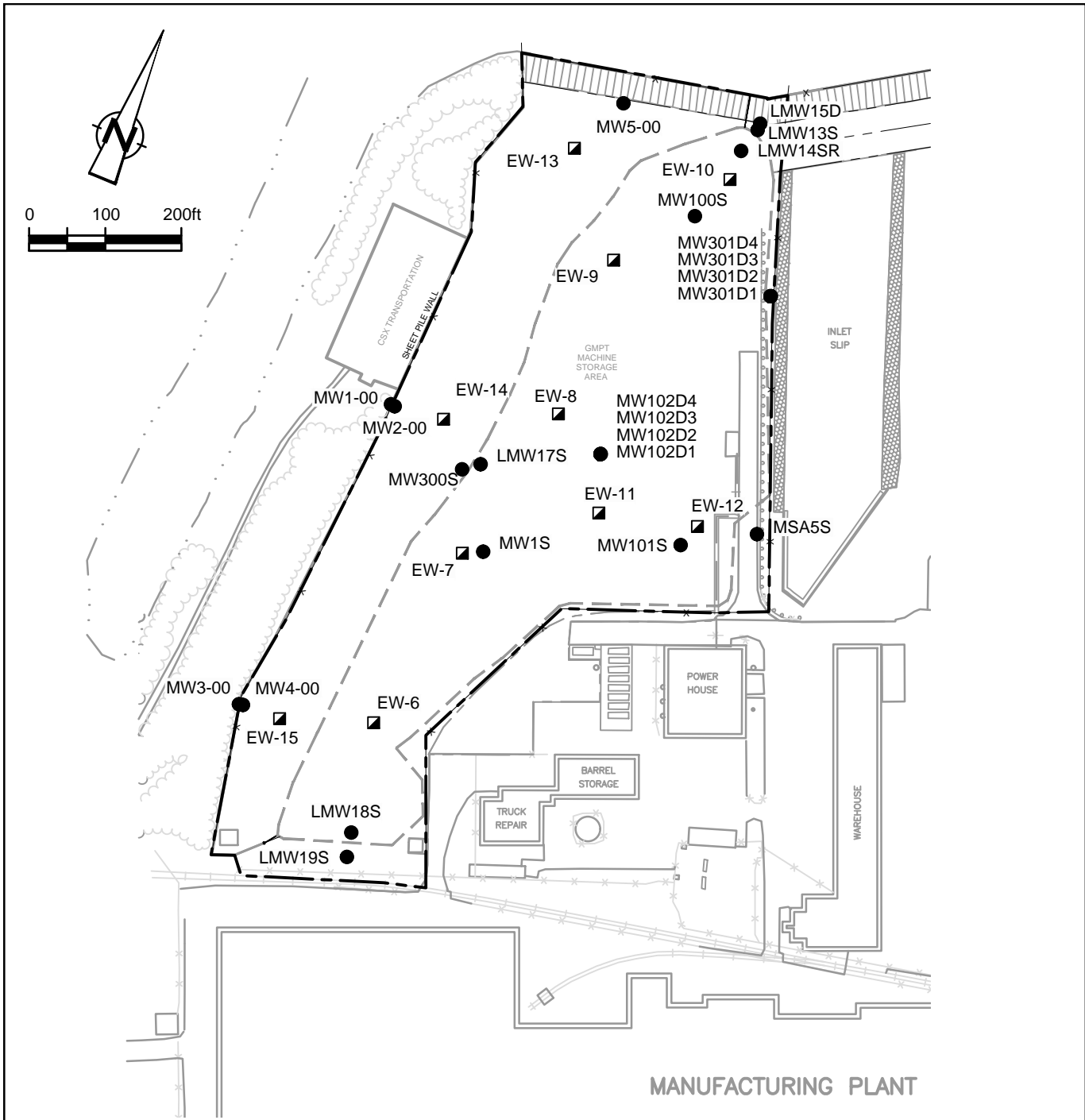
- MW403S ● MONITORING WELL LOCATION
- EW-6 ◻ GROUNDWATER EXTRACTION WELL LOCATION
- GROUNDWATER TREATMENT SYSTEM
- SAMPLE LOCATION

figure 1

**CHEMICAL ANALYSIS MONITORING LOCATIONS
RACER TRUST - BAY CITY INDUSTRIAL LAND
Bay City, Michigan**



SOURCE:
McLAREN HART ENVIRONMENTAL ENGINEERING CORP.
DATE: 08/29/94 DRAWING: 7900B216
ALL ELEVATIONS IN NAVD88



LEGEND
 FENCE
 GUARDRAIL
 RAILROAD
 TREELINE
 SHORELINE
 DEEP SOIL MIXING WALL
 SHEET PILE WALL
 APPROXIMATE RACER PROPERTY BOUNDARY

MW403S ● MONITORING WELL LOCATION
 EW-6 ▣ GROUNDWATER EXTRACTION WELL LOCATION

figure 2

WATER ELEVATION MONITORING LOCATIONS
RACER TRUST - BAY CITY INDUSTRIAL LAND
Bay City, Michigan



SOURCE:
 McLAREN HART ENVIRONMENTAL ENGINEERING CORP.
 DATE: 08/29/94 DRAWING: 7900B216
 ALL ELEVATIONS IN NAVD88

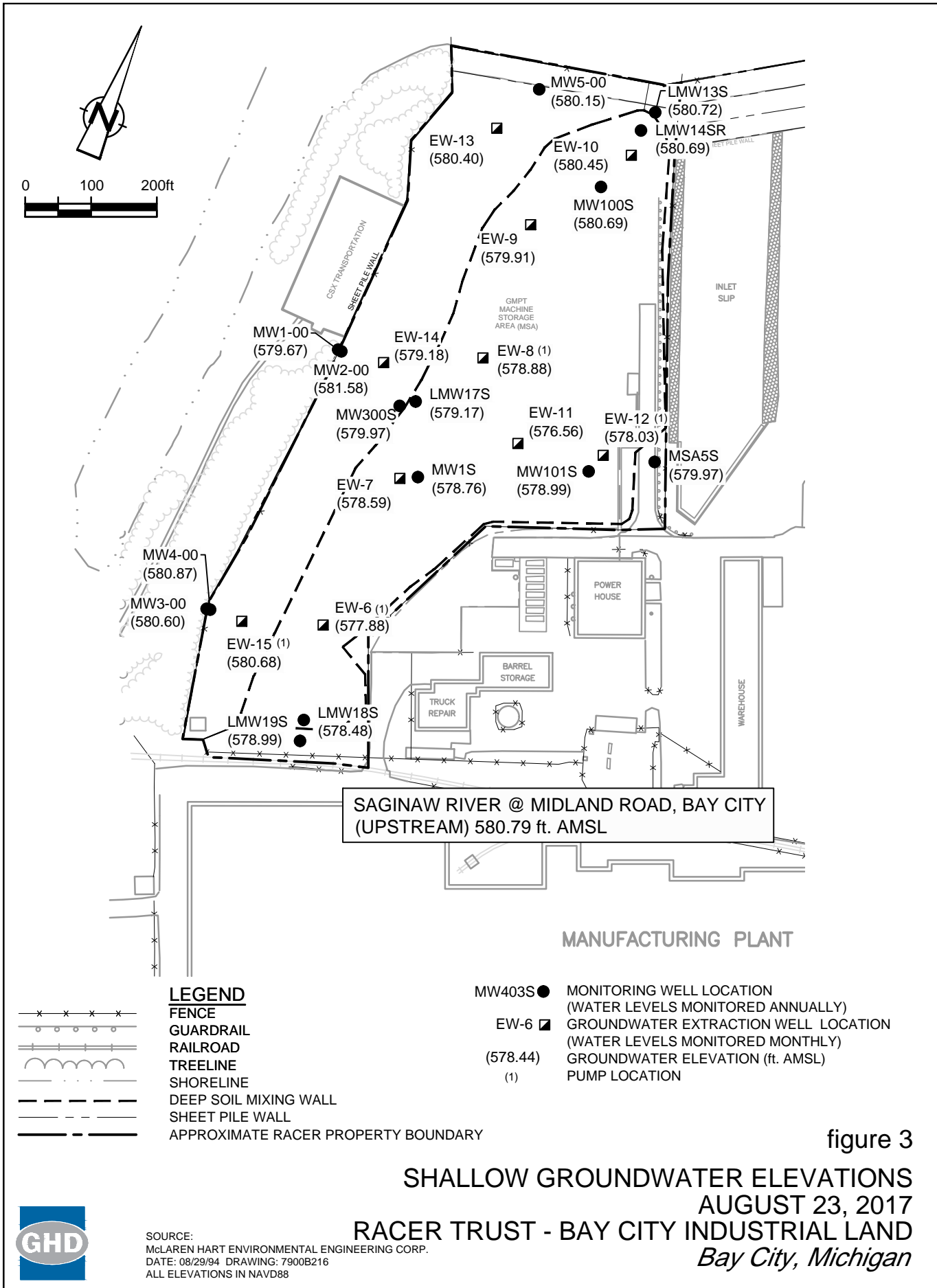


figure 3

**SHALLOW GROUNDWATER ELEVATIONS
AUGUST 23, 2017
RACER TRUST - BAY CITY INDUSTRIAL LAND
Bay City, Michigan**



SOURCE:
McLAREN HART ENVIRONMENTAL ENGINEERING CORP.
DATE: 08/29/94 DRAWING: 7900B216
ALL ELEVATIONS IN NAVD88

Table 1
Saginaw River Water Levels
Racer Trust - Bay City Industrial Land
Bay City, Michigan

Location	8-Dec-16	14-Jan-17	17-Feb-17	8-Mar-17	10-Apr-17	9-May-17	28-Jun-17	25-Jul-17	23-Aug-17	20-Sep-17	25-Oct-17
USGS Station - Midland Road at Saginaw River in Bay City, MI ⁽¹⁾											
Daily Average Water Level	579.07	579.14	579.10	578.78	580.51	580.32	580.68	580.83	580.79	(2)	(2)
Weekly Average Water Level	579.08	579.02	579.18	579.33	580.39	580.40	580.86	581.00	580.87	(2)	(2)
Monthly Average Water Level	578.99	579.10	579.21	579.54	580.18	580.32	580.52	580.83	580.83	(2)	(2)

Notes:

- (1) Source of Saginaw River Elevation is USGS Station (04157060) Midland Road at Saginaw River, Bay City, MI. (Provisional USGS Data, Subject to Revision)
- (2) USGS Station (04157060) was destroyed, therefore no reading
- NM Not Measured

Table 2

Groundwater Extraction System Water Elevations
 Racer Trust - Bay City Industrial Land
 Bay City, Michigan

Extraction	Reference Elevation	Bottom of Well	Top ICU	Water Elevation	Water Elevation	Water Elevation	Water Elevation	Water Elevation	Water Elevation	
		Elevation (ft AMSL)	Top ICU (ft AMSL)	(ft AMSL) Dec. 8, 2016	(ft AMSL) Jan. 14, 2017	(ft AMSL) Feb. 17, 2017	(ft AMSL) Mar. 8, 2017	(ft AMSL) Apr. 10, 2017	(ft AMSL) May 9, 2017	
Machine Storage Area										
EW-6	589.74	570.39	572.39	577.58	--	575.59	(1)	--	574.8	--
EW-7	587.99	571.14	571.64	578.63	--	578.58	--	--	578.63	--
EW-8	588.34	572.29	573.29	578.87	--	575.17	(1)	--	(1) 576.46	(1) --
EW-9	588.04	572.19	573.69	579.55	--	579.45	--	--	579.66	--
EW-10	587.77	570.82	572.32	579.39	--	579.33	--	--	579.96	--
EW-11	591.51	571.91	572.56	576.62	(1) --	(1) 576.56	(1) --	(1) --	(1) 576.81	(1) --
EW-12	586.42	571.57	573.07	579.07	--	(1) 578.45	(1) --	(1) --	(1) 578.99	--
Crotty Street Channel Containment Area										
EW-13	584.33	571.86	NA	575.65	--	577.2	--	--	575.67	--
EW-14	582.42	569.92	NA	573.09	--	576.93	--	--	574.49	--
EW-15	583.71	571.61	NA	576.72	--	579.88	--	--	574.35	--

Notes:

- No Level recorded
- (1) Product identified in well

Table 2

**Groundwater Extraction System Water Elevations
Racer Trust - Bay City Industrial Land
Bay City, Michigan**

Extraction	Reference	Bottom of Well	Top ICU	Water	Water	Water	Water	Water
	Elevation	Elevation	Top ICU	Elevation	Elevation	Elevation	Elevation	Elevation
		(ft AMSL)	(ft AMSL)	(ft AMSL)	(ft AMSL)	(ft AMSL)	(ft AMSL)	(ft AMSL)
				Jun. 28, 2017	Jul. 25, 2017	Aug. 23, 2017	Sept. 20, 2017	Oct. 25, 2017
Machine Storage Area								
EW-6	589.74	570.39	572.39	577.83	577.31	577.88	577.97	578.01 (1)
EW-7	587.99	571.14	571.64	578.63	578.58	578.59	578.57	578.52
EW-8	588.34	572.29	573.29	576.51	576.25	578.88 (1)	578.95	578.71 (1)
EW-9	588.04	572.19	573.69	579.63	579.71	579.91	579.96	579.91
EW-10	587.77	570.82	572.32	580.23	580.22	580.45	580.38	580.2
EW-11	591.51	571.91	572.56	576.72 (1)	576.35 (1)	576.56 (1)	576.22 (1)	576.06 (1)
EW-12	586.42	571.57	573.07	580.06	578.52	578.03 (1)	579.07 (1)	578.83 (1)
Crotty Street Channel Containment Area								
EW-13	584.33	571.86	NA	580.34	579.43	580.4	580.48	580.94
EW-14	582.42	569.92	NA	578.95	578.95	579.18	580.27	580.65
EW-15	583.71	571.61	NA	--	578.44	580.68	579.74	--

Notes:

- No Level recorded
- (1) Product identified in well

Table 3
Monitoring Well Completion Details And Groundwater Elevations
Racer Trust - Bay City Industrial Land
Bay City, Michigan

Well Location	Top of Riser Elevation (ft AMSL)	Depth of Well (feet)	Screen Length (feet)	Screen Type	Riser Type	Diameter of Screen (inches)	Groundwater Elevation (feet AMSL)								
							8/23/2017	12/8/2016	8/24/2015	8/6/2014	8/6/2013	8/7/2012	8/22/2011	8/16/2010	
Machine Storage Area (MSA)															
LMW13S	589.40	19.22	10	SS	PVC	2	580.72	580.01	580.10	579.43	578.61	578.19	578.03	578.71	
LMW17S	589.31	19.83	10	SS	PVC	2	579.17	578.79	579.13	578.96	578.87	578.85	578.80	578.83	
LMW18S	592.33	22.52	10	SS	PVC	2	578.48	578.17	578.62	578.27	577.93	577.82	577.61	577.66	
LMW19S	588.61	19.32	10	SS	PVC	2	578.99	578.91	579.55	579.32	578.44	578.58	578.34	578.25	
MW1S	591.08	12.95	2	SS	SS	2	578.76	578.77	578.73	578.71	578.80	578.65	578.65	578.68	
MW100S	591.97	14.44	10	SS	SS	2	580.69	579.80	580.19	579.32	578.81	578.49	578.18	578.86	
MW101S	593.34	19.22	10	SS	SS	2	578.99	579.17	579.12	579.01	579.10	578.94	578.80	578.93	
MW102D1	594.86	30.99	10	SS	SS	2	580.86	579.30	579.88	579.39	578.34	577.90	578.71	578.39	
MW102D2	594.93	36.21	10	SS	SS	2	580.85	579.37	579.86	579.38	578.31	577.89	578.69	578.37	
MW102D3	594.91	46.74	10	SS	SS	2	580.78	579.25	579.83	579.35	578.27	577.84	578.67	579.34	
MW102D4 (replacement)	594.90	56.85	10	SS	SS	2	580.74	579.19	579.77	579.30	578.24	577.79	578.63	578.29	
MW300S	587.12	15.06	10	SS	SS	2	579.97	577.19	577.90	577.03	577.17	577.69	577.03	577.18	
LMW14SR (Replaced LMW14S Jan/00)	589.01	13.00	7	SS	SS	2	580.69	579.63	580.02	579.22	578.55	578.14	577.47	578.60	
Perimeter Banks (PB)															
LMW15D	588.34	32.8	10	SS	PVC	2	580.93	579.16	579.68	579.37	578.02	577.56	578.65	578.21	
MW301D1	589.54	27.50	10	SS	SS	2	579.24	577.60	578.15	577.70	576.56	578.38	579.39	578.96	
MW301D2	589.16	37.24	10	SS	SS	2	579.31	577.67	578.22	577.78	576.62	577.99	579.00	578.60	
MW301D3	589.22	44.04	10	SS	SS	2	579.17	577.53	578.06	577.64	576.46	577.87	578.87	578.47	
MW301D4	589.33	55.95	10	SS	SS	2	579.25	577.61	578.14	577.96	576.54	578.15	579.16	578.74	
Support Facilities Area (SFA)															
MSA5S	588.60	18.98			SS	2	579.97	579.91	580.26	579.67	580.22	578.58	578.67	579.10	
Crotty Street Channel															
MW1-00	588.26	12.00	7	SS	SS	2	579.67	579.16	579.79	579.35	577.71	576.44	577.17	577.13	
MW2-00	589.29	18.00	7	SS	SS	2	581.58	578.84	579.35	578.75	577.79	576.62	577.29	577.26	
MW3-00	588.40	12.50	7	SS	SS	2	580.60	579.15	579.76	579.38	577.67	576.47	577.25	577.14	
MW4-00	589.65	19.00	7	SS	SS	2	580.87	579.03	579.54	578.91	576.76	577.41	577.38	577.38	
MW5-00	588.89	13.00	7	SS	SS	2	580.15	577.22	577.70	576.99	577.00	576.73	576.77	576.95	
SG-1	580.00	--	--	--	--	--	n/a	n/a	n/a	581.06	n/a	n/a	n/a	n/a	
Saginaw River Elevation ⁽⁶⁾							580.79	579.07	579.66	579.32	577.02	576.71	577.53	577.41	

Notes:

- (1) Approximate value
 - (2) Lock Needs Replacing
 - (3) Gage needs to be relocated
 - (4) Could not open due to liner attachment
 - (5) Could not read due to accumulation of snow and ice
 - (6) Source of Saginaw River Elevation is: NOAA (Essexville, MI) for prior to November 1, 2005, USGS Station (04157065) for November 1, 2005 to December 4, 2013 and USGS Station (04157060) for December 4, 2013 to the present.
 - (7) Could not read due to well being covered with equipment
- n/a Water elevation not available

Table 3

**Monitoring Well Completion Details And Groundwater Elevations
Racer Trust - Bay City Industrial Land
Bay City, Michigan**

Well Location	Top of Riser Elevation (ft AMSL)	Depth of Well (feet)	Screen Length (feet)	Screen Type	Riser Type	Diameter of Screen (inches)	Groundwater Elevation (feet AMSL)											
							8/27/2009	8/19/2008	8/20/2007	8/16/2006	8/29/2005	8/24/2004	7/28/2003	8/26/2002	8/13/2001	3/19/2001	2/23/2001	1/24/2001
Machine Storage Area (MSA)																		
LMW13S	589.40	19.22	10	SS	PVC	2	579.31	578.21	577.67	578.23	578.14	579.40	578.45	582.05	578.68	577.85	578.17	578.19
LMW17S	589.31	19.83	10	SS	PVC	2	578.81	578.58	577.58	578.63	578.31	578.80	582.73	578.91	578.68	578.74	578.83	579.06
LMW18S	592.33	22.52	10	SS	PVC	2	577.99	577.62	578.13	578.00	578.23	578.45	578.35	578.85	578.10	578.22	578.61	578.39
LMW19S	588.61	19.32	10	SS	PVC	2	578.53	578.45	579.71	578.45	578.85	579.21	579.24	579.93	578.79	579.56	579.96	579.59
MW1S	591.08	12.95	2	SS	SS	2	579.71	580.93	578.48	n/a	577.58	578.63	578.56	578.48	578.51	578.41	(5)	578.44
MW100S	591.97	14.44	10	SS	SS	2	579.27	578.40	578.01	578.38	578.57	579.15	577.27	578.91	578.93	578.36	578.64	578.87
MW101S	593.34	19.22	10	SS	SS	2	578.78	578.49	578.39	578.31	577.95	578.82	578.87	579.12	578.76	578.84	578.96	579.18
MW102D1	594.86	30.99	10	SS	SS	2	579.42	578.83	578.04	578.30	578.30	579.02	578.25	578.98	578.18	577.61	577.40	577.47
MW102D2	594.93	36.21	10	SS	SS	2	579.40	578.93	578.03	578.25	578.33	579.01	578.24	578.95	578.15	577.60	577.39	577.45
MW102D3	594.91	46.74	10	SS	SS	2	579.41	578.89	577.98	578.25	578.31	578.98	578.20	578.93	578.11	577.56	577.34	577.40
MW102D4 (replacement)	594.90	56.85	10	SS	SS	2	579.33	578.76	577.98	578.22	578.25	578.94	578.16	578.86	578.03	577.49	577.27	577.33
MW300S	587.12	15.06	10	SS	SS	2	578.22	579.26	576.30	576.81	578.34	577.05	577.77	578.53	577.00	578.84	578.67	578.99
LMW14SR (Replaced LMW14S Jan/00)	589.01	13.00	7	SS	SS	2	579.19	577.96	576.98	577.97	577.50	576.94	578.13	578.45	578.23	577.38	577.77	577.88
Perimeter Banks (PB)																		
LMW15D	588.34	32.8	10	SS	PVC	2	579.45	578.12	577.89	578.22	578.24	579.34	578.04	578.83	578.06	577.37	577.12	577.22
MW301D1	589.54	27.50	10	SS	SS	2	579.96	579.03	578.72	578.94	579.05	580.02	578.90	579.66	578.89	578.28	578.03	578.09
MW301D2	589.16	37.24	10	SS	SS	2	579.56	578.64	578.33	578.55	578.62	579.59	578.49	579.25	578.48	577.86	577.62	577.67
MW301D3	589.22	44.04	10	SS	SS	2	579.44	578.41	578.20	578.44	578.52	579.47	578.36	579.10	578.53	577.72	577.59	577.52
MW301D4	589.33	55.95	10	SS	SS	2	579.70	578.75	578.48	578.69	578.80	579.71	578.57	579.28	578.48	577.86	577.63	577.68
Support Facilities Area (SFA)																		
MSA5S	588.60	18.98			SS	2	580.10	578.04	580.10	579.28	579.76	580.57	580.55	580.65	579.74	580.65	580.42	580.62
Crotty Street Channel																		
MW1-00	588.26	12.00	7	SS	SS	2	578.95	578.74	577.11	576.92	577.09	578.37	577.78	578.44	576.72	578.61	578.14	577.81
MW2-00	589.29	18.00	7	SS	SS	2	578.40	578.83	577.09	576.97	577.23	577.50	577.60	578.03	576.76	578.69	578.26	577.82
MW3-00	588.40	12.50	7	SS	SS	2	579.01	578.74	577.19	576.94	577.13	578.51	577.77	578.38	576.70	578.62	578.26	577.79
MW4-00	589.65	19.00	7	SS	SS	2	578.55	578.95	577.21	577.07	577.34	577.59	577.68	578.07	576.79	578.67	578.30	577.84
MW5-00	588.89	13.00	7	SS	SS	2	578.04	578.82	576.55	576.72	577.85	576.91	576.28	576.72	577.02	577.06	577.86	576.97
SG-1	580.00	--	--	--	--	--	n/a	578.55	577.83	578.33	578.43	579.63	577.93	578.73	578.12	(5)	(5)	(5)
Saginaw River Elevation ⁽⁶⁾							578.34	577.97	577.09	577.41	578.32	578.52	576.83	578.50	577.91	576.80	576.74	576.77

Notes:

- (1) Approximate value
 - (2) Lock Needs Replacing
 - (3) Gage needs to be relocated
 - (4) Could not open due to liner attachment
 - (5) Could not read due to accumulation of snow and ice
 - (6) Source of Saginaw River Elevation is: NOAA (Essexville, MI) for prior to November 1, 2005, USGS Station (04157065) for November 1, 2005 to December 4, 2013 and USGS Station (04157060) for December 4, 2013 to the present.
 - (7) Could not read due to well being covered with equipment
- n/a Water elevation not available

Table 3
Monitoring Well Completion Details And Groundwater Elevations
Racer Trust - Bay City Industrial Land
Bay City, Michigan

Well Location	Top of Riser Elevation (ft AMSL)	Depth of Well (feet)	Screen Length (feet)	Screen Type	Riser Type	Diameter of Screen (inches)	Groundwater Elevation (feet AMSL)											
							12/15/2000	11/30/2000	10/31/2000	9/11/2000	8/29/2000	7/18/2000	6/30/2000	5/30/2000	4/26/2000	3/29/2000	2/28/2000	2/2/2000
Machine Storage Area (MSA)																		
LMW13S	589.40	19.22	10	SS	PVC	2	578.06	578.35	578.63	578.90	578.90	580.11	580.62	581.63	581.81	581.27	581.74	579.27
LMW17S	589.31	19.83	10	SS	PVC	2	578.79	579.17	578.93	579.24	579.20	579.09	579.85	580.06	580.19	579.91	579.96	579.08
LMW18S	592.33	22.52	10	SS	PVC	2	578.18	578.29	578.52	578.67	579.03	578.52	577.80	578.10	578.09	577.66	577.80	577.09
LMW19S	588.61	19.32	10	SS	PVC	2	(5)	579.56	579.38	579.34	580.13	579.45	580.56	580.96	581.25	580.73	581.39	579.70
MW1S	591.08	12.95	2	SS	SS	2	578.36	578.40	578.57	578.43	578.38	578.34	579.31	579.26	579.29	579.28	579.18	579.05
MW100S	591.97	14.44	10	SS	SS	2	578.65	579.05	579.33	579.57	579.66	579.85	578.03	577.79	577.07	576.87	576.69	577.09
MW101S	593.34	19.22	10	SS	SS	2	578.84	579.03	578.91	578.99	579.04	579.02	580.22	580.39	580.14	579.21	579.86	579.61
MW102D1	594.86	30.99	10	SS	SS	2	577.62	577.67	577.87	578.16	578.15	578.71	577.62	577.70	577.60	577.25	577.23	576.81
MW102D2	594.93	36.21	10	SS	SS	2	577.61	577.65	577.85	578.13	578.13	578.67	577.48	577.58	577.44	577.12	577.08	576.80
MW102D3	594.91	46.74	10	SS	SS	2	577.56	577.60	577.80	578.08	578.09	578.63	577.52	577.59	577.47	577.16	577.12	576.88
MW102D4 (replacement)	594.90	56.85	10	SS	SS	2	577.47	577.53	577.73	578.00	578.02	578.55	577.38	577.45	577.34	577.01	576.98	575.70
MW300S	587.12	15.06	10	SS	SS	2	578.07	578.84	578.27	578.16	578.24	n/a (2)	n/a (4)	579.89	580.18	579.73	No Access	578.55
LMW14SR (Replaced LMW14S Jan/00)	589.01	13.00	7	SS	SS	2	577.54	578.04	578.13	578.16	578.21	579.19	579.32	579.22	578.91	578.99	578.55	578.58
Perimeter Banks (PB)																		
LMW15D	588.34	32.8	10	SS	PVC	2	577.33	577.48	577.63	577.94	578.03	578.43	n/a (4)	578.88	578.74	578.56	578.56	578.23
MW301D1	589.54	27.50	10	SS	SS	2	578.25	578.34	(5)	(5)	578.88	578.65	579.37	578.80	578.85	578.59	578.56	578.28
MW301D2	589.16	37.24	10	SS	SS	2	577.81	577.92	(5)	(5)	578.47	578.56	578.80	578.89	578.77	578.54	578.51	578.22
MW301D3	589.22	44.04	10	SS	SS	2	577.67	577.78	(5)	(5)	578.32	578.56	578.80	578.85	578.74	578.49	578.48	578.18
MW301D4	589.33	55.95	10	SS	SS	2	577.82	577.93	(5)	(5)	578.48	578.48	578.78	578.76	578.69	578.45	578.43	578.14
Support Facilities Area (SFA)																		
MSA5S	588.60	18.98			SS	2	580.46	580.65	580.34	580.56	580.41	581.32	581.17	582.22	582.37	580.62	582.13	580.96
Crotty Street Channel																		
MW1-00	588.26	12.00	7	SS	SS	2	577.49	577.75	577.45	577.36	577.60	577.71	579.57	578.68	578.42	578.04	578.89	577.89
MW2-00	589.29	18.00	7	SS	SS	2	577.51	577.77	577.45	577.36	577.59	577.65	578.67	Not Accessible	577.65	577.26	578.11	579.11
MW3-00	588.40	12.50	7	SS	SS	2	577.48	577.74	577.45	577.37	577.60	578.68	578.46	579.05	578.79	578.40	579.25	578.27
MW4-00	589.65	19.00	7	SS	SS	2	577.51	577.78	577.47	577.34	577.57	577.62	578.87	Not Accessible	577.60	577.18	578.03	577.03
MW5-00	588.89	13.00	7	SS	SS	2	576.91	576.90	577.31	577.91	578.01	n/a (4)	n/a (4)	579.12	578.86	578.66	578.36	577.63
SG-1	580.00	--	--	--	--	--	(5)	577.33	577.43	577.93	578.05	Destroyed (3)	Destroyed (3)	Destroyed	Destroyed	Destroyed	Destroyed	Destroyed
Saginaw River Elevation ⁽⁶⁾							576.78	577.02	577.23	577.49	577.76	578.27	577.81	577.48	577.42	577.37	577.24	577.14

Notes:

- (1) Approximate value
- (2) Lock Needs Replacing
- (3) Gage needs to be relocated
- (4) Could not open due to liner attachment
- (5) Could not read due to accumulation of snow and ice
- (6) Source of Saginaw River Elevation is: NOAA (Essexville, MI) for prior to November 1, 2005, USGS Station (04157065) for November 1, 2005 to December 4, 2013 and USGS Station (04157060) for December 4, 2013 to the present.
- (7) Could not read due to well being covered with equipment
- n/a Water elevation not available

Table 3
Monitoring Well Completion Details And Groundwater Elevations
Racer Trust - Bay City Industrial Land
Bay City, Michigan

Well Location	Top of Riser Elevation (ft AMSL)	Depth of Well (feet)	Screen Length (feet)	Screen Type	Riser Type	Diameter of Screen (inches)	Groundwater Elevation (feet AMSL)										
							1/4/2000	11/24/1999	10/25/1999	9/27/1999	9/7/1999	7/20/1999	6/22/1999	5/20/1999	4/20/1999	3/19/1999	3/8/1999
Machine Storage Area (MSA)																	
LMW13S	589.40	19.22	10	SS	PVC	2	580.08	580.68	581.26	580.55	580.02	579.68	579.23	581.42	582.65	583.17	582.56
LMW17S	589.31	19.83	10	SS	PVC	2	579.47	579.71	579.69	578.98	579.19	579.43	579.65	579.77	580.25	581.57	581.58
LMW18S	592.33	22.52	10	SS	PVC	2	577.37	577.32	577.62	577.51	577.89	579.57	579.45	579.39	579.78	579.44	579.44
LMW19S	588.61	19.32	10	SS	PVC	2	580.30	579.58	579.95	579.53	580.01	580.42	580.52	580.51	580.94	580.90	580.66
MW1S	591.08	12.95	2	SS	SS	2	579.07	579.15	579.11	578.51	578.58	--	578.64	579.29	579.49	584.35	584.12
MW100S	591.97	14.44	10	SS	SS	2	577.49	578.09	578.77	578.57	--	579.33	579.07	579.30	579.96	582.53	582.71
MW101S	593.34	19.22	10	SS	SS	2	579.61	579.65	579.81	579.04	579.18	578.83	578.71	579.19	580.44	586.50	586.44
MW102D1	594.86	30.99	10	SS	SS	2	576.80	576.38	577.47	577.64	578.29	579.69	576.82	579.27	579.34	582.38	582.32
MW102D2	594.93	36.21	10	SS	SS	2	576.67	576.24	577.33	577.50	578.15	579.68	576.78	579.34	579.39	582.03	581.93
MW102D3	594.91	46.74	10	SS	SS	2	576.71	576.26	577.35	577.55	578.20	579.66	576.80	579.25	579.35	581.92	581.84
MW102D4 (replacement)	594.90	56.85	10	SS	SS	2	576.56	576.12	577.21	577.40	578.05	579.56	576.70	579.13	579.21	581.54	581.45
MW300S	587.12	15.06	10	SS	SS	2	579.27	579.91	578.87	578.90	579.33	579.69	579.95	579.51	579.86	579.37	579.51
LMW14SR (Replaced LMW14S Jan/00)	589.01	13.00	7	SS	SS	2	Damaged	Damaged	578.58	578.30	578.88	579.97	578.55	580.40	581.12	582.10	582.11
Perimeter Banks (PB)																	
LMW15D	588.34	32.8	10	SS	PVC	2	577.95	577.18	578.49	578.93	579.81	579.68	577.88	579.21	579.23	579.86	579.71
MW301D1	589.54	27.50	10	SS	SS	2	578.05	577.42	578.63	578.99	579.67	579.73	575.75	579.22	579.32	579.40	579.29
MW301D2	589.16	37.24	10	SS	SS	2	577.99	577.35	578.57	578.93	579.62	579.69	576.11	579.19	579.28	579.35	579.23
MW301D3	589.22	44.04	10	SS	SS	2	577.96	577.32	578.54	578.90	579.59	579.65	576.13	579.18	579.25	579.38	579.23
MW301D4	589.33	55.95	10	SS	SS	2	577.90	577.27	578.47	578.85	579.52	579.62	576.08	579.17	579.26	579.37	579.18
Support Facilities Area (SFA)																	
MSA5S	588.60	18.98			SS	2	581.42	581.70	581.77	581.74	581.84	579.38	577.24	579.71	580.83	580.33	580.54
Crotty Street Channel																	
MW1-00	588.26	12.00	7	SS	SS	2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
MW2-00	589.29	18.00	7	SS	SS	2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
MW3-00	588.40	12.50	7	SS	SS	2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
MW4-00	589.65	19.00	7	SS	SS	2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
MW5-00	588.89	13.00	7	SS	SS	2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
SG-1	580.00	--	--	--	--	--	Destroyed	Destroyed	Destroyed	Destroyed	Destroyed	Destroyed	Destroyed	Destroyed	Destroyed	Destroyed	Destroyed
Saginaw River Elevation ⁽⁶⁾							577.15	576.54	577.35	578.04	578.59	578.87	578.51	578.37	578.32	578.55	578.34

Notes:

- (1) Approximate value
- (2) Lock Needs Replacing
- (3) Gage needs to be relocated
- (4) Could not open due to liner attachment
- (5) Could not read due to accumulation of snow and ice
- (6) Source of Saginaw River Elevation is: NOAA (Essexville, MI) for prior to November 1, 2005, USGS Station (04157065) for November 1, 2005 to December 4, 2013 and USGS Station (04157060) for December 4, 2013 to the present.
- (7) Could not read due to well being covered with equipment
- n/a Water elevation not available

Table 4

Analytical Results Summary
Groundwater Treatment System Effluent Sampling
Racer Trust - Bay City Industrial Land
Bay City, Michigan

Sample Location: Sample ID: Sample Date:			effluent-GWTS W-12610-011617-SSH-1701 01/16/17	effluent-GWTS WT-12610-050917-SSH-01-17 5/9/2017
Parameters VOAs	Units	Daily Maximum (Bay City Industrial User Permit)		
Vinyl chloride	mg/L	0.002	0.001 U	0.001 U
Metals				
Cadmium	mg/L	0.057	0.002 U	0.002 U
Chromium	mg/L	6.812	0.005 U	0.00056 J
Copper	mg/L	1.476	0.067	0.0063 J
Iron	mg/L	--	0.57	0.1 U
Lead	mg/L	0.632	0.003 U	0.003 U
Mercury	mg/L	ND	0.0002 U	0.0002 U
Nickel	mg/L	2.548	0.02 U	0.0028 J
Silver	mg/L	0.2	0.005 U	0.005 U
Pesticides				
Aroclor-1016 (PCB-1016)	mg/L	ND	0.000095 U	0.000095 U
Aroclor-1221 (PCB-1221)	mg/L	ND	0.000095 U	0.000095 U
Aroclor-1232 (PCB-1232)	mg/L	ND	0.000095 U	0.000095 U
Aroclor-1242 (PCB-1242)	mg/L	ND	0.000095 U	0.000095 U
Aroclor-1248 (PCB-1248)	mg/L	ND	0.000095 U	0.000095 U
Aroclor-1254 (PCB-1254)	mg/L	ND	0.000095 U	0.000095 U
Aroclor-1260 (PCB-1260)	mg/L	ND	0.000095 U	0.000095 U
Wet				
Ammonia	mg/L	30	2.2	2.0 U
Biochemical oxygen demand (BOD)	mg/L	835	2.0 U	2.0 U
Chemical oxygen demand (COD)	mg/L	1670	24	21
Oil and grease (HEM), polar	mg/L	100	4.7 U	1.2 J
pH, lab	s.u.	6.5 to 11.0	7.7 HF	7.9 HF
Phosphorus	mg/L	13.8	0.10 U	0.10 U
Total suspended solids (TSS)	mg/L	1336	4.0 U	4.0 U

Footnotes:

HF Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.

U Not detected at the associated reporting limit.

**Analytical Results Summary
Extraction System Sampling
Racer Trust - Bay City Industrial Land
Bay City, Michigan**

**AOI:
Sample Location:
Sample ID:
Sample Date:**

**Treatment System
Influent
GW-12610-082117-SSH-08-17
8/21/2017**

Parameters:	Units	Michigan Residential Drinking water criteria	
Polychlorinated Biphenyls			
Aroclor-1016 (PCB-1016)	mg/L	0.0005	0.0019 U
Aroclor-1221 (PCB-1221)	mg/L	0.0005	0.0019 U
Aroclor-1232 (PCB-1232)	mg/L	0.0005	0.0019 U
Aroclor-1242 (PCB-1242)	mg/L	0.0005	0.0054
Aroclor-1248 (PCB-1248)	mg/L	0.0005	0.0019 U
Aroclor-1254 (PCB-1254)	mg/L	0.0005	0.0019 U
Aroclor-1260 (PCB-1260)	mg/L	0.0005	0.0019 U

Notes:

- J Estimated concentration
- U Not present at or above the associated value
- 1.0** Exceedance of criteria

**Analytical Results Summary
Annual Sampling
Racer Trust - Bay City Industrial Land
Bay City, Michigan**

AOI:			Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area
Sample Location:			MW102D1	MW102D2	MW102D4	MW102D4
Sample ID:			GW-12610-082117-SSH-02-17	GW-12610-082117-SSH-03-17	GW-12610-082117-SSH-04-17	GW-12610-082117-SSH-05-17
Sample Date:			8/21/2017	8/21/2017	8/21/2017	8/21/2017 (Duplicate)
Parameters:	Units	Michigan Residential Drinking water criteria				
Polychlorinated Biphenyls						
Aroclor-1016 (PCB-1016)	mg/L	0.0005	0.00019 U	0.00019 U	0.00019 U	0.00019 U
Aroclor-1221 (PCB-1221)	mg/L	0.0005	0.00019 U	0.00019 U	0.00019 U	0.00019 U
Aroclor-1232 (PCB-1232)	mg/L	0.0005	0.00019 U	0.00019 U	0.00019 U	0.00019 U
Aroclor-1242 (PCB-1242)	mg/L	0.0005	0.00026	0.00048	0.00019 U	0.000078 J
Aroclor-1248 (PCB-1248)	mg/L	0.0005	0.00019 U	0.00019 U	0.00019 U	0.00019 U
Aroclor-1254 (PCB-1254)	mg/L	0.0005	0.00019 U	0.00019 U	0.00019 U	0.00019 U
Aroclor-1260 (PCB-1260)	mg/L	0.0005	0.00019 U	0.00019 U	0.00019 U	0.00019 U

Notes:

- J Estimated concentration.
- U Not present at or above the associated value.
- R Rejected
- 1.0 Exceedance of criteria

**Analytical Results Summary
Annual Sampling
Racer Trust - Bay City Industrial Land
Bay City, Michigan**

AOI:	Machine Storage Area	Perimeter Banks	Perimeter Banks	Perimeter Banks
Sample Location:	MW300S	LMW13S	LMW15D	MW301D2
Sample ID:	GW-12610-082117-SSH-07-17	GW-12610-082217-SSH-09-17	GW-12610-082217-SSH-10-17	GW-12610-082117-SSH-06-17
Sample Date:	8/21/2017	8/22/2017	8/22/2017	8/21/2017

Parameters: **Michigan Residential
Units Drinking water criteria**

Polychlorinated Biphenyls

Aroclor-1016 (PCB-1016)	mg/L	0.0005	0.00019 U	0.00019 U	0.00019 U	0.00019 U
Aroclor-1221 (PCB-1221)	mg/L	0.0005	0.00019 U	0.00019 U	0.00019 U	0.00019 U
Aroclor-1232 (PCB-1232)	mg/L	0.0005	0.00019 U	0.00019 U	0.00019 U	0.00019 U
Aroclor-1242 (PCB-1242)	mg/L	0.0005	0.000084 J	0.00057	0.00019 U	0.00019 U
Aroclor-1248 (PCB-1248)	mg/L	0.0005	0.00019 U	0.00019 U	0.00019 U	0.00019 U
Aroclor-1254 (PCB-1254)	mg/L	0.0005	0.00019 U	0.00019 U	0.00019 U	0.00019 U
Aroclor-1260 (PCB-1260)	mg/L	0.0005	0.00019 U	0.00019 U	0.00019 U	0.00019 U

Notes:

- J Estimated concentration.
- U Not present at or above the associated value.
- R Rejected
- 1.0 Exceedance of criteria

Table 7

**Summary of Long-Term Groundwater and Stormwater Monitoring Activities
Racer Trust - Bay City Site
Bay City, Michigan**

Plant Area	Location	Original Program (1) 2001 - 2010			Revised 2011 - 2014			Revised 2015-2016			Revised 2017-2018		
		Groundwater		Static Water	Groundwater		Static Water	Groundwater		Static Water	Groundwater		Static Water
		Quality Monitoring	Level Monitoring (2)	Level Monitoring (2)	Quality Monitoring	Level Monitoring (2)	Level Monitoring (2)	Quality Monitoring	Level Monitoring (2)	Level Monitoring (2)	Quality Monitoring	Level Monitoring (2)	Level Monitoring (2)
		Parameters	Frequency	Frequency	Parameters	Frequency	Frequency	Parameters	Frequency	Frequency	Parameters	Frequency	Frequency
Machine Storage Area (MSA)													
MSA	LMW17S	--	--	annually	--	--	annually	--	--	annually	--	--	annually
MSA	LMW18S (4)	--	--	annually	--	--	annually	--	--	annually	--	--	annually
MSA	LMW19S	--	--	annually	--	--	annually	--	--	annually	--	--	annually
MSA	MW1S (4)	--	--	annually	--	--	annually	--	--	annually	--	--	annually
MSA	MW100S (4)	--	--	annually	--	--	annually	--	--	annually	--	--	annually
MSA	MW101S (4)	--	--	annually	--	--	annually	--	--	annually	--	--	annually
MSA	MW102D1	PCBs	annually	annually	PCBs	annually	annually	PCBs	annually	annually	PCBs	annually	annually
MSA	MW102D2	PCBs	annually	annually	PCBs	annually	annually	PCBs	annually	annually	PCBs	annually	annually
MSA	MW102D3	PCBs	annually	annually	--	--	annually	--	--	annually	--	--	annually
MSA	MW102D4	PCBs	annually	annually	PCBs	annually	annually	PCBs	annually	annually	PCBs	annually	annually
MSA	MW300S	PCBs	annually	annually	PCBs	annually	annually	PCBs	annually	annually	PCBs	annually	annually
MSA	LMW14S	--	--	annually	--	--	annually	--	--	annually	--	--	annually
Perimeter Banks (PB)													
PB	LMW13S	PCBs	annually	annually	PCBs	annually	annually	PCBs	annually	annually	PCBs	annually	annually
PB	LMW15D	PCBs	annually	annually	PCBs	annually	annually	PCBs	annually	annually	PCBs	annually	annually
PB	MW301D1	PCBs	annually	annually	--	--	annually	--	--	annually	--	--	annually
PB	MW301D2	PCBs	annually	annually	PCBs	annually	annually	PCBs	annually	annually	PCBs	annually	annually
PB	MW301D3	PCBs	annually	annually	--	--	annually	--	--	annually	--	--	annually
PB	MW301D4	PCBs	annually	annually	--	--	annually	--	--	annually	--	--	annually
Crotty Street Channel (CSC)													
CSC	MW1	--	--	annually	--	--	annually	--	--	annually	--	--	annually
CSC	MW2	--	--	annually	--	--	annually	--	--	annually	--	--	annually
CSC	MW3	--	--	annually	--	--	annually	--	--	annually	--	--	annually
CSC	MW4	--	--	annually	--	--	annually	--	--	annually	--	--	annually
CSC	MW5	--	--	annually	--	--	annually	--	--	annually	--	--	annually
CSC	SG-1 (3)	--	--	annually	--	--	annually	--	--	--	--	--	--
Stormwater System(3)													
MSA(5)	Extraction System	PCBs	Semi-annually	--	PCBs	Semi-annually	--	PCBs	Semi-annually	--	--	--	--
CSC(5)	Extraction System	PCBs	Semi-annually	--	PCBs	Semi-annually	--	PCBs	Semi-annually	--	--	--	--
CSC(5)	CB2	PCBs	Semi-annually	--	--	--	--	--	--	--	--	--	--
Treatment System Influent								--	--	--	PCBs	Semi-annually	--
Treatment System Effluent								(6)	Semi-annually	--	(6)	Semi-annually	--

Notes:

- (1) The program presented is a subset of the original program. Locations no longer included in this long-term groundwater and stormwater monitoring program are not presented.
- (2) Static water level monitoring refers to independent monitoring program to evaluate containment. Static water level measurements will also be collected at all groundwater quality monitoring wells to evaluate groundwater flow directions.
- (3) Staff gauge.
- (4) Extraction system monitoring.
- (5) To be sampled by company who maintains the extraction system.
- (6) Sampling in accordance with the Industrial User Discharge Permit with the City of Bay City (120807). Parameters include: TSS, pH, grease/oil, phosphorous, COD, BOD, cadmium, chromium, copper, mercury, lead, nickel, silver, ammonia-nitrogen, PCBs, and vinyl chloride

Attachment A

Maintenance Activity Checklists

On-Site Personnel: Steve Hoevermeyer

Completed Date: 1/14/17

Completed By: SH

1. DETAILS OF INSPECTION

- Routine Monthly Inspection
- Response to Alarm (list type and/or PLC outputs)
- Other task:

Weather part sun; wind = 5 mph
 Temperature mid 30s

2. SITE INSPECTION

If yes indicate nature of maintenance/repairs required

- Exposure Barrier (signs of trespassing, impairment of pavement) no excavations
- Multi-layer Cap (evidence of settlement, erosion, disturbance) some snow - minor erosion by sheet pile
- Containment System (signs of deterioration of sheet pile, leaking) minor cracks at welds on cap

3. GROUNDWATER EXTRACTION SYSTEM

- Forcemain tubing requires replacement? new tubing in EW15

EW (pump)	Target Depth (feet)	DTW (feet)	Pump Operating? (Y/N) What speed?	Heater On? (Y/N)	Comments (product evident, tubing replaced, iron bacteria)	
EW-6	12.74				} non operational - conjunction vault froze	
EW-8	11.34					
EW-12	9.42					
EW-15	6.71					
EW (no pump)	EW-7	EW-9	EW-10	EW-11	EW-13	EW-14
Target Depth	11.00	11.04	10.77	14.51	7.33	5.42
DTW						

4. GROUNDWATER TREATMENT SYSTEM

Comments	Comments
<input checked="" type="checkbox"/> Check piping for leaks <u>none</u>	<input checked="" type="checkbox"/> check feed pump
<input checked="" type="checkbox"/> Check Bag filters <u>OK</u>	Flow Reading _____ (gpm)
<input checked="" type="checkbox"/> check GACs for leaks <u>none</u>	Totalized Flow Reading <u>609,074</u> (gal)
<input checked="" type="checkbox"/> Check PLC <u>OK</u>	<input checked="" type="checkbox"/> heater on?
<input checked="" type="checkbox"/> check aerator <u>OK</u>	<input checked="" type="checkbox"/> check sludge tank
<input checked="" type="checkbox"/> check sludge pump <u>OK</u>	sludge thickness <u>2</u> (in)
<input checked="" type="checkbox"/> check inspection drum <u>iron bacteria</u>	
<input checked="" type="checkbox"/> check aeration tank <u>OK</u>	
<input checked="" type="checkbox"/> check settling chamber <u>OK</u>	
<input checked="" type="checkbox"/> check clear well <u>OK</u>	
<input checked="" type="checkbox"/> check floats in clearwell <u>OK</u>	

Collect Samples

	Date	Initials	Sample Number	Time
<input type="checkbox"/> Sample Groundwater Treatment System Influent			<u>W-12610-</u>	
<input type="checkbox"/> Sample Groundwater Treatment System effluent			<u>W-12610-</u>	

Notes

new pump head on EW15
Reset flow to 0
SH

On-Site Personnel: Steve Hoevemeyer

Completed Date: 2/17/17

Completed By: SH

1. DETAILS OF INSPECTION

- Routine Monthly Inspection
- Response to Alarm (list type and/or PLC outputs)
- Other task:

Weather part sun/clouds; wind 5-10
 Temperature mid 30s

2. SITE INSPECTION

If yes indicate nature of maintenance/repairs required

- Exposure Barrier (signs of trespassing, impairment of pavement) no excavations
- Multi-layer Cap (evidence of settlement, erosion, disturbance) minor erosion by sheet pile - vegetation grown
- Containment System (signs of deterioration of sheet pile, leaking) minor cracks at welds on cap of sheet pile

3. GROUNDWATER EXTRACTION SYSTEM

Forcemain tubing requires replacement? as necessary

EW (pump)	Target Depth (feet)	DTW (feet)	Pump Operating? (Y/N) What speed?	Heater On? (Y/N)	Comments (product evident, tubing replaced, iron bacteria)	
EW-6	12.74	14.15	70%	Y	LNAPL drops	
EW-8	11.34	13.17	75%	Y	LNAPL	
EW-12	9.42	7.97	80%	Y	LNAPL	
EW-15	6.71	3.83	50%	Y		
EW (no pump)	EW-7	EW-9	EW-10	EW-11	EW-13	EW-14
Target Depth	11.00	11.04	10.77	14.51	7.33	5.42
DTW	9.41	8.59	8.44	13.98/14.95	7.13	5.49

4. GROUNDWATER TREATMENT SYSTEM

- Check piping for leaks none
- Check Bag filters influent 7 psi
- Check GACs for leaks in 6psi - out 3.5psi
- Check PLC OK
- Check aerator OK - 4psi
- Check sludge pump run when onsite
- Check inspection drum iron bacteria
- Check aeration tank OK
- Check settling chamber OK
- Check clear well OK
- Check floats in clearwell OK

- check feed pump 90%
- Flow Reading 1.71 (gpm)
- Totalized Flow Reading 14,021 (gal)
- heater on?
- check sludge tank
- sludge thickness 2 (in)

Collect Samples

- Sample Groundwater Treatment System Influent
- Sample Groundwater Treatment System effluent

W-12610-
W-12610-

Date Initials Sample Number Time

Notes

sludge pump in EW14 - nonoperational

On-Site Personnel: Steve Hoevemeyer

Completed Date: 3/8/17

Completed By: SH

1. DETAILS OF INSPECTION

- Routine Monthly Inspection
- Response to Alarm (list type and/or PLC outputs)
- Other task:

Weather sun, dry, windy
 Temperature high 30s

2. SITE INSPECTION

If yes indicate nature of maintenance/repairs required

- Exposure Barrier (signs of trespassing, impairment of pavement) no excavations
- Multi-layer Cap (evidence of settlement, erosion, disturbance) lots of standing H₂O
- Containment System (signs of deterioration of sheet pile, leaking) minor cracks at welds on cap

3. GROUNDWATER EXTRACTION SYSTEM

Forcemain tubing requires replacement?

EW (pump)	Target Depth (feet)	DTW (feet)	Pump Operating? (Y/N) What speed?	Heater On? (Y/N)	Comments (product evident, tubing replaced, iron bacteria)	
EW-6	12.74	} shutdown				
EW-8	11.34					
EW-12	9.42					
EW-15	6.71	flooded				
EW (no pump)	EW-7	EW-9	EW-10	EW-11	EW-13	EW-14 (sump on)
Target Depth	11.00	11.04	10.77	14.51	7.33	5.42
DTW						

4. GROUNDWATER TREATMENT SYSTEM

	Comments
<input checked="" type="checkbox"/> Check piping for leaks	none
<input checked="" type="checkbox"/> Check Bag filters	psi - OK
<input checked="" type="checkbox"/> check GACs for leaks	psi - OK
<input checked="" type="checkbox"/> Check PLC	OK
<input type="checkbox"/> check aerator	OK
<input checked="" type="checkbox"/> check sludge pump	run when onsite
<input checked="" type="checkbox"/> check inspection drum	iron bacteria
<input checked="" type="checkbox"/> check aeration tank	OK
<input checked="" type="checkbox"/> check settling chamber	OK
<input checked="" type="checkbox"/> check clear well	OK
<input checked="" type="checkbox"/> check floats in clearwell	OK

	Comments
<input checked="" type="checkbox"/> check feed pump	
Flow Reading	(gpm)
Totalized Flow Reading	16,886 (gal)
<input checked="" type="checkbox"/> heater on?	
<input checked="" type="checkbox"/> check sludge tank	
sludge thickness	2 (in)

Collect Samples

- Sample Groundwater Treatment System Influent
- Sample Groundwater Treatment System effluent

W-12610-
W-12610-

Date Initials Sample Number Time

Notes

BAY CITY INDUSTRIAL LAND - MONTHLY SITE INSPECTION

Project: 12610

On-Site Personnel: Steve Hoevemeyer
ASH

Completed Date: 4/10/17
 Completed By: SH

1. DETAILS OF INSPECTION

- Routine Monthly Inspection
- Response to Alarm (list type and/or PLC outputs)
- Other task:

Weather: cloudy, winds 15 mph
 Temperature: high 40s

2. SITE INSPECTION

If yes indicate nature of maintenance/repairs required

- Exposure Barrier (signs of trespassing, impairment of pavement) no excavations
- Multi-layer Cap (evidence of settlement, erosion, disturbance) minor erosion by sheetpile - vegetation growing up
- Containment System (signs of deterioration of sheet pile, leaking) minor cracks at welds on cap

3. GROUNDWATER EXTRACTION SYSTEM

- Forcemain tubing requires replacement? EW15

EW (pump)	Target Depth (feet)	DTW (feet)	Pump Operating? (Y/N) What speed?	Heater On? (Y/N)	Comments (product evident, tubing replaced, iron bacteria)	
EW-6	12.74	14.94	70%			
EW-8	11.34	11.88	75%		thick LMAPL	
EW-12	9.42	7.43	80%			
EW-15	6.71	9.36	45%			
EW (no pump)	EW-7	EW-9	EW-10	EW-11	EW-13	EW-14
Target Depth	11.00	11.04	10.77	14.51	7.33	5.42
DTW	7.36	8.38	7.81	13.37/14.70	8.66	7.93

4. GROUNDWATER TREATMENT SYSTEM

- Check piping for leaks
- Check Bag filters
- check GACs for leaks
- Check PLC
- check aerator
- check sludge pump
- check inspection drum
- check aeration tank
- check settling chamber
- check clear well
- check floats in clearwell

Comments
none
influent 5 psi
influent 5 psi
OK
OK
OK
iron bacteria
OK
some iron bacteria

- check feed pump
- Flow Reading
- Totalized Flow Reading
- heater on?
- check sludge tank
- sludge thickness

Comments
95%
1.70 (gpm)
37,369 (gal)
2 (in)

Collect Samples

- Sample Groundwater Treatment System Influent
- Sample Groundwater Treatment System effluent

Date Initials Sample Number Time

W-12610-

W-12610-

Notes

On-Site Personnel: Steve Hoevemeyer

Completed Date: 5/9/17
 Completed By: SH

1. DETAILS OF INSPECTION

- Routine Monthly Inspection
- Response to Alarm (list type and/or PLC outputs)
- Other task:

Weather part sun/clouds; wind=5-10
 Temperature 40s

2. SITE INSPECTION

If yes indicate nature of maintenance/repairs required

- Exposure Barrier (signs of trespassing, impairment of pavement) no excavations
- Multi-layer Cap (evidence of settlement, erosion, disturbance) minor erosion along sheetpile wall
- Containment System (signs of deterioration of sheet pile, leaking) minor cracks at welds on cap

3. GROUNDWATER EXTRACTION SYSTEM

- Forcemain tubing requires replacement? EWIS tubing

EW (pump)	Target Depth (feet)	DTW (feet)	Pump Operating? (Y/N) What speed?	Heater On? (Y/N)	Comments (product evident, tubing replaced, iron bacteria)	
EW-6	12.74		70%	N		
EW-8	11.34		75%	N		
EW-12	9.42		80%	N		
EW-15	6.71		45%	N		
EW (no pump)	EW-7	EW-9	EW-10	EW-11	EW-13	EW-14 (sump on)
Target Depth	11.00	11.04	10.77	14.51	7.33	5.42
DTW						

4. GROUNDWATER TREATMENT SYSTEM

- Check piping for leaks none
- Check Bag filters OK
- Check GACs for leaks none
- Check PLC OK
- Check aerator OK
- Check sludge pump OK - run when onsite
- Check inspection drum iron bacteria
- Check aeration tank OK
- Check settling chamber OK
- Check clear well OK
- Check floats in clearwell OK

- check feed pump 90%
- Flow Reading 1.72 (gpm)
- Totalized Flow Reading 56,710 (gal)
- heater on?
- check sludge tank
- sludge thickness 2 (in)

Collect Samples

	Date	Initials	Sample Number	Time
<input type="checkbox"/> Sample Groundwater Treatment System Influent			W-12610-	
<input checked="" type="checkbox"/> Sample Groundwater Treatment System effluent	05/09/17	SSH	01-17	0755

Notes

BAY CITY INDUSTRIAL LAND - MONTHLY SITE INSPECTION

On-Site Personnel: Steve Hoevermeyer

Completed Date: 6/28/17

Completed By: SH SH

Weather part sun/clouds

Temperature low 70s, wind ~10

1. DETAILS OF INSPECTION

- Routine Monthly Inspection
- Response to Alarm (list type and/or PLC outputs)
- Other task:

If yes indicate nature of maintenance/repairs required

2. SITE INSPECTION

- Exposure Barrier (signs of trespassing, impairment of pavement)
- Multi-layer Cap (evidence of settlement, erosion, disturbance) minor along sheetpile wall
- Containment System (signs of deterioration of sheet pile, leaking) minor cracks at weirs on cap
- Monitoring wells (sign of damage) some minor head-upwards of wells
- Crotty Street Sewer (check level for potential flooding)
- Permanent Markers (signs of damage/visibility issues)
- Storm Water sewer network (signs of debris/silt/damage in CBs and outlets) OK

3. GROUNDWATER EXTRACTION SYSTEM

- Forcemain tubing requires replacement? as necessary
- Are the EW vaults deteriorating (structure, lids, piping)?

EW (pump)	Target Depth (feet)	DTW (feet)	Pump Operating? (Y/N) What speed?	Heater On? (Y/N)	Comments (product evident, tubing replaced, iron bacteria)	
EW-6	12.74	11.91	70%	N		
EW-8	11.34	11.83	80%	N		
EW-12	9.42	6.36	90%	N	replace tubing	
EW-15	6.71	flooded		N		
EW (no pump)	EW-7	EW-9	EW-10	EW-11	EW-13	EW-14
Target Depth	11.00	11.04	10.77	14.51	7.33	5.42
DTW	9.36	8.41	7.54	13.30/4.79	3.99	3.47

4. GROUNDWATER TREATMENT SYSTEM

Comments	Comments
<input checked="" type="checkbox"/> Check piping for leaks <u>none</u>	<input checked="" type="checkbox"/> check feed pump (calib. every 6-mon) <u>off</u> (include date of last calib.)
<input checked="" type="checkbox"/> Check PLC <u>OK</u>	Flow Reading <u>off</u> (gpm)
<input checked="" type="checkbox"/> check sludge pump <u>OK</u>	Totalized Flow Reading <u>56,911</u> (gal)
<input checked="" type="checkbox"/> check inspection drum <u>OK - iron bacteria</u>	<input checked="" type="checkbox"/> check sludge tank
<input checked="" type="checkbox"/> check aeration tank <u>OK</u>	Sludge thickness <u>3-4</u> (in)
<input checked="" type="checkbox"/> check settling chamber <u>OK</u>	<input checked="" type="checkbox"/> check bag filters <u>OK - off</u>
<input checked="" type="checkbox"/> check clear well <u>OK</u>	Pressure reading (PSI) BF1 _____ BF2 _____ BF3 _____
<input checked="" type="checkbox"/> check floats in clearwell <u>OK</u>	Normal Range (5 to 25 PSI)
<input checked="" type="checkbox"/> check inlet air filter - blower <u>OK</u>	<input checked="" type="checkbox"/> check GACs for leaks <u>none - off</u>
<input type="checkbox"/> check aerator (clean every 6-months)	Pressure reading (PSI) GAC1 _____ GAC2 _____
Pressure reading (PSI) A1 <u>4.5</u>	Normal Range (4 to 6 PSI)
Normal Range (4 to 9 PSI)	<input checked="" type="checkbox"/> check heater

Collect Samples

- Sample Groundwater Treatment System effluent

Date Initials Sample Number Time

W-12610-

Notes

BAY CITY INDUSTRIAL LAND - MONTHLY SITE INSPECTION

On-Site Personnel: Steve Hoevemeyer

Completed Date: 7/25/17

Completed By: SH

Weather: sun, calm

Temperature: low 70s

1. DETAILS OF INSPECTION

- Routine Monthly Inspection
- Response to Alarm (list type and/or PLC outputs)
- Other task:

If yes indicate nature of maintenance/repairs required

2. SITE INSPECTION

- Exposure Barrier (signs of trespassing, impairment of pavement)
- Multi-layer Cap (evidence of settlement, erosion, disturbance) no excavations; minor along shut-pile
- Containment System (signs of deterioration of sheet pile, leaking) minor cracks at welds on cap
- Monitoring wells (sign of damage)
- Crotty Street Sewer (check level for potential flooding) no flooding
- Permanent Markers (signs of damage/visibility issues)
- Storm Water sewer network (signs of debris/silt/damage in CBs and outlets)

3. GROUNDWATER EXTRACTION SYSTEM

- Forcemain tubing requires replacement?
- Are the EW vaults deteriorating (structure, lids, piping)?

EW (pump)	Target Depth (feet)	DTW (feet)	Pump Operating? (Y/N) What speed?	Heater On? (Y/N)	Comments (product evident, tubing replaced, iron bacteria)	
EW-6	12.74	12.43	75%			
EW-8	11.34	12.09	80%			
EW-12	9.42	7.90	90%			
EW-15	6.71	5.27	45%			
EW (no pump)	EW-7	EW-9	EW-10	EW-11	EW-13	EW-14
Target Depth	11.00	11.04	10.77	14.51	7.33	5.42
DTW	9.41	8.33	7.55	13.61/15.16	4.90	3.47

4. GROUNDWATER TREATMENT SYSTEM

Comments	Comments
<input checked="" type="checkbox"/> Check piping for leaks <u>none</u>	<input checked="" type="checkbox"/> check feed pump (calib. every 6-mon) <u>95%</u> (include date of last calib.)
<input checked="" type="checkbox"/> Check PLC <u>storms blew off awning</u>	Flow Reading _____ (gpm)
<input checked="" type="checkbox"/> check sludge pump <u>OK</u>	Totalized Flow Reading <u>60,991</u> (gal)
<input checked="" type="checkbox"/> check inspection drum <u>signs of Fe bacteria</u>	<input checked="" type="checkbox"/> check sludge tank
<input checked="" type="checkbox"/> check aeration tank	Sludge thickness <u>3-4</u> (in)
<input checked="" type="checkbox"/> check settling chamber	<input checked="" type="checkbox"/> check bag filters <u>replaced</u>
<input checked="" type="checkbox"/> check clear well	Pressure reading (PSI) BF1 _____ BF2 _____ BF3 _____
<input checked="" type="checkbox"/> check floats in clearwell <u>appears a wire tie broke</u>	Normal Range (5 to 25 PSI)
<input checked="" type="checkbox"/> check inlet air filter - blower	<input checked="" type="checkbox"/> check GACs for leaks
<input type="checkbox"/> check aerator (clean every 6-months)	Pressure reading (PSI) GAC1 _____ GAC2 _____
Pressure reading (PSI) A1 <u>5</u>	Normal Range (4 to 6 PSI)
Normal Range (4 to 9 PSI)	<input checked="" type="checkbox"/> check heater

Collect Samples

- Sample Groundwater Treatment System effluent

Date Initials Sample Number Time

W-12610-

Notes

• clean diffusers • flowmeter
• replace bag filters

BAY CITY INDUSTRIAL LAND - MONTHLY SITE INSPECTION

Completed Date: 8/22/17

Completed By: SH SSH

Weather rain, overcast
 Temperature 70s, windy

On-Site Personnel: Steve Hoevemeyer

1. DETAILS OF INSPECTION

- Routine Monthly Inspection
- Response to Alarm (list type and/or PLC outputs)
- Other task:

If yes indicate nature of maintenance/repairs required

2. SITE INSPECTION

- Exposure Barrier (signs of trespassing, impairment of pavement)
- Multi-layer Cap (evidence of settlement, erosion, disturbance) no excavations; animal signs
- Containment System (signs of deterioration of sheet pile, leaking) minor cracks at welds & cap
- Monitoring wells (sign of damage) some heaving
- Crotty Street Sewer (check level for potential flooding)
- Permanent Markers (signs of damage/visibility issues)
- Storm Water sewer network (signs of debris/silt/damage in CBs and outlets)

3. GROUNDWATER EXTRACTION SYSTEM

- Forcemain tubing requires replacement?
- Are the EW vaults deteriorating (structure, lids, piping)?

EW (pump)	Target Depth (feet)	DTW (feet)	Pump Operating? (Y/N) What speed?	Heater On? (Y/N)	Comments (product evident, tubing replaced, iron bacteria)	
EW-6	12.74	11.86				
EW-8	11.34	9.76			LNAPL on probe	
EW-12	9.42	8.39			LNAPL - thick	
EW-15	6.71	3.03				
EW (no pump)	EW-7	EW-9	EW-10	EW-11	EW-13	EW-14
Target Depth	11.00	11.04	10.77	14.51	7.33	5.42
DTW	9.40	8.13	7.32	13.68/14.95	3.93	2.24

4. GROUNDWATER TREATMENT SYSTEM

- | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <input type="checkbox"/> Check piping for leaks <input type="checkbox"/> Check PLC <input type="checkbox"/> check sludge pump <input type="checkbox"/> check inspection drum <input type="checkbox"/> check aeration tank <input type="checkbox"/> check settling chamber <input type="checkbox"/> check clear well <input type="checkbox"/> check floats in clearwell <input type="checkbox"/> check inlet air filter - blower <input type="checkbox"/> check aerator (clean every 6-months) Pressure reading (PSI) A1 _____ Normal Range (4 to 9 PSI) | <ul style="list-style-type: none"> <input type="checkbox"/> check feed pump (calib. every 6-mon) (include date of last calib.) Flow Reading _____ (gpm) Totalized Flow Reading _____ (gal) <input type="checkbox"/> check sludge tank Sludge thickness _____ (in) <input type="checkbox"/> check bag filters Pressure reading (PSI) BF1 _____ BF2 _____ BF3 _____ Normal Range (5 to 25 PSI) <input type="checkbox"/> check GACs for leaks Pressure reading (PSI) GAC1 _____ GAC2 _____ Normal Range (4 to 6 PSI) <input type="checkbox"/> check heater |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Collect Samples

Sample Groundwater Treatment System effluent Date Initials Sample Number Time
W-12610-082117-SSH-08-17 1415

Notes

shut system down to change out carbon drums

BAY CITY INDUSTRIAL LAND - MONTHLY SITE INSPECTION

Completed Date: 9/20/17

Completed By: SH ASH

Weather cloudy, wind ~10
 Temperature low 60s

On-Site Personnel: Steve Hoevemeyer

1. DETAILS OF INSPECTION

- Routine Monthly Inspection
- Response to Alarm (list type and/or PLC outputs)
- Other task:

If yes indicate nature of maintenance/repairs required

2. SITE INSPECTION

- Exposure Barrier (signs of trespassing, impairment of pavement)
- Multi-layer Cap (evidence of settlement, erosion, disturbance) minor erosion along sheet pile wall
- Containment System (signs of deterioration of sheet pile, leaking) weld cracks on cap
- Monitoring wells (sign of damage) protective cover not close
- Crotty Street Sewer (check level for potential flooding)
- Permanent Markers (signs of damage/visibility issues)
- Storm Water sewer network (signs of debris/silt/damage in CBs and outlets)

3. GROUNDWATER EXTRACTION SYSTEM

- Forcemain tubing requires replacement?
- Are the EW vaults deteriorating (structure, lids, piping)?

EW (pump)	Target Depth (feet)	DTW (feet)	Pump Operating? (Y/N) What speed?	Heater On? (Y/N)	Comments (product evident, tubing replaced, iron bacteria)	
EW-6	12.74	11.77	off			
EW-8	11.34	9.39	off			
EW-12	9.42	7.35	off		thick WAPL	
EW-15	6.71	3.97	off			
EW (no pump)	EW-7	EW-9	EW-10	EW-11	EW-13	EW-14
Target Depth	11.00	11.04	10.77	14.51	7.33	5.42
DTW	9.42	8.08	7.39	13.66/15.29	3.85	2.15

4. GROUNDWATER TREATMENT SYSTEM

- | | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Check piping for leaks <input checked="" type="checkbox"/> Check PLC <input checked="" type="checkbox"/> check sludge pump <input checked="" type="checkbox"/> check inspection drum <input checked="" type="checkbox"/> check aeration tank <input checked="" type="checkbox"/> check settling chamber <input checked="" type="checkbox"/> check clear well <input checked="" type="checkbox"/> check floats in clearwell <input checked="" type="checkbox"/> check inlet air filter - blower <input checked="" type="checkbox"/> check aerator (clean every 6-months) | <ul style="list-style-type: none"> <input checked="" type="checkbox"/> check feed pump (calib. every 6-mon) (include date of last calib.) Flow Reading (gpm) Totalized Flow Reading (gal) <input checked="" type="checkbox"/> check sludge tank Sludge thickness (in) <input checked="" type="checkbox"/> check bag filters Pressure reading (PSI) BF1 _____ BF2 _____ BF3 _____ Normal Range (5 to 25 PSI) <input checked="" type="checkbox"/> check GACs for leaks Pressure reading (PSI) GAC1 _____ GAC2 _____ Normal Range (4 to 6 PSI) <input checked="" type="checkbox"/> check heater |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Collect Samples

- Sample Groundwater Treatment System effluent

Date Initials Sample Number Time

W-12610-

Notes

Pipe between inspection drum and aeration tank is clogged with iron bacteria buildup

BAY CITY INDUSTRIAL LAND - MONTHLY SITE INSPECTION

Completed Date: 10/25/17

Completed By: SH

Weather part sun/clouds, windy
 Temperature high 40s

On-Site Personnel: Steve Hoevermeyer

1. DETAILS OF INSPECTION

- Routine Monthly Inspection
- Response to Alarm (list type and/or PLC outputs)
- Other task:

If yes indicate nature of maintenance/repairs required

2. SITE INSPECTION

- Exposure Barrier (signs of trespassing, impairment of pavement)
- Multi-layer Cap (evidence of settlement, erosion, disturbance) minor erosion along sheetpile wall
- Containment System (signs of deterioration of sheet pile, leaking) minor cracks at welds on cap
- Monitoring wells (sign of damage) couple wells have heaved over time
- Crotty Street Sewer (check level for potential flooding)
- Permanent Markers (signs of damage/visibility issues)
- Storm Water sewer network (signs of debris/silt/damage in CBs and outlets)

3. GROUNDWATER EXTRACTION SYSTEM

- Forcemain tubing requires replacement?
- Are the EW vaults deteriorating (structure, lids, piping)?

EW (pump)	Target Depth (feet)	DTW (feet)	Pump Operating? (Y/N) What speed?	Heater On? (Y/N)	Comments (product evident, tubing replaced, iron bacteria)	
EW-6	12.74	11.73	N	N	drops of hMAPL on probe	
EW-8	11.34	9.63	N	N	thick hMAPL	
EW-12	9.42	7.59	N	N	thick hMAPL	
EW-15	6.71	partly flooded		N	operating at 30%	
EW (no pump)	EW-7	EW-9	EW-10	EW-11	EW-13	EW-14
Target Depth	11.00	11.04	10.77	14.51	7.33	5.42
DTW	9.47	8.13	7.57	13.69/15.45	3.39	1.77

4. GROUNDWATER TREATMENT SYSTEM

Check	Comments	Check	Comments
<input checked="" type="checkbox"/> Check piping for leaks	<u>none</u>	<input checked="" type="checkbox"/> check feed pump (calib. every 6-mon)	<u>none</u> (include date of last calib.)
<input checked="" type="checkbox"/> Check PLC	<u>OK</u>	Flow Reading	<u>none</u> (gpm)
<input checked="" type="checkbox"/> check sludge pump	<u>run when onsite</u>	Totalized Flow Reading	<u>73,702</u> (gal)
<input checked="" type="checkbox"/> check inspection drum	<u>iron bacteria</u>	<input checked="" type="checkbox"/> check sludge tank	
<input checked="" type="checkbox"/> check aeration tank	<u>little sludge</u>	Sludge thickness	<u>≈ 3</u> (in)
<input checked="" type="checkbox"/> check settling chamber	<u>iron bacteria</u>	<input checked="" type="checkbox"/> check bag filters	<u>OK</u>
<input checked="" type="checkbox"/> check clear well	<u>OK</u>	Pressure reading (PSI) BF1 <u>5.5</u> BF2 <u> </u> BF3 <u> </u>	
<input checked="" type="checkbox"/> check floats in clearwell	<u>low level is loose</u>	Normal Range (5 to 25 PSI)	
<input checked="" type="checkbox"/> check inlet air filter - blower	<u>OK</u>	<input checked="" type="checkbox"/> check GACs for leaks	<u>4</u>
<input checked="" type="checkbox"/> check aerator		Pressure reading (PSI) GAC1 <u> </u> GAC2 <u> </u>	
<input checked="" type="checkbox"/> (clean every 6-months)		Normal Range (4 to 6 PSI)	
Pressure reading (PSI) A1 <u>4.5</u>		<input checked="" type="checkbox"/> check heater	<u>bidly heat is "on"</u>
Normal Range (4 to 9 PSI)			

Collect Samples Date Initials Sample Number Time

Sample Groundwater Treatment System effluent

W-12610-

Notes

Attachment B
Analytical Results Summary (2008-2017)

Attachment B
Analytical Results Summary Sampling

AOI:														Crotty Street Channel
Sample Location:													CB-2	
Sample ID:	W-12610-021214-SSH-1401	W-12610-022614-SSH-1403	W-12610-090514-SSH-1411	W-12610-031615-SSH-1501	W-12610-121015-SSH-1115	W-12610-050916-SSH-1601	W-12610-061416-SSH-1603	W-12610-011617-SSH-1701	WT-12610-050917-SSH-01-17	W-12610-022614-SSH-1402	GW-12610-082117-SSH-08-17	CB2-(06/11/08)		
Sample Date:	2/12/2014	2/26/2014	9/5/2014	3/16/2015	12/10/2015	5/9/2016	6/14/2016	1/16/2017	5/9/2017	2/26/2014	8/21/2017	6/11/2008		
Parameters	Units	Michigan Residential Drinking water criteria												
VOAs														
PCBs														
Aroclor-1016 (PCB-1016)	mg/L	0.0005	0.000096 U	0.000098 U	0.000095 U	0.000095 U	0.0001 U	0.00019 U	0.000095 U	0.000095 U	0.000095 U	-	0.0019 U	0.0002 U
Aroclor-1221 (PCB-1221)	mg/L	0.0005	0.000096 U	0.000098 U	0.000095 U	0.000095 U	0.0001 U	0.00019 U	0.000095 U	0.000095 U	0.000095 U	-	0.0019 U	0.0002 U
Aroclor-1232 (PCB-1232)	mg/L	0.0005	0.000096 U	0.000098 U	0.000095 U	0.000095 U	0.0001 U	0.00019 U	0.000095 U	0.000095 U	0.000095 U	-	0.0019 U	0.0002 U
Aroclor-1242 (PCB-1242)	mg/L	0.0005	0.000096 U	0.000098 U	0.000095 U	0.000095 U	0.0001 U	0.00019 U	0.000095 U	0.000095 U	0.000095 U	-	0.0019 U	0.0002 U
Aroclor-1248 (PCB-1248)	mg/L	0.0005	0.000096 U	0.000098 U	0.000095 U	0.000095 U	0.0001 U	0.00019 U	0.000095 U	0.000095 U	0.000095 U	-	0.0019 U	0.0002 U
Aroclor-1254 (PCB-1254)	mg/L	0.0005	0.000096 U	0.000098 U	0.000095 U	0.000095 U	0.0001 U	0.00019 U	0.000095 U	0.000095 U	0.000095 U	-	0.0019 U	0.0002 U
Aroclor-1260 (PCB-1260)	mg/L	0.0005	0.000096 U	0.000098 U	0.000095 U	0.000095 U	0.0001 U	0.00019 U	0.000095 U	0.000095 U	0.000095 U	-	0.0019 U	0.0002 U
Wet														
Alkalinity, total (as CaCO3)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
Ammonia	mg/L	10	33	4.4	2.0 U	6.8	-	-	-	-	-	6.7	-	-
Ammonia-N	mg/L	-	-	-	-	-	3.4	-	2.0 U	2.2	2.0 U	-	-	-
Biochemical oxygen demand (BOD)	mg/L	-	17	2.3	2.0 U	2.3	9.3	-	2.0 U	2.0 U	2.0 U	-	-	-
Chemical oxygen demand (COD)	mg/L	-	20 U	10 U	10 U	10 U	10 U	-	18	24	21	-	-	-
Hardness, carbonate	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
Oil and grease (HEM), polar	mg/L	-	4.8 U	1.7 JB	4.9 U	4.7 U	4.8 U	-	4.7 U	4.7 U	1.2 J	-	-	-
pH, lab	s.u.	6.5 - 8.5	8.00 HF	8.09 HF	7.98 HF	7.69 HF	7.75 HF	-	7.54 HF	7.7 HF	7.9 HF	-	-	-
Phosphate, total	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
Phosphorus	mg/L	63	0.22	0.20	0.10 U	0.10 U	0.10 U	-	0.10 U	0.10 U	0.10 U	-	-	-
Total dissolved solids (TDS)	mg/L	500	-	-	-	-	-	-	-	-	-	-	-	-
Total microbial population	cfu/mL	-	-	-	-	-	-	-	-	-	-	-	-	-
Total organic carbon (TOC)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
Total suspended solids (TSS)	mg/L	-	4.0 U	4.0	4.0 U	4.0 U	4.0 U	-	4.0 U	4.0 U	4.0 U	-	-	-
FPARAM														
Dissolved oxygen (DO), field	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
pH, field	s.u.	6.5 - 8.5	-	-	-	-	-	-	-	-	-	-	-	-
Temperature, field	Deg C	-	-	-	-	-	-	-	-	-	-	-	-	-
Turbidity, field	NTU	-	-	-	-	-	-	-	-	-	-	-	-	-

Footnotes:
 U Not detected at the associated reporting limit.
 J Estimated concentration.
 UJ Not detected; associated reporting limit is estimated.
 R Rejected.

Analytical Results Summary Sampling

AOI:		Crotty Street Channel	Crotty Street Channel	Crotty Street Channel	Crotty Street Channel	Crotty Street Channel	Crotty Street Channel	Crotty Street Channel	Crotty Street Channel	Crotty Street Channel	Crotty Street Channel	Crotty Street Channel	Crotty Street Channel	Crotty Street Channel	Crotty Street Channel	
Sample Location:		CB-2	CB-2	CB-2	CB-2	CB-2	CB-2	CB-2	CB-2	CB-2	CB-2	CB-2	CB-2	SA GW Ext. Sys. Discharg	SA GW Ext. Sys. Discharg	SA GW Ext. Sys. Discharg
Sample ID:		CB2_(08/19/08)	CB-2_(03/12/09)	W-12610-032410-SSH-CB10-1	W-12610-040611-SSH-11103	W-12610-040611-SSH-11104	W-12610-102511-SSH-027	W-12610-041712-SSH-SA1202	GW-12610-080712-SSH-001	W-12610-040913-SSH-CB1213	W-12610-122914-SSH-1421	CSC-(06/11/08)	DUP-(06/11/08)	CSC_(08/19/08)		
Sample Date:		8/19/2008	3/12/2009	3/24/2010	4/6/2011	4/6/2011 (Duplicate)	10/25/2011	4/17/2012	8/7/2012	4/9/2013	12/29/2014	6/11/2008	6/11/2008 (Duplicate)	8/19/2008		
Parameters	Units															
VOAs																
PCBs																
Aroclor-1016 (PCB-1016)	mg/L	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.00019 U	0.000095 U	0.00019 U	0.00019 U	0.00019 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Aroclor-1221 (PCB-1221)	mg/L	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.00019 U	0.000095 U	0.00019 U	0.00019 U	0.00019 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Aroclor-1232 (PCB-1232)	mg/L	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.00019 U	0.000095 U	0.00019 U	0.00019 U	0.00019 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Aroclor-1242 (PCB-1242)	mg/L	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.00019 U	0.000095 U	0.00019 U	0.00019 U	0.00019 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Aroclor-1248 (PCB-1248)	mg/L	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.00019 U	0.000095 U	0.00019 U	0.00019 U	0.00019 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Aroclor-1254 (PCB-1254)	mg/L	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.00019 U	0.000095 U	0.00019 U	0.00019 U	0.00019 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Aroclor-1260 (PCB-1260)	mg/L	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.00019 U	0.000095 U	0.00019 U	0.00019 U	0.00019 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Wet																
Alkalinity, total (as CaCO3)	mg/L	-	-	-	-	-	200 B	-	-	-	-	-	-	-	-	-
Ammonia	mg/L	-	-	-	-	-	0.069 J	-	-	-	-	-	-	-	-	-
Ammonia-N	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Biochemical oxygen demand (BOD)	mg/L	-	-	-	-	-	2.0 U	-	-	-	-	-	-	-	-	-
Chemical oxygen demand (COD)	mg/L	-	-	-	-	-	20	-	-	-	-	-	-	-	-	-
Hardness, carbonate	mg/L	-	-	-	-	-	220	-	-	-	-	-	-	-	-	-
Oil and grease (HEM), polar	mg/L	-	-	-	-	-	1.1 J	-	-	-	-	-	-	-	-	-
pH, lab	s.u.	-	-	-	-	-	7.39 HF	-	-	-	-	-	-	-	-	-
Phosphate, total	mg/L	-	-	-	-	-	0.10 U	-	-	-	-	-	-	-	-	-
Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total dissolved solids (TDS)	mg/L	-	-	-	-	-	260	-	-	-	-	-	-	-	-	-
Total microbial population	cfu/mL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total organic carbon (TOC)	mg/L	-	-	-	-	-	9.4	-	-	-	-	-	-	-	-	-
Total suspended solids (TSS)	mg/L	-	-	-	-	-	4.0 U	-	-	-	-	-	-	-	-	-
FPARAM																
Dissolved oxygen (DO), field	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
pH, field	s.u.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Temperature, field	Deg C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Turbidity, field	NTU	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Footnotes:

- U Not detected at the associated reporting limit.
- J Estimated concentration.
- UJ Not detected; associated reporting limit is estimated.
- R Rejected.

Attachment B
Analytical Results Summary Sampling

AOI:	Crotty Street Channel	Crotty Street Channel	Crotty Street Channel	Crotty Street Channel	Crotty Street Channel	Crotty Street Channel	Crotty Street Channel	Crotty Street Channel	Crotty Street Channel	Crotty Street Channel	Crotty Street Channel	Crotty Street Channel	Crotty Street Channel
Sample Location:	:SA GW Ext. Sys. Discharg	:SA GW Ext. Sys. Discharg	CSA GW Ext. Sys. Discharge	CSA GW Ext. Sys. Discharge	CSA GW Ext. Sys. Discharge	CSA GW Ext. Sys. Discharge	:SA GW Ext. Sys. Discharg	CSA GW Ext. Sys. Discharge	CSA GW Ext. Sys. Discharge	CSA GW Ext. Sys. Discharge	CSA GW Ext. Sys. Discharge	CSA GW Ext. Sys. Discharge	CSA GW Ext. Sys. Discharge
Sample ID:	CSC_(03/12/09)	CSC	W-12610-043010-SSH-CSC-4	GW-12610-081910-SSH-026	GW-12610-081910-SSH-027	W-12610-040611-SSH-11102	GW-12610-082211-JY-002	W-12610-041712-SSH-SA1201	GW-12610-080712-SSH-002	GW-12610-080514-SSH-1402	W-12610-122914-SSH-1420	W-12610-040915-SSH-1502	
Sample Date:	3/12/2009	8/27/2009	4/30/2010	8/19/2010	8/19/2010 (Duplicate)	4/6/2011	8/22/2011	4/17/2012	8/7/2012	8/5/2014	12/29/2014	4/9/2015	
Parameters	Units												
VOAs													
PCBs													
Aroclor-1016 (PCB-1016)	mg/L	0.0002 U	0.0002 U	0.0002 UJ	0.0002 U	0.0002 U	0.0002 U	0.00019 U	0.000097 U	0.0002 U	0.00019 U	0.0002 U	0.00019 U
Aroclor-1221 (PCB-1221)	mg/L	0.0002 U	0.0002 U	0.0002 UJ	0.0002 U	0.0002 U	0.0002 U	0.00019 U	0.000097 U	0.0002 U	0.00019 U	0.0002 U	0.00019 U
Aroclor-1232 (PCB-1232)	mg/L	0.0002 U	0.0002 U	0.0002 UJ	0.0002 U	0.0002 U	0.0002 U	0.00019 U	0.000097 U	0.0002 U	0.00019 U	0.0002 U	0.00019 U
Aroclor-1242 (PCB-1242)	mg/L	0.00014 J	0.00075	0.00059 J	0.00062	0.00063	0.0002 U	0.00096	0.00062	0.00086	0.00068 J	0.00022	0.00019 U
Aroclor-1248 (PCB-1248)	mg/L	0.0002 U	0.0002 U	0.0002 UJ	0.0002 U	0.0002 U	0.0002 U	0.00019 U	0.000097 U	0.0002 U	0.00019 U	0.0002 U	0.00019 U
Aroclor-1254 (PCB-1254)	mg/L	0.0002 U	0.0002 U	0.0002 UJ	0.0002 U	0.0002 U	0.0002 U	0.00019 U	0.000097 U	0.0002 U	0.00019 U	0.0002 U	0.00019 U
Aroclor-1260 (PCB-1260)	mg/L	0.0002 U	0.0002 U	0.0002 UJ	0.0002 U	0.0002 U	0.0002 U	0.000044 J	0.000097 U	0.0002 U	0.00019 U	0.0002 U	0.00019 U
Wet													
Alkalinity, total (as CaCO3)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-
Ammonia	mg/L	-	-	-	-	-	-	-	-	-	-	-	-
Ammonia-N	mg/L	-	-	-	-	-	-	-	-	-	-	-	-
Biochemical oxygen demand (BOD)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-
Chemical oxygen demand (COD)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-
Hardness, carbonate	mg/L	-	-	-	-	-	-	-	-	-	-	-	-
Oil and grease (HEM), polar	mg/L	-	-	-	-	-	-	-	-	-	-	-	-
pH, lab	s.u.	-	-	-	-	-	-	-	-	-	-	-	-
Phosphate, total	mg/L	-	-	-	-	-	-	-	-	-	-	-	-
Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	-
Total dissolved solids (TDS)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-
Total microbial population	cfu/mL	-	-	-	-	-	-	-	-	-	-	-	-
Total organic carbon (TOC)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-
Total suspended solids (TSS)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-
FPARAM													
Dissolved oxygen (DO), field	mg/L	-	-	-	-	-	-	-	-	-	-	-	-
pH, field	s.u.	-	-	-	-	-	-	-	-	-	-	-	-
Temperature, field	Deg C	-	-	-	-	-	-	-	-	-	-	-	-
Turbidity, field	NTU	-	-	-	-	-	-	-	-	-	-	-	-

Footnotes:
 U Not detected at the associated reporting limit.
 J Estimated concentration.
 UJ Not detected; associated reporting limit is estimated.
 R Rejected.

Attachment B
Analytical Results Summary Sampling

AOI:	Crotty Street Channel	Crotty Street Channel	Crotty Street Channel	Crotty Street Channel	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area
Sample Location:	CSA GW Ext. Sys. Discharge	CSA GW Ext. Sys. Discharge	CSA GW Ext. Sys. Discharge	EW14	EW6	EW7	EW8	EW9	EW9	EW10	EW11	EW12
Sample ID:	GW-12610-082515-SSH-0115	W-12610-050916-SSH-1602	W-12610-082516-SSH-1606	GW-12610-071811-SH-004	GW-12610-072011-SH-016	GW-12610-071811-SH-001(C)	GW-12610-071911-SH-009C	GW-12610-071811-SH-002(C)	GW-12610-071811-SH-003	GW-12610-072011-SH-017	GW-12610-071911-SH-008C	GW-12610-072011-SH-015
Sample Date:	8/25/2015	5/9/2016	8/25/2016	7/18/2011	7/20/2011	7/18/2011	7/19/2011	7/18/2011	7/18/2011 (Duplicate)	7/20/2011	7/19/2011	7/20/2011
Parameters	Units											
VOAs												
PCBs												
Aroclor-1016 (PCB-1016)	mg/L	0.00019 U	0.00019 U	0.00019 U	0.00019 U	-	-	-	-	-	-	-
Aroclor-1221 (PCB-1221)	mg/L	0.00019 U	0.00019 U	0.00019 U	0.00019 U	-	-	-	-	-	-	-
Aroclor-1232 (PCB-1232)	mg/L	0.00019 U	0.00019 U	0.00019 U	0.00019 U	-	-	-	-	-	-	-
Aroclor-1242 (PCB-1242)	mg/L	0.00056	0.00019	0.00019 U	0.00054	-	-	-	-	-	-	-
Aroclor-1248 (PCB-1248)	mg/L	0.00019 U	0.00019 U	0.00019 U	0.00019 U	-	-	-	-	-	-	-
Aroclor-1254 (PCB-1254)	mg/L	0.00019 U	0.00019 U	R	0.00019 U	-	-	-	-	-	-	-
Aroclor-1260 (PCB-1260)	mg/L	0.00019 U	0.00019 U	R	0.00019 U	-	-	-	-	-	-	-
Wet												
Alkalinity, total (as CaCO3)	mg/L	-	-	-	570	-	-	-	-	-	-	-
Ammonia	mg/L	-	-	-	12	-	-	-	-	-	-	-
Ammonia-N	mg/L	-	-	-	-	-	-	-	-	-	-	-
Biochemical oxygen demand (BOD)	mg/L	-	-	-	2.0 UJ	-	-	-	-	-	-	-
Chemical oxygen demand (COD)	mg/L	-	-	-	85	-	-	-	-	-	-	-
Hardness, carbonate	mg/L	-	-	-	550	-	-	-	-	-	-	-
Oil and grease (HEM), polar	mg/L	-	-	-	1.4 J	-	-	-	-	-	-	-
pH, lab	s.u.	-	-	-	6.88 J	-	-	-	-	-	-	-
Phosphate, total	mg/L	-	-	-	0.14	-	-	-	-	-	-	-
Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-
Total dissolved solids (TDS)	mg/L	-	-	-	690	-	-	-	-	-	-	-
Total microbial population	cfu/mL	-	-	-	105	4240	9400	1920	9360	19800	7140	3800
Total organic carbon (TOC)	mg/L	-	-	-	31	-	-	-	-	-	-	-
Total suspended solids (TSS)	mg/L	-	-	-	99	-	-	-	-	-	-	-
FPARAM												
Dissolved oxygen (DO), field	mg/L	-	-	-	0.17	4.57	6.19	0.12	0.18	-	0.33	0.07
pH, field	s.u.	-	-	-	6.69	8.30	8.07	6.90	6.69	-	6.63	6.94
Temperature, field	Deg C	-	-	-	19.75	18.05	19.74	18.45	17.89	-	14.02	17.13
Turbidity, field	NTU	-	-	-	18.4	66.9	50.8	34.1	12.0	-	49.3	113

Footnotes:

- U Not detected at the associated reporting limit.
- J Estimated concentration.
- UJ Not detected; associated reporting limit is estimated.
- R Rejected.

Attachment B
Analytical Results Summary Sampling

AOI:	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area
Sample Location:	MSA GW Ext. Sys. Discharge	MSA GW Ext. Sys. Discharge	MSA GW Ext. Sys. Discharge	MSA GW Ext. Sys. Discharge	MSA GW Ext. Sys. Discharge	MSA GW Ext. Sys. Discharge	MSA GW Ext. Sys. Discharge	MSA GW Ext. Sys. Discharge	MSA GW Ext. Sys. Discharge	MSA GW Ext. Sys. Discharge	MSA GW Ext. Sys. Discharge	MSA GW Ext. Sys. Discharge	MSA GW Ext. Sys. Discharge
Sample ID:	MSA-(06/11/08)	MSA_(08/19/08)	DUP_(03/12/09)	MSA_(03/12/09)	MSA	W-12610-032410-SSH-MSA10-2	GW-12610-081910-SSH-028	W-12610-040611-SSH-11101	GW-12610-082211-JY-001	W-12610-041712-SSH-SA1203	GW-12610-080712-SSH-003	W-12610-040913-SSH-MSA1313	
Sample Date:	6/11/2008	8/19/2008	3/12/2009 (Duplicate)	3/12/2009	8/27/2009	3/24/2010	8/19/2010	4/6/2011	8/22/2011	4/17/2012	8/7/2012	4/9/2013	
Parameters	Units												
VOAs													
PCBs													
Aroclor-1016 (PCB-1016)	mg/L	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.00019 U	0.000096 U	0.00019 U	0.00019 U	0.0019 U
Aroclor-1221 (PCB-1221)	mg/L	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.00019 U	0.000096 U	0.00019 U	0.00019 U	0.0019 U
Aroclor-1232 (PCB-1232)	mg/L	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.00019 U	0.000096 U	0.00019 U	0.00019 U	0.0019 U
Aroclor-1242 (PCB-1242)	mg/L	0.0002 U	0.00025	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.00013 J	0.00019 U	0.000096 U	0.00019 U	0.00019 U	0.0019 U
Aroclor-1248 (PCB-1248)	mg/L	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.00019 U	0.0004	0.00019 U	0.00019 U	0.0019 U
Aroclor-1254 (PCB-1254)	mg/L	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.00019 U	0.000096 U	0.00019 U	0.00019 U	0.0019 U
Aroclor-1260 (PCB-1260)	mg/L	0.0002 U	0.00028	0.0002 U	0.0002	0.0002 U	0.0002 U	0.00017 J	0.0002 U	0.00018	0.00019 U	0.00019 U	0.0086
Wet													
Alkalinity, total (as CaCO3)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-
Ammonia	mg/L	-	-	-	-	-	-	-	-	-	-	-	-
Ammonia-N	mg/L	-	-	-	-	-	-	-	-	-	-	-	-
Biochemical oxygen demand (BOD)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-
Chemical oxygen demand (COD)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-
Hardness, carbonate	mg/L	-	-	-	-	-	-	-	-	-	-	-	-
Oil and grease (HEM), polar	mg/L	-	-	-	-	-	-	-	-	-	-	-	-
pH, lab	s.u.	-	-	-	-	-	-	-	-	-	-	-	-
Phosphate, total	mg/L	-	-	-	-	-	-	-	-	-	-	-	-
Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	-
Total dissolved solids (TDS)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-
Total microbial population	cfu/mL	-	-	-	-	-	-	-	-	-	-	-	-
Total organic carbon (TOC)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-
Total suspended solids (TSS)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-
FPARAM													
Dissolved oxygen (DO), field	mg/L	-	-	-	-	-	-	-	-	-	-	-	-
pH, field	s.u.	-	-	-	-	-	-	-	-	-	-	-	-
Temperature, field	Deg C	-	-	-	-	-	-	-	-	-	-	-	-
Turbidity, field	NTU	-	-	-	-	-	-	-	-	-	-	-	-

Footnotes:

- U Not detected at the associated reporting limit.
- J Estimated concentration.
- UJ Not detected; associated reporting limit is estimated.
- R Rejected.

Attachment B
Analytical Results Summary Sampling

AOI:	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area
Sample Location:	MSA GW Ext. Sys. Discharge	MSA GW Ext. Sys. Discharge	MSA GW Ext. Sys. Discharge	MSA GW Ext. Sys. Discharge	MSA GW Ext. Sys. Discharge	MW102D1	MW102D1	MW102D1	MW102D1	MW102D1	MW102D1	MW102D1	MW102D1	MW102D1
Sample ID:	W-12610-120913-SSH-010	GW-12610-080514-SSH-1401	W-12610-122914-SSH-1422	GW-12610-082515-SSH-0215	W-12610-082516-SSH-1607	MW102D1_(08/19/08)	MW102D1	GW-12610-081710-JY-001	GW-12610-082311-JY-010	GW-12610-080912-SSH-012	GW-12610-080713-JY-004	GW-12610-080614-SSH-1403	GW-12610-082615-SSH-0715	
Sample Date:	12/9/2013	8/5/2014	12/29/2014	8/25/2015	8/25/2016	8/19/2008	8/26/2009	8/17/2010	8/23/2011	8/9/2012	8/7/2013	8/6/2014	8/26/2015	
Parameters	Units													
VOAs														
PCBs														
Aroclor-1016 (PCB-1016)	mg/L	0.0002 U	0.00019 U	0.00019 UH	0.00038 U	0.0019 U	0.0002 U	0.0002 UJ	0.0002 U	0.00019 U	0.00019 U	0.00019 U	0.00019 U	0.00019 U
Aroclor-1221 (PCB-1221)	mg/L	0.0002 U	0.00019 U	0.00019 UH	0.00038 U	0.0019 U	0.0002 U	0.0002 UJ	0.0002 U	0.00019 U	0.00019 U	0.00019 U	0.00019 U	0.00019 U
Aroclor-1232 (PCB-1232)	mg/L	0.0002 U	0.00019 U	0.00019 UH	0.00038 U	0.0019 U	0.0002 U	0.0002 UJ	0.0002 U	0.00019 U	0.00019 U	0.00019 U	0.00019 U	0.00019 U
Aroclor-1242 (PCB-1242)	mg/L	0.0002 U	0.00019 U	0.00019 UH	0.00038 U	0.0019 U	0.0002 U	0.0004 J	0.00031	0.00028	0.00043	0.00041 J	0.00034	
Aroclor-1248 (PCB-1248)	mg/L	0.0002 U	0.00019 U	0.00019 UH	0.00038 U	0.0019 U	0.0002 U	0.0002 UJ	0.00019 U	0.00019 U	0.00019 U	0.00019 U	0.00019 U	
Aroclor-1254 (PCB-1254)	mg/L	0.0002 U	R	0.00019 UH	0.00038 U	0.0019 U	0.0002 U	0.0002 UJ	0.0002 U	0.00019 U	0.00019 U	R	0.00019 U	
Aroclor-1260 (PCB-1260)	mg/L	0.0002 U	R	0.00019 UH	0.00019 J	0.0019 U	0.0002 U	0.0002 UJ	0.0002 U	0.000046 J	0.00019 U	R	0.00019 U	
Wet														
Alkalinity, total (as CaCO3)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	
Ammonia	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	
Ammonia-N	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	
Biochemical oxygen demand (BOD)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	
Chemical oxygen demand (COD)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	
Hardness, carbonate	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	
Oil and grease (HEM), polar	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	
pH, lab	s.u.	-	-	-	-	-	-	-	-	-	-	-	-	
Phosphate, total	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	
Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	
Total dissolved solids (TDS)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	
Total microbial population	cfu/mL	-	-	-	-	-	-	-	-	-	-	-	-	
Total organic carbon (TOC)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	
Total suspended solids (TSS)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	
FPARAM														
Dissolved oxygen (DO), field	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	
pH, field	s.u.	-	-	-	-	-	-	-	-	-	-	-	-	
Temperature, field	Deg C	-	-	-	-	-	-	-	-	-	-	-	-	
Turbidity, field	NTU	-	-	-	-	-	-	-	-	-	-	-	-	

Footnotes:
U Not detected at the associated reporting limit.
J Estimated concentration.
UJ Not detected; associated reporting limit is estimated.
R Rejected.

Attachment B
Analytical Results Summary Sampling

AOI:	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area
Sample Location:	MW102D1	MW102D1	MW102D1	MW102D1	MW102D2	MW102D2	MW102D2	MW102D2	MW102D2	MW102D2	MW102D2	MW102D2	MW102D2
Sample ID:	GW-12610-082615-SSH-0815	GW-12610-082716-SSH-1613	GW-12610-082716-SSH-1614	GW-12610-082117-SSH-02-17	MW102D2_(08/19/08)	MW102D2	GW-12610-081710-JY-002	GW-12610-082311-JY-011	GW-12610-080912-SSH-011	GW-12610-080713-JY-005	GW-12610-080614-SSH-1404	GW-12610-082615-SSH-0915	
Sample Date:	8/26/2015 (Duplicate)	8/27/2016	8/27/2016 (Duplicate)	8/21/2017	8/19/2008	8/26/2009	8/17/2010	8/23/2011	8/9/2012	8/7/2013	8/6/2014	8/26/2015	
Parameters	Units												
VOAs													
PCBs													
Aroclor-1016 (PCB-1016)	mg/L	0.00019 U	0.00019 U	0.00019 U	0.00019 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.00019 U	0.00019 U	0.00019 U	0.00019 U
Aroclor-1221 (PCB-1221)	mg/L	0.00019 U	0.00019 U	0.00019 U	0.00019 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.00019 U	0.00019 U	0.00019 U	0.00019 U
Aroclor-1232 (PCB-1232)	mg/L	0.00019 U	0.00019 U	0.00019 U	0.00019 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.00019 U	0.00019 U	0.00019 U	0.00019 U
Aroclor-1242 (PCB-1242)	mg/L	0.00034	0.00019 U	0.00019 U	0.00026	0.0002 U	0.00013 J	0.0002 U	0.0002 U	0.00019 U	0.00013 J	0.00019 U	0.00019 U
Aroclor-1248 (PCB-1248)	mg/L	0.00019 U	0.00019 U	0.00019 U	0.00019 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.00013 J	0.00019 U	0.00019 U	0.00019 U
Aroclor-1254 (PCB-1254)	mg/L	0.00019 U	0.00019 U	0.00019 U	0.00019 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.00019 U	0.00019 U	0.00019 U	0.00019 U
Aroclor-1260 (PCB-1260)	mg/L	0.00019 U	0.00019 U	0.00019 U	0.00019 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.00019 U	0.00019 U	0.00019 U	0.00019 U
Wet													
Alkalinity, total (as CaCO3)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-
Ammonia	mg/L	-	-	-	-	-	-	-	-	-	-	-	-
Ammonia-N	mg/L	-	-	-	-	-	-	-	-	-	-	-	-
Biochemical oxygen demand (BOD)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-
Chemical oxygen demand (COD)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-
Hardness, carbonate	mg/L	-	-	-	-	-	-	-	-	-	-	-	-
Oil and grease (HEM), polar	mg/L	-	-	-	-	-	-	-	-	-	-	-	-
pH, lab	s.u.	-	-	-	-	-	-	-	-	-	-	-	-
Phosphate, total	mg/L	-	-	-	-	-	-	-	-	-	-	-	-
Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	-
Total dissolved solids (TDS)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-
Total microbial population	cfu/mL	-	-	-	-	-	-	-	-	-	-	-	-
Total organic carbon (TOC)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-
Total suspended solids (TSS)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-
FPARAM													
Dissolved oxygen (DO), field	mg/L	-	-	-	-	-	-	-	-	-	-	-	-
pH, field	s.u.	-	-	-	-	-	-	-	-	-	-	-	-
Temperature, field	Deg C	-	-	-	-	-	-	-	-	-	-	-	-
Turbidity, field	NTU	-	-	-	-	-	-	-	-	-	-	-	-

Footnotes:

- U Not detected at the associated reporting limit.
- J Estimated concentration.
- UJ Not detected; associated reporting limit is estimated.
- R Rejected.

Attachment B
Analytical Results Summary Sampling

AOI:	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area
Sample Location:	MW102D2	MW102D2	MW102D3	MW102D3	MW102D3	MW102D4	MW102D4	MW102D4	MW102D4	MW102D4	MW102D4	MW102D4	MW102D4	MW102D4
Sample ID:	GW-12610-082616-SSH-1612	GW-12610-082117-SSH-03-17	MW102D3_(08/19/08)	MW102D3	GW-12610-081710-JY-003	MW102D4_(08/19/08)	MW102D4	GW-12610-081710-JY-004	GW-12610-082311-JY-012	GW-12610-080912-SSH-010	GW-12610-080713-JY-006	GW-12610-080614-SSH-1405	GW-12610-080614-SSH-1406	
Sample Date:	8/26/2016	8/21/2017	8/19/2008	8/26/2009	8/17/2010	8/19/2008	8/26/2009	8/17/2010	8/23/2011	8/9/2012	8/7/2013	8/6/2014	8/6/2014 (Duplicate)	
Parameters	Units													
VOAs														
PCBs														
Aroclor-1016 (PCB-1016)	mg/L	0.0002 U	0.00019 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.00019 U	0.00019 U	0.00019 U	0.00019 U
Aroclor-1221 (PCB-1221)	mg/L	0.0002 U	0.00019 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.00019 U	0.00019 U	0.00019 U	0.00019 U
Aroclor-1232 (PCB-1232)	mg/L	0.0002 U	0.00019 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.00019 U	0.00019 U	0.00019 U	0.00019 U
Aroclor-1242 (PCB-1242)	mg/L	0.00015 J	0.00048	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.000084 J	0.000082 J	0.00019 U	0.00019	0.00019 U	0.00019 U
Aroclor-1248 (PCB-1248)	mg/L	0.0002 U	0.00019 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.00019 U	0.00019 U	0.00019 U	0.00019 U
Aroclor-1254 (PCB-1254)	mg/L	0.000045 J	0.00019 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.00019 U	0.00019 U	0.00019 U	0.00019 U
Aroclor-1260 (PCB-1260)	mg/L	0.0002 U	0.00019 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.00019 U	0.00019 U	0.00019 U	0.00019 U
Wet														
Alkalinity, total (as CaCO3)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
Ammonia	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
Ammonia-N	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
Biochemical oxygen demand (BOD)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
Chemical oxygen demand (COD)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
Hardness, carbonate	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
Oil and grease (HEM), polar	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
pH, lab	s.u.	-	-	-	-	-	-	-	-	-	-	-	-	-
Phosphate, total	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
Total dissolved solids (TDS)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
Total microbial population	cfu/mL	-	-	-	-	-	-	-	-	-	-	-	-	-
Total organic carbon (TOC)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
Total suspended solids (TSS)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
FPARAM														
Dissolved oxygen (DO), field	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
pH, field	s.u.	-	-	-	-	-	-	-	-	-	-	-	-	-
Temperature, field	Deg C	-	-	-	-	-	-	-	-	-	-	-	-	-
Turbidity, field	NTU	-	-	-	-	-	-	-	-	-	-	-	-	-

Footnotes:
 U Not detected at the associated reporting limit.
 J Estimated concentration.
 UJ Not detected; associated reporting limit is estimated.
 R Rejected.

Attachment B
Analytical Results Summary Sampling

AOI:	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area
Sample Location:	MW102D4	MW102D4	MW102D4	MW102D4	MW300S	MW300S	MW300S	MW300S	MW300S	MW300S	MW300S	MW300S	MW300S	MW300S
Sample ID:	GW-12610-082615-SSH-1015	GW-12610-082616-SSH-1611	GW-12610-082117-SSH-04-17	GW-12610-082117-SSH-05-17	MW300S_(08/19/08)	DUP 4	MW300S	MW300S	GW-12610-081810-JY-011	GW-12610-081810-JY-012	GW-12610-071911-SH-014	GW-12610-082311-JY-004	GW-12610-082311-JY-005	GW-12610-080912-SSH-007
Sample Date:	8/26/2015	8/26/2016	8/21/2017	8/21/2017 (Duplicate)	8/19/2008	8/26/2009 (Duplicate)	8/26/2009	8/18/2010	8/18/2010 (Duplicate)	7/19/2011	8/23/2011	8/23/2011 (Duplicate)	8/23/2011 (Duplicate)	8/9/2012
Parameters	Units													
VOAs														
PCBs														
Aroclor-1016 (PCB-1016)	mg/L	0.00019 U	0.00019 U	0.00019 U	0.00019 U	0.0002 U	0.0002 UJ	0.0002 UJ	0.0002 U	0.0002 U	-	0.0002 U	0.00019 U	0.00019 U
Aroclor-1221 (PCB-1221)	mg/L	0.00019 U	0.00019 U	0.00019 U	0.00019 U	0.0002 U	0.0002 UJ	0.0002 UJ	0.0002 U	0.0002 U	-	0.0002 U	0.00019 U	0.00019 U
Aroclor-1232 (PCB-1232)	mg/L	0.00019 U	0.00019 U	0.00019 U	0.00019 U	0.0002 U	0.0002 UJ	0.0002 UJ	0.0002 U	0.0002 U	-	0.0002 U	0.00019 U	0.00019 U
Aroclor-1242 (PCB-1242)	mg/L	0.00019 U	0.00019 U	0.00019 U	0.000078 J	0.00021	0.0004 J	0.00039 J	0.00014 J	0.00016 J	-	0.00023	0.00024	0.00019 U
Aroclor-1248 (PCB-1248)	mg/L	0.00019 U	0.00019 U	0.00019 U	0.00019 U	0.0002 U	0.0002 UJ	0.0002 UJ	0.0002 U	0.0002 U	-	0.0002 U	0.00019 U	0.00019 U
Aroclor-1254 (PCB-1254)	mg/L	0.00019 U	0.00019 U	0.00019 U	0.00019 U	0.0002 U	0.0002 UJ	0.0002 UJ	0.0002 U	0.0002 U	-	0.0002 U	0.00019 U	0.00019 U
Aroclor-1260 (PCB-1260)	mg/L	0.00019 U	0.00019 U	0.00019 U	0.00019 U	0.0002 U	0.0002 UJ	0.0002 UJ	0.0002 U	0.0002 U	-	0.0002 U	0.00019 U	0.00019 U
Wet														
Alkalinity, total (as CaCO3)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
Ammonia	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
Ammonia-N	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
Biochemical oxygen demand (BOD)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
Chemical oxygen demand (COD)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
Hardness, carbonate	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
Oil and grease (HEM), polar	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
pH, lab	s.u.	-	-	-	-	-	-	-	-	-	-	-	-	-
Phosphate, total	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
Total dissolved solids (TDS)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
Total microbial population	cfu/mL	-	-	-	-	-	-	-	-	-	2960	-	-	-
Total organic carbon (TOC)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
Total suspended solids (TSS)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
FPARAM														
Dissolved oxygen (DO), field	mg/L	-	-	-	-	-	-	-	-	-	0.14	-	-	-
pH, field	s.u.	-	-	-	-	-	-	-	-	-	7.28	-	-	-
Temperature, field	Deg C	-	-	-	-	-	-	-	-	-	16.78	-	-	-
Turbidity, field	NTU	-	-	-	-	-	-	-	-	-	4.92	-	-	-

Footnotes:

- U Not detected at the associated reporting limit.
- J Estimated concentration.
- UJ Not detected; associated reporting limit is estimated.
- R Rejected.

Attachment B
Analytical Results Summary Sampling

AOI:	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Machine Storage Area	Perimeter Banks	Perimeter Banks	Perimeter Banks	Perimeter Banks	Perimeter Banks	Perimeter Banks
Sample Location:	MW300S	MW300S	MW300S	MW300S	MW300S	MW300S	MW300S	MW300S	LMW13S	LMW13S	LMW13S	LMW13S	LMW13S	LMW13S
Sample ID:	GW-12610-080912-SSH-008	GW-12610-080713-JY-001	GW-12610-080713-JY-002	GW-12610-080614-SSH-1407	GW-12610-082615-SSH-0615	GW-12610-082616-SSH-1610	GW-12610-082117-SSH-07-17	GW-12610-082117-SSH-07-17	LMW13S_(08/18/08)	GW-12610-081710-JY-009	GW-12610-082311-JY-006	GW-12610-080812-SSH-004	GW-12610-080812-SSH-005	GW-12610-080813-JY-008
Sample Date:	8/9/2012 (Duplicate)	8/7/2013	8/7/2013 (Duplicate)	8/6/2014	8/26/2015	8/26/2016	8/26/2016	8/21/2017	8/18/2008	8/17/2010	8/23/2011	8/8/2012	8/8/2012 (Duplicate)	8/8/2013
Parameters	Units													
VOAs														
PCBs														
Aroclor-1016 (PCB-1016)	mg/L	0.00019 U	0.00019 U	0.00019 U	0.00019 U	0.00019 U	0.00019 U	0.00019 U	0.0002 U	0.0002 U	0.00019 U	0.00019 U	0.00019 U	0.00019 UJ
Aroclor-1221 (PCB-1221)	mg/L	0.00019 U	0.00019 U	0.00019 U	0.00019 U	0.00019 U	0.00019 U	0.00019 U	0.0002 U	0.0002 U	0.00019 U	0.00019 U	0.00019 U	0.00019 UJ
Aroclor-1232 (PCB-1232)	mg/L	0.00019 U	0.00019 U	0.00019 U	0.00019 U	0.00019 U	0.00019 U	0.00019 U	0.0002 U	0.0002 U	0.00019 U	0.00019 U	0.00019 U	0.00019 UJ
Aroclor-1242 (PCB-1242)	mg/L	0.000083 J	0.00019 U	0.00019 U	0.0001 J	0.000095 J	0.00019 U	0.000084 J	0.0002 U	0.0002 U	0.00019 U	0.00019 U	0.00019 UJ	0.00019 UJ
Aroclor-1248 (PCB-1248)	mg/L	0.00019 U	0.00019 U	0.00019 U	0.00019 U	0.00019 U	0.00019 U	0.00019 U	0.0002 U	0.0002 U	0.00019 U	0.00019 U	0.00019 U	0.00019 UJ
Aroclor-1254 (PCB-1254)	mg/L	0.00019 U	R	R	0.00019 U	0.00019 U	0.00019 U	R	0.0002 U	0.0002 U	0.00019 U	0.00019 U	0.00019 U	0.00019 U
Aroclor-1260 (PCB-1260)	mg/L	0.00019 U	R	R	0.00019 U	0.00019 U	0.00019 U	R	0.0002 U	0.0002 U	0.00019 U	0.00019 U	0.00019 U	0.00019 U
Wet														
Alkalinity, total (as CaCO3)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
Ammonia	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
Ammonia-N	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
Biochemical oxygen demand (BOD)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
Chemical oxygen demand (COD)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
Hardness, carbonate	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
Oil and grease (HEM), polar	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
pH, lab	s.u.	-	-	-	-	-	-	-	-	-	-	-	-	-
Phosphate, total	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
Total dissolved solids (TDS)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
Total microbial population	cfu/mL	-	-	-	-	-	-	-	-	-	-	-	-	-
Total organic carbon (TOC)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
Total suspended solids (TSS)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
FPARAM														
Dissolved oxygen (DO), field	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
pH, field	s.u.	-	-	-	-	-	-	-	-	-	-	-	-	-
Temperature, field	Deg C	-	-	-	-	-	-	-	-	-	-	-	-	-
Turbidity, field	NTU	-	-	-	-	-	-	-	-	-	-	-	-	-

Footnotes:
 U Not detected at the associated reporting limit.
 J Estimated concentration.
 UJ Not detected; associated reporting limit is estimated.
 R Rejected.

Attachment B
Analytical Results Summary Sampling

AOI:	Perimeter Banks	Perimeter Banks	Perimeter Banks	Perimeter Banks	Perimeter Banks	Perimeter Banks	Perimeter Banks	Perimeter Banks	Perimeter Banks	Perimeter Banks	Perimeter Banks	Perimeter Banks	Perimeter Banks	Perimeter Banks
Sample Location:	LMW13S	LMW13S	LMW13S	LMW13S	LMW15D	LMW15D	LMW15D	LMW15D	LMW15D	LMW15D	LMW15D	LMW15D	LMW15D	LMW15D
Sample ID:	GW-12610-080614-SSH-1408	GW-12610-082615-SSH-0315	GW-12610-082616-SSH-1609	GW-12610-082217-SSH-09-17	LMW15D_(08/18/08)	MW15D	GW-12610-081710-JY-010	GW-12610-082311-JY-007	GW-12610-080812-SSH-006	GW-12610-080813-JY-009	GW-12610-080614-SSH-1409	GW-12610-082615-SSH-0415	GW-12610-082616-SSH-1608	
Sample Date:	8/6/2014	8/26/2015	8/26/2016	8/22/2017	8/18/2008	8/26/2009	8/17/2010	8/23/2011	8/8/2012	8/8/2013	8/6/2014	8/26/2015	8/26/2016	
Parameters	Units													
VOAs														
PCBs														
Aroclor-1016 (PCB-1016)	mg/L	0.00019 U	0.00019 U	0.00019 U	0.00019 U	0.0002 U	0.0002 UJ	0.0002 U	0.00019 U	0.00019 U	0.00019 U	0.00019 U	0.00019 U	0.00019 U
Aroclor-1221 (PCB-1221)	mg/L	0.00019 U	0.00019 U	0.00019 U	0.00019 U	0.0002 U	0.0002 UJ	0.0002 U	0.00019 U	0.00019 U	0.00019 U	0.00019 U	0.00019 U	0.00019 U
Aroclor-1232 (PCB-1232)	mg/L	0.00019 U	0.00019 U	0.00019 U	0.00019 U	0.0002 U	0.0002 UJ	0.0002 U	0.00019 U	0.00019 U	0.00019 U	0.00019 U	0.00019 U	0.00019 U
Aroclor-1242 (PCB-1242)	mg/L	0.00019 U	0.00019 U	0.00019 U	0.00019 U	0.00019 J	0.000073 J	0.0002 U	0.00006 J	0.00013 J	0.00014 J	0.000065 J	0.00019 U	0.00019 U
Aroclor-1248 (PCB-1248)	mg/L	0.001	0.00098	0.00058	0.00019 U	0.0002 U	0.0002 UJ	0.0002 U	0.00019 U	0.00019 U	0.00019 U	0.00019 U	0.00019 U	0.00019 U
Aroclor-1254 (PCB-1254)	mg/L	0.00019 U	0.00019 U	0.00019 U	0.00019 U	0.0002 U	0.0002 UJ	0.0002 U	0.00019 U	0.00019 U	0.00019 UJ	0.00019 U	0.00019 U	0.00019 U
Aroclor-1260 (PCB-1260)	mg/L	0.00019 U	0.00019 U	0.00019 U	0.00019 U	0.0002 U	0.0002 UJ	0.0002 U	0.00019 U	0.00019 U	0.00019 UJ	0.00019 U	0.00019 U	0.00019 U
Wet														
Alkalinity, total (as CaCO3)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
Ammonia	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
Ammonia-N	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
Biochemical oxygen demand (BOD)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
Chemical oxygen demand (COD)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
Hardness, carbonate	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
Oil and grease (HEM), polar	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
pH, lab	s.u.	-	-	-	-	-	-	-	-	-	-	-	-	-
Phosphate, total	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
Total dissolved solids (TDS)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
Total microbial population	cfu/mL	-	-	-	-	-	-	-	-	-	-	-	-	-
Total organic carbon (TOC)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
Total suspended solids (TSS)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
FPARAM														
Dissolved oxygen (DO), field	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
pH, field	s.u.	-	-	-	-	-	-	-	-	-	-	-	-	-
Temperature, field	Deg C	-	-	-	-	-	-	-	-	-	-	-	-	-
Turbidity, field	NTU	-	-	-	-	-	-	-	-	-	-	-	-	-

Footnotes:

- U Not detected at the associated reporting limit.
- J Estimated concentration.
- UJ Not detected; associated reporting limit is estimated.
- R Rejected.

Analytical Results Summary Sampling

AOI:	Perimeter Banks	Perimeter Banks	Perimeter Banks	Perimeter Banks	Perimeter Banks	Perimeter Banks	Perimeter Banks	Perimeter Banks	Perimeter Banks	Perimeter Banks	Perimeter Banks	Perimeter Banks	Perimeter Banks	Perimeter Banks	
Sample Location:	LMW15D	MW301D1	MW301D1	MW301D1	MW301D1	MW301D1	MW301D2	MW301D2	MW301D2	MW301D2	MW301D2	MW301D2	MW301D2	MW301D2	
Sample ID:	GW-12610-082217-SSH-10-17	GW-081706-SSH-0612	MW301D1_(08/19/08)	MW301D1	GW-12610-081710-JY-005	MW301D2_(08/19/08)	MW301D2	GW-12610-081710-JY-006	GW-12610-082311-JY-008	GW-12610-080912-SSH-009	GW-12610-080713-JY-007	GW-12610-080614-SSH-1410	GW-12610-082615-SSH-0515	GW-12610-121416-SSH-1615	
Sample Date:	8/22/2017	8/17/2006	8/19/2008	8/26/2009	8/17/2010	8/19/2008	8/26/2009	8/17/2010	8/23/2011	8/9/2012	8/7/2013	8/6/2014	8/26/2015	12/14/2016	
Parameters	Units														
VOAs															
PCBs															
Aroclor-1016 (PCB-1016)	mg/L	0.00019 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 UJ	0.0002 U	0.00019 U	0.00019 U	0.00019 U	0.00019 U	0.00038 U	0.00019 U
Aroclor-1221 (PCB-1221)	mg/L	0.00019 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 UJ	0.0002 U	0.00019 U	0.00019 U	0.00019 U	0.00019 U	0.00038 U	0.00019 U
Aroclor-1232 (PCB-1232)	mg/L	0.00019 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 UJ	0.0002 U	0.00019 U	0.00019 U	0.00019 U	0.00019 U	0.00038 U	0.00019 U
Aroclor-1242 (PCB-1242)	mg/L	0.00019 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.000085 J	0.0002 U	0.00019 U	0.00019 U	0.00019 U	0.00019 U	0.00038 U	0.00019 U
Aroclor-1248 (PCB-1248)	mg/L	0.00019 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 UJ	0.0002 U	0.00019 U	0.00019 U	0.00019 U	0.00019 U	0.00038 U	0.00019 U
Aroclor-1254 (PCB-1254)	mg/L	0.00019 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 UJ	0.0002 U	0.00019 U	0.00019 U	0.00019 U	0.00019 U	0.00038 U	0.00019 U
Aroclor-1260 (PCB-1260)	mg/L	0.00019 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 UJ	0.0002 U	0.00019 U	0.00019 U	0.00019 U	0.00019 U	0.00038 U	0.00019 U
Wet															
Alkalinity, total (as CaCO3)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ammonia	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ammonia-N	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Biochemical oxygen demand (BOD)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chemical oxygen demand (COD)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hardness, carbonate	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Oil and grease (HEM), polar	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-
pH, lab	s.u.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phosphate, total	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total dissolved solids (TDS)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total microbial population	cfu/mL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total organic carbon (TOC)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total suspended solids (TSS)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FPARAM															
Dissolved oxygen (DO), field	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-
pH, field	s.u.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Temperature, field	Deg C	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Turbidity, field	NTU	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Footnotes:

- U Not detected at the associated reporting limit.
- J Estimated concentration.
- UJ Not detected; associated reporting limit is estimated.
- R Rejected.

Attachment B
Analytical Results Summary Sampling

AOI:		Perimeter Banks	Perimeter Banks	Perimeter Banks	Perimeter Banks	Perimeter Banks	Perimeter Banks	Perimeter Banks	Perimeter Banks	Perimeter Banks	Perimeter Banks
Sample Location:		MW301D2	MW301D3	MW301D3	MW301D3	MW301D3	MW301D4	MW301D4	MW301D4	MW301D4	MW301D4
Sample ID:		GW-12610-082117-SSH-06-17	GW-081706-SSH-0614	MW301D3_(08/19/08)	MW301D3	GW-12610-081710-JY-007	DUP3_(08/19/08)	MW301D4_(08/19/08)	MW301D4	GW-12610-081710-JY-008	GW-12610-082311-JY-009
Sample Date:		8/21/2017	8/17/2006	8/19/2008	8/26/2009	8/17/2010	8/19/2008	8/19/2008	8/26/2009	8/17/2010	8/23/2011
Parameters	Units						(Duplicate)				
VOAs											
PCBs											
Aroclor-1016 (PCB-1016)	mg/L	0.00019 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Aroclor-1221 (PCB-1221)	mg/L	0.00019 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Aroclor-1232 (PCB-1232)	mg/L	0.00019 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Aroclor-1242 (PCB-1242)	mg/L	0.00019 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Aroclor-1248 (PCB-1248)	mg/L	0.00019 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Aroclor-1254 (PCB-1254)	mg/L	0.00019 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Aroclor-1260 (PCB-1260)	mg/L	0.00019 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U
Wet											
Alkalinity, total (as CaCO3)	mg/L	-	-	-	-	-	-	-	-	-	-
Ammonia	mg/L	-	-	-	-	-	-	-	-	-	-
Ammonia-N	mg/L	-	-	-	-	-	-	-	-	-	-
Biochemical oxygen demand (BOD)	mg/L	-	-	-	-	-	-	-	-	-	-
Chemical oxygen demand (COD)	mg/L	-	-	-	-	-	-	-	-	-	-
Hardness, carbonate	mg/L	-	-	-	-	-	-	-	-	-	-
Oil and grease (HEM), polar	mg/L	-	-	-	-	-	-	-	-	-	-
pH, lab	s.u.	-	-	-	-	-	-	-	-	-	-
Phosphate, total	mg/L	-	-	-	-	-	-	-	-	-	-
Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-
Total dissolved solids (TDS)	mg/L	-	-	-	-	-	-	-	-	-	-
Total microbial population	cfu/mL	-	-	-	-	-	-	-	-	-	-
Total organic carbon (TOC)	mg/L	-	-	-	-	-	-	-	-	-	-
Total suspended solids (TSS)	mg/L	-	-	-	-	-	-	-	-	-	-
FPARAM											
Dissolved oxygen (DO), field	mg/L	-	-	-	-	-	-	-	-	-	-
pH, field	s.u.	-	-	-	-	-	-	-	-	-	-
Temperature, field	Deg C	-	-	-	-	-	-	-	-	-	-
Turbidity, field	NTU	-	-	-	-	-	-	-	-	-	-

Footnotes:
 U Not detected at the associated reporting limit.
 J Estimated concentration.
 UJ Not detected; associated reporting limit is estimated.
 R Rejected.

Attachment C
Analytical Results and Reduced Validation -
2017 Annual Sampling Event



Memorandum

September 12, 2017

To: Mike Tomka Ref. No.: 012610-T04

From: James Abston/tl/25/Det *James Abston* Tel: 248-893-3400

**Subject: Analytical Results and Reduced Validation
2017 Semi-Annual Groundwater Sampling
RACER Bay City Site
Bay City, Michigan
August 2017**

1. Introduction

This document details a reduced validation of analytical results for groundwater samples collected in support of the 2016 Semi-Annual Groundwater Sampling at the RACER Bay City Site during August 2017. Samples were submitted to TestAmerica Laboratories, Inc., located in North Canton, Ohio. A sample collection and analysis summary is presented in Table 1. The validated analytical results are summarized in Table 2. A summary of the analytical methodology is presented in Table 3.

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

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

- i) "USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review", USEPA 540-R-08-01, June 2008

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

2. Sample Holding Time and Preservation

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

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



3. Laboratory Method Blank Analyses

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

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

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

4. Surrogate Spike Recoveries

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

All samples submitted for polychlorinated biphenyls (PCB) determinations were spiked with the appropriate number of surrogate compounds prior to sample extraction and analysis.

Surrogate recoveries were assessed against laboratory control limits. All surrogate recoveries were acceptable with the exception of one surrogate from one sample that was analyzed at a dilution and could not be assessed.

5. Laboratory Control Sample Analyses

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

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

The LCS contained the compounds specified in the method. All LCS recoveries were within the laboratory control limits, demonstrating acceptable analytical accuracy.

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

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

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



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

7. Field QA/QC Samples

The field QA/QC consisted of one field duplicate sample set.

Field Duplicate Sample Analysis

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

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

8. Analyte Reporting

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

9. Conclusion

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

Table 1
Sample Collection and Analysis Summary
2017 Semi-Annual Groundwater Sampling
RACER Bay City Site
Bay City, Michigan
August 2017

Sample Identification	Location	Matrix	Collection Date (mm/dd/yyyy)	Collection Time (hr:min)	<u>Analysis/Parameters</u>	
					PCB	Comments
GW-12610-082117-SSH-02-17	MW102D1	Water	08/21/2017	09:16:00	X	
GW-12610-082117-SSH-03-17	MW102D2	Water	08/21/2017	10:06:00	X	
GW-12610-082117-SSH-04-17	MW102D4	Water	08/21/2017	10:51:00	X	
GW-12610-082117-SSH-05-17	MW102D4	Water	08/21/2017	11:01:00	X	FD
GW-12610-082117-SSH-06-17	MW301D2	Water	08/21/2017	12:06:00	X	
GW-12610-082117-SSH-07-17	MW300S	Water	08/21/2017	13:46:00	X	
GW-12610-082117-SSH-08-17	influent-GWTS	Water	08/21/2017	14:15:00	X	
GW-12610-082217-SSH-09-17	MW13S	Water	08/22/2017	10:31:00	X	MS/MSD
GW-12610-082217-SSH-10-17	MW15D	Water	08/22/2017	11:16:00	X	

Notes:

FD - Field Duplicate sample in parenthesis
MS/MSD - Matrix Spike/Matrix Spike Duplicate
PCB - Polychlorinated Biphenyls

Table 2

**Validated Analytical Summary Results
2017 Semi-Annual Groundwater Sampling
RACER Bay City Site
Bay City, Michigan
August 2017**

Location ID:	influent-GWTS	MW13S	MW102D1	MW102D2	MW102D4
Sample Name:	GW-12610-082117-SSH-08-17	GW-12610-082217-SSH-09-17	GW-12610-082117-SSH-02-17	GW-12610-082117-SSH-03-17	GW-12610-082117-SSH-04-17
Sample Date:	08/21/2017	08/22/2017	08/21/2017	08/21/2017	08/21/2017
Depth:	--	--	--	--	--
Parameters	Unit				
Pesticides/PCBs					
Aroclor-1016 (PCB-1016)	µg/L	1.9 U	0.19 U	0.19 U	0.19 U
Aroclor-1221 (PCB-1221)	µg/L	1.9 U	0.19 U	0.19 U	0.19 U
Aroclor-1232 (PCB-1232)	µg/L	1.9 U	0.19 U	0.19 U	0.19 U
Aroclor-1242 (PCB-1242)	µg/L	5.4	0.57	0.26	0.48
Aroclor-1248 (PCB-1248)	µg/L	1.9 U	0.19 U	0.19 U	0.19 U
Aroclor-1254 (PCB-1254)	µg/L	1.9 U	0.19 U	0.19 U	0.19 U
Aroclor-1260 (PCB-1260)	µg/L	1.9 U	0.19 U	0.19 U	0.19 U

Table 2
Validated Analytical Summary Results
2017 Semi-Annual Groundwater Sampling
RACER Bay City Site
Bay City, Michigan
August 2017

Location ID:	MW102D4	MW15D	MW300S	MW301D2
Sample Name:	GW-12610-082117-SSH-05-17	GW-12610-082217-SSH-10-17	GW-12610-082117-SSH-07-17	GW-12610-082117-SSH-06-17
Sample Date:	08/21/2017	08/22/2017	08/21/2017	08/21/2017
Depth:	--	--	--	--
	Duplicate			
Parameters	Unit			
Pesticides/PCBs				
Aroclor-1016 (PCB-1016)	µg/L	0.19 U	0.19 U	0.19 U
Aroclor-1221 (PCB-1221)	µg/L	0.19 U	0.19 U	0.19 U
Aroclor-1232 (PCB-1232)	µg/L	0.19 U	0.19 U	0.19 U
Aroclor-1242 (PCB-1242)	µg/L	0.078 J	0.19 U	0.19 U
Aroclor-1248 (PCB-1248)	µg/L	0.19 U	0.19 U	0.19 U
Aroclor-1254 (PCB-1254)	µg/L	0.19 U	0.19 U	0.19 U
Aroclor-1260 (PCB-1260)	µg/L	0.19 U	0.19 U	0.19 U

Table 2

Validated Analytical Summary Results
 2017 Semi-Annual Groundwater Sampling
 RACER Bay City Site
 Bay City, Michigan
 August 2017

Location ID: MW301D2
 Sample Name: GW-12610-082117-SSH-06-17
 Sample Date: 08/21/2017
 Depth: --

Parameters	Unit	
Pesticides/PCBs		
Aroclor-1016 (PCB-1016)	µg/L	0.19 U
Aroclor-1221 (PCB-1221)	µg/L	0.19 U
Aroclor-1232 (PCB-1232)	µg/L	0.19 U
Aroclor-1242 (PCB-1242)	µg/L	0.19 U
Aroclor-1248 (PCB-1248)	µg/L	0.19 U
Aroclor-1254 (PCB-1254)	µg/L	0.19 U
Aroclor-1260 (PCB-1260)	µg/L	0.19 U

Notes:

- U - Not detected at the associated reporting limit
- J - Estimated concentration

Table 3
Analytical Methods
2017 Semi-Annual Groundwater Sampling
RACER Bay City Site
Bay City, Michigan
August 2017

Parameter	Method	Matrix	Preservation	Holding Time	
				Collection to Extraction (Days)	Collection or Extraction to Analysis (Days)
Polychlorinated Biphenyls (PCBs)	SW-846 8082	Water	Iced, 0-6° C	7	40

Notes:

Method References:

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

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Canton

4101 Shuffel Street NW

North Canton, OH 44720

Tel: (330)497-9396

TestAmerica Job ID: 240-88685-1

Client Project/Site: 12610-T04, RACER Bay City

For:

GHD Services Inc.

26850 Haggerty Rd.

Farmington Hills, Michigan 48331

Attn: Ms. Ruth Mickle



Authorized for release by:

12/13/2017 8:34:35 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: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-88685-1

Job ID: 240-88685-1

Laboratory: TestAmerica Canton

Narrative

Job Narrative
240-88685-1

Comments

No additional comments.

Receipt

The samples were received on 12/1/2017 9:45 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.1° C.

GC/MS VOA

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

GC Semi VOA

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

Metals

Method(s) 200.7 Rev 4.4: Some requested practical quantitation limits (PQLs) on the following samples fall below the laboratory's verified standard quantitation limit: WT-12610-113017-SSH-02-17 (240-88685-1). The continuing calibration blanks and method blanks may not support the lower PQL.

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

General Chemistry

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

Organic Prep

Method(s) 3520C, 608: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 240-306029.

Method(s) 608: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 240-306419.

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

Definitions/Glossary

Client: GHD Services Inc.
Project/Site: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-88685-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

GC Semi VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Metals

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

General Chemistry

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.
s	Seeded Control Blank (SCB) Recovery High

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
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: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-88685-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-88685-1	WT-12610-113017-SSH-02-17	Water	11/30/17 14:00	12/01/17 09:45
240-88685-2	TB-12610-113017-SSH-03-17	Water	11/30/17 14:15	12/01/17 09:45

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Detection Summary

Client: GHD Services Inc.
Project/Site: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-88685-1

Client Sample ID: WT-12610-113017-SSH-02-17

Lab Sample ID: 240-88685-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Iron	400		100	25	ug/L	1		200.7 Rev 4.4	Total
Nickel	74		20	1.6	ug/L	1		200.7 Rev 4.4	Recoverable Total
Chemical Oxygen Demand	13		10	4.1	mg/L	1		410.4	Recoverable Total/NA
pH	7.2	HF	0.1	0.1	SU	1		4500 H+ B-2000	Total/NA
Ammonia	0.20		0.20	0.093	mg/L	1		SM 4500 NH3 D	Total/NA

Client Sample ID: TB-12610-113017-SSH-03-17

Lab Sample ID: 240-88685-2

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Canton

Method Summary

Client: GHD Services Inc.
Project/Site: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-88685-1

Method	Method Description	Protocol	Laboratory
624	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL CAN
608	Polychlorinated Biphenyls (PCBs) (GC)	40CFR136A	TAL CAN
200.7 Rev 4.4	Metals (ICP)	EPA	TAL CAN
245.1	Mercury (CVAA)	EPA	TAL CAN
1664A	HEM and SGT-HEM	1664A	TAL CAN
410.4	COD	MCAWW	TAL CAN
4500 H+ B-2000	pH	SM	TAL CAN
5210B-2001	BOD, 5-Day	SM	TAL CAN
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL CAN
SM 4500 NH3 D	Ammonia	SM	TAL CAN
SM4500 P E-1999	Phosphorus	SM	TAL CAN

Protocol References:

1664A = EPA-821-98-002

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater",

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: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-88685-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Client Sample ID: WT-12610-113017-SSH-02-17

Date Collected: 11/30/17 14:00

Date Received: 12/01/17 09:45

Lab Sample ID: 240-88685-1

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	1.0	U	1.0	0.45	ug/L			12/06/17 02:49	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	89		69 - 120					12/06/17 02:49	1
1,2-Dichloroethane-d4 (Surr)	95		61 - 138					12/06/17 02:49	1
Toluene-d8 (Surr)	103		73 - 120					12/06/17 02:49	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-88685-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Client Sample ID: TB-12610-113017-SSH-03-17

Date Collected: 11/30/17 14:15

Date Received: 12/01/17 09:45

Lab Sample ID: 240-88685-2

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	1.0	U	1.0	0.45	ug/L			12/06/17 03:11	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	89		69 - 120					12/06/17 03:11	1
1,2-Dichloroethane-d4 (Surr)	94		61 - 138					12/06/17 03:11	1
Toluene-d8 (Surr)	99		73 - 120					12/06/17 03:11	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-88685-1

Method: 608 - Polychlorinated Biphenyls (PCBs) (GC)

Client Sample ID: WT-12610-113017-SSH-02-17

Date Collected: 11/30/17 14:00

Date Received: 12/01/17 09:45

Lab Sample ID: 240-88685-1

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor-1016	0.096	U	0.096	0.048	ug/L		12/04/17 07:26	12/08/17 22:19	1
Aroclor-1221	0.096	U	0.096	0.087	ug/L		12/04/17 07:26	12/08/17 22:19	1
Aroclor-1232	0.096	U	0.096	0.067	ug/L		12/04/17 07:26	12/08/17 22:19	1
Aroclor-1242	0.096	U	0.096	0.058	ug/L		12/04/17 07:26	12/08/17 22:19	1
Aroclor-1248	0.096	U	0.096	0.048	ug/L		12/04/17 07:26	12/08/17 22:19	1
Aroclor-1254	0.096	U	0.096	0.029	ug/L		12/04/17 07:26	12/08/17 22:19	1
Aroclor-1260	0.096	U	0.096	0.038	ug/L		12/04/17 07:26	12/08/17 22:19	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	75		10 - 114	12/04/17 07:26	12/08/17 22:19	1
Tetrachloro-m-xylene	75		15 - 131	12/04/17 07:26	12/08/17 22:19	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-88685-1

Method: 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Client Sample ID: WT-12610-113017-SSH-02-17

Date Collected: 11/30/17 14:00

Date Received: 12/01/17 09:45

Lab Sample ID: 240-88685-1

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	5.0	U	5.0	0.92	ug/L		12/04/17 14:00	12/06/17 02:04	1
Cadmium	2.0	U	2.0	0.29	ug/L		12/04/17 14:00	12/06/17 02:04	1
Chromium	5.0	U	5.0	0.55	ug/L		12/04/17 14:00	12/06/17 02:04	1
Copper	20	U	20	3.9	ug/L		12/04/17 14:00	12/06/17 02:04	1
Iron	400		100	25	ug/L		12/04/17 14:00	12/06/17 02:04	1
Nickel	74		20	1.6	ug/L		12/04/17 14:00	12/06/17 02:04	1
Lead	3.0	U	3.0	1.9	ug/L		12/04/17 14:00	12/06/17 02:04	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-88685-1

Method: 245.1 - Mercury (CVAA)

Client Sample ID: WT-12610-113017-SSH-02-17

Date Collected: 11/30/17 14:00

Date Received: 12/01/17 09:45

Lab Sample ID: 240-88685-1

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.20	U	0.20	0.13	ug/L		12/04/17 14:00	12/06/17 15:34	1

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Client Sample Results

Client: GHD Services Inc.
 Project/Site: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-88685-1

General Chemistry

Client Sample ID: WT-12610-113017-SSH-02-17

Date Collected: 11/30/17 14:00

Date Received: 12/01/17 09:45

Lab Sample ID: 240-88685-1

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM	4.7	U	4.7	0.97	mg/L			12/12/17 08:14	1
Chemical Oxygen Demand	13		10	4.1	mg/L			12/06/17 14:09	1
pH	7.2	HF	0.1	0.1	SU			12/01/17 15:53	1
Biochemical Oxygen Demand	2.0	U	2.0	1.2	mg/L			12/01/17 14:49	1
Total Suspended Solids	4.0	U	4.0	2.2	mg/L			12/04/17 09:20	1
Ammonia	0.20		0.20	0.093	mg/L			12/06/17 09:56	1
Total Phosphorus as P	0.10	U	0.10	0.037	mg/L			12/04/17 13:45	1

QC Association Summary

Client: GHD Services Inc.
Project/Site: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-88685-1

GC/MS VOA

Analysis Batch: 306349

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-88685-1	WT-12610-113017-SSH-02-17	Total/NA	Water	624	
240-88685-2	TB-12610-113017-SSH-03-17	Total/NA	Water	624	
MB 240-306349/7	Method Blank	Total/NA	Water	624	
LCS 240-306349/4	Lab Control Sample	Total/NA	Water	624	

GC Semi VOA

Prep Batch: 306029

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-88685-1	WT-12610-113017-SSH-02-17	Total/NA	Water	608	
MB 240-306029/15-A	Method Blank	Total/NA	Water	608	
LCS 240-306029/16-A	Lab Control Sample	Total/NA	Water	608	

Analysis Batch: 306974

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-88685-1	WT-12610-113017-SSH-02-17	Total/NA	Water	608	306029
MB 240-306029/15-A	Method Blank	Total/NA	Water	608	306029

Analysis Batch: 307119

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 240-306029/16-A	Lab Control Sample	Total/NA	Water	608	306029

Metals

Prep Batch: 306063

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-88685-1	WT-12610-113017-SSH-02-17	Total Recoverable	Water	200.7	
MB 240-306063/1-A	Method Blank	Total Recoverable	Water	200.7	
LCS 240-306063/2-A	Lab Control Sample	Total Recoverable	Water	200.7	

Prep Batch: 306065

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-88685-1	WT-12610-113017-SSH-02-17	Total/NA	Water	245.1	
MB 240-306065/1-A	Method Blank	Total/NA	Water	245.1	
LCS 240-306065/2-A	Lab Control Sample	Total/NA	Water	245.1	

Analysis Batch: 306329

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 240-306065/1-A	Method Blank	Total/NA	Water	245.1	306065
LCS 240-306065/2-A	Lab Control Sample	Total/NA	Water	245.1	306065

Analysis Batch: 306330

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-88685-1	WT-12610-113017-SSH-02-17	Total Recoverable	Water	200.7 Rev 4.4	306063
MB 240-306063/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	306063
LCS 240-306063/2-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	306063

Analysis Batch: 306568

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-88685-1	WT-12610-113017-SSH-02-17	Total/NA	Water	245.1	306065

TestAmerica Canton

QC Association Summary

Client: GHD Services Inc.
Project/Site: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-88685-1

General Chemistry

Analysis Batch: 305882

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-88685-1	WT-12610-113017-SSH-02-17	Total/NA	Water	5210B-2001	
SCB 240-305882/2	Method Blank	Total/NA	Water	5210B-2001	
USB 240-305882/1	Method Blank	Total/NA	Water	5210B-2001	
LCS 240-305882/3	Lab Control Sample	Total/NA	Water	5210B-2001	

Analysis Batch: 305897

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-88685-1	WT-12610-113017-SSH-02-17	Total/NA	Water	4500 H+ B-2000	
LCS 240-305897/2	Lab Control Sample	Total/NA	Water	4500 H+ B-2000	

Analysis Batch: 306066

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-88685-1	WT-12610-113017-SSH-02-17	Total/NA	Water	SM 2540D	
MB 240-306066/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 240-306066/2	Lab Control Sample	Total/NA	Water	SM 2540D	

Analysis Batch: 306177

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-88685-1	WT-12610-113017-SSH-02-17	Total/NA	Water	SM4500 P E-1999	
MB 240-306177/35	Method Blank	Total/NA	Water	SM4500 P E-1999	
LCS 240-306177/36	Lab Control Sample	Total/NA	Water	SM4500 P E-1999	

Analysis Batch: 306496

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-88685-1	WT-12610-113017-SSH-02-17	Total/NA	Water	410.4	
MB 240-306496/9	Method Blank	Total/NA	Water	410.4	
LCS 240-306496/10	Lab Control Sample	Total/NA	Water	410.4	

Analysis Batch: 306574

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-88685-1	WT-12610-113017-SSH-02-17	Total/NA	Water	SM 4500 NH3 D	
MB 240-306574/7	Method Blank	Total/NA	Water	SM 4500 NH3 D	
LCS 240-306574/8	Lab Control Sample	Total/NA	Water	SM 4500 NH3 D	

Analysis Batch: 307287

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-88685-1	WT-12610-113017-SSH-02-17	Total/NA	Water	1664A	
MB 240-307287/1	Method Blank	Total/NA	Water	1664A	
LCS 240-307287/2	Lab Control Sample	Total/NA	Water	1664A	
240-88685-1 MS	WT-12610-113017-SSH-02-17	Total/NA	Water	1664A	

QC Sample Results

Client: GHD Services Inc.
Project/Site: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-88685-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-306349/7
Matrix: Water
Analysis Batch: 306349

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	1.0	U	1.0	0.45	ug/L			12/05/17 18:57	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	97		69 - 120		12/05/17 18:57	1
1,2-Dichloroethane-d4 (Surr)	100		61 - 138		12/05/17 18:57	1
Toluene-d8 (Surr)	108		73 - 120		12/05/17 18:57	1

Lab Sample ID: LCS 240-306349/4
Matrix: Water
Analysis Batch: 306349

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Vinyl chloride	20.0	19.4		ug/L		97	10 - 251

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	102		69 - 120
1,2-Dichloroethane-d4 (Surr)	102		61 - 138
Toluene-d8 (Surr)	112		73 - 120

Method: 608 - Polychlorinated Biphenyls (PCBs) (GC)

Lab Sample ID: MB 240-306029/15-A
Matrix: Water
Analysis Batch: 306974

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 306029

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor-1016	0.10	U	0.10	0.050	ug/L		12/04/17 07:26	12/08/17 20:31	1
Aroclor-1221	0.10	U	0.10	0.090	ug/L		12/04/17 07:26	12/08/17 20:31	1
Aroclor-1232	0.10	U	0.10	0.070	ug/L		12/04/17 07:26	12/08/17 20:31	1
Aroclor-1242	0.10	U	0.10	0.060	ug/L		12/04/17 07:26	12/08/17 20:31	1
Aroclor-1248	0.10	U	0.10	0.050	ug/L		12/04/17 07:26	12/08/17 20:31	1
Aroclor-1254	0.10	U	0.10	0.030	ug/L		12/04/17 07:26	12/08/17 20:31	1
Aroclor-1260	0.10	U	0.10	0.040	ug/L		12/04/17 07:26	12/08/17 20:31	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	70		10 - 114	12/04/17 07:26	12/08/17 20:31	1
Tetrachloro-m-xylene	63		15 - 131	12/04/17 07:26	12/08/17 20:31	1

Lab Sample ID: LCS 240-306029/16-A
Matrix: Water
Analysis Batch: 307119

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 306029

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aroclor-1016	2.50	1.95		ug/L		78	50 - 114
Aroclor-1260	2.50	2.11		ug/L		84	8 - 127

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QC Sample Results

Client: GHD Services Inc.
Project/Site: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-88685-1

Method: 608 - Polychlorinated Biphenyls (PCBs) (GC) (Continued)

Lab Sample ID: LCS 240-306029/16-A
Matrix: Water
Analysis Batch: 307119

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 306029

Surrogate	LCS %Recovery	LCS Qualifier	Limits
DCB Decachlorobiphenyl	113		10 - 114
Tetrachloro-m-xylene	110		15 - 131

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 240-306063/1-A
Matrix: Water
Analysis Batch: 306330

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 306063

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	5.0	U	5.0	0.92	ug/L		12/04/17 14:00	12/05/17 12:05	1
Cadmium	2.0	U	2.0	0.29	ug/L		12/04/17 14:00	12/05/17 12:05	1
Chromium	5.0	U	5.0	0.55	ug/L		12/04/17 14:00	12/05/17 12:05	1
Copper	20	U	20	3.9	ug/L		12/04/17 14:00	12/05/17 12:05	1
Iron	100	U	100	25	ug/L		12/04/17 14:00	12/05/17 12:05	1
Nickel	20	U	20	1.6	ug/L		12/04/17 14:00	12/05/17 12:05	1
Lead	3.0	U	3.0	1.9	ug/L		12/04/17 14:00	12/05/17 12:05	1

Lab Sample ID: LCS 240-306063/2-A
Matrix: Water
Analysis Batch: 306330

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 306063

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits %Rec.
Silver	50.0	50.2		ug/L		100	85 - 115
Cadmium	50.0	49.6		ug/L		99	85 - 115
Chromium	200	194		ug/L		97	85 - 115
Copper	250	247		ug/L		99	85 - 115
Iron	1000	1010		ug/L		101	85 - 115
Nickel	500	498		ug/L		100	85 - 115
Lead	500	484		ug/L		97	85 - 115

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 240-306065/1-A
Matrix: Water
Analysis Batch: 306329

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 306065

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.20	U	0.20	0.13	ug/L		12/04/17 14:00	12/05/17 09:48	1

Lab Sample ID: LCS 240-306065/2-A
Matrix: Water
Analysis Batch: 306329

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 306065

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits %Rec.
Mercury	5.00	4.71		ug/L		94	85 - 115

TestAmerica Canton

QC Sample Results

Client: GHD Services Inc.
Project/Site: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-88685-1

Method: 1664A - HEM and SGT-HEM

Lab Sample ID: MB 240-307287/1
Matrix: Water
Analysis Batch: 307287

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM	5.0	U	5.0	1.0	mg/L			12/12/17 08:14	1

Lab Sample ID: LCS 240-307287/2
Matrix: Water
Analysis Batch: 307287

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
HEM	40.0	35.40		mg/L		89	78 - 114

Lab Sample ID: 240-88685-1 MS
Matrix: Water
Analysis Batch: 307287

Client Sample ID: WT-12610-113017-SSH-02-17
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
HEM	4.7	U	37.5	31.99		mg/L		85	78 - 114

Method: 410.4 - COD

Lab Sample ID: MB 240-306496/9
Matrix: Water
Analysis Batch: 306496

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chemical Oxygen Demand	10	U	10	4.1	mg/L			12/06/17 14:05	1

Lab Sample ID: LCS 240-306496/10
Matrix: Water
Analysis Batch: 306496

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chemical Oxygen Demand	55.2	52.9		mg/L		96	90 - 110

Method: 4500 H+ B-2000 - pH

Lab Sample ID: LCS 240-305897/2
Matrix: Water
Analysis Batch: 305897

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH	9.19	9.2		SU		100	97 - 103

TestAmerica Canton

QC Sample Results

Client: GHD Services Inc.
Project/Site: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-88685-1

Method: 5210B-2001 - BOD, 5-Day

Lab Sample ID: SCB 240-305882/2
Matrix: Water
Analysis Batch: 305882

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	SCB Result	SCB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biochemical Oxygen Demand	2.19	s	2.0	1.2	mg/L			12/01/17 13:42	1

Lab Sample ID: USB 240-305882/1
Matrix: Water
Analysis Batch: 305882

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	USB Result	USB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biochemical Oxygen Demand	2.0	U	2.0	1.2	mg/L			12/01/17 13:40	1

Lab Sample ID: LCS 240-305882/3
Matrix: Water
Analysis Batch: 305882

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Biochemical Oxygen Demand	198	179		mg/L		91	85 - 115

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 240-306066/1
Matrix: Water
Analysis Batch: 306066

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	4.0	U	4.0	2.2	mg/L			12/04/17 09:20	1

Lab Sample ID: LCS 240-306066/2
Matrix: Water
Analysis Batch: 306066

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	58.1	57.0		mg/L		98	64 - 120

Method: SM 4500 NH3 D - Ammonia

Lab Sample ID: MB 240-306574/7
Matrix: Water
Analysis Batch: 306574

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia	0.20	U	0.20	0.093	mg/L			12/06/17 09:21	1

Lab Sample ID: LCS 240-306574/8
Matrix: Water
Analysis Batch: 306574

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia	1.96	2.00		mg/L		102	85 - 114

TestAmerica Canton

QC Sample Results

Client: GHD Services Inc.
 Project/Site: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-88685-1

Method: SM4500 P E-1999 - Phosphorus

Lab Sample ID: MB 240-306177/35
 Matrix: Water
 Analysis Batch: 306177

Client Sample ID: Method Blank
 Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Phosphorus as P	0.10	U	0.10	0.037	mg/L			12/04/17 13:45	1

Lab Sample ID: LCS 240-306177/36
 Matrix: Water
 Analysis Batch: 306177

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Phosphorus as P	0.665	0.730		mg/L		110	77 - 120

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Surrogate Summary

Client: GHD Services Inc.
Project/Site: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-88685-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	BFB (69-120)	DCA (61-138)	TOL (73-120)
240-88685-1	WT-12610-113017-SSH-02-17	89	95	103
240-88685-2	TB-12610-113017-SSH-03-17	89	94	99
LCS 240-306349/4	Lab Control Sample	102	102	112
MB 240-306349/7	Method Blank	97	100	108

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)

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

TOL = Toluene-d8 (Surr)

Method: 608 - Polychlorinated Biphenyls (PCBs) (GC)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCBP2 (10-114)	TCX2 (15-131)
240-88685-1	WT-12610-113017-SSH-02-17	75	75
MB 240-306029/15-A	Method Blank	70	63

Surrogate Legend

DCBP = DCB Decachlorobiphenyl

TCX = Tetrachloro-m-xylene

Method: 608 - Polychlorinated Biphenyls (PCBs) (GC)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCBP1 (10-114)	TCX1 (15-131)
LCS 240-306029/16-A	Lab Control Sample	113	110

Surrogate Legend

DCBP = DCB Decachlorobiphenyl

TCX = Tetrachloro-m-xylene

Lab Chronicle

Client: GHD Services Inc.
Project/Site: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-88685-1

Client Sample ID: WT-12610-113017-SSH-02-17

Lab Sample ID: 240-88685-1

Date Collected: 11/30/17 14:00

Matrix: Water

Date Received: 12/01/17 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	306349	12/06/17 02:49	TJL1	TAL CAN
Total/NA	Prep	608			306029	12/04/17 07:26	SDE	TAL CAN
Total/NA	Analysis	608		1	306974	12/08/17 22:19	KMG	TAL CAN
Total Recoverable	Prep	200.7			306063	12/04/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	200.7 Rev 4.4		1	306330	12/06/17 02:04	KLC	TAL CAN
Total/NA	Prep	245.1			306065	12/04/17 14:00	AJC	TAL CAN
Total/NA	Analysis	245.1		1	306568	12/06/17 15:34	DSH	TAL CAN
Total/NA	Analysis	1664A		1	307287	12/12/17 08:14	BLW	TAL CAN
Total/NA	Analysis	410.4		1	306496	12/06/17 14:09	JMB	TAL CAN
Total/NA	Analysis	4500 H+ B-2000		1	305897	12/01/17 15:53	MMM	TAL CAN
Total/NA	Analysis	5210B-2001		1	305882	12/01/17 14:49	JESW	TAL CAN
Total/NA	Analysis	SM 2540D		1	306066	12/04/17 09:20	MMM	TAL CAN
Total/NA	Analysis	SM 4500 NH3 D		1	306574	12/06/17 09:56	JAS	TAL CAN
Total/NA	Analysis	SM4500 P E-1999		1	306177	12/04/17 13:45	JWW	TAL CAN

Client Sample ID: TB-12610-113017-SSH-03-17

Lab Sample ID: 240-88685-2

Date Collected: 11/30/17 14:15

Matrix: Water

Date Received: 12/01/17 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	306349	12/06/17 03:11	TJL1	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: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-88685-1

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	02-23-18
Connecticut	State Program	1	PH-0590	12-31-17 *
Florida	NELAP	4	E87225	06-30-18
Illinois	NELAP	5	200004	07-31-18
Kansas	NELAP	7	E-10336	01-31-18 *
Kentucky (UST)	State Program	4	58	02-23-18
Kentucky (WW)	State Program	4	98016	12-31-17 *
Minnesota	NELAP	5	039-999-348	12-31-17 *
Minnesota (Petrofund)	State Program	1	3506	07-31-18
Nevada	State Program	9	OH-000482008A	07-31-18
New Jersey	NELAP	2	OH001	06-30-18
New York	NELAP	2	10975	03-31-18
Ohio VAP	State Program	5	CL0024	09-06-19
Oregon	NELAP	10	4062	02-23-18
Pennsylvania	NELAP	3	68-00340	08-31-18
Texas	NELAP	6	T104704517-17-9	08-31-18
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-18
Washington	State Program	10	C971	01-12-18 *
West Virginia DEP	State Program	3	210	12-31-17 *

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



TestAmerica Canton Sample Receipt Form/Narrative
Canton Facility


Client GHD Site Name _____ Cooler unpacked by: [Signature]
Cooler Received on 12/1/17 Opened on 12/1/17

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 -0.3°C) Observed Cooler Temp. 3.4 °C Corrected Cooler Temp. 3.1 °C
IR GUN #36 (CF +0.3°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
IR GUN # 627 (CF -1.3°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °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# HC730269
- 13. Were VOAs on the COC? Yes No
- 14. Were air bubbles >6 mm in any VOA vials? Yes No NA  Larger than this.
- 15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____ 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 _____

16. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES
Samples processed by: _____

17. 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)

18. 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 pH</u>	<u>Preservative Added (mls)</u>	<u>Lot #</u>
WT-12610-113017-SSH-02-17	240-88685-G-1	Plastic 500ml - with Sulfuric Acid	<2	_____	_____
WT-12610-113017-SSH-02-17	240-88685-H-1	Plastic 500ml - with Sulfuric Acid	<2	_____	_____
WT-12610-113017-SSH-02-17	240-88685-I-1	Plastic 500ml - with Nitric Acid	<2	_____	_____
WT-12610-113017-SSH-02-17	240-88685-M-1	Amber Glass 1 liter - Sulfuric Acid	_____	_____	_____
WT-12610-113017-SSH-02-17	240-88685-N-1	Amber Glass 1 liter - Sulfuric Acid	_____	_____	_____

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TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Canton

4101 Shuffel Street NW

North Canton, OH 44720

Tel: (330)497-9396

TestAmerica Job ID: 240-74459-1

Client Project/Site: 12610-T03, RACER Bay City

For:

GHD Services Inc.

14496 Sheldon Road, Suite 200

Plymouth, Michigan 48170

Attn: Rawa Fleisher



Authorized for release by:

1/24/2017 8:02:22 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: 12610-T03, RACER Bay City

TestAmerica Job ID: 240-74459-1

Job ID: 240-74459-1

Laboratory: TestAmerica Canton

Narrative

Job Narrative 240-74459-1

Comments

No additional comments.

Receipt

The samples were received on 1/17/2017 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.4° C.

GC/MS VOA

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

GC Semi VOA

Method(s) 608: The following sample required a tetrabutylammonium sulfite (TBA) clean-up to reduce matrix interferences caused by sulfur: W-12610-011617-SSH-1701 (240-74459-1). 2881016, 2596995.

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

Metals

Method(s) 200.7 Rev 4.4, 6010B: Some requested practical quantitation limits (PQLs) on the following samples fall below the laboratory's verified standard quantitation limit: W-12610-011617-SSH-1701 (240-74459-1). The continuing calibration blanks and method blanks may not support the lower PQL.

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

General Chemistry

Method(s) 1664A: The reference method requires samples to be preserved to a pH of 2 or less or analyzed within 4 hours of the collection time. The following sample was received at the laboratory with a pH of greater than 2: W-12610-011617-SSH-1701 (240-74459-1). As such, the laboratory had insufficient time remaining to perform this analysis within holding time.

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

Organic Prep

Method(s) 3520C, 608: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 240-263275.

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

Definitions/Glossary

Client: GHD Services Inc.
Project/Site: 12610-T03, RACER Bay City

TestAmerica Job ID: 240-74459-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

GC Semi VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

Metals

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

General Chemistry

Qualifier	Qualifier Description
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.
U	Indicates the analyte was analyzed for but not detected.
s	Seeded Control Blank (SCB) Recovery High

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, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
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
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: 12610-T03, RACER Bay City

TestAmerica Job ID: 240-74459-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-74459-1	W-12610-011617-SSH-1701	Water	01/16/17 13:30	01/17/17 09:30
240-74459-2	TB-12610-011617-SSH-1702	Water	01/16/17 13:35	01/17/17 09:30

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Detection Summary

Client: GHD Services Inc.
Project/Site: 12610-T03, RACER Bay City

TestAmerica Job ID: 240-74459-1

Client Sample ID: W-12610-011617-SSH-1701

Lab Sample ID: 240-74459-1

Analyte	Result	Qualifier	RL	Unit	Dil Fac	D	Method	Prep Type
Copper	67		20	ug/L	1		200.7 Rev 4.4	Total
Iron	570		100	ug/L	1		200.7 Rev 4.4	Recoverable Total
Ammonia (as N)	2.2		2.0	mg/L	1		350.2	Recoverable Total/NA
Chemical Oxygen Demand	24		10	mg/L	1		410.4	Total/NA
pH	7.7	HF	0.1	SU	1		4500 H+ B-2000	Total/NA

Client Sample ID: TB-12610-011617-SSH-1702

Lab Sample ID: 240-74459-2

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Canton



Method Summary

Client: GHD Services Inc.
Project/Site: 12610-T03, RACER Bay City

TestAmerica Job ID: 240-74459-1

Method	Method Description	Protocol	Laboratory
624	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL CAN
608	Polychlorinated Biphenyls (PCBs) (GC)	40CFR136A	TAL CAN
200.7 Rev 4.4	Metals (ICP)	EPA	TAL CAN
245.1	Mercury (CVAA)	EPA	TAL CAN
1664A	HEM and SGT-HEM	1664A	TAL CAN
350.2	Nitrogen, Ammonia, Distillation	MCAWW	TAL CAN
410.4	COD	MCAWW	TAL CAN
4500 H+ B-2000	pH	SM	TAL CAN
5210B-2001	BOD, 5-Day	SM	TAL CAN
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL CAN
SM4500 P E-1999	Phosphorus	SM	TAL CAN

Protocol References:

1664A = EPA-821-98-002

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater",

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: 12610-T03, RACER Bay City

TestAmerica Job ID: 240-74459-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Client Sample ID: W-12610-011617-SSH-1701

Date Collected: 01/16/17 13:30

Date Received: 01/17/17 09:30

Lab Sample ID: 240-74459-1

Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	1.0	U	1.0	ug/L			01/20/17 00:20	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	94		73 - 120				01/20/17 00:20	1
1,2-Dichloroethane-d4 (Surr)	95		63 - 132				01/20/17 00:20	1
Toluene-d8 (Surr)	95		73 - 124				01/20/17 00:20	1

Client Sample Results

Client: GHD Services Inc.
 Project/Site: 12610-T03, RACER Bay City

TestAmerica Job ID: 240-74459-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Client Sample ID: TB-12610-011617-SSH-1702

Date Collected: 01/16/17 13:35

Date Received: 01/17/17 09:30

Lab Sample ID: 240-74459-2

Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	1.0	U	1.0	ug/L			01/20/17 00:45	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	95		73 - 120		01/20/17 00:45	1
1,2-Dichloroethane-d4 (Surr)	92		63 - 132		01/20/17 00:45	1
Toluene-d8 (Surr)	95		73 - 124		01/20/17 00:45	1

Client Sample Results

Client: GHD Services Inc.
 Project/Site: 12610-T03, RACER Bay City

TestAmerica Job ID: 240-74459-1

Method: 608 - Polychlorinated Biphenyls (PCBs) (GC)

Client Sample ID: W-12610-011617-SSH-1701

Date Collected: 01/16/17 13:30

Date Received: 01/17/17 09:30

Lab Sample ID: 240-74459-1

Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor-1016	0.095	U	0.095	ug/L		01/18/17 09:52	01/20/17 08:11	1
Aroclor-1221	0.095	U	0.095	ug/L		01/18/17 09:52	01/20/17 08:11	1
Aroclor-1232	0.095	U	0.095	ug/L		01/18/17 09:52	01/20/17 08:11	1
Aroclor-1242	0.095	U	0.095	ug/L		01/18/17 09:52	01/20/17 08:11	1
Aroclor-1248	0.095	U	0.095	ug/L		01/18/17 09:52	01/20/17 08:11	1
Aroclor-1254	0.095	U	0.095	ug/L		01/18/17 09:52	01/20/17 08:11	1
Aroclor-1260	0.095	U	0.095	ug/L		01/18/17 09:52	01/20/17 08:11	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	65		10 - 114	01/18/17 09:52	01/20/17 08:11	1
Tetrachloro-m-xylene	70		15 - 131	01/18/17 09:52	01/20/17 08:11	1

Client Sample Results

Client: GHD Services Inc.
 Project/Site: 12610-T03, RACER Bay City

TestAmerica Job ID: 240-74459-1

Method: 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Client Sample ID: W-12610-011617-SSH-1701

Date Collected: 01/16/17 13:30

Date Received: 01/17/17 09:30

Lab Sample ID: 240-74459-1

Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	5.0	U	5.0	ug/L		01/19/17 14:00	01/20/17 14:32	1
Cadmium	2.0	U	2.0	ug/L		01/18/17 14:00	01/19/17 18:39	1
Chromium	5.0	U	5.0	ug/L		01/18/17 14:00	01/19/17 18:39	1
Copper	67		20	ug/L		01/18/17 14:00	01/19/17 18:39	1
Iron	570		100	ug/L		01/18/17 14:00	01/19/17 18:39	1
Nickel	20	U	20	ug/L		01/18/17 14:00	01/19/17 18:39	1
Lead	3.0	U	3.0	ug/L		01/18/17 14:00	01/19/17 18:39	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 12610-T03, RACER Bay City

TestAmerica Job ID: 240-74459-1

Method: 245.1 - Mercury (CVAA)

Client Sample ID: W-12610-011617-SSH-1701

Date Collected: 01/16/17 13:30

Date Received: 01/17/17 09:30

Lab Sample ID: 240-74459-1

Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.20	U	0.20	ug/L		01/18/17 14:00	01/19/17 11:50	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: 12610-T03, RACER Bay City

TestAmerica Job ID: 240-74459-1

General Chemistry

Client Sample ID: W-12610-011617-SSH-1701

Date Collected: 01/16/17 13:30

Date Received: 01/17/17 09:30

Lab Sample ID: 240-74459-1

Matrix: Water

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
HEM	4.7	U	4.7	mg/L			01/18/17 08:13	1
Ammonia (as N)	2.2		2.0	mg/L		01/18/17 12:10	01/18/17 15:00	1
Chemical Oxygen Demand	24		10	mg/L			01/18/17 09:52	1
pH	7.7	HF	0.1	SU			01/17/17 16:34	1
Biochemical Oxygen Demand	2.0	U	2.0	mg/L			01/18/17 12:42	1
Total Suspended Solids	4.0	U	4.0	mg/L			01/19/17 09:58	1
Total Phosphorus as P	0.10	U	0.10	mg/L			01/19/17 08:51	1

QC Association Summary

Client: GHD Services Inc.
Project/Site: 12610-T03, RACER Bay City

TestAmerica Job ID: 240-74459-1

GC/MS VOA

Analysis Batch: 263429

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74459-1	W-12610-011617-SSH-1701	Total/NA	Water	624	
240-74459-2	TB-12610-011617-SSH-1702	Total/NA	Water	624	
MB 240-263429/8	Method Blank	Total/NA	Water	624	
LCS 240-263429/5	Lab Control Sample	Total/NA	Water	624	

GC Semi VOA

Prep Batch: 263275

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74459-1	W-12610-011617-SSH-1701	Total/NA	Water	608	
MB 240-263275/13-A	Method Blank	Total/NA	Water	608	
LCS 240-263275/14-A	Lab Control Sample	Total/NA	Water	608	

Analysis Batch: 263583

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74459-1	W-12610-011617-SSH-1701	Total/NA	Water	608	263275
MB 240-263275/13-A	Method Blank	Total/NA	Water	608	263275
LCS 240-263275/14-A	Lab Control Sample	Total/NA	Water	608	263275

Metals

Prep Batch: 263301

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74459-1	W-12610-011617-SSH-1701	Total Recoverable	Water	200.7	
MB 240-263301/1-A	Method Blank	Total Recoverable	Water	200.7	
LCS 240-263301/2-A	Lab Control Sample	Total Recoverable	Water	200.7	

Prep Batch: 263302

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74459-1	W-12610-011617-SSH-1701	Total/NA	Water	245.1	
MB 240-263302/1-A	Method Blank	Total/NA	Water	245.1	
LCS 240-263302/2-A	Lab Control Sample	Total/NA	Water	245.1	

Prep Batch: 263505

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74459-1	W-12610-011617-SSH-1701	Total Recoverable	Water	200.7	
MB 240-263505/1-A	Method Blank	Total Recoverable	Water	200.7	
LCS 240-263505/2-A	Lab Control Sample	Total Recoverable	Water	200.7	

Analysis Batch: 263508

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74459-1	W-12610-011617-SSH-1701	Total Recoverable	Water	200.7 Rev 4.4	263301
MB 240-263301/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	263301
LCS 240-263301/2-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	263301

Analysis Batch: 263556

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74459-1	W-12610-011617-SSH-1701	Total/NA	Water	245.1	263302
MB 240-263302/1-A	Method Blank	Total/NA	Water	245.1	263302
LCS 240-263302/2-A	Lab Control Sample	Total/NA	Water	245.1	263302

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QC Association Summary

Client: GHD Services Inc.
Project/Site: 12610-T03, RACER Bay City

TestAmerica Job ID: 240-74459-1

Metals (Continued)

Analysis Batch: 263653

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74459-1	W-12610-011617-SSH-1701	Total Recoverable	Water	200.7 Rev 4.4	263505
MB 240-263505/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	263505
LCS 240-263505/2-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	263505

General Chemistry

Analysis Batch: 263152

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74459-1	W-12610-011617-SSH-1701	Total/NA	Water	4500 H+ B-2000	
LCS 240-263152/21	Lab Control Sample	Total/NA	Water	4500 H+ B-2000	

Analysis Batch: 263224

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74459-1	W-12610-011617-SSH-1701	Total/NA	Water	410.4	
MB 240-263224/9	Method Blank	Total/NA	Water	410.4	
LCS 240-263224/10	Lab Control Sample	Total/NA	Water	410.4	
240-74459-1 MS	W-12610-011617-SSH-1701	Total/NA	Water	410.4	

Analysis Batch: 263240

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74459-1	W-12610-011617-SSH-1701	Total/NA	Water	1664A	
MB 240-263240/1	Method Blank	Total/NA	Water	1664A	
LCS 240-263240/2	Lab Control Sample	Total/NA	Water	1664A	

Prep Batch: 263327

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74459-1	W-12610-011617-SSH-1701	Total/NA	Water	Distill/Ammonia	
MB 240-263327/1-A	Method Blank	Total/NA	Water	Distill/Ammonia	
LCS 240-263327/2-A	Lab Control Sample	Total/NA	Water	Distill/Ammonia	

Analysis Batch: 263350

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74459-1	W-12610-011617-SSH-1701	Total/NA	Water	350.2	263327
MB 240-263327/1-A	Method Blank	Total/NA	Water	350.2	263327
LCS 240-263327/2-A	Lab Control Sample	Total/NA	Water	350.2	263327

Analysis Batch: 263371

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74459-1	W-12610-011617-SSH-1701	Total/NA	Water	5210B-2001	
SCB 240-263371/2	Method Blank	Total/NA	Water	5210B-2001	
USB 240-263371/1	Method Blank	Total/NA	Water	5210B-2001	
LCS 240-263371/3	Lab Control Sample	Total/NA	Water	5210B-2001	
240-74459-1 DU	W-12610-011617-SSH-1701	Total/NA	Water	5210B-2001	

Analysis Batch: 263439

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74459-1	W-12610-011617-SSH-1701	Total/NA	Water	SM4500 P E-1999	
MB 240-263439/3	Method Blank	Total/NA	Water	SM4500 P E-1999	

TestAmerica Canton

QC Association Summary

Client: GHD Services Inc.
Project/Site: 12610-T03, RACER Bay City

TestAmerica Job ID: 240-74459-1

General Chemistry (Continued)

Analysis Batch: 263439 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 240-263439/4	Lab Control Sample	Total/NA	Water	SM4500 P E-1999	

Analysis Batch: 263479

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-74459-1	W-12610-011617-SSH-1701	Total/NA	Water	SM 2540D	
MB 240-263479/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 240-263479/2	Lab Control Sample	Total/NA	Water	SM 2540D	
240-74459-1 DU	W-12610-011617-SSH-1701	Total/NA	Water	SM 2540D	

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QC Sample Results

Client: GHD Services Inc.
Project/Site: 12610-T03, RACER Bay City

TestAmerica Job ID: 240-74459-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-263429/8

Matrix: Water

Analysis Batch: 263429

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	1.0	U	1.0	ug/L			01/19/17 13:05	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	92		73 - 120		01/19/17 13:05	1
1,2-Dichloroethane-d4 (Surr)	89		63 - 132		01/19/17 13:05	1
Toluene-d8 (Surr)	94		73 - 124		01/19/17 13:05	1

Lab Sample ID: LCS 240-263429/5

Matrix: Water

Analysis Batch: 263429

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Vinyl chloride	20.0	18.6		ug/L		93	10 - 251

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	97		73 - 120
1,2-Dichloroethane-d4 (Surr)	86		63 - 132
Toluene-d8 (Surr)	96		73 - 124

Method: 608 - Polychlorinated Biphenyls (PCBs) (GC)

Lab Sample ID: MB 240-263275/13-A

Matrix: Water

Analysis Batch: 263583

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 263275

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor-1016	0.10	U	0.10	ug/L		01/18/17 09:52	01/20/17 07:18	1
Aroclor-1221	0.10	U	0.10	ug/L		01/18/17 09:52	01/20/17 07:18	1
Aroclor-1232	0.10	U	0.10	ug/L		01/18/17 09:52	01/20/17 07:18	1
Aroclor-1242	0.10	U	0.10	ug/L		01/18/17 09:52	01/20/17 07:18	1
Aroclor-1248	0.10	U	0.10	ug/L		01/18/17 09:52	01/20/17 07:18	1
Aroclor-1254	0.10	U	0.10	ug/L		01/18/17 09:52	01/20/17 07:18	1
Aroclor-1260	0.10	U	0.10	ug/L		01/18/17 09:52	01/20/17 07:18	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	78		10 - 114	01/18/17 09:52	01/20/17 07:18	1
Tetrachloro-m-xylene	76		15 - 131	01/18/17 09:52	01/20/17 07:18	1

Lab Sample ID: LCS 240-263275/14-A

Matrix: Water

Analysis Batch: 263583

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 263275

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aroclor-1016	2.50	2.10		ug/L		84	50 - 114
Aroclor-1260	2.50	2.16		ug/L		86	8 - 127

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QC Sample Results

Client: GHD Services Inc.
Project/Site: 12610-T03, RACER Bay City

TestAmerica Job ID: 240-74459-1

Method: 608 - Polychlorinated Biphenyls (PCBs) (GC) (Continued)

Lab Sample ID: LCS 240-263275/14-A
Matrix: Water
Analysis Batch: 263583

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 263275

Surrogate	LCS %Recovery	LCS Qualifier	Limits
DCB Decachlorobiphenyl	76		10 - 114
Tetrachloro-m-xylene	70		15 - 131

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 240-263301/1-A
Matrix: Water
Analysis Batch: 263508

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 263301

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	2.0	U	2.0	ug/L		01/18/17 14:00	01/19/17 11:28	1
Chromium	5.0	U	5.0	ug/L		01/18/17 14:00	01/19/17 11:28	1
Copper	20	U	20	ug/L		01/18/17 14:00	01/19/17 11:28	1
Iron	100	U	100	ug/L		01/18/17 14:00	01/19/17 11:28	1
Nickel	20	U	20	ug/L		01/18/17 14:00	01/19/17 11:28	1
Lead	3.0	U	3.0	ug/L		01/18/17 14:00	01/19/17 11:28	1

Lab Sample ID: LCS 240-263301/2-A
Matrix: Water
Analysis Batch: 263508

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 263301

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Cadmium	50.0	47.3		ug/L		95	85 - 115
Chromium	200	187		ug/L		93	85 - 115
Copper	250	236		ug/L		94	85 - 115
Iron	1000	946		ug/L		95	85 - 115
Nickel	500	465		ug/L		93	85 - 115
Lead	500	456		ug/L		91	85 - 115

Lab Sample ID: MB 240-263505/1-A
Matrix: Water
Analysis Batch: 263653

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 263505

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	5.0	U	5.0	ug/L		01/19/17 14:00	01/20/17 09:03	1
Cadmium	2.0	U	2.0	ug/L		01/19/17 14:00	01/20/17 09:03	1
Chromium	5.0	U	5.0	ug/L		01/19/17 14:00	01/20/17 09:03	1
Copper	20	U	20	ug/L		01/19/17 14:00	01/20/17 09:03	1
Iron	100	U	100	ug/L		01/19/17 14:00	01/20/17 09:03	1
Nickel	20	U	20	ug/L		01/19/17 14:00	01/20/17 09:03	1
Lead	3.0	U	3.0	ug/L		01/19/17 14:00	01/20/17 09:03	1

Lab Sample ID: LCS 240-263505/2-A
Matrix: Water
Analysis Batch: 263653

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 263505

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Silver	50.0	48.5		ug/L		97	85 - 115

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QC Sample Results

Client: GHD Services Inc.
Project/Site: 12610-T03, RACER Bay City

TestAmerica Job ID: 240-74459-1

Method: 200.7 Rev 4.4 - Metals (ICP) (Continued)

Lab Sample ID: LCS 240-263505/2-A
Matrix: Water
Analysis Batch: 263653

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 263505

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	50.0	49.4		ug/L		99	85 - 115
Chromium	200	191		ug/L		96	85 - 115
Copper	250	240		ug/L		96	85 - 115
Iron	1000	998		ug/L		100	85 - 115
Nickel	500	480		ug/L		96	85 - 115
Lead	500	472		ug/L		94	85 - 115

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 240-263302/1-A
Matrix: Water
Analysis Batch: 263556

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 263302

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.20	U	0.20	ug/L		01/18/17 14:00	01/19/17 11:04	1

Lab Sample ID: LCS 240-263302/2-A
Matrix: Water
Analysis Batch: 263556

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 263302

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	5.00	5.12		ug/L		102	85 - 115

Method: 1664A - HEM and SGT-HEM

Lab Sample ID: MB 240-263240/1
Matrix: Water
Analysis Batch: 263240

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
HEM	5.0	U	5.0	mg/L			01/18/17 08:13	1

Lab Sample ID: LCS 240-263240/2
Matrix: Water
Analysis Batch: 263240

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
HEM	40.0	39.40		mg/L		98	78 - 114

Method: 350.2 - Nitrogen, Ammonia, Distillation

Lab Sample ID: MB 240-263327/1-A
Matrix: Water
Analysis Batch: 263350

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 263327

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia (as N)	2.0	U	2.0	mg/L		01/18/17 12:10	01/18/17 14:10	1

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QC Sample Results

Client: GHD Services Inc.
Project/Site: 12610-T03, RACER Bay City

TestAmerica Job ID: 240-74459-1

Method: 350.2 - Nitrogen, Ammonia, Distillation (Continued)

Lab Sample ID: LCS 240-263327/2-A
Matrix: Water
Analysis Batch: 263350

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 263327

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	3.84	4.20		mg/L		109	82 - 116

Method: 410.4 - COD

Lab Sample ID: MB 240-263224/9
Matrix: Water
Analysis Batch: 263224

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Chemical Oxygen Demand	10	U	10	mg/L			01/18/17 09:50	1

Lab Sample ID: LCS 240-263224/10
Matrix: Water
Analysis Batch: 263224

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chemical Oxygen Demand	117	110		mg/L		94	90 - 110

Lab Sample ID: 240-74459-1 MS
Matrix: Water
Analysis Batch: 263224

Client Sample ID: W-12610-011617-SSH-1701
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chemical Oxygen Demand	24		50.0	75.7		mg/L		102	90 - 110

Method: 4500 H+ B-2000 - pH

Lab Sample ID: LCS 240-263152/21
Matrix: Water
Analysis Batch: 263152

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH	9.14	9.1		SU		100	97 - 103

Method: 5210B-2001 - BOD, 5-Day

Lab Sample ID: SCB 240-263371/2
Matrix: Water
Analysis Batch: 263371

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	SCB Result	SCB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Biochemical Oxygen Demand	2.0	U s	2.0	mg/L			01/18/17 12:24	1

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QC Sample Results

Client: GHD Services Inc.
Project/Site: 12610-T03, RACER Bay City

TestAmerica Job ID: 240-74459-1

Method: 5210B-2001 - BOD, 5-Day (Continued)

Lab Sample ID: USB 240-263371/1
Matrix: Water
Analysis Batch: 263371

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	USB Result	USB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Biochemical Oxygen Demand	2.0	U	2.0	mg/L			01/18/17 12:32	1

Lab Sample ID: LCS 240-263371/3
Matrix: Water
Analysis Batch: 263371

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Biochemical Oxygen Demand	198	202		mg/L		102	85 - 115

Lab Sample ID: 240-74459-1 DU
Matrix: Water
Analysis Batch: 263371

Client Sample ID: W-12610-011617-SSH-1701
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Biochemical Oxygen Demand	2.0	U	2.0	U	mg/L		NC	15

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 240-263479/1
Matrix: Water
Analysis Batch: 263479

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	4.0	U	4.0	mg/L			01/19/17 09:58	1

Lab Sample ID: LCS 240-263479/2
Matrix: Water
Analysis Batch: 263479

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	56.8	50.0		mg/L		88	64 - 120

Lab Sample ID: 240-74459-1 DU
Matrix: Water
Analysis Batch: 263479

Client Sample ID: W-12610-011617-SSH-1701
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Suspended Solids	4.0	U	4.0	U	mg/L		NC	10

Method: SM4500 P E-1999 - Phosphorus

Lab Sample ID: MB 240-263439/3
Matrix: Water
Analysis Batch: 263439

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Total Phosphorus as P	0.10	U	0.10	mg/L			01/19/17 08:20	1

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QC Sample Results

Client: GHD Services Inc.
Project/Site: 12610-T03, RACER Bay City

TestAmerica Job ID: 240-74459-1

Method: SM4500 P E-1999 - Phosphorus (Continued)

Lab Sample ID: LCS 240-263439/4
Matrix: Water
Analysis Batch: 263439

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Phosphorus as P	0.665	0.694		mg/L		104	77 - 120

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Surrogate Summary

Client: GHD Services Inc.
Project/Site: 12610-T03, RACER Bay City

TestAmerica Job ID: 240-74459-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	BFB (73-120)	12DCE (63-132)	TOL (73-124)
240-74459-1	W-12610-011617-SSH-1701	94	95	95
240-74459-2	TB-12610-011617-SSH-1702	95	92	95
LCS 240-263429/5	Lab Control Sample	97	86	96
MB 240-263429/8	Method Blank	92	89	94

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)

12DCE = 1,2-Dichloroethane-d4 (Surr)

TOL = Toluene-d8 (Surr)

Method: 608 - Polychlorinated Biphenyls (PCBs) (GC)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCB2 (10-114)	TCX2 (15-131)
240-74459-1	W-12610-011617-SSH-1701	65	70
LCS 240-263275/14-A	Lab Control Sample	76	70
MB 240-263275/13-A	Method Blank	78	76

Surrogate Legend

DCB = DCB Decachlorobiphenyl

TCX = Tetrachloro-m-xylene

Lab Chronicle

Client: GHD Services Inc.
Project/Site: 12610-T03, RACER Bay City

TestAmerica Job ID: 240-74459-1

Client Sample ID: W-12610-011617-SSH-1701

Lab Sample ID: 240-74459-1

Date Collected: 01/16/17 13:30

Matrix: Water

Date Received: 01/17/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	263429	01/20/17 00:20	TJL1	TAL CAN
Total/NA	Prep	608			263275	01/18/17 09:52	KEH	TAL CAN
Total/NA	Analysis	608		1	263583	01/20/17 08:11	KMG	TAL CAN
Total Recoverable	Prep	200.7			263301	01/18/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	200.7 Rev 4.4		1	263508	01/19/17 18:39	KLC	TAL CAN
Total Recoverable	Prep	200.7			263505	01/19/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	200.7 Rev 4.4		1	263653	01/20/17 14:32	KLC	TAL CAN
Total/NA	Prep	245.1			263302	01/18/17 14:00	AJC	TAL CAN
Total/NA	Analysis	245.1		1	263556	01/19/17 11:50	WKD	TAL CAN
Total/NA	Analysis	1664A		1	263240	01/18/17 08:13	BLW	TAL CAN
Total/NA	Prep	Distill/Ammonia			263327	01/18/17 12:10	JAS	TAL CAN
Total/NA	Analysis	350.2		1	263350	01/18/17 15:00	JAS	TAL CAN
Total/NA	Analysis	410.4		1	263224	01/18/17 09:52	TPH	TAL CAN
Total/NA	Analysis	4500 H+ B-2000		1	263152	01/17/17 16:34	LCN	TAL CAN
Total/NA	Analysis	5210B-2001		1	263371	01/18/17 12:42	JESW	TAL CAN
Total/NA	Analysis	SM 2540D		1	263479	01/19/17 09:58	CL	TAL CAN
Total/NA	Analysis	SM4500 P E-1999		1	263439	01/19/17 08:51	TPH	TAL CAN

Client Sample ID: TB-12610-011617-SSH-1702

Lab Sample ID: 240-74459-2

Date Collected: 01/16/17 13:35

Matrix: Water

Date Received: 01/17/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	263429	01/20/17 00:45	TJL1	TAL CAN

Laboratory References:

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

Certification Summary

Client: GHD Services Inc.
Project/Site: 12610-T03, RACER Bay City

TestAmerica Job ID: 240-74459-1

Laboratory: TestAmerica Canton

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

Authority	Program	EPA Region	Certification ID	Expiration Date
California	State Program	9	2927	04-30-17 *
Connecticut	State Program	1	PH-0590	12-31-17
Florida	NELAP	4	E87225	06-30-17
Illinois	NELAP	5	200004	07-31-17
Kansas	NELAP	7	E-10336	01-31-17 *
Kentucky (UST)	State Program	4	58	02-23-17 *
Kentucky (WW)	State Program	4	98016	12-31-16 *
Minnesota	NELAP	5	039-999-348	12-31-17
Minnesota (Petrofund)	State Program	1	3506	07-31-17
Nevada	State Program	9	OH-000482008A	07-31-17
New Jersey	NELAP	2	OH001	06-30-17
New York	NELAP	2	10975	03-31-17 *
Ohio VAP	State Program	5	CL0024	09-14-17
Oregon	NELAP	10	4062	02-23-17 *
Pennsylvania	NELAP	3	68-00340	08-31-17
Texas	NELAP	6	T104704517-15-5	08-31-17
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-17
Washington	State Program	10	C971	01-12-18
West Virginia DEP	State Program	3	210	12-31-16 *
Wisconsin	State Program	5	999518190	08-31-17

* Certification renewal pending - certification considered valid.

TestAmerica Canton

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Regulatory Program: DW NPDES RCRA Other

Project Manager: M. 1pmkg Tell Fax: 519 884 0510 Analysis Turnaround Time <input checked="" type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS TAT If different from Below <input checked="" type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Site Contact: SE Perdy Date: 1/16/17 Lab Contact: D. Huck Carrier: FEMEX COC No: 189912 Sampler: S. Howermeyer For Lab Use Only: Walk-in Client: Lab Sampling: Job / SDG No.:	
Company Name: GHD Address: 14486 N. Sheldon Rd. Ste 200 City/State/Zip: Plymouth MI 48170 Phone: 734 453 5123 Fax: Project Name: RawTrust Bay City Site: 550W 12610 - T03 - 013 P.O #: 24006288		Filtered Sample (Y/N) Perform MS / MSD (Y/N) T. Phosphorus select metals NH ₃ -N Nitri chloride PbS BOD TSS HFM	
Sample Identification W-12610-011617-SSH-1701 TB-12610-011617-SSH-1702 AAH		Sample Specific Notes: Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for _____ Months	
Preservation Used: 1= Ice, 2= HCl, 3= H2SO4, 4= HNO3, 5= NaOH, 6= Other 1234 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. <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input checked="" type="checkbox"/> Unknown		Special Instructions/QC Requirements & Comments: TAT - 1 week * Cd, Cr, Cu, Hg, Pb, Ni, Ag, Fe	
Relinquished by: STEA Mann Date/Time: 1/16/17 1600 Company: GHD		Received by: [Signature] Date/Time: 01/17/17 930 Company: TAL	



TestAmerica Canton Sample Receipt Form/Narrative
Canton Facility

Login # : 74459

Client CHD Site Name _____ Cooler unpacked by: DSD
 Cooler Received on 01/17/17 Opened on 01/17/17
 FedEx: 1st Grd UPS FAS Stetson 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 °C) Observed Cooler Temp. 4.4 °C Corrected Cooler Temp. 4.4 °C
 IR GUN #36 (CF +1.1 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
2. Were custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
 -Were custody seals on the outside of the cooler(s) signed & dated? Yes No NA
 -Were custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
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 11-15 have been checked at the originating laboratory.
11. Were sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC682547
 12. Were VOAs on the COC? Yes No
 13. Were air bubbles >6 mm in any VOA vials? Yes No NA
 14. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____ Yes No
 15. Was a LL Hg or Me Hg trip blank present? Yes No
- Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other _____
 Concerning _____

14. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by: _____

15. 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)

16. 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 pH</u>	<u>Preservative Added (mls)</u>	<u>Lot #</u>
W-12610-011617-SSH-1701	240-74459-E-1	Plastic 500ml - with Sulfuric Acid	<2	_____	_____
W-12610-011617-SSH-1701	240-74459-F-1	Plastic 500ml - with Nitric Acid	<2	_____	_____
W-12610-011617-SSH-1701	240-74459-J-1	Amber Glass 1 liter - Sulfuric Acid	_____	_____	_____
W-12610-011617-SSH-1701	240-74459-K-1	Amber Glass 1 liter - Sulfuric Acid	_____	_____	_____

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TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Canton

4101 Shuffel Street NW

North Canton, OH 44720

Tel: (330)497-9396

TestAmerica Job ID: 240-79295-1

Client Project/Site: 12610-T04, RACER Bay City

For:

GHD Services Inc.

14496 Sheldon Road, Suite 200

Plymouth, Michigan 48170

Attn: Ms. Ruth Mickle



Authorized for release by:

5/18/2017 6:58:43 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: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-79295-1

Job ID: 240-79295-1

Laboratory: TestAmerica Canton

Narrative

Job Narrative 240-79295-1

Comments

No additional comments.

Receipt

The sample was received on 5/10/2017 9:40 AM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.9° C.

GC/MS VOA

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

GC Semi VOA

Method(s) 608: The following samples required a tetrabutylammonium sulfite (TBA) clean-up to reduce matrix interferences caused by sulfur: WT-12610-050917-SSH-01-17 (240-79295-1).3029030, 2596993, 2719940.

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

Metals

Method(s) 200.7 Rev 4.4, 6010B: Some requested practical quantitation limits (PQLs) on the following samples fall below the laboratory's verified standard quantitation limit: WT-12610-050917-SSH-01-17 (240-79295-1). The continuing calibration blanks and method blanks may not support the lower PQL.

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

General Chemistry

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

Organic Prep

Method(s) 3520C, 608: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 240-278493.

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

Definitions/Glossary

Client: GHD Services Inc.
Project/Site: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-79295-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

GC Semi VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

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.

General Chemistry

Qualifier	Qualifier Description
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.
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.
s	Seeded Control Blank (SCB) Recovery High

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: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-79295-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-79295-1	WT-12610-050917-SSH-01-17	Water	05/09/17 08:00	05/10/17 09:40

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- 2
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Detection Summary

Client: GHD Services Inc.
Project/Site: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-79295-1

Client Sample ID: WT-12610-050917-SSH-01-17

Lab Sample ID: 240-79295-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chromium	0.56	J	5.0	0.55	ug/L	1		200.7 Rev 4.4	Total Recoverable
Copper	6.3	J	20	3.9	ug/L	1		200.7 Rev 4.4	Total Recoverable
Nickel	2.8	J	20	1.6	ug/L	1		200.7 Rev 4.4	Total Recoverable
HEM	1.2	J	4.8	0.98	mg/L	1		1664A	Total/NA
Chemical Oxygen Demand	21		10	4.1	mg/L	1		410.4	Total/NA
pH	7.9	HF	0.1	0.1	SU	1		4500 H+ B-2000	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Canton

Method Summary

Client: GHD Services Inc.
Project/Site: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-79295-1

Method	Method Description	Protocol	Laboratory
624	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL CAN
608	Polychlorinated Biphenyls (PCBs) (GC)	40CFR136A	TAL CAN
200.7 Rev 4.4	Metals (ICP)	EPA	TAL CAN
245.1	Mercury (CVAA)	EPA	TAL CAN
1664A	HEM and SGT-HEM	1664A	TAL CAN
350.2	Nitrogen, Ammonia, Distillation	MCAWW	TAL CAN
410.4	COD	MCAWW	TAL CAN
4500 H+ B-2000	pH	SM	TAL CAN
5210B-2001	BOD, 5-Day	SM	TAL CAN
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL CAN
SM4500 P E-1999	Phosphorus	SM	TAL CAN

Protocol References:

1664A = EPA-821-98-002

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater",

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: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-79295-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Client Sample ID: WT-12610-050917-SSH-01-17

Date Collected: 05/09/17 08:00

Date Received: 05/10/17 09:40

Lab Sample ID: 240-79295-1

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/11/17 06:29	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	96		69 - 120					05/11/17 06:29	1
1,2-Dichloroethane-d4 (Surr)	100		61 - 138					05/11/17 06:29	1
Toluene-d8 (Surr)	95		73 - 120					05/11/17 06:29	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-79295-1

Method: 608 - Polychlorinated Biphenyls (PCBs) (GC)

Client Sample ID: WT-12610-050917-SSH-01-17

Date Collected: 05/09/17 08:00

Date Received: 05/10/17 09:40

Lab Sample ID: 240-79295-1

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor-1016	0.095	U	0.095	0.048	ug/L		05/11/17 09:34	05/13/17 23:18	1
Aroclor-1221	0.095	U	0.095	0.086	ug/L		05/11/17 09:34	05/13/17 23:18	1
Aroclor-1232	0.095	U	0.095	0.067	ug/L		05/11/17 09:34	05/13/17 23:18	1
Aroclor-1242	0.095	U	0.095	0.057	ug/L		05/11/17 09:34	05/13/17 23:18	1
Aroclor-1248	0.095	U	0.095	0.048	ug/L		05/11/17 09:34	05/13/17 23:18	1
Aroclor-1254	0.095	U	0.095	0.029	ug/L		05/11/17 09:34	05/13/17 23:18	1
Aroclor-1260	0.095	U	0.095	0.038	ug/L		05/11/17 09:34	05/13/17 23:18	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	54		10 - 114	05/11/17 09:34	05/13/17 23:18	1
Tetrachloro-m-xylene	40		15 - 131	05/11/17 09:34	05/13/17 23:18	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-79295-1

Method: 200.7 Rev 4.4 - Metals (ICP) - Total Recoverable

Client Sample ID: WT-12610-050917-SSH-01-17

Date Collected: 05/09/17 08:00

Date Received: 05/10/17 09:40

Lab Sample ID: 240-79295-1

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	5.0	U	5.0	0.92	ug/L		05/11/17 14:00	05/12/17 21:13	1
Cadmium	2.0	U	2.0	0.29	ug/L		05/11/17 14:00	05/12/17 21:13	1
Chromium	0.56	J	5.0	0.55	ug/L		05/11/17 14:00	05/12/17 21:13	1
Copper	6.3	J	20	3.9	ug/L		05/11/17 14:00	05/12/17 21:13	1
Iron	100	U	100	25	ug/L		05/11/17 14:00	05/12/17 21:13	1
Nickel	2.8	J	20	1.6	ug/L		05/11/17 14:00	05/12/17 21:13	1
Lead	3.0	U	3.0	1.9	ug/L		05/11/17 14:00	05/12/17 21:13	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-79295-1

Method: 245.1 - Mercury (CVAA)

Client Sample ID: WT-12610-050917-SSH-01-17

Date Collected: 05/09/17 08:00

Date Received: 05/10/17 09:40

Lab Sample ID: 240-79295-1

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.20	U	0.20	0.13	ug/L		05/11/17 14:00	05/12/17 13:02	1

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Client Sample Results

Client: GHD Services Inc.
Project/Site: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-79295-1

General Chemistry

Client Sample ID: WT-12610-050917-SSH-01-17

Date Collected: 05/09/17 08:00

Date Received: 05/10/17 09:40

Lab Sample ID: 240-79295-1

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM	1.2	J	4.8	0.98	mg/L			05/17/17 08:22	1
Ammonia (as N)	2.0	U	2.0	0.46	mg/L		05/15/17 08:00	05/15/17 14:39	1
Chemical Oxygen Demand	21		10	4.1	mg/L			05/11/17 11:36	1
pH	7.9	HF	0.1	0.1	SU			05/10/17 11:58	1
Biochemical Oxygen Demand	2.0	U	2.0	1.2	mg/L			05/10/17 14:43	1
Total Suspended Solids	4.0	U	4.0	2.2	mg/L			05/11/17 10:56	1
Total Phosphorus as P	0.10	U	0.10	0.037	mg/L			05/16/17 11:07	1

QC Association Summary

Client: GHD Services Inc.
Project/Site: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-79295-1

GC/MS VOA

Analysis Batch: 278401

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-79295-1	WT-12610-050917-SSH-01-17	Total/NA	Water	624	
MB 240-278401/7	Method Blank	Total/NA	Water	624	
LCS 240-278401/4	Lab Control Sample	Total/NA	Water	624	

GC Semi VOA

Prep Batch: 278493

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-79295-1	WT-12610-050917-SSH-01-17	Total/NA	Water	608	
MB 240-278493/16-A	Method Blank	Total/NA	Water	608	
LCS 240-278493/17-A	Lab Control Sample	Total/NA	Water	608	

Analysis Batch: 278828

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-79295-1	WT-12610-050917-SSH-01-17	Total/NA	Water	608	278493
MB 240-278493/16-A	Method Blank	Total/NA	Water	608	278493
LCS 240-278493/17-A	Lab Control Sample	Total/NA	Water	608	278493

Metals

Prep Batch: 278504

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-79295-1	WT-12610-050917-SSH-01-17	Total Recoverable	Water	200.7	
MB 240-278504/1-A	Method Blank	Total Recoverable	Water	200.7	
LCS 240-278504/2-A	Lab Control Sample	Total Recoverable	Water	200.7	

Prep Batch: 278509

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-79295-1	WT-12610-050917-SSH-01-17	Total/NA	Water	245.1	
MB 240-278509/1-A	Method Blank	Total/NA	Water	245.1	
LCS 240-278509/2-A	Lab Control Sample	Total/NA	Water	245.1	

Analysis Batch: 278745

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-79295-1	WT-12610-050917-SSH-01-17	Total/NA	Water	245.1	278509
MB 240-278509/1-A	Method Blank	Total/NA	Water	245.1	278509
LCS 240-278509/2-A	Lab Control Sample	Total/NA	Water	245.1	278509

Analysis Batch: 278752

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-79295-1	WT-12610-050917-SSH-01-17	Total Recoverable	Water	200.7 Rev 4.4	278504
MB 240-278504/1-A	Method Blank	Total Recoverable	Water	200.7 Rev 4.4	278504
LCS 240-278504/2-A	Lab Control Sample	Total Recoverable	Water	200.7 Rev 4.4	278504

General Chemistry

Analysis Batch: 278349

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-79295-1	WT-12610-050917-SSH-01-17	Total/NA	Water	4500 H+ B-2000	
LCS 240-278349/2	Lab Control Sample	Total/NA	Water	4500 H+ B-2000	

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QC Association Summary

Client: GHD Services Inc.
Project/Site: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-79295-1

General Chemistry (Continued)

Analysis Batch: 278349 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-79295-1 DU	WT-12610-050917-SSH-01-17	Total/NA	Water	4500 H+ B-2000	

Analysis Batch: 278392

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-79295-1	WT-12610-050917-SSH-01-17	Total/NA	Water	5210B-2001	
SCB 240-278392/2	Method Blank	Total/NA	Water	5210B-2001	
USB 240-278392/1	Method Blank	Total/NA	Water	5210B-2001	
LCS 240-278392/3	Lab Control Sample	Total/NA	Water	5210B-2001	

Analysis Batch: 278440

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-79295-1	WT-12610-050917-SSH-01-17	Total/NA	Water	410.4	
MB 240-278440/40	Method Blank	Total/NA	Water	410.4	
MB 240-278440/9	Method Blank	Total/NA	Water	410.4	
LCS 240-278440/10	Lab Control Sample	Total/NA	Water	410.4	
LCS 240-278440/41	Lab Control Sample	Total/NA	Water	410.4	

Analysis Batch: 278517

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-79295-1	WT-12610-050917-SSH-01-17	Total/NA	Water	SM 2540D	
MB 240-278517/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 240-278517/2	Lab Control Sample	Total/NA	Water	SM 2540D	

Prep Batch: 278971

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-79295-1	WT-12610-050917-SSH-01-17	Total/NA	Water	Distill/Ammonia	
MB 240-278971/1-A	Method Blank	Total/NA	Water	Distill/Ammonia	
LCS 240-278971/2-A	Lab Control Sample	Total/NA	Water	Distill/Ammonia	

Analysis Batch: 278973

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-79295-1	WT-12610-050917-SSH-01-17	Total/NA	Water	350.2	278971
MB 240-278971/1-A	Method Blank	Total/NA	Water	350.2	278971
LCS 240-278971/2-A	Lab Control Sample	Total/NA	Water	350.2	278971

Analysis Batch: 279109

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-79295-1	WT-12610-050917-SSH-01-17	Total/NA	Water	SM4500 P E-1999	
MB 240-279109/3	Method Blank	Total/NA	Water	SM4500 P E-1999	
LCS 240-279109/4	Lab Control Sample	Total/NA	Water	SM4500 P E-1999	

Analysis Batch: 279239

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-79295-1	WT-12610-050917-SSH-01-17	Total/NA	Water	1664A	
MB 240-279239/1	Method Blank	Total/NA	Water	1664A	
LCS 240-279239/2	Lab Control Sample	Total/NA	Water	1664A	

TestAmerica Canton

QC Sample Results

Client: GHD Services Inc.
Project/Site: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-79295-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-278401/7
Matrix: Water
Analysis Batch: 278401

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	1.0	U	1.0	0.45	ug/L			05/10/17 18:23	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	97		69 - 120		05/10/17 18:23	1
1,2-Dichloroethane-d4 (Surr)	93		61 - 138		05/10/17 18:23	1
Toluene-d8 (Surr)	98		73 - 120		05/10/17 18:23	1

Lab Sample ID: LCS 240-278401/4
Matrix: Water
Analysis Batch: 278401

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Vinyl chloride	20.0	18.7		ug/L		94	10 - 251

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	100		69 - 120
1,2-Dichloroethane-d4 (Surr)	91		61 - 138
Toluene-d8 (Surr)	98		73 - 120

Method: 608 - Polychlorinated Biphenyls (PCBs) (GC)

Lab Sample ID: MB 240-278493/16-A
Matrix: Water
Analysis Batch: 278828

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 278493

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor-1016	0.10	U	0.10	0.050	ug/L		05/11/17 09:34	05/13/17 20:38	1
Aroclor-1221	0.10	U	0.10	0.090	ug/L		05/11/17 09:34	05/13/17 20:38	1
Aroclor-1232	0.10	U	0.10	0.070	ug/L		05/11/17 09:34	05/13/17 20:38	1
Aroclor-1242	0.10	U	0.10	0.060	ug/L		05/11/17 09:34	05/13/17 20:38	1
Aroclor-1248	0.10	U	0.10	0.050	ug/L		05/11/17 09:34	05/13/17 20:38	1
Aroclor-1254	0.10	U	0.10	0.030	ug/L		05/11/17 09:34	05/13/17 20:38	1
Aroclor-1260	0.10	U	0.10	0.040	ug/L		05/11/17 09:34	05/13/17 20:38	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
DCB Decachlorobiphenyl	84		10 - 114	05/11/17 09:34	05/13/17 20:38	1
Tetrachloro-m-xylene	78		15 - 131	05/11/17 09:34	05/13/17 20:38	1

Lab Sample ID: LCS 240-278493/17-A
Matrix: Water
Analysis Batch: 278828

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 278493

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Aroclor-1016	2.50	1.42		ug/L		57	50 - 114
Aroclor-1260	2.50	1.55		ug/L		62	8 - 127

TestAmerica Canton

QC Sample Results

Client: GHD Services Inc.
Project/Site: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-79295-1

Method: 608 - Polychlorinated Biphenyls (PCBs) (GC) (Continued)

Lab Sample ID: LCS 240-278493/17-A
Matrix: Water
Analysis Batch: 278828

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 278493

Surrogate	LCS %Recovery	LCS Qualifier	Limits
DCB Decachlorobiphenyl	65		10 - 114
Tetrachloro-m-xylene	61		15 - 131

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 240-278504/1-A
Matrix: Water
Analysis Batch: 278752

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 278504

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	5.0	U	5.0	0.92	ug/L		05/11/17 14:00	05/12/17 10:39	1
Cadmium	2.0	U	2.0	0.29	ug/L		05/11/17 14:00	05/12/17 10:39	1
Chromium	5.0	U	5.0	0.55	ug/L		05/11/17 14:00	05/12/17 10:39	1
Copper	20	U	20	3.9	ug/L		05/11/17 14:00	05/12/17 10:39	1
Iron	100	U	100	25	ug/L		05/11/17 14:00	05/12/17 10:39	1
Nickel	20	U	20	1.6	ug/L		05/11/17 14:00	05/12/17 10:39	1
Lead	3.0	U	3.0	1.9	ug/L		05/11/17 14:00	05/12/17 10:39	1

Lab Sample ID: LCS 240-278504/2-A
Matrix: Water
Analysis Batch: 278752

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 278504

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits %Rec.
Silver	50.0	50.8		ug/L		102	85 - 115
Cadmium	50.0	53.5		ug/L		107	85 - 115
Chromium	200	200		ug/L		100	85 - 115
Copper	250	253		ug/L		101	85 - 115
Iron	1000	1050		ug/L		105	85 - 115
Nickel	500	503		ug/L		101	85 - 115
Lead	500	502		ug/L		100	85 - 115

Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 240-278509/1-A
Matrix: Water
Analysis Batch: 278745

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 278509

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.20	U	0.20	0.13	ug/L		05/11/17 14:00	05/12/17 12:12	1

Lab Sample ID: LCS 240-278509/2-A
Matrix: Water
Analysis Batch: 278745

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 278509

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits %Rec.
Mercury	5.00	4.50		ug/L		90	85 - 115

TestAmerica Canton

QC Sample Results

Client: GHD Services Inc.
Project/Site: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-79295-1

Method: 1664A - HEM and SGT-HEM

Lab Sample ID: MB 240-279239/1
Matrix: Water
Analysis Batch: 279239

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HEM	5.0	U	5.0	1.0	mg/L			05/17/17 08:22	1

Lab Sample ID: LCS 240-279239/2
Matrix: Water
Analysis Batch: 279239

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
HEM	40.0	38.90		mg/L		97	78 - 114

Method: 350.2 - Nitrogen, Ammonia, Distillation

Lab Sample ID: MB 240-278971/1-A
Matrix: Water
Analysis Batch: 278973

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 278971

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia (as N)	2.0	U	2.0	0.46	mg/L		05/15/17 08:00	05/15/17 14:35	1

Lab Sample ID: LCS 240-278971/2-A
Matrix: Water
Analysis Batch: 278973

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 278971

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia (as N)	10.3	10.4		mg/L		101	82 - 116

Method: 410.4 - COD

Lab Sample ID: MB 240-278440/40
Matrix: Water
Analysis Batch: 278440

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chemical Oxygen Demand	10	U	10	4.1	mg/L			05/11/17 11:03	1

Lab Sample ID: MB 240-278440/9
Matrix: Water
Analysis Batch: 278440

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chemical Oxygen Demand	10	U	10	4.1	mg/L			05/11/17 10:24	1

Lab Sample ID: LCS 240-278440/10
Matrix: Water
Analysis Batch: 278440

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chemical Oxygen Demand	55.2	50.6		mg/L		92	90 - 110

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QC Sample Results

Client: GHD Services Inc.
Project/Site: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-79295-1

Method: 410.4 - COD (Continued)

Lab Sample ID: LCS 240-278440/41
Matrix: Water
Analysis Batch: 278440

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chemical Oxygen Demand	55.2	56.0		mg/L		102	90 - 110

Method: 4500 H+ B-2000 - pH

Lab Sample ID: LCS 240-278349/2
Matrix: Water
Analysis Batch: 278349

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH	5.79	5.8		SU		100	97 - 103

Lab Sample ID: 240-79295-1 DU
Matrix: Water
Analysis Batch: 278349

Client Sample ID: WT-12610-050917-SSH-01-17
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
pH	7.9	HF	7.6		SU		3	20

Method: 5210B-2001 - BOD, 5-Day

Lab Sample ID: SCB 240-278392/2
Matrix: Water
Analysis Batch: 278392

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	SCB Result	SCB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biochemical Oxygen Demand	1.26	J s	2.0	1.2	mg/L			05/10/17 14:17	1

Lab Sample ID: USB 240-278392/1
Matrix: Water
Analysis Batch: 278392

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	USB Result	USB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Biochemical Oxygen Demand	2.0	U	2.0	1.2	mg/L			05/10/17 14:15	1

Lab Sample ID: LCS 240-278392/3
Matrix: Water
Analysis Batch: 278392

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Biochemical Oxygen Demand	198	207		mg/L		105	85 - 115

TestAmerica Canton

QC Sample Results

Client: GHD Services Inc.
Project/Site: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-79295-1

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 240-278517/1
Matrix: Water
Analysis Batch: 278517

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	4.0	U	4.0	2.2	mg/L			05/11/17 10:56	1

Lab Sample ID: LCS 240-278517/2
Matrix: Water
Analysis Batch: 278517

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	20.7	15.0		mg/L		72	64 - 120

Method: SM4500 P E-1999 - Phosphorus

Lab Sample ID: MB 240-279109/3
Matrix: Water
Analysis Batch: 279109

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Phosphorus as P	0.10	U	0.10	0.037	mg/L			05/16/17 10:46	1

Lab Sample ID: LCS 240-279109/4
Matrix: Water
Analysis Batch: 279109

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Phosphorus as P	0.665	0.650		mg/L		98	77 - 120

Surrogate Summary

Client: GHD Services Inc.
Project/Site: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-79295-1

Method: 624 - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	BFB (69-120)	12DCE (61-138)	TOL (73-120)
240-79295-1	WT-12610-050917-SSH-01-17	96	100	95
LCS 240-278401/4	Lab Control Sample	100	91	98
MB 240-278401/7	Method Blank	97	93	98

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)

12DCE = 1,2-Dichloroethane-d4 (Surr)

TOL = Toluene-d8 (Surr)

Method: 608 - Polychlorinated Biphenyls (PCBs) (GC)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	DCB2 (10-114)	TCX2 (15-131)
240-79295-1	WT-12610-050917-SSH-01-17	54	40
LCS 240-278493/17-A	Lab Control Sample	65	61
MB 240-278493/16-A	Method Blank	84	78

Surrogate Legend

DCB = DCB Decachlorobiphenyl

TCX = Tetrachloro-m-xylene

Lab Chronicle

Client: GHD Services Inc.
Project/Site: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-79295-1

Client Sample ID: WT-12610-050917-SSH-01-17

Lab Sample ID: 240-79295-1

Date Collected: 05/09/17 08:00

Matrix: Water

Date Received: 05/10/17 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	278401	05/11/17 06:29	TJL1	TAL CAN
Total/NA	Prep	608			278493	05/11/17 09:34	CS	TAL CAN
Total/NA	Analysis	608		1	278828	05/13/17 23:18	LSH	TAL CAN
Total Recoverable	Prep	200.7			278504	05/11/17 14:00	AJC	TAL CAN
Total Recoverable	Analysis	200.7 Rev 4.4		1	278752	05/12/17 21:13	KLC	TAL CAN
Total/NA	Prep	245.1			278509	05/11/17 14:00	AJC	TAL CAN
Total/NA	Analysis	245.1		1	278745	05/12/17 13:02	DTN	TAL CAN
Total/NA	Analysis	1664A		1	279239	05/17/17 08:22	BLW	TAL CAN
Total/NA	Prep	Distill/Ammonia			278971	05/15/17 08:00	JAS	TAL CAN
Total/NA	Analysis	350.2		1	278973	05/15/17 14:39	JAS	TAL CAN
Total/NA	Analysis	410.4		1	278440	05/11/17 11:36	TPH	TAL CAN
Total/NA	Analysis	4500 H+ B-2000		1	278349	05/10/17 11:58	MM	TAL CAN
Total/NA	Analysis	5210B-2001		1	278392	05/10/17 14:43	MM	TAL CAN
Total/NA	Analysis	SM 2540D		1	278517	05/11/17 10:56	CL	TAL CAN
Total/NA	Analysis	SM4500 P E-1999		1	279109	05/16/17 11:07	TPH	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: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-79295-1

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	02-23-18
Connecticut	State Program	1	PH-0590	12-31-17
Florida	NELAP	4	E87225	06-30-17 *
Illinois	NELAP	5	200004	07-31-17 *
Kansas	NELAP	7	E-10336	01-31-18
Kentucky (UST)	State Program	4	58	02-23-18
Kentucky (WW)	State Program	4	98016	12-31-17
Minnesota	NELAP	5	039-999-348	12-31-17
Minnesota (Petrofund)	State Program	1	3506	07-31-17 *
Nevada	State Program	9	OH-000482008A	07-31-17 *
New Jersey	NELAP	2	OH001	06-30-17 *
New York	NELAP	2	10975	03-31-18
Ohio VAP	State Program	5	CL0024	09-14-17
Oregon	NELAP	10	4062	02-23-18
Pennsylvania	NELAP	3	68-00340	08-31-17 *
Texas	NELAP	6	T104704517-15-5	08-31-17 *
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-17
Washington	State Program	10	C971	01-12-18
West Virginia DEP	State Program	3	210	12-31-17
Wisconsin	State Program	5	999518190	08-31-17 *

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

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

MICHIGAN
 190 4.2/3.9

Chain of Custody Record
 248626

TestAmerica
 THE LEADER IN ENVIRONMENTAL TESTING
 TestAmerica Laboratories, Inc.
 TAL-8210 (0713)

Regulatory Program: DW NPDES RCRA Other:

Project Manager: M. Tomika
 Tel/Fax: 515 884 0510
 Analysis Turnaround Time: CALENDAR DAYS WORKING DAYS

TAT if different from Below:
 2 weeks
 1 week
 2 days
 1 day

Client Contact
 Company Name: GHD
 Address: 14496 N. Sheldon Rd, #200
 City/State/Zip: Plymouth MI 48170
 Phone: 734 453 5225
 Project Name: Rawlins Bay City
 Site: 12610-TOL
 PO# 24006288

Site Contact: St Parady Date: 5/9/17
 Lab Contact: D. Heilmann Carrier: FedEx
 Filtered Sample (Y/N) Perform MS/MSD (Y/N) Select metals Common's Cd T Phosphorus as P Hexyl chloride PCBs BOD H+PH TSS HFM

Sample Identification: WT-12610-050917-SS4-01-17 5/9/17 0800 C.G WT 11

Sample Type (C=Comp, G=Grab) Matrix # of Cont.

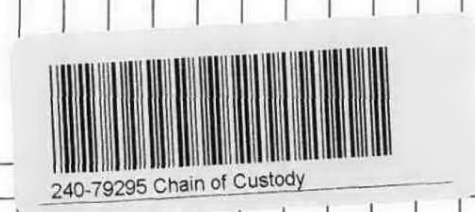
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other 2,3,4

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.

Special Instructions/QC Requirements & Comments: Non-Hazard Flammable Skin Irritant Unknown Poison B

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
 Return to Client Disposal by Lab Archive for Months

Therm ID No.:
 Received by: GHD Date/Time: 5/9/17 1700
 Received by: JTA Date/Time: 5/10/17 940
 Received in Laboratory by: Date/Time:



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- 13
- 14

TestAmerica Canton Sample Receipt Form/Narrative

Login # : 70205

Canton Facility

Client GHD Site Name -

Cooler unpacked by:

POD

Cooler Received on 5-10-17 Opened on 5-10-17


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 -0.3 °C) Observed Cooler Temp. 4.2 °C Corrected Cooler Temp. 39 °C
 IR GUN #36 (CF +0.8 °C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
 2. Were custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
 -Were custody seals on the outside of the cooler(s) signed & dated? Yes No NA
 -Were custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
 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 11-15 have been checked at the originating laboratory.
11. Were sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC697954
 12. Were VOAs on the COC? Yes No
 13. Were air bubbles >6 mm in any VOA vials? Yes  Larger than this. Yes No NA
 14. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____ Yes No
 15. Was a LL Hg or Me Hg trip blank present? _____ Yes No

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

Concerning _____

16. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by:

17. 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)

18. 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 pH</u>	<u>Preservative Added (mls)</u>	<u>Lot #</u>
WT-12610-050917-SSH-01-17	240-79295-E-1	Plastic 500ml - with Sulfuric Acid	<2	_____	_____
WT-12610-050917-SSH-01-17	240-79295-F-1	Plastic 500ml - with Nitric Acid	<2	_____	_____
WT-12610-050917-SSH-01-17	240-79295-H-1	Amber Glass 1 liter - Sulfuric Acid	_____	_____	_____
WT-12610-050917-SSH-01-17	240-79295-I-1	Amber Glass 1 liter - Sulfuric Acid	_____	_____	_____

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TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Canton

4101 Shuffel Street NW

North Canton, OH 44720

Tel: (330)497-9396

TestAmerica Job ID: 240-84046-1

Client Project/Site: 12610-T04, RACER Bay City

For:

GHD Services Inc.

26850 Haggerty Rd.

Farmington Hills, Michigan 48331

Attn: Ms. Ruth Mickle



Authorized for release by:

8/30/2017 12:36:13 PM

Denise Heckler, Project Manager II

(330)966-9477

denise.heckler@testamericainc.com



LINKS

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results through

Total Access

Have a Question?



Visit us at:

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: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-84046-1

Job ID: 240-84046-1

Laboratory: TestAmerica Canton

Narrative

Job Narrative 240-84046-1

Comments

No additional comments.

Receipt

The samples were received on 8/23/2017 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 1.2° C, 1.8° C and 3.1° C.

GC Semi VOA

Method(s) 8082A: The following samples appear to contain polychlorinated biphenyls (PCBs); however, the Aroclor patterns of the PCBs in the samples are altered and do not directly match the laboratory's individual Aroclor standards used for instrument calibration: GW-12610-082117-SSH-02-17 (240-84046-1), GW-12610-082117-SSH-03-17 (240-84046-2), GW-12610-082117-SSH-05-17 (240-84046-4), GW-12610-082117-SSH-07-17 (240-84046-6), GW-12610-082117-SSH-08-17 (240-84046-7) and GW-12610-082217-SSH-09-17 (240-84046-8). These altered PCB patterns may be caused by weathering, other environmental processes, and/or contributions from the presence of multiple Aroclors resulting in overlapping PCB patterns. The samples have been quantified and reported using the best overall Aroclor/standard pattern match. Due to the reasons stated above there is increased quantitative uncertainty associated with the reported results.

Method(s) 8082A: The following samples required a tetrabutylammonium sulfite (TBA) clean-up to reduce matrix interferences caused by sulfur: GW-12610-082117-SSH-03-17 (240-84046-2), GW-12610-082117-SSH-04-17 (240-84046-3), GW-12610-082117-SSH-05-17 (240-84046-4), GW-12610-082117-SSH-06-17 (240-84046-5), GW-12610-082217-SSH-09-17 (240-84046-8), GW-12610-082217-SSH-09-17 (240-84046-8[MS]), GW-12610-082217-SSH-09-17 (240-84046-8[MSD]) and GW-12610-082217-SSH-10-17 (240-84046-9).3206289, 2596993, 3141111.

Method(s) 8082A: The following sample was diluted due to abundance of target analytes: GW-12610-082117-SSH-08-17 (240-84046-7). As such, surrogate recoveries are below the calibration range or are not reported, and elevated reporting limits (RLs) are provided.

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

Organic 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: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-84046-1

Qualifiers

GC Semi VOA

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.
X	Surrogate is outside control limits

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: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-84046-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
240-84046-1	GW-12610-082117-SSH-02-17	Water	08/21/17 09:16	08/23/17 09:30
240-84046-2	GW-12610-082117-SSH-03-17	Water	08/21/17 10:06	08/23/17 09:30
240-84046-3	GW-12610-082117-SSH-04-17	Water	08/21/17 10:51	08/23/17 09:30
240-84046-4	GW-12610-082117-SSH-05-17	Water	08/21/17 11:01	08/23/17 09:30
240-84046-5	GW-12610-082117-SSH-06-17	Water	08/21/17 12:06	08/23/17 09:30
240-84046-6	GW-12610-082117-SSH-07-17	Water	08/21/17 13:46	08/23/17 09:30
240-84046-7	GW-12610-082117-SSH-08-17	Water	08/21/17 14:15	08/23/17 09:30
240-84046-8	GW-12610-082217-SSH-09-17	Water	08/22/17 10:31	08/23/17 09:30
240-84046-9	GW-12610-082217-SSH-10-17	Water	08/22/17 11:16	08/23/17 09:30



Detection Summary

Client: GHD Services Inc.
Project/Site: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-84046-1

Client Sample ID: GW-12610-082117-SSH-02-17

Lab Sample ID: 240-84046-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aroclor-1242	0.26		0.19	0.058	ug/L	1		8082A	Total/NA

Client Sample ID: GW-12610-082117-SSH-03-17

Lab Sample ID: 240-84046-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aroclor-1242	0.48		0.19	0.057	ug/L	1		8082A	Total/NA

Client Sample ID: GW-12610-082117-SSH-04-17

Lab Sample ID: 240-84046-3

No Detections.

Client Sample ID: GW-12610-082117-SSH-05-17

Lab Sample ID: 240-84046-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aroclor-1242	0.078	J	0.19	0.057	ug/L	1		8082A	Total/NA

Client Sample ID: GW-12610-082117-SSH-06-17

Lab Sample ID: 240-84046-5

No Detections.

Client Sample ID: GW-12610-082117-SSH-07-17

Lab Sample ID: 240-84046-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aroclor-1242	0.084	J	0.19	0.057	ug/L	1		8082A	Total/NA

Client Sample ID: GW-12610-082117-SSH-08-17

Lab Sample ID: 240-84046-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aroclor-1242	5.4		1.9	0.57	ug/L	10		8082A	Total/NA

Client Sample ID: GW-12610-082217-SSH-09-17

Lab Sample ID: 240-84046-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aroclor-1242	0.57		0.19	0.058	ug/L	1		8082A	Total/NA

Client Sample ID: GW-12610-082217-SSH-10-17

Lab Sample ID: 240-84046-9

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Canton

Method Summary

Client: GHD Services Inc.
Project/Site: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-84046-1

Method	Method Description	Protocol	Laboratory
8082A	Polychlorinated Biphenyls (PCBs) by Gas Chromatography	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: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-84046-1

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Client Sample ID: GW-12610-082117-SSH-02-17

Lab Sample ID: 240-84046-1

Date Collected: 08/21/17 09:16

Matrix: Water

Date Received: 08/23/17 09:30

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor-1016	0.19	U	0.19	0.048	ug/L		08/24/17 10:09	08/26/17 13:11	1
Aroclor-1221	0.19	U	0.19	0.087	ug/L		08/24/17 10:09	08/26/17 13:11	1
Aroclor-1232	0.19	U	0.19	0.067	ug/L		08/24/17 10:09	08/26/17 13:11	1
Aroclor-1242	0.26		0.19	0.058	ug/L		08/24/17 10:09	08/26/17 13:11	1
Aroclor-1248	0.19	U	0.19	0.048	ug/L		08/24/17 10:09	08/26/17 13:11	1
Aroclor-1254	0.19	U	0.19	0.029	ug/L		08/24/17 10:09	08/26/17 13:11	1
Aroclor-1260	0.19	U	0.19	0.038	ug/L		08/24/17 10:09	08/26/17 13:11	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	67		21 - 120	08/24/17 10:09	08/26/17 13:11	1
DCB Decachlorobiphenyl	55		10 - 120	08/24/17 10:09	08/26/17 13:11	1

Client Sample Results

Client: GHD Services Inc.
 Project/Site: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-84046-1

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Client Sample ID: GW-12610-082117-SSH-03-17

Lab Sample ID: 240-84046-2

Date Collected: 08/21/17 10:06

Matrix: Water

Date Received: 08/23/17 09:30

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor-1016	0.19	U	0.19	0.048	ug/L		08/24/17 10:09	08/26/17 13:30	1
Aroclor-1221	0.19	U	0.19	0.086	ug/L		08/24/17 10:09	08/26/17 13:30	1
Aroclor-1232	0.19	U	0.19	0.067	ug/L		08/24/17 10:09	08/26/17 13:30	1
Aroclor-1242	0.48		0.19	0.057	ug/L		08/24/17 10:09	08/26/17 13:30	1
Aroclor-1248	0.19	U	0.19	0.048	ug/L		08/24/17 10:09	08/26/17 13:30	1
Aroclor-1254	0.19	U	0.19	0.029	ug/L		08/24/17 10:09	08/26/17 13:30	1
Aroclor-1260	0.19	U	0.19	0.038	ug/L		08/24/17 10:09	08/26/17 13:30	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<i>Tetrachloro-m-xylene</i>	51		21 - 120				08/24/17 10:09	08/26/17 13:30	1
<i>DCB Decachlorobiphenyl</i>	26		10 - 120				08/24/17 10:09	08/26/17 13:30	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-84046-1

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Client Sample ID: GW-12610-082117-SSH-04-17

Lab Sample ID: 240-84046-3

Date Collected: 08/21/17 10:51

Matrix: Water

Date Received: 08/23/17 09:30

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor-1016	0.19	U	0.19	0.048	ug/L		08/24/17 10:09	08/26/17 13:48	1
Aroclor-1221	0.19	U	0.19	0.086	ug/L		08/24/17 10:09	08/26/17 13:48	1
Aroclor-1232	0.19	U	0.19	0.067	ug/L		08/24/17 10:09	08/26/17 13:48	1
Aroclor-1242	0.19	U	0.19	0.057	ug/L		08/24/17 10:09	08/26/17 13:48	1
Aroclor-1248	0.19	U	0.19	0.048	ug/L		08/24/17 10:09	08/26/17 13:48	1
Aroclor-1254	0.19	U	0.19	0.029	ug/L		08/24/17 10:09	08/26/17 13:48	1
Aroclor-1260	0.19	U	0.19	0.038	ug/L		08/24/17 10:09	08/26/17 13:48	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	57		21 - 120				08/24/17 10:09	08/26/17 13:48	1
DCB Decachlorobiphenyl	35		10 - 120				08/24/17 10:09	08/26/17 13:48	1

Client Sample Results

Client: GHD Services Inc.
 Project/Site: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-84046-1

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Client Sample ID: GW-12610-082117-SSH-05-17

Lab Sample ID: 240-84046-4

Date Collected: 08/21/17 11:01

Matrix: Water

Date Received: 08/23/17 09:30

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor-1016	0.19	U	0.19	0.048	ug/L		08/24/17 10:09	08/26/17 14:07	1
Aroclor-1221	0.19	U	0.19	0.086	ug/L		08/24/17 10:09	08/26/17 14:07	1
Aroclor-1232	0.19	U	0.19	0.067	ug/L		08/24/17 10:09	08/26/17 14:07	1
Aroclor-1242	0.078	J	0.19	0.057	ug/L		08/24/17 10:09	08/26/17 14:07	1
Aroclor-1248	0.19	U	0.19	0.048	ug/L		08/24/17 10:09	08/26/17 14:07	1
Aroclor-1254	0.19	U	0.19	0.029	ug/L		08/24/17 10:09	08/26/17 14:07	1
Aroclor-1260	0.19	U	0.19	0.038	ug/L		08/24/17 10:09	08/26/17 14:07	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<i>Tetrachloro-m-xylene</i>	64		21 - 120				08/24/17 10:09	08/26/17 14:07	1
<i>DCB Decachlorobiphenyl</i>	40		10 - 120				08/24/17 10:09	08/26/17 14:07	1

Client Sample Results

Client: GHD Services Inc.
 Project/Site: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-84046-1

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Client Sample ID: GW-12610-082117-SSH-06-17

Lab Sample ID: 240-84046-5

Date Collected: 08/21/17 12:06

Matrix: Water

Date Received: 08/23/17 09:30

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor-1016	0.19	U	0.19	0.048	ug/L		08/24/17 10:09	08/26/17 14:25	1
Aroclor-1221	0.19	U	0.19	0.086	ug/L		08/24/17 10:09	08/26/17 14:25	1
Aroclor-1232	0.19	U	0.19	0.067	ug/L		08/24/17 10:09	08/26/17 14:25	1
Aroclor-1242	0.19	U	0.19	0.057	ug/L		08/24/17 10:09	08/26/17 14:25	1
Aroclor-1248	0.19	U	0.19	0.048	ug/L		08/24/17 10:09	08/26/17 14:25	1
Aroclor-1254	0.19	U	0.19	0.029	ug/L		08/24/17 10:09	08/26/17 14:25	1
Aroclor-1260	0.19	U	0.19	0.038	ug/L		08/24/17 10:09	08/26/17 14:25	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	64		21 - 120	08/24/17 10:09	08/26/17 14:25	1
DCB Decachlorobiphenyl	57		10 - 120	08/24/17 10:09	08/26/17 14:25	1

Client Sample Results

Client: GHD Services Inc.
 Project/Site: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-84046-1

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Client Sample ID: GW-12610-082117-SSH-07-17

Lab Sample ID: 240-84046-6

Date Collected: 08/21/17 13:46

Matrix: Water

Date Received: 08/23/17 09:30

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor-1016	0.19	U	0.19	0.048	ug/L		08/24/17 10:09	08/26/17 14:44	1
Aroclor-1221	0.19	U	0.19	0.086	ug/L		08/24/17 10:09	08/26/17 14:44	1
Aroclor-1232	0.19	U	0.19	0.067	ug/L		08/24/17 10:09	08/26/17 14:44	1
Aroclor-1242	0.084	J	0.19	0.057	ug/L		08/24/17 10:09	08/26/17 14:44	1
Aroclor-1248	0.19	U	0.19	0.048	ug/L		08/24/17 10:09	08/26/17 14:44	1
Aroclor-1254	0.19	U	0.19	0.029	ug/L		08/24/17 10:09	08/26/17 14:44	1
Aroclor-1260	0.19	U	0.19	0.038	ug/L		08/24/17 10:09	08/26/17 14:44	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<i>Tetrachloro-m-xylene</i>	76		21 - 120				08/24/17 10:09	08/26/17 14:44	1
<i>DCB Decachlorobiphenyl</i>	20		10 - 120				08/24/17 10:09	08/26/17 14:44	1

Client Sample Results

Client: GHD Services Inc.
 Project/Site: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-84046-1

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Client Sample ID: GW-12610-082117-SSH-08-17

Lab Sample ID: 240-84046-7

Date Collected: 08/21/17 14:15

Matrix: Water

Date Received: 08/23/17 09:30

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor-1016	1.9	U	1.9	0.48	ug/L		08/24/17 10:09	08/26/17 15:03	10
Aroclor-1221	1.9	U	1.9	0.86	ug/L		08/24/17 10:09	08/26/17 15:03	10
Aroclor-1232	1.9	U	1.9	0.67	ug/L		08/24/17 10:09	08/26/17 15:03	10
Aroclor-1242	5.4		1.9	0.57	ug/L		08/24/17 10:09	08/26/17 15:03	10
Aroclor-1248	1.9	U	1.9	0.48	ug/L		08/24/17 10:09	08/26/17 15:03	10
Aroclor-1254	1.9	U	1.9	0.29	ug/L		08/24/17 10:09	08/26/17 15:03	10
Aroclor-1260	1.9	U	1.9	0.38	ug/L		08/24/17 10:09	08/26/17 15:03	10
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<i>Tetrachloro-m-xylene</i>	138	X	21 - 120				08/24/17 10:09	08/26/17 15:03	10
<i>DCB Decachlorobiphenyl</i>	30		10 - 120				08/24/17 10:09	08/26/17 15:03	10

Client Sample Results

Client: GHD Services Inc.
 Project/Site: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-84046-1

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Client Sample ID: GW-12610-082217-SSH-09-17

Lab Sample ID: 240-84046-8

Date Collected: 08/22/17 10:31

Matrix: Water

Date Received: 08/23/17 09:30

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor-1016	0.19	U	0.19	0.049	ug/L		08/24/17 10:09	08/26/17 15:21	1
Aroclor-1221	0.19	U	0.19	0.087	ug/L		08/24/17 10:09	08/26/17 15:21	1
Aroclor-1232	0.19	U	0.19	0.068	ug/L		08/24/17 10:09	08/26/17 15:21	1
Aroclor-1242	0.57		0.19	0.058	ug/L		08/24/17 10:09	08/26/17 15:21	1
Aroclor-1248	0.19	U	0.19	0.049	ug/L		08/24/17 10:09	08/26/17 15:21	1
Aroclor-1254	0.19	U	0.19	0.029	ug/L		08/24/17 10:09	08/26/17 15:21	1
Aroclor-1260	0.19	U	0.19	0.039	ug/L		08/24/17 10:09	08/26/17 15:21	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
<i>Tetrachloro-m-xylene</i>	68		21 - 120				08/24/17 10:09	08/26/17 15:21	1
<i>DCB Decachlorobiphenyl</i>	33		10 - 120				08/24/17 10:09	08/26/17 15:21	1

Client Sample Results

Client: GHD Services Inc.
Project/Site: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-84046-1

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Client Sample ID: GW-12610-082217-SSH-10-17

Lab Sample ID: 240-84046-9

Date Collected: 08/22/17 11:16

Matrix: Water

Date Received: 08/23/17 09:30

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Aroclor-1016	0.19	U	0.19	0.048	ug/L		08/24/17 10:09	08/26/17 16:17	1
Aroclor-1221	0.19	U	0.19	0.086	ug/L		08/24/17 10:09	08/26/17 16:17	1
Aroclor-1232	0.19	U	0.19	0.067	ug/L		08/24/17 10:09	08/26/17 16:17	1
Aroclor-1242	0.19	U	0.19	0.057	ug/L		08/24/17 10:09	08/26/17 16:17	1
Aroclor-1248	0.19	U	0.19	0.048	ug/L		08/24/17 10:09	08/26/17 16:17	1
Aroclor-1254	0.19	U	0.19	0.029	ug/L		08/24/17 10:09	08/26/17 16:17	1
Aroclor-1260	0.19	U	0.19	0.038	ug/L		08/24/17 10:09	08/26/17 16:17	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Tetrachloro-m-xylene	57		21 - 120				08/24/17 10:09	08/26/17 16:17	1
DCB Decachlorobiphenyl	23		10 - 120				08/24/17 10:09	08/26/17 16:17	1

QC Association Summary

Client: GHD Services Inc.
Project/Site: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-84046-1

GC Semi VOA

Prep Batch: 292346

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-84046-1	GW-12610-082117-SSH-02-17	Total/NA	Water	3520C	
240-84046-2	GW-12610-082117-SSH-03-17	Total/NA	Water	3520C	
240-84046-3	GW-12610-082117-SSH-04-17	Total/NA	Water	3520C	
240-84046-4	GW-12610-082117-SSH-05-17	Total/NA	Water	3520C	
240-84046-5	GW-12610-082117-SSH-06-17	Total/NA	Water	3520C	
240-84046-6	GW-12610-082117-SSH-07-17	Total/NA	Water	3520C	
240-84046-7	GW-12610-082117-SSH-08-17	Total/NA	Water	3520C	
240-84046-8	GW-12610-082217-SSH-09-17	Total/NA	Water	3520C	
240-84046-9	GW-12610-082217-SSH-10-17	Total/NA	Water	3520C	
MB 240-292346/13-A	Method Blank	Total/NA	Water	3520C	
LCS 240-292346/14-A	Lab Control Sample	Total/NA	Water	3520C	
240-84046-8 MS	GW-12610-082217-SSH-09-17	Total/NA	Water	3520C	
240-84046-8 MSD	GW-12610-082217-SSH-09-17	Total/NA	Water	3520C	

Analysis Batch: 292624

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-84046-1	GW-12610-082117-SSH-02-17	Total/NA	Water	8082A	292346
240-84046-2	GW-12610-082117-SSH-03-17	Total/NA	Water	8082A	292346
240-84046-3	GW-12610-082117-SSH-04-17	Total/NA	Water	8082A	292346
240-84046-4	GW-12610-082117-SSH-05-17	Total/NA	Water	8082A	292346
240-84046-5	GW-12610-082117-SSH-06-17	Total/NA	Water	8082A	292346
240-84046-6	GW-12610-082117-SSH-07-17	Total/NA	Water	8082A	292346
240-84046-7	GW-12610-082117-SSH-08-17	Total/NA	Water	8082A	292346
240-84046-8	GW-12610-082217-SSH-09-17	Total/NA	Water	8082A	292346
240-84046-9	GW-12610-082217-SSH-10-17	Total/NA	Water	8082A	292346
MB 240-292346/13-A	Method Blank	Total/NA	Water	8082A	292346
LCS 240-292346/14-A	Lab Control Sample	Total/NA	Water	8082A	292346
240-84046-8 MS	GW-12610-082217-SSH-09-17	Total/NA	Water	8082A	292346
240-84046-8 MSD	GW-12610-082217-SSH-09-17	Total/NA	Water	8082A	292346

QC Sample Results

Client: GHD Services Inc.
Project/Site: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-84046-1

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Lab Sample ID: MB 240-292346/13-A
Matrix: Water
Analysis Batch: 292624

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 292346

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Aroclor-1016	0.20	U	0.20	0.050	ug/L		08/24/17 10:09	08/26/17 16:36	1
Aroclor-1221	0.20	U	0.20	0.090	ug/L		08/24/17 10:09	08/26/17 16:36	1
Aroclor-1232	0.20	U	0.20	0.070	ug/L		08/24/17 10:09	08/26/17 16:36	1
Aroclor-1242	0.20	U	0.20	0.060	ug/L		08/24/17 10:09	08/26/17 16:36	1
Aroclor-1248	0.20	U	0.20	0.050	ug/L		08/24/17 10:09	08/26/17 16:36	1
Aroclor-1254	0.20	U	0.20	0.030	ug/L		08/24/17 10:09	08/26/17 16:36	1
Aroclor-1260	0.20	U	0.20	0.040	ug/L		08/24/17 10:09	08/26/17 16:36	1

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
Tetrachloro-m-xylene	73		21 - 120	08/24/17 10:09	08/26/17 16:36	1
DCB Decachlorobiphenyl	76		10 - 120	08/24/17 10:09	08/26/17 16:36	1

Lab Sample ID: LCS 240-292346/14-A
Matrix: Water
Analysis Batch: 292624

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 292346

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	Limits
		Result	Qualifier				
Aroclor-1016	2.50	1.64		ug/L		66	32 - 120
Aroclor-1260	2.50	1.95		ug/L		78	36 - 120

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
Tetrachloro-m-xylene	62		21 - 120
DCB Decachlorobiphenyl	79		10 - 120

Lab Sample ID: 240-84046-8 MS
Matrix: Water
Analysis Batch: 292624

Client Sample ID: GW-12610-082217-SSH-09-17
Prep Type: Total/NA
Prep Batch: 292346

Analyte	Sample Result	Sample Qualifier	Spike Added	MS MS		Unit	D	%Rec	Limits
				Result	Qualifier				
Aroclor-1016	0.19	U	2.40	1.99		ug/L		83	24 - 121
Aroclor-1260	0.19	U	2.40	1.54		ug/L		64	10 - 120

Surrogate	MS MS		Limits
	%Recovery	Qualifier	
Tetrachloro-m-xylene	68		21 - 120
DCB Decachlorobiphenyl	45		10 - 120

Lab Sample ID: 240-84046-8 MSD
Matrix: Water
Analysis Batch: 292624

Client Sample ID: GW-12610-082217-SSH-09-17
Prep Type: Total/NA
Prep Batch: 292346

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD MSD		Unit	D	%Rec	Limits	RPD	Limit
				Result	Qualifier						
Aroclor-1016	0.19	U	2.48	1.87		ug/L		75	24 - 121	6	30
Aroclor-1260	0.19	U	2.48	1.44		ug/L		58	10 - 120	7	30

Surrogate	MSD MSD		Limits
	%Recovery	Qualifier	
Tetrachloro-m-xylene	66		21 - 120
DCB Decachlorobiphenyl	44		10 - 120

TestAmerica Canton

Surrogate Summary

Client: GHD Services Inc.
Project/Site: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-84046-1

Method: 8082A - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	TCX1 (21-120)	DCB1 (10-120)
240-84046-1	GW-12610-082117-SSH-02-17	67	55
240-84046-2	GW-12610-082117-SSH-03-17	51	26
240-84046-3	GW-12610-082117-SSH-04-17	57	35
240-84046-4	GW-12610-082117-SSH-05-17	64	40
240-84046-5	GW-12610-082117-SSH-06-17	64	57
240-84046-6	GW-12610-082117-SSH-07-17	76	20
240-84046-7	GW-12610-082117-SSH-08-17	138 X	30
240-84046-8	GW-12610-082217-SSH-09-17	68	33
240-84046-8 MS	GW-12610-082217-SSH-09-17	68	45
240-84046-8 MSD	GW-12610-082217-SSH-09-17	66	44
240-84046-9	GW-12610-082217-SSH-10-17	57	23
LCS 240-292346/14-A	Lab Control Sample	62	79
MB 240-292346/13-A	Method Blank	73	76

Surrogate Legend

TCX = Tetrachloro-m-xylene

DCB = DCB Decachlorobiphenyl

Lab Chronicle

Client: GHD Services Inc.
Project/Site: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-84046-1

Client Sample ID: GW-12610-082117-SSH-02-17

Lab Sample ID: 240-84046-1

Date Collected: 08/21/17 09:16

Matrix: Water

Date Received: 08/23/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			292346	08/24/17 10:09	BMB	TAL CAN
Total/NA	Analysis	8082A		1	292624	08/26/17 13:11	LSH	TAL CAN

Client Sample ID: GW-12610-082117-SSH-03-17

Lab Sample ID: 240-84046-2

Date Collected: 08/21/17 10:06

Matrix: Water

Date Received: 08/23/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			292346	08/24/17 10:09	BMB	TAL CAN
Total/NA	Analysis	8082A		1	292624	08/26/17 13:30	LSH	TAL CAN

Client Sample ID: GW-12610-082117-SSH-04-17

Lab Sample ID: 240-84046-3

Date Collected: 08/21/17 10:51

Matrix: Water

Date Received: 08/23/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			292346	08/24/17 10:09	BMB	TAL CAN
Total/NA	Analysis	8082A		1	292624	08/26/17 13:48	LSH	TAL CAN

Client Sample ID: GW-12610-082117-SSH-05-17

Lab Sample ID: 240-84046-4

Date Collected: 08/21/17 11:01

Matrix: Water

Date Received: 08/23/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			292346	08/24/17 10:09	BMB	TAL CAN
Total/NA	Analysis	8082A		1	292624	08/26/17 14:07	LSH	TAL CAN

Client Sample ID: GW-12610-082117-SSH-06-17

Lab Sample ID: 240-84046-5

Date Collected: 08/21/17 12:06

Matrix: Water

Date Received: 08/23/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			292346	08/24/17 10:09	BMB	TAL CAN
Total/NA	Analysis	8082A		1	292624	08/26/17 14:25	LSH	TAL CAN

Client Sample ID: GW-12610-082117-SSH-07-17

Lab Sample ID: 240-84046-6

Date Collected: 08/21/17 13:46

Matrix: Water

Date Received: 08/23/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			292346	08/24/17 10:09	BMB	TAL CAN
Total/NA	Analysis	8082A		1	292624	08/26/17 14:44	LSH	TAL CAN

TestAmerica Canton

Lab Chronicle

Client: GHD Services Inc.
Project/Site: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-84046-1

Client Sample ID: GW-12610-082117-SSH-08-17

Lab Sample ID: 240-84046-7

Date Collected: 08/21/17 14:15

Matrix: Water

Date Received: 08/23/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			292346	08/24/17 10:09	BMB	TAL CAN
Total/NA	Analysis	8082A		10	292624	08/26/17 15:03	LSH	TAL CAN

Client Sample ID: GW-12610-082217-SSH-09-17

Lab Sample ID: 240-84046-8

Date Collected: 08/22/17 10:31

Matrix: Water

Date Received: 08/23/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			292346	08/24/17 10:09	BMB	TAL CAN
Total/NA	Analysis	8082A		1	292624	08/26/17 15:21	LSH	TAL CAN

Client Sample ID: GW-12610-082217-SSH-10-17

Lab Sample ID: 240-84046-9

Date Collected: 08/22/17 11:16

Matrix: Water

Date Received: 08/23/17 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3520C			292346	08/24/17 10:09	BMB	TAL CAN
Total/NA	Analysis	8082A		1	292624	08/26/17 16:17	LSH	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: 12610-T04, RACER Bay City

TestAmerica Job ID: 240-84046-1

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	02-23-18
Connecticut	State Program	1	PH-0590	12-31-17 *
Florida	NELAP	4	E87225	06-30-18
Illinois	NELAP	5	200004	07-31-18
Kansas	NELAP	7	E-10336	01-31-18 *
Kentucky (UST)	State Program	4	58	02-23-18
Kentucky (WW)	State Program	4	98016	12-31-17 *
Minnesota	NELAP	5	039-999-348	12-31-17 *
Minnesota (Petrofund)	State Program	1	3506	07-31-17 *
Nevada	State Program	9	OH-000482008A	07-31-18
New Jersey	NELAP	2	OH001	06-30-18
New York	NELAP	2	10975	03-31-18
Ohio VAP	State Program	5	CL0024	09-14-17 *
Oregon	NELAP	10	4062	02-23-18
Pennsylvania	NELAP	3	68-00340	08-31-17 *
Texas	NELAP	6	T104704517-15-5	08-31-18
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-17 *
Washington	State Program	10	C971	01-12-18 *
West Virginia DEP	State Program	3	210	12-31-17 *
Wisconsin	State Program	5	999518190	08-31-17

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

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

MICHIGAN Chain of Custody Record 248785
 190 1.8/CI.8 1.2/CI.2-3.1/CI.1

TestAmerica
 THE LEADER IN ENVIRONMENTAL TESTING
 TestAmerica Laboratories, Inc.
 TAL-8210 (0713)

Regulatory Program: DW NPDES RCRA Other:

Company Name: GHD
 Address: 21850 Annapolis Rd
 City/State/Zip: Farmington Hills, MI 48331
 Phone: 248 893 3700
 Fax:
 Project Name: Reed Trust Bay City
 Site: SS0W 12610-104-01
 P O #

Client Contact
 Project Manager: M. Tomka
 Tel/Fax: 517 884 0510
 Analysis Turnaround Time
 CALENDAR DAYS WORKING DAYS
 TAT if different from Below
 2 weeks
 1 week
 2 days
 1 day

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	Sample Specific Notes:
GW-12610-082117-SSH-02-17	8/21/17	0916	G	GW	2	W	X	 240-84046 Chain of Custody MS/MSD
		1006	G	GW	2	W	X	
		1051	G	GW	2	W	X	
		1101	G	GW	2	W	X	
		1206	G	GW	2	W	X	
		1346	G	GW	2	W	X	
		1415	G	GW	2	W	X	
		8/22/17 031	G	GW	4	W	X	
		1116	G	GW	2	W	X	

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-Hazardous Flammable Skin Irritant Unknown
 Return to Client Disposal by Lab Archive for _____ Months

Special Instructions/QC Requirements & Comments:

Custody Seal No.: 045427875508 14513 Cooler Temp. (°C): Obs'd: _____
 Relinquished by: DLA Am Date/Time: 8/22/17 1600 Received by: POP Date/Time: 8/23-17 930
 Relinquished by: _____ Date/Time: _____ Received in Laboratory by: _____ Date/Time: _____



TestAmerica Canton Sample Receipt Form/Narrative

Login #: 84046

Canton Facility

Client GAD Site Name

Cooler unpacked by:

Cooler Received on 8-23-17 Opened on 8-23-17

JOP

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
IR GUN# IR-8 (CF -0.4 °C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
IR GUN #36 (CF +0°C) Observed Cooler Temp. °C Corrected Cooler Temp. °C
2. Were custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
-Were custody seals on the outside of the cooler(s) signed & dated? Yes No NA
-Were custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
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 11-15 have been checked at the originating laboratory.
11. Were sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC697954
12. Were VOAs on the COC? Yes No
13. Were air bubbles >6 mm in any VOA vials? Yes No NA
14. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # Yes No
15. Was a LL Hg or Me Hg trip blank present? Yes No

Contacted PM Date by via Verbal Voice Mail Other

Concerning

16. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by:

17. 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)

18. SAMPLE PRESERVATION

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

