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GZA GeoEnvironmental of NY
300 Pearl Street
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Buffalo, NY 14202
T: 716.685.2300
F: 716.248.1472
www.gza.com

VIA EMAIL

August 24, 2020
File No. 21.0056546.20

Glenn May
New York State Department of Environmental Conservation
Division of Environmental Remediation
270 Michigan Avenue
Buffalo, New York 14203
e-mail: *glenn.may@dec.ny.gov*

Re: **Periodic Review Report** - Number 9 – January 2020, Revised July 2020
Delphi Harrison Thermal Systems Site - Registry Site No. 932113
Lockport, New York

Dear Glenn:

GZA GeoEnvironmental of New York (GZA) prepared this revised 2019 Periodic Review Report (PRR) for the Delphi Harrison Thermal Systems Site (Site) as required by the Site Management Plan[1] (SMP) that was approved by the New York State Department of Environmental Conservation (NYSDEC) on October 13, 2011. This PRR has been revised to address one comment by the Department as presented in your letter dated May 21, 2020. The implementation of the SMP is a requirement of the Remedial Program Order on Consent and Administrative Settlement (Index #B9-0553-99-06) between GM Components Holdings, LLC (GMCH) and NYSDEC dated November 8, 2011.

GMCH is the current owner and operator of an automotive components manufacturing facility at 200 Upper Mountain Road, Lockport, New York. The Site, as defined by the environmental easement (Instrument # 2011-17072) recorded in the Niagara County Clerk's Office in October 2011, comprises approximately 22.7 acres located in the eastern portion of the facility as shown on **Figure 1**. In 2014, a portion of the Site was conveyed to Delphi Properties Management LLC. On June 30, 2015 that same portion of the Site was transferred from Delphi Properties Management LLC to MAHLE Manufacturing Management Inc., now called MAHLE BEHR USA INC.

[1] "Delphi Harrison Thermal Systems Site, Niagara County, New York, Site Management Plan, NYSDEC Site Number: 9-32-113" dated October 13, 2011

REGULATORY HISTORY SUMMARY

The following is a summary of the regulatory actions at the Site.

- Building 8, located in the northern central portion of the facility, formerly housed degreasing operations that utilized trichloroethylene (TCE). An aboveground storage tank (AST) was formerly located outside the southeastern corner of Building 8 until it was decommissioned in May 1994. Delphi Thermal Systems (Delphi) notified the NYSDEC in 1994 that TCE was detected in soil during an excavation to repair fire protection lines in the vicinity of the former AST. NYSDEC assigned the incident Spill Number 9410972. Delphi removed the TCE-impacted soil from the excavation down to the top of bedrock and provided NYSDEC with a report of this removal action in a letter dated December 22, 1994.

- In March 1999, the Site was added to the NYSDEC Inactive Hazardous Waste Registry, Site Number 932113 as a Class 3 listing (does not present a significant threat to the public health or the environment – action may be deferred).

- In 2001, Delphi entered into a Remedial Investigation/Feasibility Study Order on Consent, Index #B9-0553-99-06 (RI/FS Order) to determine the extent of TCE contamination and complete a Focused Feasibility Study.

- In March 2005, NYSDEC, in consultation with the New York State Department of Health (NYSDOH), issued a Record of Decision (ROD) based on the results of the Focused Remedial Investigation (FRI) and Focused Feasibility Study (FFS). The components of the selected remedy, as defined in the ROD, are as follows.

    - Monitored natural attenuation (MNA) with groundwater monitoring and sampling to check the continued effectiveness of the remedy.

    - Development of a contingency plan for groundwater control/treatment if natural attenuation processes can no longer be demonstrated as effective or if significant off-site groundwater contamination is observed.

    - Development of a site management plan to: (a) address residual contaminated soils that may be excavated from the site during future redevelopment, (b) evaluate the potential for vapor intrusion for all current site buildings and those developed on the site in the future, including provision for mitigation of impacts identified; (c) provide for the operation and maintenance of the components of the remedy; (d) monitor site groundwater; and (e) identify use restrictions on site development or groundwater use.

    - Imposition of an environmental easement to restrict groundwater use and check compliance with the approved site management plan.

    - Certification of the institutional and engineering controls.

- Annual MNA groundwater sampling was completed voluntarily at the Site from October 2006 through April 2011.

- In October 2011, an environmental easement (Instrument # 2011-17072) for the Site was recorded in the Niagara County Clerk's Office.

- In November 2011, a Remedial Program Order on Consent and Administrative Settlement (Index #B9-0553-99-06) was executed between GMCH and NYSDEC.

- In April 2012, the Site was reclassified on the NYSDEC Inactive Hazardous Waste Registry, to a Class 4 listing (site has been properly closed but requires continued site management consisting of operation, maintenance and/or monitoring).

- Since April 2012, groundwater sampling has been completed at the Site in accordance with the Remedial Program Order on Consent and Administrative Settlement (Index #B9-0553-99-06).

- There were no additional regulatory actions taken during the reporting period.

2019 PERIODIC REVIEW REPORTING PERIOD

In accordance with Section 5.3 of the SMP, the following constitutes the Calendar Year 2019 PRR:

1. Results of the required Site inspections and severe weather condition inspections, if applicable

(a) A Site inspection was completed on December 18, 2019 by James Richert of GZA. The site inspection form was completed, a copy of which is provided as **Appendix A.**

2. All applicable inspection forms and other records generated for the Site during the reporting period in electronic format

A copy of the completed site inspection form from the December 18, 2019 site inspection is included in **Appendix A**. Also, included as part of the electronic submittal is a copy of the Delphi Harrison Thermal Systems Site 2019 NYSDEC Site Management Periodic Review Report Institutional and Engineering Controls Certification Form. A copy of this Form is attached to the PRR as **Appendix B**.

3. A summary of any monitoring data and/or information generated during the Reporting Period with comments and conclusions

- The most recent groundwater sampling was completed in May 2019. A copy of the GZA report is included with this PRR as **Appendix C.** The report provides the following pertinent conclusions and recommendations.

CONCLUSIONS:

Based on the results of the May 2019 sampling round within the framework of the historical results, natural attenuation of COCs is occurring via reductive dechlorination. GZA offers the following additional observations relative to the 2019 sampling round:

- The concentrations of the parent compounds decrease significantly from the source area (MW-7) downgradient to the mid-point of the plume (MW-4 and MW-10), and from the mid-point on to the downgradient portions of the Site (MW-11 through MW-15). The decrease in concentrations is as much as five orders of magnitude from the source area to the most downgradient wells where COCs are not detected.
- There is an increase in daughter compound concentrations from the source area to the mid-point of the plume, with an overall decrease in total COC concentrations.
- The COCs were not detected above NYSDEC Class GA groundwater standards at the down-gradient property line at wells MW-11, MW-13, and MW-14.

RECOMMENDATIONS

Based on the results of the May 2019 and previous sampling events and supported by the findings of the 2014 treatability study, current conditions mid-plume show potential for complete reductive dechlorination of the COCs to ethene. COCs were not detected or were detected at concentrations below NYSDEC TOGS 1.1.1 GA standards in groundwater collected from the downgradient Site boundary, providing additional confirmation of continued natural attenuation.

Recommended annual groundwater monitoring will utilize the same eight monitoring wells (MW-4, -7, -10, -11, -12, -13, -14 and -15), as stated in the SMP. The COC and natural attenuation analytical parameters measured during the 2019 sampling round should also be measured during the next sampling round.

4. **Data summary tables and graphical representations of contaminants of concern by media (groundwater, soil vapor), which include a listing of all compounds analyzed, along with the applicable standards, with all exceedances highlighted. These will include a presentation of past data as part of an evaluation of contaminant concentration trends.**

   Data summary tables and graphs associated with the annual MNA groundwater sampling report are included in **Appendix C**.

5. **Results of all analyses, copies of all laboratory data sheets, and the required laboratory data deliverables for all samples collected during the reporting period will be submitted electronically in a NYSDEC-approved format.**

The electronic submission of this PRR will include the results of analyses, copies of laboratory data sheets, and the required laboratory data deliverables for samples collected during the reporting period for the 2019 MNA groundwater sampling event.

6. A Site evaluation, which includes the following:

- Compliance with the requirements of the ROD Site-selected remedy;
- Any new conclusions or observations regarding site contamination based on inspections or data generated by the Site Monitoring Plan for the media being monitored;
- Recommendations regarding any necessary changes to the remedy and/or Site Monitoring Plan; and
- The overall performance and effectiveness of the remedy.

As discussed in Item 3 above, even though there appears to be a trend of decreasing temporal TOC concentrations, the results of the groundwater sampling provide evidence that anaerobic biodegradation of the COCs is controlling migration of impacted groundwater downgradient from the Site.

The Site is in compliance with the ROD, and MNA is still an effective remedy.

GZA on behalf of GMCH, in the Recommendations section of the annual MNA Groundwater Sampling report, recommended changing the frequency of sampling from annual to biennial. As of the date of this PRR, NYSDEC has not yet responded to that recommendation.

7. Identification, assessment and certification of all ECs/ICs [Engineering Controls/Institutional Controls[2]] required by the Record of Decision Site-selected remedy

There are no Engineering Controls (ECs) required under the ROD and the Institutional Controls (ICs) that apply to the Site are set forth in the recorded Environmental Easement. The ICs for the Site restrict the use of groundwater and require compliance with the SMP. There have been no changes to the SMP since it was approved by NYSDEC on October 13, 2011.

<u>Certification of the Institutional and Engineering Controls[3]</u>

For each institutional or engineering control identified for the Site, I certify[4] the following statements are true:

[2] See definition for *Engineering Control* at 6 NYCRR § 375-1.2 (o) and for *Institutional Control* at 6 NYCRR § 375-1.2 (aa).
[3] The required Certification of the Institutional and Engineering Controls is set forth in Section 5.2 of the NYSDEC-approved SMP. It is to be used for the Periodic Review Report in lieu of the certifications noted in DER-10 at section 6.3 (d).
[4] Certify is defined as a statement or declaration of a professional opinion based on the information, data and/or facts known at the time such certification is made.

- The inspection of the Site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under my direction;
- The institutional control and/or engineering controls employed at this Site are unchanged from the date the control was put in place, or last approved by the Department;
- Nothing has occurred that would impair the ability of the control to protect the public health and environment;
- Nothing has occurred that would constitute a violation or failure to comply with the Site Management Plan for this control;
- Access to the Site will continue to be provided to the Department (with valid Safety Protocol Program Card) to evaluate the remedy, including access to evaluate the continued maintenance of this control;
- If a financial assurance mechanism is required under the oversight document for the Site, the mechanism remains valid and sufficient for the intended purpose under the document[5];
- Use of the Site is compliant with the Environmental Easement;
- Engineering control systems that have been installed as part of the remedial programs for the Site *(if applicable)* are performing as designed and are effective;
- To the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the ROD Site's selected remedy and generally accepted engineering practices; and
- The information presented in this report is accurate and complete.
- I certify that the information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law. I, Bart A. Klettke, P.E. of GZA GeoEnvironmental of New York, am certifying as Owner's Designated Site Representative for the Site.

Bart A. Klettke, P.E.
Principal
GZA GeoEnvironmental of New York

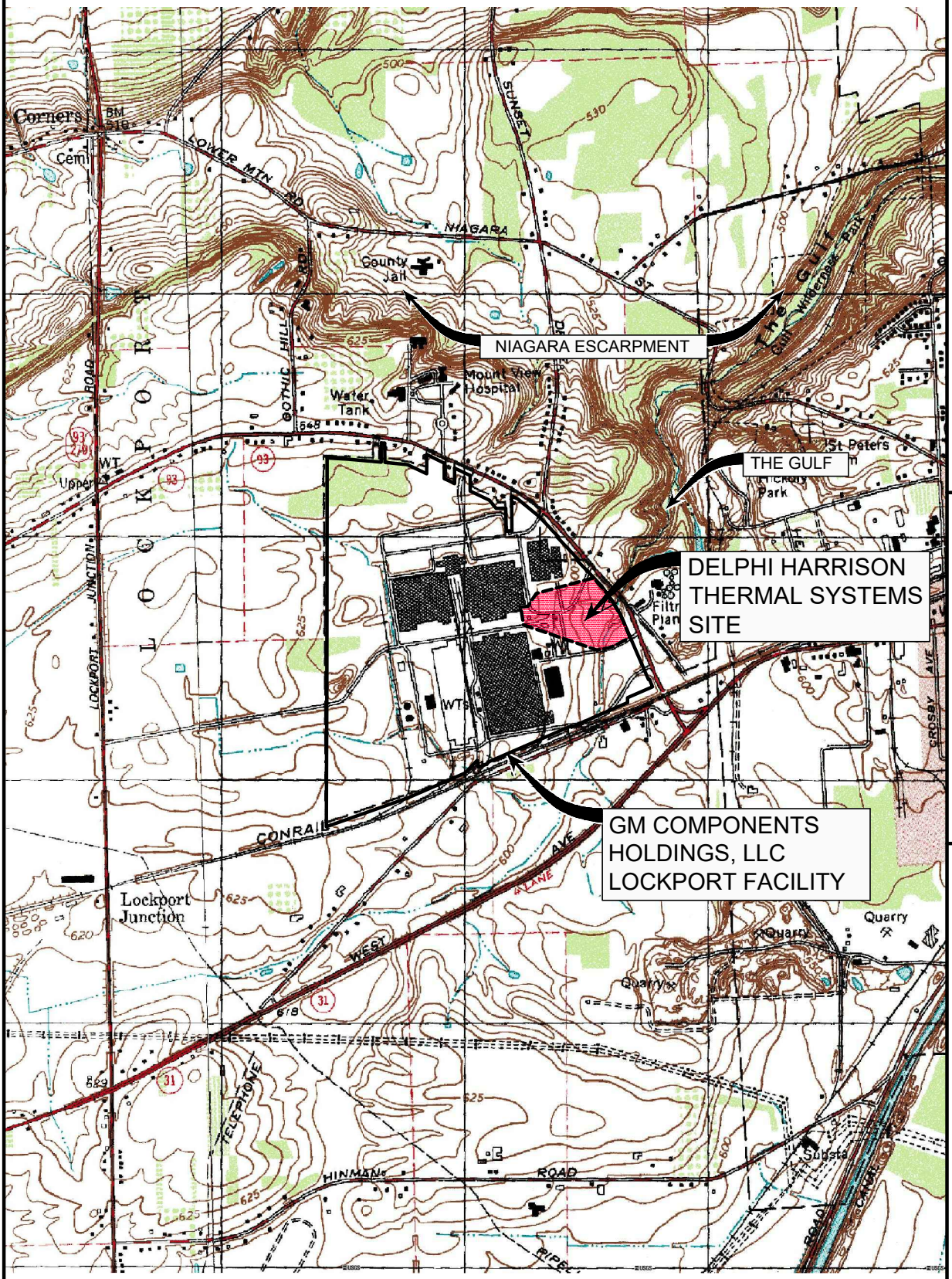
Date: August 24, 2020

[5] Note that no financial assurance mechanism is in place for the Site remedial program.

Figure 1:	Site Locus
Figure 2:	Photograph Orientation Map
Appendix A:	2019 Site Inspection Form and Inspection Photograph Log
Appendix B:	Delphi 2019 – NYSDEC Site Management Periodic Review Report Notice Institutional and Engineering Controls Certification Form
Appendix C:	May 2019 MNA Groundwater Sampling Report

cc: Brian Sadowski (NYSDEC, electronic copy only)
Jim Hartnett (GM, electronic copy only)
Cynthia Tudor-Schultz (GMCH, electronic copy only)
Denis Conley (H&A, electronic copy only)

FIGURES



NOTE:
BASE MAP ADAPTED FROM U.S.G.S. TOPOGRAPHIC MAPS DOWNLOADED FROM TERRASERVER.MICROSOFT.COM

NORTH

NEW YORK

DRAWN BY: DEW

DATE: JANUARY 2020

GZA GeoEnvironmental of New York

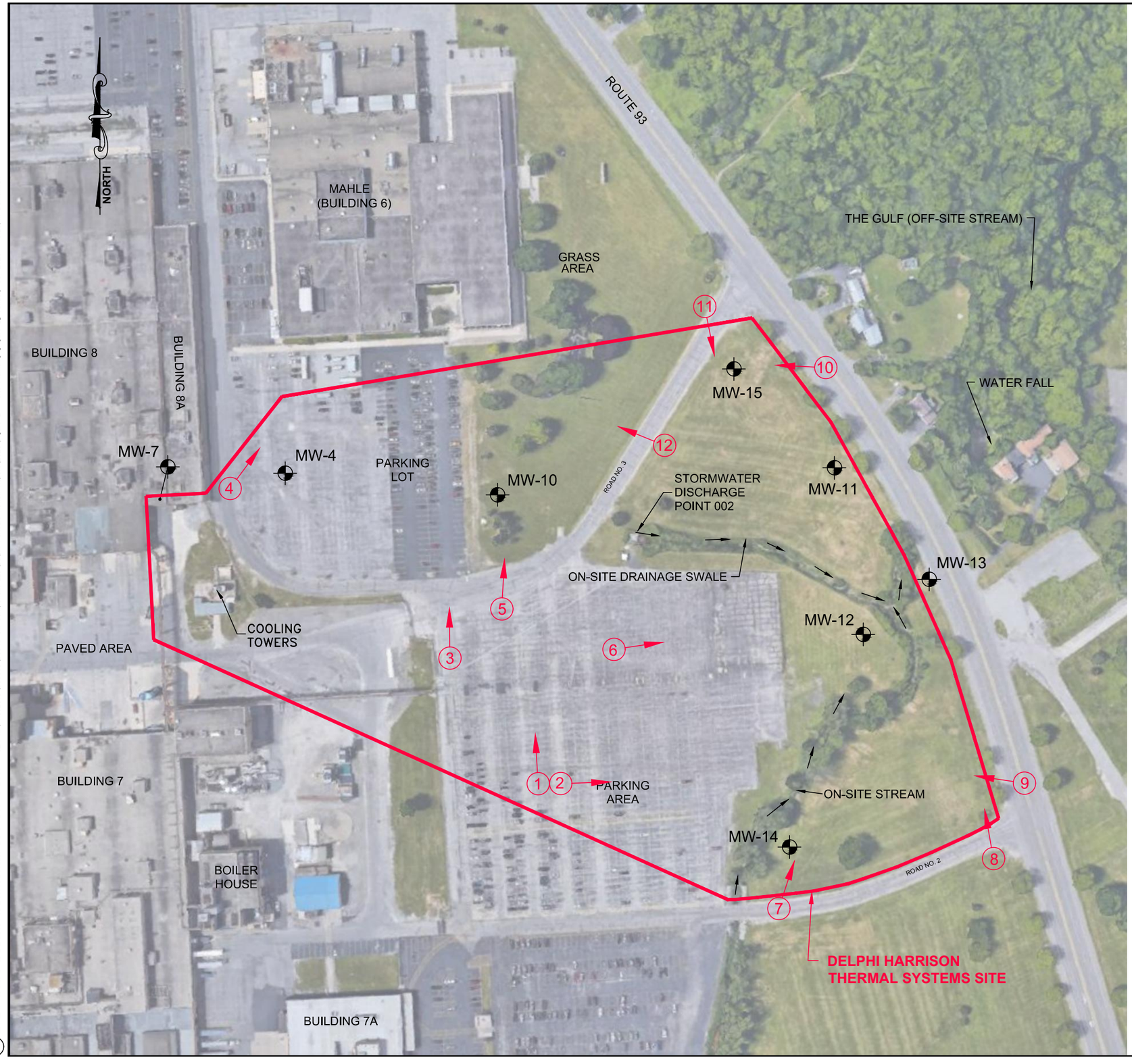
GM COMPONENTS HOLDINGS, LLC
PERIODIC REVIEW REPORT
DELPHI HARRISON THERMAL SYSTEMS SITE
200 UPPER MOUNTAIN ROAD
LOCKPORT, NEW YORK
SITE NUMBER 9-32-113

SITE PLAN

PROJECT No.
21.0056546.00

FIGURE No.
1

GZA–K:\PROJECTS\56500s\56546 GM Component LLC\Delphi Periodic Review Report\2020\Figure 1 – Locus Plan.dwg [Figure 1] January 08, 2020 – 3:15pm Daniel.Wulf



LEGEND:

1 — APPROXIMATE LOCATION AND ORIENTATION OF INSPECTION PHOTOGRAPHS TAKEN ON 12/18/2019 (SEE APPENDIX A)

MW-4 — APPROXIMATE LOCATION AND DESIGNATION OF MONITORING WELL

NOTES:

1. BASE MAP ADAPTED FROM A 2016 AERIAL PHOTOGRAPH DOWNLOADED USING GOOGLE EARTH PRO AND SITE OBSERVATIONS.

2. THE SIZE AND LOCATION OF EXISTING SITE FEATURES SHOULD BE CONSIDERED APPROXIMATE.

DRAWN BY: **DEW**

DATE: **JANUARY 2020**

GZA GeoEnvironmental of New York

APPROXIMATE SCALE IN FEET

0 90 180 360

GM COMPONENTS HOLDINGS, LLC

DELPHI HARRISON THERMAL SYSTEMS SITE

PERIODIC REVIEW REPORT

200 UPPER MOUNTAIN ROAD

LOCKPORT, NEW YORK

SITE NO. 9-32-113

PHOTOGRAPH ORIENTATION MAP

PROJECT No.

21.0056546.20

FIGURE No.

2

APPENDIX A

2019 Site Inspection Form and Inspection Photograph Log

SITE INSPECTION FORM

SITE DETAILS

Site No.: 9-32-113

Site Name: **Delphi Harrison Thermal Systems Site**

Site Address: 200 Upper Mountain Road, Lockport NY

PERSON PERFORMING INSPECTION

NAME: James Richert EMAIL: james.richert@gza.com

OTHERS PRESENT: No PHONE NUMBER: 716-844-7048

COMPANY: GZA GeoEnvironmental of NY

INSPECTION DATE AND SITE CONDITIONS

INSPECTION DATE: 12/18/2019 INSPECTION TIME: 1540 hrs

WEATHER CONDITIONS: light snow, windy, 25 degrees F.

REASON FOR SITE INSPECTION

Scheduled Annual Inspection?:	YES	NO
Inspection after a Severe Condition that could effect site controls?:	YES	NO
describe severe conditions triggering inspection:		

VERIFICATION OF SITE DETAILS

Current Site Owner: GM Components Holdings, LLC (GMCH) and MAHLE Manufacturing Management Inc.

Current Site Operators: GM Components Holdings, LLC (GMCH) and MAHLE Manufacturing Management Inc.

Describe Current Site Use (check all that apply):

Industrial Commercial Residential Other

briefly describe observed site uses: Area within the environmental easement is used as parking lots, site roads, and greenspace.

Has some or all of the Site property been sold, subdivided, merged, or undergone a tax map amendment since the initial/last inspection?	YES		NO
If YES, is documentation or evidence of documentation submittal to NYSDEC attached?	YES	N/A	NO
Have any federal, state and/or local permits (e.g., building or discharge) been issued for the property since the initial/last inspection?			NO
If YES, is documentation or evidence of documentation submittal to NYSDEC attached?	YES	N/A	NO
Has a change in Site usage per NYCRR 375-1.11(d) occurred since the last inspection?	YES		NO
If YES, is documentation or evidence of documentation submittal to NYSDEC attached?	YES	N/A	NO
Has any new information come to your attention to indicate that assumptions made in the qualitative exposure assessment for off-site contamination are no longer valid?	YES		NO
If YES, is this information or evidence of submittal to NYSDEC attached?	YES	N/A	NO

DESCRIPTION OF INSTITUTIONAL/ENGINEERING CONTROLS

Is Environmental Easement still in place?	YES	NO
If no, explain:		
Is the Site Management Plan in place?	YES	NO
If no, explain:		

AREAS IN NEED OF REPAIR OR MAINTENANCE

Area discussed in this section must be shown on a figure and have photographic documentation.

None No areas in need of repair observed.

INTRUSIVE ACTIVITIES PERFORMED AT SITE DURING INSPECTION PERIOD	DATE	LOCATION
None	N/A	N/A

REVIEW OF SITE RECORDS

Are site records being properly generated and maintained? YES NO

Provide summary of recordkeeping review and adequacy:

GMCH Environmental Engineer, Cindy Tudor Schultz, maintains both hard copies and electronic copies of the site records per GM's Information Lifecycle Management system. The records are managed under "Corrective Action and Remediation Project Records", series ENV010. Hard copies are kept in a file cabinet in the Engineering office and electronic copies reside on the environmental shared ("S") drive

ADDITIONAL NOTES & COMMENTS

See attached representative site photos from the PRR Site inspection.

INSPECTION CERTIFICATION

I hereby certfy that the information included in this report is complete and accurate to the best of my knowledge.

Inspector Signature: Jim Richert Date: 12/18/2019

Photograph Log

Client Name: General Motors Components Holdings	**Site Location:** Delphi Harrison Thermal Systems, Lockport, NY	**Project No.** 21.0056546.20

Photo No.	**Date:**
1	12/18/19

Direction Photo Taken:

North

Description:
GM/Delphi parking lot.

Photo No.	**Date:**
2	12/18/19

Direction Photo Taken:

East

Description:

GM/Delphi Parking lot.

Photograph Log

Client Name: General Motors Components Holdings	**Site Location:** Delphi Harrison Thermal Systems, Lockport, NY	**Project No.** 21.0056546.20

Photo No.	**Date:**
3	12/18/19

Direction Photo Taken:

North

Description:

View of parking lot and south wall of Building 6.

Photo No.	**Date:**
4	12/18/19

Direction Photo Taken:

Northeast

Description:

Parking lot and SW corner of Building 6.

Photograph Log

Client Name: General Motors Components Holdings	**Site Location:** Delphi Harrison Thermal Systems, Lockport, NY	**Project No.** 21.0056546.20

Photo No.	**Date:**
5	12/18/19

Direction Photo Taken:

North

Description:

Lawn on west side of Building 6.

Photo No.	**Date:**
6	12/18/19

Direction Photo Taken:

East

Description:

GM/Delphi Parking lot.

Photograph Log

Client Name: General Motors Components Holdings	**Site Location:** Delphi Harrison Thermal Systems, Lockport, NY	**Project No.** 21.0056546.20

Photo No.	**Date:**
7	12/18/19

Direction Photo Taken:

Northeast

Description:

Creek and lawn area with well MW-14 in background.

Photo No.	**Date:**
8	12/18/19

Direction Photo Taken:
West

North

Description:

GM Sign and lawn area at extreme southeastern corner of the Delphi Site.

Photograph Log

Client Name: General Motors Components Holdings	Site Location: Delphi Harrison Thermal Systems, Lockport, NY	Project No. 21.0056546.20

Photo No.	Date:
9	12/18/19

Direction Photo Taken:

Northwest

Description:

View of Site lawns and creek from Upper Mountain Road.

Photo No.	Date:
10	12/18/19

Direction Photo Taken:

West

Description:

View of Site lawn at east end of the Delphi Site. Well MW-15 in background.

Photograph Log

Client Name: General Motors Components Holdings	Site Location: Delphi Harrison Thermal Systems, Lockport, NY	Project No. 21.0056546.20

Photo No.	Date:
11	12/18/19

Direction Photo Taken:

South

Description:

View of Site lawn from Site Road #3. Well MW-15 in background.

Photo No.	Date:
12	12/18/19

Direction Photo Taken:

Northwest

Description:

View of Site lawn and southeastern corner of Building 6.

APPENDIX B

Delphi 2019 NYSDEC Site Management Periodic Review Report Notice Institutional and Engineering Controls Certification Form

Enclosure 2

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Site Management Periodic Review Report Notice
Institutional and Engineering Controls Certification Form

Site Details **Box 1**

Site No. 932113

Site Name Delphi Harrison Thermal Systems

Site Address: 200 Upper Mountain Road Zip Code: 14094
City/Town: Lockport
County: Niagara
Site Acreage: 22.7

Reporting Period: December 16, 2018 to December 16, 2019

	YES	NO
1. Is the information above correct?	☒	☐
If NO, include handwritten above or on a separate sheet.		
2. Has some or all of the site property been sold, subdivided, merged, or undergone a tax map amendment during this Reporting Period?	☐	☒
3. Has there been any change of use at the site during this Reporting Period (see 6NYCRR 375-1.11(d))?	☐	☒
4. Have any federal, state, and/or local permits (e.g., building, discharge) been issued for or at the property during this Reporting Period?	☐	☒
If you answered YES to questions 2 thru 4, include documentation or evidence that documentation has been previously submitted with this certification form.		
5. Is the site currently undergoing development?	☐	☒

Box 2

	YES	NO
6. Is the current site use consistent with the use(s) listed below? Commercial and Industrial	☒	☐
7. Are all ICs/ECs in place and functioning as designed?	☒	☐

IF THE ANSWER TO EITHER QUESTION 6 OR 7 IS NO, sign and date below and DO NOT COMPLETE THE REST OF THIS FORM. Otherwise continue.

A Corrective Measures Work Plan must be submitted along with this form to address these issues.

Signature of Owner, Remedial Party or Designated Representative

Date

SITE NO. 932113

Box 3

Description of Institutional Controls

Parcel	Owner	Institutional Control
108.13-1-1	GM Components Holdings LLC	Site Management Plan Landuse Restriction Monitoring Plan Ground Water Use Restriction Soil Management Plan IC/EC Plan

In March 2005, a Record of Decision was issued for this site. The selected remedy was Monitored Natural Attenuation (MNA). Long-term groundwater monitoring is required to evaluate the continued effectiveness of MNA at the site.

An Environmental Easement was filed with the Niagara County Clerk's Office on October 6, 2011. This easement states that the Controlled Property may be used for commercial or industrial use as long as the following engineering controls are employed and the land use restrictions specified below are adhered to: (1) implement and comply with all elements of the Department approved Site Management Plan, (2) restrict use of groundwater at the Controlled Property as a source of potable or process water without necessary water quality treatment as determined by the Niagara County Department of Health, and (3) evaluate the potential for vapor intrusion into any buildings developed on the Controlled Property. Provision for mitigation (if determined to be necessary), such as installation of a vapor barrier and sub-slab vapor system or other engineering controls shall be implemented on all structures on the Controlled Property prior to occupancy.

Box 4

Description of Engineering Controls

None Required

Not Applicable/No EC's

Box 5

Periodic Review Report (PRR) Certification Statements

1. I certify by checking "YES" below that:

   a) the Periodic Review report and all attachments were prepared under the direction of, and reviewed by, the party making the certification;

   b) to the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted engineering practices; and the information presented is accurate and compete.

YES	NO
☒	☐

2. If this site has an IC/EC Plan (or equivalent as required in the Decision Document), for each Institutional or Engineering control listed in Boxes 3 and/or 4, I certify by checking "YES" below that all of the following statements are true:

   (a) the Institutional Control and/or Engineering Control(s) employed at this site is unchanged since the date that the Control was put in-place, or was last approved by the Department;

   (b) nothing has occurred that would impair the ability of such Control, to protect public health and the environment;

   (c) access to the site will continue to be provided to the Department, to evaluate the remedy, including access to evaluate the continued maintenance of this Control;

   (d) nothing has occurred that would constitute a violation or failure to comply with the Site Management Plan for this Control; and

   (e) if a financial assurance mechanism is required by the oversight document for the site, the mechanism remains valid and sufficient for its intended purpose established in the document.

YES	NO
☒	☐

IF THE ANSWER TO QUESTION 2 IS NO, sign and date below and DO NOT COMPLETE THE REST OF THIS FORM. Otherwise continue.

A Corrective Measures Work Plan must be submitted along with this form to address these issues.

Signature of Owner, Remedial Party or Designated Representative

Date

IC CERTIFICATIONS
SITE NO. 932113

Box 6

SITE OWNER OR DESIGNATED REPRESENTATIVE SIGNATURE

I certify that all information and statements in Boxes 1,2, and 3 are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

I JAMES F. HARTNETT at 3040 VAN DYKE AVENUE, WARREN MI
print name print business address

am certifying as MANAGER, REMEDIATION SERVICES (Owner or Remedial Party)

for the Site named in the Site Details Section of this form.

James F. Hartnett 1/13/2020
Signature of Owner, Remedial Party, or Designated Representative Rendering Certification Date

IC/EC CERTIFICATIONS

Box 7

Qualified Environmental Professional Signature

I certify that all information in Boxes 4 and 5 are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

I BART A. KLETTKE at 300 PEARL STREET BUFFALO, NY 14202.
print name print business address

am certifying as a Qualified Environmental Professional for the GM COMPONENTS HOLDINGS, LLC
(Owner or Remedial Party)

Bart A. Klettke

Signature of Qualified Environmental Professional, for the Owner or Remedial Party, Rendering Certification

Stamp (Required for PE)

1-14-2020

Date

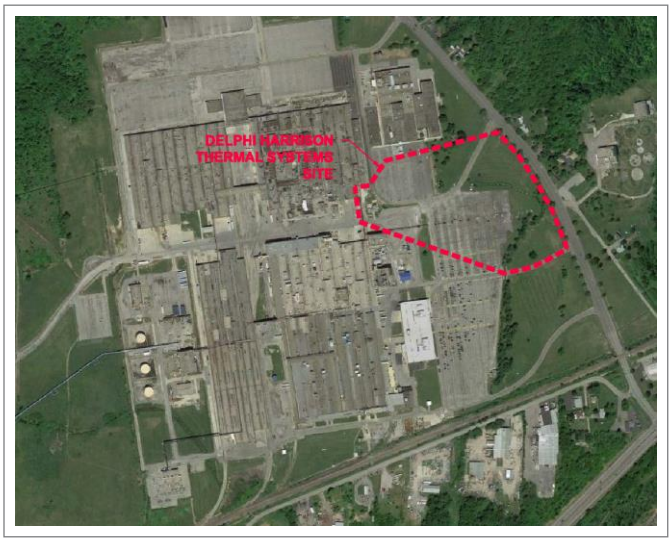
APPENDIX C

May 2019 MNA Groundwater Sampling Report

Proactive by Design

RESULTS OF MAY 2019 MONITORED NATURAL ATTENUATION GROUNDWATER SAMPLING
DELPHI HARRISON THERMAL SYSTEMS SITE
Registry Site No. 932113
GM COMPONENTS HOLDINGS, LLC
Lockport, New York

October 2019
File No. 21.0056546.20



PREPARED FOR:
New York State Department of Environmental Conservation

GZA GeoEnvironmental of New York

300 Pearl St. Suite 700 | Buffalo, NY 14202
716-685-2300
31 Offices Nationwide
www.gza.com

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VIA E-MAIL

October 22, 2019
File No: 21.0056546.20

Mr. Glenn May, CPG
New York State Department of Environmental Conservation
Division of Environmental Remediation, Region 9
270 Michigan Ave.
Buffalo, NY 14203-2915

RE: Results of May 2019 Monitored Natural Attenuation Groundwater Sampling
Delphi Harrison Thermal Systems Site (Site) - Registry Site No. 932113
Lockport, New York

Dear Glenn:

GZA GeoEnvironmental of New York (GZA) is pleased to provide the attached Report of the May 2019 Monitored Natural Attenuation Groundwater Sampling for the above reference Site.

We hope this report satisfies your present needs. If you need any additional site-specific information, please contact Jim Richert at 716-844-7048

Sincerely,

GZA GEOENVIRONMENTAL OF NEW YORK

Jim Richert
James J. Richert, P.G.
Senior Project Manager

Bart A. Klettke
Bart A. Klettke, P.E.
Principal

TABLE OF CONTENTS

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1.0 INTRODUCTION AND BACKGROUND

GZA GeoEnvironmental of New York (GZA) presents this report to summarize results of the May 2019 groundwater and monitored natural attenuation (MNA) parameter sampling event at the above-referenced Site. The groundwater sampling event was conducted from May 16th through May 21st, and included eight monitoring wells (MW-4, -7, -10, -11, -12, -13, -14 and -15). All eight wells were sampled for the five compounds of concern (COCs)[1] and MNA parameters as identified in the Site Management Plan[2] (SMP). In addition to the MNA parameters identified in the SMP, carbon dioxide, hydrogen, ethene, and ethane were added to the sampling parameter list starting in 2014.

2005

In March 2005, NYSDEC issued a Record of Decision (ROD) for the Site, which selected MNA as the remedial alternative to address the COCs present at the Site. Annual MNA groundwater sampling was completed voluntarily from October 2006 to May 2011.

2006 to 2010

Six monitoring wells (MW-7, MW-11, MW-12, MW-13, MW-14 and MW-15) were monitored in October 2006, November 2007, November 2008, and March 2009 (Figure 1). MW-7 is in the vicinity of the Area of Concern (AOC) and the other five wells, MW-11 through MW-15, are down-gradient monitoring locations. Based on the results of the groundwater sampling program through March 2009, the sampling program was expanded in July 2009 to include 10 monitoring well locations: MW-4, -7, -8, -9, -10, -11, -12, -13, -14 and -15. Results of the 2010 event indicated that natural attenuation is occurring with limited evidence of reductive dechlorination near the source area (MW-7) and midpoint (MW-4 and -10) of the groundwater plume. However, there was adequate to strong evidence for anaerobic biodegradation of COCs at the leading edge of the groundwater plume (MW-11 through -15). Given these conditions, coupled with the lack of evidence of an expanding plume, it appeared that natural attenuation processes were effectively managing the COC plume migration.

2011 to 2014

In November 2011, GMCH entered into an Order on Consent and Administrative Settlement (Index #B9-0553-99-06) for the Site which requires that annual sampling be conducted as part of the SMP. Results of the 2011 to 2014 annual sampling included eight monitoring wells (MW-4, -7, -10, -11, -12, -13, -14 and -15), as stated in the SMP and collectively resulted in the following conclusions:

- natural attenuation of COCs is occurring via reductive dechlorination,
- The COC concentrations of the parent compounds were decreasing and the concentrations of daughter compounds increasing from the source area (MW-7) down-gradient to the mid-point of the plume (MW-4 and MW-10) and on to the down-gradient portions of the Site (MW-11 through MW-15); and,
- The COC concentrations at the most down-gradient well (MW-13) along the property line did not exceed the NYSDEC Class GA criteria.

[1] The five COCs are trichloroethylene, tetrachloroethylene, *cis*-1,2-dichloroethene, *trans*-1,2-dichloroethylene, and vinyl chloride.

[2] "Delphi Harrison Thermal Systems Site, Niagara County, New York, Site Management Plan, NYSDEC Site Number 9-32-113" dated October 2011. Prepared for GM Components Holdings, LLC by GZA.

Also, the 2013 data indicated that ethene was detected in groundwater samples collected from all eight monitoring wells. Assuming the ethene represents the end-product of chlorinated volatile organic compounds (cVOC) reductive dechlorination, its detection at each monitoring well was a direct line of evidence that cVOCs have been degraded to completion at the Site.

The temporal decreasing trend in TOC concentrations continued through the 2013 monitoring event. GZA recommended a treatability study to evaluate whether the addition of an organic carbon amendment might re-stimulate natural attenuation by reductive dechlorination. The recommended study involved deployment of *in-situ* microcosms (Bio-Trap® In-Situ Microcosms, manufactured by Microbial Insights, Inc. of Knoxville, Tennessee) "baited" or "BioStim" unit with an organic carbon additive to evaluate whether reductive dechlorination can be re-stimulated.

Conclusions of the 2014 Treatability Study:

At the source area (MW-7):

- *Dehalococcoides* populations were detected in both the control and carbon amendment units. However, population counts were below the concentration at which an effective rate of dechlorination generally occurs.
- Addition of the organic carbon amendment at the source location did not substantially enhance growth of dechlorinating bacteria and increase reductive dechlorination during the study period.

At the mid-plume location (MW-4):

- High concentrations of *Dehalococcoides* and both vinyl chloride reductase enzyme genes were detected in the MNA unit, indicating the potential for complete reductive dechlorination of TCE to ethene under existing site conditions.

The *Dehalococcoides* population in the BioStim unit, in which the organic carbon was added, was an order of magnitude higher compared to the MNA unit. Vinyl chloride reductase genes were also higher in this unit compared to MNA levels, suggesting that the carbon amendment enhanced growth of dechlorinating bacteria within the study period. Contaminant concentrations and geochemistry, however, were not substantially different from those in the MNA unit.

2.0 2019 GROUNDWATER MONITORING AND SAMPLING

The 2019 groundwater monitoring and sampling event was conducted from May 16 through May 21, 2019, in accordance with the SMP, and included eight monitoring wells (MW-4, MW-7, and MW-10 through MW-15 **(Figure 1)**.

Methodology

The groundwater monitoring and sampling was performed using low flow sampling techniques with a peristaltic pump, disposable polyethylene tubing and a water quality meter with a flow-through cell to collect water quality field parameters. The sampling technique and analytical parameters were consistent with the SMP.

Field Measured Parameters: temperature, specific conductance, pH, turbidity, dissolved oxygen (DO), and oxidation reduction potential (ORP).

Compounds of Concern: tetrachloroethylene (PCE), trichloroethylene (TCE), *cis*-1,2-dichloroethylene (*cis*-DCE), *trans*-1,2-dichloroethylene (*trans*-DCE) and vinyl chloride (VC).

Natural Attenuation Parameters: iron, magnesium, manganese, potassium, sodium, alkalinity, TOC, chloride, ammonia, nitrate, nitrite, sulfate, carbon dioxide, hydrogen, methane, ethene, and ethane.

Groundwater pumping rates varied from one well to another during monitoring/sampling to establish a stable water level. Once a stable water level (constant head) was established within the monitoring well, flow rates were maintained during the monitoring/sampling period. Samples were collected for analysis after field-measured parameters stabilized. It should be noted that a stable water level could not be established at well MW-7 (as experienced in previous sampling rounds). Therefore, this location was purged to dry-like conditions and allowed to recharge until the recharge volume was sufficient to collect the samples. Also, due to the lack of a stable water level in this well, the dissolved hydrogen sample could not be collected. The Monitoring Well Observations and Groundwater Sampling field forms are included in **Appendix A**.

3.0 ANALYTICAL RESULTS AND DISCUSSION

Analytical results of the COCs show an overall downward trend in total COC concentrations over time. Analytical results of the 2019 sampling round along with those from previous sample rounds are summarized in **Table 1** and shown on **Figure 1**. The analytical results for the COCs (current and historical) shown on **Figure 1** have been graphically depicted and are included in **Appendix B**. It should be noted that the concentrations of *cis*-DCE and *trans*-DCE have been combined for presentation purposes as total 1,2-DCE in **Figure 1** and on the graphs in **Appendix B**. A contour map of the Total COC concentrations is presented on **Figure 2** and a contour map of the 2019 groundwater elevation data is provided on **Figure 3**.

Analytical results for the MNA parameters are shown in **Table 2**, along with the data from previous sampling rounds. The Test America Laboratories, Inc. report and the third-party data validation report are provided in **Appendix D**.

Compounds of Concern

Source Area Monitoring Well

MW-7: The TCE concentrations over time at MW-7 have generally been in the range of 530 to 880 mg/L from October 1996 through May 2019 except for four contiguous sample rounds from April 2003 through November 2008, where the results ranged from 1.1 to 434 mg/L. The TCE concentration graph in **Appendix B** indicates a downward temporal trend in concentrations from April 1996 to April of 2003, which is consistent with a higher availability of organic carbon for natural attenuation. The consistent TCE concentration range reported from February 2009 to May 2019 may be attributed to a decrease of available organic carbon.

The concentrations of the PCE, 1,2-DCE and VC appear to generally be consistent since the start of the sampling in 1996, with some minor fluctuation.

Mid Plume Monitoring Wells

MW-4: The concentrations of the TCE and PCE appear to generally be consistent since the start of the sampling in 1996, with some minor fluctuations.

Since 2003, there has been a general downward trend of 1,2-DCE and VC concentrations at MW-4, which may be reflected in the decreased available organic carbon concentration trend that would drive the microbially-mediated transformation of TCE→1,2-DCE→VC.

MW-10: There has been a slight downward trend of TCE and 1,2-DCE concentrations at MW-10 since 1996 with some minor fluctuations, which is consistent with natural attenuation. PCE concentrations have been non-detect since 2013. VC concentrations remain in a range between 0.007 and 0.48 mg/L.

Down-gradient Monitoring Wells

MW-11: PCE and TCE have been below method detection limits since the start of sampling in 1997, generally consistent with natural attenuation at this down-gradient location.

The concentrations of 1,2-DCE have fluctuated from below method detection limits (multiple sample rounds) to 0.013 mg/L (December 1998). 1,2-DCE results from the last four annual sample rounds have been below the method detection limit of 0.0009 mg/L.

The concentrations of VC have fluctuated from below method detection limits (multiple sample rounds) to 0.008 mg/L (August 2001) in a pattern generally similar to that of 1,2-DCE. Results from the last four annual sampling rounds have been below the method detection limit of 0.0009 mg/L.

MW-12: PCE and TCE were not detected above their respective Class GA criteria (0.005 ppm) since 2014. 1,2-DCE was detected at a concentration of 0.029 mg/l in 2019, above its NYSDEC TOGS 1.1.1 Class GA standard of 0.005 mg/L. Concentrations of VC have fluctuated from 0.011 mg/L (October 2001) to 0.190 mg/L (August 1997). VC was detected at a concentration of 0.018 mg/L in 2019, above its NYSDEC Class GA standard of 0.002 mg/L.

MW-13: PCE, 1,2-DCE and VC have been below method detection limits in all sampling rounds since the start of sampling in 2001. TCE was detected on only two occasions (October 2006 and May 2019) at concentrations above the method detection limit but well below the reporting limit of 0.001 and its NYSDEC Class GA standard of 0.005 mg/L.

MW-14: TCE has been below method detection limits in 14 of the 17 sample rounds conducted since the start of sampling in 2001. The TCE value (0.0051 mg/L) in 2015 slightly exceeded NYSDEC Class GA criteria. Consistent with results from 2016 through 2018, the results for 2019 were at pre-2015 levels, with all parameters below method detection limits. It appears that the detection of TCE in this well in 2015 was anomalous and not the beginning of a new upward trend.

MW-15: Concentrations of TCE were below method detection limits in the first 7 of the 17 sample events since the start of sampling in 2001. Between 2009 and 2019 TCE has been detected in nine consecutive sampling events at concentrations above the method detection limits (0.00064 to 0.001 mg/L), but below the NYSDEC Class GA criterion. In 2019 TCE was not detected above the method detection limit, the first time TCE has been absent in this well since 2009.

The detected concentrations of PCE have been slightly above its NYSDEC Class GA criterion since the start of sampling in 2001, with the highest concentration of 0.02 mg/L (October 2001) to the lowest concentration of 0.0054 mg/L (May 2015).

Concentrations of VC have been below their method detection limits in all sampling events completed since 2001. 1,2-DCE was detected for the third time in this well, the first being in 2017. The detected concentrations of 1,2-DCE have been below the NYSDEC Class GA standard of 0.005 mg/L.

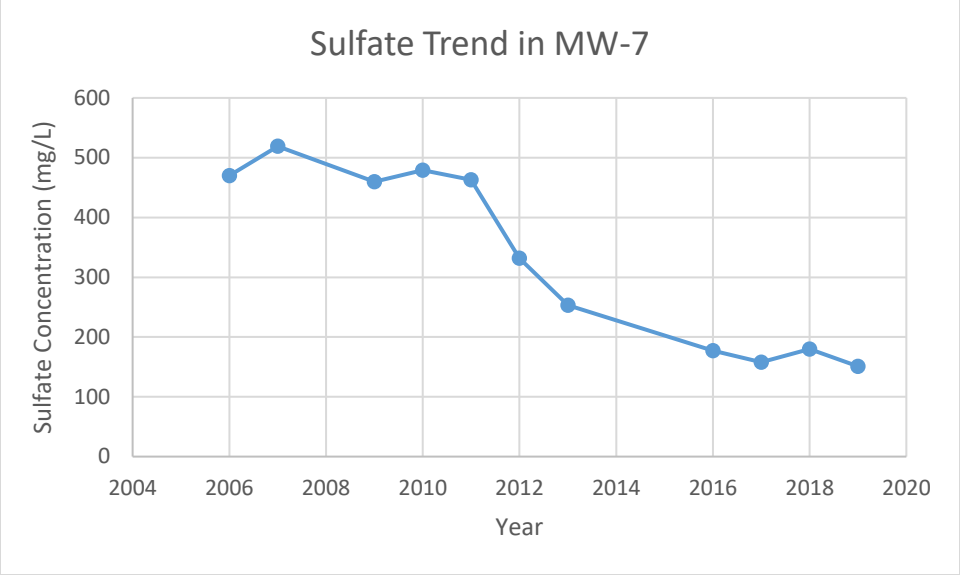
Natural Attenuation Performance

Findings of the May 2019 groundwater analytical and water quality data are generally consistent with the substantive conclusions and trends noted in prior reports. During 2019, GZA used Wiedemeier *et al.'s* (1998[3]) approach to evaluate the performance data to re-assess the strength of the evidence supporting reductive dechlorination. A table summarizing the results of that evaluation is included in **Appendix C**, and the results are tabulated below. Notably, a comparison of the 2018 summary of strength of natural attenuation evidence with that of 2019 reveals that well MW-4 moved from being "Adequate" in 2018 to "Strong" in 2019 and well MW-12 moved from "Limited" to "Adequate". The other six wells were unchanged by category year over year.

WELL	STRENGTH OF NATURAL ATTENUATION EVIDENCE			
	INADEQUATE EVIDENCE	**LIMITED EVIDENCE**	**ADEQUATE EVIDENCE**	**STRONG EVIDENCE**
Source Area Well				
MW-7		X		
Mid Plume Wells				
MW-4				X
MW-10		X		
Down-gradient Wells				
MW-11		X		
MW-12			X	
MW-13		X		
MW-14		X		
MW-15		X		

Note: "X" indicates the respective strength of the evidence for natural attenuation by reductive dechlorination for the May 2019 groundwater monitoring round in accordance with Wiedemeier *et al.* (1998).

[3] Wiedemeier, T.H., Swanson, M.A., Moutoux, D.E., Gordon, E.K., Wilson, J.T., Wilson, B.H., Kampbell, D.H., Haas, P.E., Miller, R.N., Hansen, J.E., and Chapelle, F.H., 1998, Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Ground Water, EPA/600/R-98/128, 78 p.



The decline in sulfate concentrations over time in source area monitoring well MW-7 illustrated above provides additional evidence in support of natural attenuation. Sulfate-reducing bacteria can compete with *Dehalococcoides* and other dechlorinating bacteria for the electron donor hydrogen, and the sulfide produced via sulfate reduction can inhibit production of dechlorinating enzymes. However, biologically produced sulfide can form reactive ferrous sulfide which degrades chlorinated ethenes abiotically by direct electron donation. The concurrent decrease in dissolved iron concentrations, which were an order of magnitude lower 2016-2019 than 2006-2011, supports the probability that abiotic reduction of TCE is contributing to natural attenuation in the source area.

4.0 GROUNDWATER MONITORING CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the May 2019 sampling round within the framework of the historical results, natural attenuation of COCs is occurring via reductive dechlorination. GZA offers the following additional observations relative to the 2019 sampling round:

- The concentrations of the parent compounds decrease significantly from the source area (MW-7) downgradient to the mid-point of the plume (MW-4 and MW-10), and from the mid-point on to the downgradient portions of the Site (MW-11 through MW-15). The decrease in concentrations is as much as five orders of magnitude from the source area to the most downgradient wells where COCs are not detected.
- There is an increase in daughter compound concentrations from the source area to the mid-point of the plume, with an overall decrease in total COC concentrations.
- The COCs were not detected above NYSDEC Class GA groundwater standards at the down-gradient property line at wells MW-11, MW-13, and MW-14.

RECOMMENDATIONS

Based on the results of the May 2019 and previous sampling events and supported by the findings of the 2014 treatability study, current conditions mid-plume show potential for complete reductive dechlorination of the COCs to ethene. COCs

were not detected or were detected at concentrations below NYSDEC TOGS 1.1.1 GA standards in groundwater collected from the downgradient Site boundary, providing additional confirmation of continued natural attenuation.

Given the historical stability of the plume, GZA recommends moving to biennial groundwater monitoring to confirm maintenance of natural attenuation parameters and continued spatial and temporal decreases in COCs.

Recommended spring 2021 groundwater monitoring will utilize the same eight monitoring wells (MW-4, -7, -10, -11, -12, -13, -14 and -15), as stated in the SMP. The COC and natural attenuation analytical parameters measured during the 2019 sampling round should also be measured during the 2021 sampling round.

TABLES

Table 1
Summary of Groundwater Sample Analytical Results
Delphi Harrison Thermal Systems Site
Site No. C932113

Sample Location Sample Date	Class GA Criteria	DELPHI HARRISON GROUNDWATER WELLS MW-4 5/16/2019		MW-7 5/17/2019		MW-10 5/16/2019		MW-11 5/17/2019		MW-12 5/17/2019		MW-13 5/17/2019		MW-14 5/21/2019		MW-15 5/16/2019	
VOC Compounds of Concern (ug/L)																	
cis-1,2-Dichloroethene	5	27,000		51,000		120		1.0	U	29		1.0	U	1.0	U	3.8	
Tetrachloroethene	5	5.0		20,000	U	2.0	U	1.0	U	2.0	U	1.0	U	1.0	U	14	
trans-1,2-dichloroethene	5	84		20,000	U	2.0	U	1.0	U	2.0	U	1.0	U	1.0	U	1.0	U
Trichloroethene	5	40,000		700,000		38		1.0	U	2.0	U	1.0	U	1.0	U	2.6	U
Vinyl Chloride	2	1,900		20,000	U	6.6		1.0	U	18		1.0	U	1.0	U	1.0	U
Total VOCs	2	68,989		811,000		169		0.49		53		0.47		5		22	
Field Parameters																	
Temperature (Deg. C)	NV	12.1		15.0		11.6		9.7		9.4		10.5		10.4		10.4	
Specific Conductance (mS/cm)	NV	9.283		2.193		10.439		1.261		9.200		6.49		6.351		2.713	
Dissolved Oxygen (mg/L)	NV	-0.25		5.53		-0.28		-0.23		-0.37		1.96		-0.26		-0.3	
Oxygen Reduction Potential (mv)	NV	99.2		200.2		198.6		179.5		32.3		221.7		172.9		194.6	
pH (std. units)	NV	7.05		7.59		7		7.63		6.97		7.21		7.31		7.16	
Turbidity (NTUs)	NV	3.83		5.44		0.64		1.8		9.01		2.61		4.79		0.55	
Inorganics (mg/L)																	
Iron	0.3	0.88		0.042	J	0.11		0.26		4.2		0.31		0.074		0.050	U
Magnesium	35 [Note 4]	98.0		56.3		57.5		33.9		60.4		53.0		57.3		44.6	
Manganese	NV	0.60		0.018		1.0		0.027		6.0		0.16		0.43		0.46	
Potassium	NV	28.2		11.8		6.0		8.0		4.3		13.1		4.8		4.4	
Sodium	20	1470		220		1,740		126		1,590		992		1,080		326	
Miscellaneous Water Quality Parameters																	
Methane (ug/L)	NV	1,100		130		10		4.2		94		4.0	U	9.1		4.0	U
Ethane (ug/L)	NV	53	J	180		7.5	U	7.5	U	7.5	U	7.5	U	7.5	U	7.5	U
Ethene (ug/L)	NV	330		540	J	7.0	U	7.0	U	1.8	J	7.0	U	7.0	U	7.0	U
Carbon Dioxide (ug/L)	NV	43,000		18,000		NT		16,000		57,000		37,000		38,000		69,000	
Total Organic Carbon (mg/L)	NV	1.9		7.3		3.1		1.3		2.8		1.5		1.3		2.1	
Alkalinity (mg/L)	NV	252		226		302		244		259		318		351		371	
Ammonia (mg/L)	NV	1.8		0.67		0.020	U	0.020	U	1.3		0.020	U	0.021		0.020	U
Chloride (mg/L)	NV	2,840		497		3,450		195		2,770		1,830		1,960		618	
Nitrate (mg/L)	NV	0.050	U	0.050	U	0.75		0.78		0.032	J	3.9		0.031	J	0.65	
Nitrite (mg/L)	NV	0.050	U	0.050	U	0.050	U	0.020	U	0.050	U	0.050	U	0.050	U	0.050	U
Sulfate (mg/L)	NV	238		151		205		116		100	U	113		73.5		31.2	J
Hydrogen (nm)	NV	1.8		NA		1.5		1.3		1.1		1.4		2.1		1.1	

Notes:

1. Only compounds detected in one or more of the groundwater samples are presented in this table.
2. "<" indicates compound was not detected above the method detection limit.
3. Analytical testing completed by TestAmerica in Amherst, New York.
4. Criteria is a guidance value.
5. Laboratory qualifiers: B = compound was found in the blank and sample; J = result is less than the RL but greater than or equal to the MDL and the concentration is an approximation; * - LCS or LCSD exceeds the control limits. H=Sample prepped or analyzed beyond holding time.F1=MS and/or MSD Recovery is outside acceptance limits. F2 = MS/MSD RPD exceeds control limits. ^ = Instrument related quality control is outside of acceptable range. E = Result exceeded calibration range.
6. mg/L = parts per million; ug/L = parts per billion
7. NYSDEC Class GA Groundwater Criteria as promulgated in 6 NYCRR 703; Table 1 in Technical and Operational Guidance Series (1.1.1): Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, dated October 1993; revised June 1998; errata dated January 1999; addendum dated April 2000.
8. NV = no value, NT = not tested. NA = not applicable
9. Shaded concentrations exceed Class GA criteria.

Table 2
Summary of Groundwater Field Measurements and Analytical Test Results for Natural Attenuation Parameters
May 2019 Groundwater Sampling
Delphi Thermal Systems
West Lockport Complex
Lockport, New York

		Field Parameters					Analytical Test Results - Inorganic and Miscellaneous Water Quality Parameters																
Location	Sample Date	Temp. (Deg. C)	Specific Cond. (mS/cm)	DO (mg/L)	ORP (mv)	pH (Std Units)	Methane (mg/L)	Ethane (mg/L)	Ethene (mg/L)	Carbon Dioxide (mg/L)	Hydrogen (nm)	Organic Carbon (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Chloride (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	Sulfate (mg/L)	Iron (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Sodium (mg/L)	Potassium (mg/L)
MW-4	12/2/1998	14.2	2.730	0.23	-56	6.6	2.9					19	354	1.23	986	0.30	<0.05	120	0.58	105	0.40	282	13.3
MW-4 DUP	12/2/1998	NA	NA	NA	NA	NA	5.5					8	368	1.57	971	0.05	<0.05	120	0.59	107	0.39	282	13.2
MW-4	10/7/1999	13.8	3.412	0.08	-92.8	6.7	4.2					47	360	1.03	1,010			110	0.42	98	0.23	240	10.4
MW-4	8/9/2001	12.6	3.420	0.12	-5.1	6.5	0.12					20.2	366	1.20	1,300	0.11	<0.05	190	1.01	107	0.54	384	12.7
MW-4	10/31/2001	13.8	3.444	0.10	-128.0	6.6	3.3					10.8	366	1.17	1,100	<0.05	<0.05	160	0.77	102	0.46	358	12.3
MW-4	7/20/2009	17.7	1.263	0.28	35.1	6.41	5.28					13	330	3.83	5,320	<0.6	<0.6	295					
MW-4	4/29/2010	15.0	9.664	0.96	-2.1	6.5	1.8					4.3	333	NA	3,510	<0.05	<0.05	272					
MW-4 DUP	4/22/2011	11.85	7.391	0.73	-349.0	6.77	2					0.6	343	1.9	3,260	<0.05	<0.05	370	3.1	139	1.6	1420	17.8
MW-4	4/20/2012 [9]	14.5	10.130	6.00	40.5	6.09	3.8	0.65	2.3	9.5	28	3.1	320	2.6	3,580	<0.05	<0.05	282	2.7	138	1.5	1400	15.6
MW-4	5/1/2013	14.5	13.320	0.18	-34.2	6.62	<0.22	<0.0049	<0.0052	23	0.63	2.8	329	3.4	4,300	<0.02	<0.02	268	3.9	163	2.0	2080	20.2
MW-4	5/13/2014	14.6	6.830	0.04	-21.1	6.92	1.2	0.075	0.31	14	0.52	2.9	299	1.7	1,750	0.079	<0.02	223	0.81	63.8	0.47		
MW-4	5/8/2015	18.7	6.070	0.02	-40.9	6.91	0.53	0.032	0.23	10	1.7	2.3	304	1.6	1,660	<0.020	<0.020	228	0.70	65.8	0.38		
MW-4	5/5/2016	11.3	4.720	0.16	-10.2	7.17	0.079	<0.0075	0.033	30	17	2.2	283	1.2	1,240	<0.020	<0.020	262	0.50	51.9	0.26	695	14.1
MW-4	5/2/2017	12.5	4.820	0.28	21.5	7.17	410	<0.0030	<0.0030	34	5.2	1.4	259	1.2	1,340	<0.020	<0.020	284	0.89	57.2	0.29	721	15.1
MW-4	5/8/2018	13.4	6.184	0.13	56.3	6.93	760	<17	170	42	4.1	1.7	246	1.6	1,790	<.02	<.02	292	0.83	75.5	0.47	928	17.4
MW-4	5/16/2019	12.1	9.283	-0.25	99.2	7.05	1.1	0.053	0.33	43	1.8	1.9	252	1.8	2,840	<0.05	<0.05	238	0.88	98	0.60	1470	28.2
MW-7	12/3/1998	17.3	3.130	0.33	-35	7.0	0.06					36	376	1.43	944	0.29	<0.05	200	0.14	118	<0.01	288	20.5
MW-7 [3]	10/7/1999	19.4	3.049	0.69	-52	7.1	0.02					58	420	1.10	1,180			180	0.86	138	0.05	292	21.4
MW-7	10/25/2006	17.4	2.620	1.08	-92	7.1	0.06					28	376	1.33	600	<0.05	<0.05	470	0.23	112	0.02	237	19.4
MW-7	11/29/2007	15.5	2.162	0.83	-195	7.2	0.13					14	322	1.14	430	<0.05	<0.05	519	0.58	98.5	0.05	278	20.7
MW-7	11/4/2008	16.2	3.152	0.33	-80	6.8	0.11					4.4	348	0.08	980	<0.05	<0.05	23	6.06	74	2.28	277	4.39
MW-7	2/24/2009	13.1	1.718	1.22	-68	7.3	0.04					NM	270	0.98	410	<0.05	<0.05	430	0.09	86.7	0.04	213	14.2
MW-7	7/20/2009	16.4	2.558	0.88	32	7.1	0.07					28	310	1.28	452	<0.6	<0.6	460					
MW-7	4/29/2010	15.0	1.540	3.14	-13.4	7.24	0.057					10.9	239	NA	280	<0.05	<0.05	479					
MW-7	4/22/2011	10.4	1.241	3.75	-334	7.68	0.015					9.2	223	0.53	267	<0.05	<0.05	463	0.20	60.1	0.025	3290	13.8
MW-7	4/20/2012	15.4	1.830	0	-34	7.49	0.046	0.017	0.098	1.6		8.7	240	0.77	416	<0.05	<0.05	332	0.06	67.1	0.024	193	13.2
MW-7	5/3/2013	13.2	2.530	2.05	-55.6	7.3	0.12	0.032	0.25	4.4		7.6	242	0.75	569	<0.02	<0.02	253	0.02	76	0.190	254	14.3
MW-7	5/30/2014	13..2	2.230	1.78	-10.7	7.32	0.009	<0.0075	0.048	4.3	NM	5.4	258	0.43	292	<0.02	<0.02	138	<0.019	34.7	0.009		
MW-7	5/7/2015	13.1	1.815	0.21	-47.8	7.24	0.021	0.014	0.079	3.5	NM	9.4	244	0.7	300	<0.020	<0.020	143	0.39	41.4	0.019		
MW-7 DUP	5/7/2015	NA	NA	NA	NA	NA	0.025	0.016	0.091	3.6	NM	9.5	244	0.7	298	<0.020	<0.020	142	0.41	42	0.019		
MW-7	5/17/2016	15.1	1.770	2.01	32.9	7.52	0.04	0.023	0.13	20	NM	6.5	261	0.61	268	<0.020	<0.020	177	0.095	43.2	0.014		
MW-7	5/11/2017	13.6	1.500	5.7	85.8	7.75	53	0.037	0.17	16	NM	5	247	0.47	267	<0.05	<0.05	158	0.046	30.7	0.094	150	8.3
MW-7	5/10/2018	16.6	1.764	4.16	139.8	7.72	69	30	380	21	NM	8.4	243	0.66	299	<.02	<.02	180	0.050	39.6	0.013	196	11.1
MW-7	5/17/2019	15.0	2.190	5.53	200	7.59	0.13	0.18	0.54	18	MN	7.3	226	0.67	497	<0.05	<0.05	151	0.042	56.3	0.018	220	11.8
MW-10	12/1/1998	14.5	4.100	0.40	-13.7	6.7	0.23					11	320	0.32	1,220	0.19	<0.05	270	1.95	54.6	2.30	584	13.4
MW-10	10/5/1999	14.2	4.775	0.07	-2.0	6.8	0.14					24	280	0.29	1,010	0.15	0.10	240	0.73	9.94	0.99	33.2	18.8
MW-10	8/9/2001	12.2	5.033	0.17	249.1	6.6	0.018					10.0	334	0.16	1,700	0.08	<0.05	330	0.14	98.9	1.66	857	9.2
MW-10	10/31/2001	14.4	3.990	0.15	90.9	6.7	0.20					3.6	336	0.12	2,800	0.17	<0.05	280	0.05	92.1	0.91	720	7.6
MW-10	7/15/2009	13.2	9.579	0.76	79.6	6.6	0.36					33.0	330	0.27	4,260	<0.6	<0.6	276					
MW-10 (DUP)	4/28/2010	11.0	3.741	0.35	16.2	6.88	0.14					4.3	263	NA	1,460	0.053	<1.0	168					
MW-10	4/21/2011	10.29	6.218	0.42	-337.0	6.98	0.064					4.1	277	0.11	3,230	<0.05	<0.05	175	0.75	77.3	2.10	1760	6.9
MW-10	4/19/2012 [9]	12.71	7.974	5.16	129.1	6.1	0.170	0.009	0.009	5.6	1	2.3	280	0.11	3,790	<0.05	<0.05	210	0.32	95.5	2.40	2110	7
MW-10	5/1/2013	11.9	4.820	0.75	131.2	7.05	0.058	0.001	0.001	7.4	0.77	3.3	270	0.039	1,470	0.33	<0.02	153	0.48	31.8	1.50	845	3.4
MW-10	5/14/2014	13.2	8.370	0.1	105.7	6.85	0.110	<0.0015	<0.0015	15.0	0.95	3.5	272	0.01	2,580	<0.02	<0.02	370	0.07	53.7	1.90		
MW-10	5/8/2015	14.2	6.059	0.14	146.3	6.94	0.006	<0.0015	<0.0015	7.9	1.4	3.2	260	0.021	1,720	<0.02	<0.02	346	0.035	40.5	1.30		
MW-10	5/5/2016	12.9	6.250	0.12	102.6	7.09	0.006	<0.0015	<0.0015	7.9	1.4	3.2	260	0.021	1,720	<0.02	<0.02	346	0.035	40.5	1.30		
MW-10	5/2/2017	11.8	4.410	0.28	46.7	7.03	0.005	<001.5	<0.0015	50.0	3.7	3.2	297	<0.009	1,230	0.34	0.03	332	11.200	36.8	17.60	791	3
MW-10	5/9/2018	13.1	5.622	0.03	130.2	7.06	37.000	<1.5	<1.5	36.0	2.6	3.1	286	0.09	1,500	0.21	<.02	259	0.046	37.7	0.81	874	3.2
MW-10	5/16/2019	11.6	10.44	-0.28	199	7	0.01	<.007	<.007	NT	1.5	3.1	302	<0.02	3450	0.75	<.05	205	0.11	57.5	1	1740	6
MW-11	12/1/1998	11.9	4.360	0.22	-271	7.6	0.01					17	275	0.58	188	0.17	<0.05	110	1.00	39.0	0.11	116	8.88
MW-11	10/5/1999	11.9	5.228	2.34	-231	7.7	0.05					20	270	0.76	192	0.05	<0.05	210	0.34	46.4	0.08	180	10.9
MW-11	8/8/2001	10.4	3.576	0.12	-73.6	7.4	<0.002					12	285	0.46	250	<0.05	<0.05	140	0.14	43.2	0.12	130	8.0
MW-11	10/30/2001	12.0	4.126	0.04	-248.8	7.5	<0.002					3.1	265	0.46	230	<0.05	<0.05	110	0.02	38.7	0.41	120	9.1
MW-11	10/24/2006	13.1	8.000	1.61	-106	7.3	0.008					1.9	341	0.12	108	0.16	<0.05	66	0.80	30.7	0.08	85	7.6
MW-11	11/28/2007	10.7	1.390	0.38	-309	7.2	0.008					3	233	0.38	410	0.18	<0.05	144	0.74	42.1	0.08	235	12.3
MW-11	11/4/2008	14.4	1.377	0.56	-200	7.3	0.005					2.38	249	0.28	200	<0.05	<0.05	101	0.38	38.8	0.08	134	8.4
MW-11	7/16/2009	13.7	1.143	0.33	-15.2	7.3	0.019					16	260	0.45	246	<0.6	<0.6	112					
MW-11	4/28/2010	9.2	1.145	0.46	-126.3	7.3	0.013					2.1	245	NA	325	0.109	<0.05	93.6					
MW-11	4/21/2011	7.5	0.807	1.72	-325	7.56	0.0071					2.8	294	0.038	170	0.32	<0.05	53.5	0.14	30.8	0.09	119	5.7
MW-11	4/18/2012	10.9	1.450	0	-75	7.6	0.014	0.00099	0.0013	2.1	12	1.3	248	0.27	360	0.095	<0.05	98.9	0.20	48.5	0.14	143	8.3
MW-11	5/2/2013	9.7	1.670	0.71	-101.9	7.41	0.04	0.001	0.0013	4.2	0.91	1.6	259	0.15	333	0.34	<0.02	84.6	0.70	47.0	0.17	151	9.0
MW-11	5/20/2014	9.6	1.310	0.64	-72.6	7.41	0.0067	<0.0015	<0.0015	5	60	1.2	274	0.12	200	0.29	<0.02	61.5	0.18	34.4	0.13		
MW-11	5/6/2015	11.0	1.598	0.52	19	7.33	0.025	<0.0015	<0.0015	3.9	1.3	2.0	28	0.27	367	0.12	<0.02	121	0.13	48.2	0.08		
MW-11	5/5/2016	10.2	1.400	1.24	-78.1	7.44	0.021	<0.0015	<0.0015	14	1.1	1.7	262	<0.0090	237	0.2	<0.02	123	0.64	38.2	0.13	144	8.5
MW-11	4/28/2017	9.5	1.340	1.39	-6.4	7.53	0.005	<0.001.5	<0.0015	17	1	1.0	253	0.026	212	0.31	<0.020	129	0.29	38.3	0.11		7.8
MW-11	5/10/2018	11.2	1.251	2.26	106.7	7.52	<1	<1.5	<1.5	14000	1.9	1.1	248	0.065	190	0.25	<.02	140	0.08	37.7	0.05	112	7.7
MW-11	5/17/2019	9.7	1.26	-0.23	179	7.63	0.004	<0.008	<.007	16	1.3	1.3	244	<.02	195	0.78	<.02	116	0.26	33.9	0.027	126	8

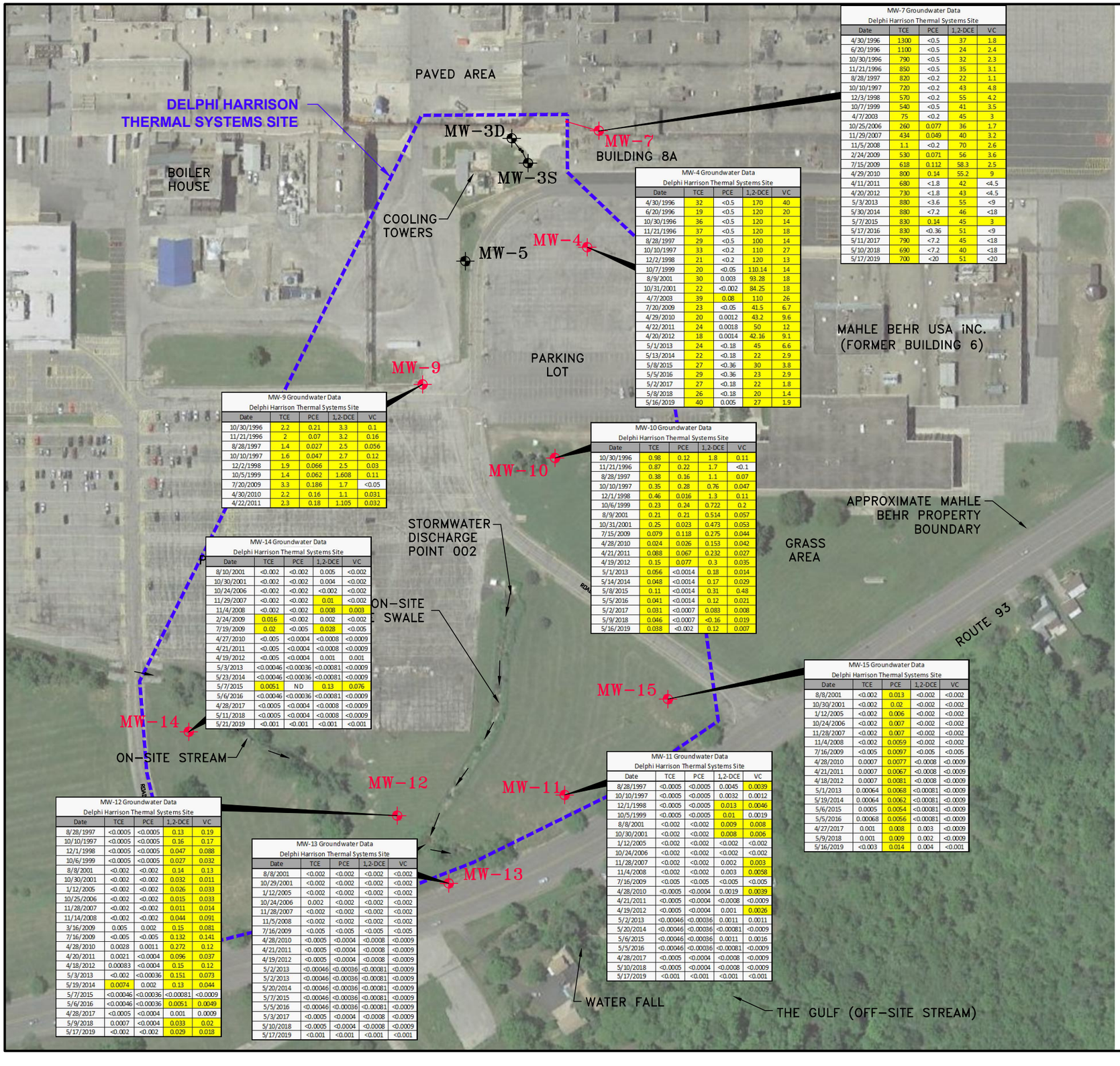
Notes:
1. In general the field parameters were stable with very little variation. However, as noted, some readings varied.
2. Readings were collected using a low flow peristalic pump and water quailty meter with flow through cell..
3. Analytical Testing completed by TestAmerica Laboratories, Inc.
4. < - Indicates compound not detected above the specified detection limit.
5. Blank = Not tested.
6. NM = not measured

Table 2
Summary of Groundwater Field Measurements and Analytical Test Results for Natural Attenuation Parameters
May 2019 Groundwater Sampling
Delphi Thermal Systems
West Lockport Complex
Lockport, New York

		Field Parameters					Analytical Test Results - Inorganic and Miscellaneous Water Quality Parameters																
Location	Sample Date	Temp. (Deg. C)	Specific Cond. (mS/cm)	DO (mg/L)	ORP (mv)	pH (Std Units)	Methane (mg/L)	Ethane (mg/L)	Ethene (mg/L)	Carbon Dioxide (mg/L)	Hydrogen (nm)	Organic Carbon (mg/L)	Alkalinity (mg/L)	Ammonia (mg/L)	Chloride (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	Sulfate (mg/L)	Iron (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Sodium (mg/L)	Potassium (mg/L)
MW-12	12/1/1998	13.4	2.006	0.39	-41	6.9	0.5					7	284	0.94	294	0.48	<0.05	73	7.48	26.8	4.41	183	4.1
MW-12	10/5/1999	15.8	1.849	0.10	-105.2	7.0	0.36					30	300	0.90	342	0.27	<0.05	66	<0.01	27.8	<0.01	166	4.9
MW-12	8/8/2001	13.5	3.300	0.24	-38.5	6.6	0.50					13.9	336	1.77	920	<0.05	<0.05	160	16.9	57.5	8.41	427	6.3
MW-12 DUP	8/8/2001	NA	NA	NA	NA	NA	0.74					14.9	338	1.85	930	<0.05	<0.05	160	14.8	56.2	8.14	433	6.0
MW-12	10/30/2001	14.2	2.850	0.14	-127.1	6.8	0.57					5.7	309	1.35	590	0.18	<0.05	110	4.73	37.0	4.69	342	5.0
MW-12	10/25/2006	13.7	3.500	1.26	-127.1	6.9	0.024					6.5	333	1.55	1,300	<0.05	<0.05	110	7.50	44.8	6.02	684	4.5
MW-12	11/28/2007	11.2	3.307	0.18	-302	7.0	0.012					4.0	274	1.47	1,300	<0.05	<0.05	79	6.68	46.0	4.44	666	3.9
MW-12	11/4/2008	14.3	6.319	0.02	-88	6.7	0.12					2.74	332	2.08	2,000	<0.05	<0.05	138	13.70	69.7	7.82	1110	5.6
MW-12	3/16/2009	6.1	4.516	1.08	-48	6.6	0.87					NM	270	1.89	2,300	<0.05	<0.05	140	11.50	81.7	8.60	1060	5.1
MW-12	7/16/2009	14.5	6.493	0.64	-39.3	6.7	0.9					14	360	2.57	2,480	<0.6	<0.6	148					
MW-12	4/28/2010	8.8	6.562	0.32	-46.1	6.6	0.46					5.0	315	NA	2,630	<0.05	0.039	153					
MW-12	4/20/2011	8.83	6.320	0.00	-65	6.9	0.042					3.3	272	1.1	1,880	<0.05	<0.05	108	6.6	65.1	7.1	958	3.7
MW-12	4/18/2012	10.02	7.920	0.59	-74	7.0	0.3	0.011	0.011	15	0.76	3.7	280	1.8	2,900	<0.05	<0.05	133	12.7	84.3	9.1	1250	3.7
MW-12	5/3/2013	9	7.300	0.31	-48.3	6.8	0.2	0.0031	0.0042	14	1.1	3.6	232	1.2	3,090	<0.02	<0.02	120	8.1	76.4	7.4	1260	3.9
MW-12	5/19/2014	11.1	5.400	0.11	-41.2	6.9	0.11	<0.0015	<0.0015	16	33	4	291	1.2	1,650	0.032	<0.02	96.5	3.7	50.0	4.9		
MW-12	5/7/2015	11.2	7.819	0.07	-61.1	6.9	0.048	<0.0015	<0.0015	6.1	1.6	2.2	796	0.12	1,390	0.036	<0.020	58.9	0.0	60.1	0.3		
MW-12	5/6/2016	10.3	6.500	0.14	-49.6	7.1	0.086	<0.0015	<0.0015	45	1.4	3.7	289	1.1	2,010	0.12	0.023	80.3	2.5	51.0	4.3	974	3.4
MW-12	4/28/2017	11.5	9.560	0.26	5.6	7.0	0.014	0.0015	<0.0015	44	1.8	2.2	269	0.98	2,660	0.28	<0.020	105	3.6	52.5	4.9	1450	4.2
MW-12	5/9/2018	11.2	11.301	0.11	49.4	6.8	140	<1.5	<1.5	59000	2.3	2.9	253	1.4	3,390	0.43	<.02	102	4.0	78.6	6.1	1910	5.1
MW-12	5/17/2019	9.4	9.200	-0.37	32.3	7.0	0.094	<.0075	0.002	57	1.1	2.8	259	1.3	2,770	0.032	<.05	<100	4.2	60.4	6.0	1590	4.3
MW-13	8/8/2001	15.4	5.742	0.23	-118.5	7.8	0.08					15.2	255	1.45	1,900	0.05	<0.05	160	2.59	49.6	2.67	1,200	12.1
MW-13	10/29/2001	15.5	6.625	0.20	-136	7.4	0.07					9.9	426	1.29	1,700	0.61	0.08	120	3.75	40.9	2.96	1,160	8.2
MW-13	10/24/2006	15.2	6.090	2.67	-146	7.3	0.16					8.4	431	1.35	2,200	<0.05	<0.05	98	9.21	53.7	6.03	1,210	9.1
MW-13	11/28/2007	12.7	5.696	0.08	-274	7.3	0.003					7.0	420	1.74	2,200	0.05	<0.05	95	7.83	50.8	4.95	1,250	9.6
MW-13	11/5/2008	7.08	6.782	0.12	-97	7.1	0.021					3.8	410	1.57	2,000	<0.05	<0.5	91	7.60	52.3	5.40	1,430	11.0
MW-13	7/16/2009	16.0	6.476	0.60	-113.4	7.2	6.15					15	400	2.10	2,290	<0.6	<0.6	112					
MW-13	4/28/2010	9.4	5.783	0.28	-133.5	7.2	0.17					6.1	382	NA	2,280	0.069	<0.05	102					
MW-13	4/21/2011	7.64	5.023	0.34	-336	7.4	0.058					5.8	368	0.94	2,090	0.069	<0.05	105	7.4	53.2	6.30	1,320	8.3
MW-13 DUP	4/19/2012	10.7	5.480	0.00	-120	7.4	0.093	0.0086	0.008	4.5	0.79	4	360	0.96	1,490	0.081	<0.05	71.3	5.8	38.5	4.40	940	5.4
MW-13	5/2/2013	10.5	5.410	1.27	-71.2	7.3	0.11	<0.0049	<0.0052	3.7	0.69	3.8	382	0.6	1,590	0.57	<0.02	62.7	4.7	39.4	4.30	964	6.2
MW-13	5/20/2014	11.5	5.850	0.24	-82.1	7.1	0.073	<0.0015	<0.015	16	1.8	4.5	419	0.88	1,740	0.089	<0.05	82.5	6.4	42.3	4.40		
MW-13	5/13/2015	12	7.369	0.27	-87.1	7.0	0.029	<0.0015	<0.0015	8.8	2.1	5.5	299	1.2	2,390	0.48	0.058	264	5.9	61.7	5.80		
MW-13	5/5/2016	11.4	6.380	0.14	-95.2	7.2	0.011	<0.0015	<0.0015	49	14	3.6	326	0.54	1,830	0.06	0.027	257	5.6	55.8	4.60	969	9.8
MW-13	5/3/2017	9.8	2.040	0.31	35.8	7.3	<0.001	<0.0015	<0.0015	24	2.1	4	214	0.064	709	0.14	<0.020	82.9	0.6	24.7	0.89	410	12.4
MW-13	5/10/2018	11.4	5.281	2.45	161.1	7.1	<1	<1.5	<1.5	34000	2.2	1.6	322	<.009	1,740	1600	<.02	148	0.7	50.2	0.31	1,090	15.9
MW-13	5/17/2019	10.5	6.490	1.96	222	7.2	<.004	<.007	<.007		1.4	1.5	318	<.02	1,830	3.9	<.05	113	0.3	53	0.16	992	13.1
MW-14	8/9/2001	11.5	2.064	3.66	330.7	7.2	<0.002					14.1	328	0.19	680	0.08	<0.05	130	0.18	64.1	0.04	394	6.4
MW-14	10/30/2001	13.2	2.478	0.80	-39.1	7.2	0.013					4.3	334	0.31	770	<0.05	<0.05	120	0.06	64.8	0.06	466	7.3
MW-14	10/24/2006	12.9	4.310	3.11	-60.6	7.2	0.31					3.3	336	0.25	1,700	<0.05	<0.05	88	0.15	94.9	0.20	831	8.0
MW-14	11/29/2007	10.3	4.402	1.27	-110	7.1	0.16					4.0	371	0.53	1,800	<0.05	<0.05	87	0.44	111	0.25	777	10.5
MW-14	11/4/2008	14.5	6.397	0.13	11.2	6.8	0.14					2.4	340	0.39	2,100	<0.05	<0.05	80	0.39	138	0.28	1010	13.5
MW-14	2/24/2009	5.3	3.534	0.73	-34	7.2	0.15					NM	299	0.23	1,500	0.07	<0.05	68	0.06	79.8	0.18	833	7.3
MW-14	7/16/2009	11.6	5.970	1.87	72.6	6.8	0.465					51	380	0.69	2,430	<0.6	<0.6	81.4					
MW-14	4/27/2010	9.8	3.726	0.32	16.8	7.1	0.055					2.7	354	NA	1,450	0.03	<0.05	65.7					
MW-14	4/21/2011	7.72	3.779	2.45	-335	7.5	0.016					2.8	339	0.14	1,750	0.093	<0.05	78.2	0.052	68	0.19	875	5.4
MW-14	4/19/2012	10.85	5.460	0.00	-9	7.3	0.071	0.0086	0.0083	2.9	6.7	1.5	328	0.25	1,720	<0.05	<0.05	88.2	0.140	86.7	0.29	916	6.2
MW-14	5/3/2013	10.1	4.670	0.17	-1.8	7.3	0.05	<0.00049	<0.00052	6.2	16	1.7	361	0.15	1,340	0.061	<0.02	60	0.038	59.4	0.20	850	5.1
MW-14	5/23/2014	9.4	3.400	0.07	22.7	7.3	0.0083	<0.015	<0.015	7.14	2.3	1.6	396	0.055	790	<0.02	0.036	34.7	0.036	40.1	0.30		
MW-14	5/7/2015	14.1	4.702	0.07	153.7	7.2	0.27	<0.0015	<0.0015	17	1.7	3.4	468	1.8	2,590	<0.020	<0.020	123	11.3	81.7	7.90		
MW-15	8/8/2001	13.0	2011.000	0.20	289.1	6.7	<0.002					11.7	410	0.08	600	1.34	<0.05	160	2.33	70.4	0.46	204	4.9
MW-14	5/6/2016	9.3	4.770	0.20	52.8	7.3	0.36	<0.0015	<0.0015	30	14	2.3	402	0.078	1,350	<0.020	<0.020	52.1	0.2	55.4	0.34	760	3.2
MW-14	4/28/2017	10.9	5.330	0.29	-12.5	7.3	9	<0.0015	<0.0015	32	10	1.6	359	<0.0090	1,500	0.15	<0.020	76.8	0.8	63.6	0.28	865	3.7
MW-14	5/11/2018	8.3	6.719	0.15	165.2	7.0	31	<1.5	<1.5	37	2.2	NT	364	0.11	2,020	<.02	<.02	117	0.1	67.6	0.37	1090	3.9
MW-14	5/21/2019	10.4	6.350	-0.26	173	7.3	0.009	<.007	<.007	38	2.1	1.3	351	0.021	1,960	0.031	<.05	73.5	0.1	57.3	0.43	1080	4.8
MW-15	10/30/2001	14.6	1656.000	0.16	83.9	6.8	<0.002					4.1	395	0.07	410	0.85	<0.05	110	0.02	47.5	0.40	196	3.8
MW-15 DUP	10/30/2001	NA	NA	NA	NA	NA	<0.002					3.7	386	0.05	450	0.91	<0.05	110	0.03	47.6	0.39	198	4.0
MW-15	10/24/2006	13.9	2.180	1.14	64.2	6.8	<0.002					3.6	434	0.09	660	1.89	<0.05	84	<0.02	62.3	0.27	311	4.7
MW-15	11/28/2007	11.7	3.085	3.16	-128	7.1	<0.002					2.0	346	1.03	1100	<0.05	<0.05	74	0.14	71.7	0.39	455	4.9
MW-15 DUP	11/4/2008	14.3	4.719	2.42	75	6.8	<0.002					1.77	345	0.07	1,900	0.34	<0.05	110	<0.02	82.3	0.82	594	6.1
MW-15	7/16/2009	14.6	3.349	1.49	135.7	6.8	<0.004					12	400	<0.1	1,130	1.7	<0.6	88.7					
MW-15	4/28/2010	9.5	1.998	0.35	41.1	6.8	<0.0022					3.3	419	NA	627	1.03	<0.02	66.0					
MW-15	4/21/2011	7.71	2.294	2.43	-328	6.8	<0.0022					3.5	394	<0.02	895	0.95	<0.02	86.7	0.02	55.5	0.24	390	3.7
MW-15	4/18/2012	10.95	3.537	4.77	385.1	7.1	0.00047	0.00078	0.00064	11	0.82	2	384	<0.02	962	0.73	<0.02	111	<0.05	54.4	0.24	424	3.3
MW-15	5/1/2013	11	2.950	0.19	88.3	6.9	<0.00022	<0.00049	<0.00052	15	0.75	2.1	415	<0.009	672	1.4	<0.02	74.7	<0.019	43.7	0.21	384	3.2
MW-15	5/19/2014	10	2.500	0.10	120.4	6.9	<0.001	<0.0015	<0.0015	21	0.83	2.2	439	0.033	590	0.46	<0.02	55.2	<0.019	42.5	0.11		
MW-15	5/6/2015	9.8	2.941	0.05	162.5	6.9	0.017	<0.0015	<0.0015	16	7.7	2.5	448	<0.0090	730	0.7	<0.0050	77	<0.019	44.8	0.13		
MW-15	5/4/2016	11.1	2.690	0.18	141.7	7.0	<0.001	<0.0015	<0.0015	63	1	2.4	459	<0.0090	597	0.19	<0.02	71.6	<0.019	41.5	0.18	334	3.5
MW-15	4/27/2017	12.9	2.100	0.26	45.9	7.2	0.006	<0.0015	<0.0015	45	3.4	1.6	378	<0.0090	427	0.28	<0.02	79.4	<0.019	28.8	0.21	335	3.1
MW-15	5/9/2018	11.2	2.292	0.03	134.2	7.0	<1	<1.5	<1.5	65	2.8	1.8	391	0.081	95	0.28	<.02	71.8	<.019	35.4	0.42	275	3.3
MW-15	5/16/2019	10.4	2.710	-0.30	195	7.2	<.004	<.007	<.007	69	1.1	2.1	371	<.02	618	0.65	<.05	31.2	<.05	44.6	0.46	326	4.4

Notes:
1. In general the field parameters were stable with very little variation. However, as noted, some readings varied.
2. Readings were collected using a low flow peristalic pump and water quailty meter with flow through cell..
3. Analytical Testing completed by TestAmerica Laboratories, Inc.
4. < - Indicates compound not detected above the specified detection limit.
5. Blank = Not tested.
6. NM = not measured

FIGURES



MW-7 Groundwater Data
Delphi Harrison Thermal Systems Site

Date	TCE	PCE	1,2-DCE	VC
4/30/1996	1300	<0.5	37	1.8
6/20/1996	1100	<0.5	24	2.4
10/30/1996	790	<0.5	32	2.3
11/21/1996	850	<0.5	35	3.1
8/28/1997	820	<0.2	22	1.1
10/10/1997	720	<0.2	43	4.8
12/3/1998	570	<0.2	55	4.2
10/7/1999	540	<0.5	41	3.5
4/7/2003	75	<0.2	45	3
10/25/2006	260	0.077	36	1.7
11/29/2007	434	0.049	40	3.2
11/5/2008	1.1	<0.2	70	2.6
2/24/2009	530	0.071	56	3.6
7/15/2009	618	0.112	58.3	2.5
4/29/2010	800	0.14	55.2	9
4/11/2011	680	<1.8	42	<4.5
4/20/2012	730	<1.8	43	<4.5
5/3/2013	880	<3.6	55	<9
5/30/2014	880	<7.2	46	<18
5/7/2015	830	0.14	45	3
5/17/2016	830	<0.36	51	<9
5/11/2017	790	<7.2	45	<18
5/10/2018	690	<7.2	40	<18
5/17/2019	700	<20	51	<20

MW-4 Groundwater Data
Delphi Harrison Thermal Systems Site

Date	TCE	PCE	1,2-DCE	VC
4/30/1996	32	<0.5	170	40
6/20/1996	19	<0.5	120	20
10/30/1996	36	<0.5	120	14
11/21/1996	37	<0.5	120	18
8/28/1997	29	<0.5	100	14
10/10/1997	33	<0.2	110	27
12/2/1998	21	<0.2	120	13
10/7/1999	20	<0.05	110.14	14
8/9/2001	30	0.003	93.28	18
10/31/2001	22	<0.002	84.25	18
4/7/2003	39	0.08	110	26
7/20/2009	23	<0.05	41.5	6.7
4/29/2010	20	0.0012	43.2	9.6
4/22/2011	24	0.0018	50	12
4/20/2012	18	0.0014	42.16	9.1
5/1/2013	24	<0.18	45	6.6
5/13/2014	22	<0.18	22	2.9
5/8/2015	27	<0.36	30	3.8
5/5/2016	29	<0.36	23	2.9
5/2/2017	27	<0.18	22	1.8
5/8/2018	26	<0.18	20	1.4
5/16/2019	40	0.005	27	1.9

MW-9 Groundwater Data
Delphi Harrison Thermal Systems Site

Date	TCE	PCE	1,2-DCE	VC
10/30/1996	2.2	0.21	3.3	0.1
11/21/1996	2	0.07	3.2	0.16
8/28/1997	1.4	0.027	2.5	0.056
10/10/1997	1.6	0.047	2.7	0.12
12/2/1998	1.9	0.066	2.5	0.03
10/5/1999	1.4	0.062	1.608	0.11
7/20/2009	3.3	0.186	1.7	<0.05
4/30/2010	2.2	0.16	1.1	0.031
4/22/2011	2.3	0.18	1.105	0.032

MW-10 Groundwater Data
Delphi Harrison Thermal Systems Site

Date	TCE	PCE	1,2-DCE	VC
10/30/1996	0.98	0.12	1.8	0.11
11/21/1996	0.87	0.22	1.7	<0.1
8/28/1997	0.38	0.16	1.1	0.07
10/10/1997	0.35	0.28	0.76	0.047
12/1/1998	0.46	0.016	1.3	0.11
10/6/1999	0.23	0.24	0.722	0.2
8/9/2001	0.21	0.21	0.514	0.057
10/31/2001	0.25	0.023	0.473	0.053
7/15/2009	0.079	0.118	0.275	0.044
4/28/2010	0.024	0.026	0.153	0.042
4/21/2011	0.088	0.067	0.232	0.027
4/19/2012	0.15	0.077	0.3	0.035
5/1/2013	0.056	<0.0014	0.18	0.014
5/14/2014	0.048	<0.0014	0.17	0.029
5/8/2015	0.11	<0.0014	0.31	0.48
5/5/2016	0.041	<0.0014	0.12	0.021
5/2/2017	0.031	<0.0007	0.083	0.008
5/9/2018	0.046	<0.0007	<0.16	0.019
5/16/2019	0.038	<0.002	0.12	0.007

MW-14 Groundwater Data
Delphi Harrison Thermal Systems Site

Date	TCE	PCE	1,2-DCE	VC
8/10/2001	<0.002	<0.002	0.005	<0.002
10/30/2001	<0.002	<0.002	0.004	<0.002
10/24/2006	<0.002	<0.002	<0.002	<0.002
11/29/2007	<0.002	<0.002	0.01	<0.002
11/4/2008	<0.002	<0.002	0.008	0.003
2/24/2009	0.016	<0.002	0.002	<0.002
7/19/2009	0.02	<0.005	0.028	<0.005
4/27/2010	<0.005	<0.0004	<0.0008	<0.0009
4/21/2011	<0.005	<0.0004	<0.0008	<0.0009
4/19/2012	<0.005	<0.0004	0.001	0.001
5/3/2013	<0.00046	<0.00036	<0.00081	<0.0009
5/23/2014	<0.00046	<0.00036	<0.00081	<0.0009
5/7/2015	0.0051	ND	0.13	0.076
5/6/2016	<0.00046	<0.00036	<0.00081	<0.0009
4/28/2017	<0.0005	<0.0004	<0.0008	<0.0009
5/11/2018	<0.0005	<0.0004	<0.0008	<0.0009
5/21/2019	<0.001	<0.001	<0.001	<0.001

MW-15 Groundwater Data
Delphi Harrison Thermal Systems Site

Date	TCE	PCE	1,2-DCE	VC
8/8/2001	<0.002	0.013	<0.002	<0.002
10/30/2001	<0.002	0.02	<0.002	<0.002
1/12/2005	<0.002	0.006	<0.002	<0.002
10/24/2006	<0.002	0.007	<0.002	<0.002
11/28/2007	<0.002	0.007	<0.002	<0.002
11/4/2008	<0.002	0.0059	<0.002	<0.002
7/16/2009	<0.005	0.0097	<0.005	<0.005
4/28/2010	0.0007	0.0077	<0.0008	<0.0009
4/21/2011	0.0007	0.0067	<0.0008	<0.0009
4/18/2012	0.0007	0.0081	<0.0008	<0.0009
5/1/2013	0.00064	0.0068	<0.00081	<0.0009
5/19/2014	0.00064	0.0062	<0.00081	<0.0009
5/6/2015	0.0005	0.0054	<0.00081	<0.0009
5/5/2016	0.00068	0.0056	<0.00081	<0.0009
4/27/2017	0.001	0.008	0.003	<0.0009
5/9/2018	0.001	0.009	0.002	<0.0009
5/16/2019	<0.003	0.014	0.004	<0.001

MW-12 Groundwater Data
Delphi Harrison Thermal Systems Site

Date	TCE	PCE	1,2-DCE	VC
8/28/1997	<0.0005	<0.0005	0.13	0.19
10/10/1997	<0.0005	<0.0005	0.16	0.17
12/1/1998	<0.0005	<0.0005	0.047	0.088
10/6/1999	<0.0005	<0.0005	0.027	0.032
8/8/2001	<0.002	<0.002	0.14	0.13
10/30/2001	<0.002	<0.002	0.032	0.011
1/12/2005	<0.002	<0.002	0.026	0.033
10/25/2006	<0.002	<0.002	0.015	0.033
11/28/2007	<0.002	<0.002	0.011	0.014
11/14/2008	<0.002	<0.002	0.044	0.091
3/16/2009	0.005	0.002	0.15	0.081
7/16/2009	<0.005	<0.005	0.132	0.141
4/28/2010	0.0028	0.0011	0.272	0.12
4/20/2011	0.0021	<0.0004	0.096	0.037
4/18/2012	0.00083	<0.0004	0.15	0.12
5/3/2013	<0.002	<0.00036	0.151	0.073
5/19/2014	0.0074	0.002	0.13	0.044
5/7/2015	<0.00046	<0.00036	<0.00081	<0.0009
5/6/2016	<0.00046	<0.00036	0.0051	0.0049
4/28/2017	<0.0005	<0.0004	0.001	0.0009
5/9/2018	0.0007	<0.0004	0.033	0.02
5/17/2019	<0.002	<0.002	0.029	0.018

MW-13 Groundwater Data
Delphi Harrison Thermal Systems Site

Date	TCE	PCE	1,2-DCE	VC
8/8/2001	<0.002	<0.002	<0.002	<0.002
10/29/2001	<0.002	<0.002	<0.002	<0.002
1/12/2005	<0.002	<0.002	<0.002	<0.002
10/24/2006	0.002	<0.002	<0.002	<0.002
11/28/2007	<0.002	<0.002	<0.002	<0.002
11/5/2008	<0.002	<0.002	<0.002	<0.002
7/16/2009	<0.005	<0.005	<0.005	<0.005
4/28/2010	<0.0005	<0.0004	<0.0008	<0.0009
4/21/2011	<0.0005	<0.0004	<0.0008	<0.0009
4/19/2012	<0.0005	<0.0004	<0.0008	<0.0009
5/2/2013	<0.00046	<0.00036	<0.00081	<0.0009
5/2/2013	<0.00046	<0.00036	<0.00081	<0.0009
5/20/2014	<0.00046	<0.00036	<0.00081	<0.0009
5/7/2015	<0.00046	<0.00036	<0.00081	<0.0009
5/5/2016	<0.00046	<0.00036	<0.00081	<0.0009
5/3/2017	<0.0005	<0.0004	<0.0008	<0.0009
5/10/2018	<0.0005	<0.0004	<0.0008	<0.0009
5/17/2019	<0.001	<0.001	<0.001	<0.001

MW-11 Groundwater Data
Delphi Harrison Thermal Systems Site

Date	TCE	PCE	1,2-DCE	VC
8/28/1997	<0.0005	<0.0005	0.0045	0.0039
10/10/1997	<0.0005	<0.0005	0.0032	0.0012
12/1/1998	<0.0005	<0.0005	0.013	0.0046
10/5/1999	<0.0005	<0.0005	0.01	0.0019
8/8/2001	<0.002	<0.002	0.009	0.008
10/30/2001	<0.002	<0.002	0.008	0.006
1/12/2005	<0.002	<0.002	<0.002	<0.002
10/24/2006	<0.002	<0.002	<0.002	<0.002
11/28/2007	<0.002	<0.002	0.002	0.003
11/4/2008	<0.002	<0.002	0.003	0.0058
7/16/2009	<0.005	<0.005	<0.005	<0.005
4/28/2010	<0.0005	<0.0004	0.0019	0.0039
4/21/2011	<0.0005	<0.0004	<0.0008	<0.0009
4/19/2012	<0.0005	<0.0004	0.001	0.0026
5/2/2013	<0.00046	<0.00036	0.0011	0.0011
5/20/2014	<0.00046	<0.00036	<0.00081	<0.0009
5/6/2015	<0.00046	<0.00036	0.0011	0.0016
5/5/2016	<0.00046	<0.00036	<0.00081	<0.0009
4/28/2017	<0.0005	<0.0004	<0.0008	<0.0009
5/10/2018	<0.0005	<0.0004	<0.0008	<0.0009
5/17/2019	<0.001	<0.001	<0.001	<0.001

NORTH

NOTES:

1. BASE MAP ADAPTED FROM A 2015 AERIAL PHOTOGRAPH DOWNLOADED FROM GOOGLE EARTH PRO AND SITE OBSERVATIONS.

2. ANALYTICAL TESTING WAS COMPLETED BY TEST AMERICA LABORATORIES.

3. UNITS ARE LISTED IN MILLIGRAMS PER LITER (mg/l). (< - INDICATES COMPOUND NOT DETECTED ABOVE THE SPECIFIED DETECTION LIMIT)

4. THE SIZE AND LOCATION OF EXISTING SITE FEATURES SHOULD BE CONSIDERED APPROXIMATE.

LEGEND:

MW-8 — APPROXIMATE LOCATION AND DESIGNATION OF MONITORING WELL INSTALLED BY GZA

TCE = TRICHLOROETHENE

PCE = TETRACHLOROETHENE

1,2-DCE = TRANS & CIS 1,2-DICHLOROETHENE

VC = VINYL CHLORIDE

0.006 — HIGHLIGHTED VALUES INDICATE EXCEEDANCE OF NYS CLASS GA GROUNDWATER CRITERIA

DRAWN BY: DEW

DATE: OCTOBER 2019

GZA GeoEnvironmental of New York

APPROXIMATE SCALE IN FEET

0 90 180 360

GM COMPONENTS HOLDINGS, LLC
DELPHI HARRISON THERMAL SYSTEMS SITE
200 UPPER MOUNTAIN ROAD
LOCKPORT, NEW YORK
MAY 2019 GROUNDWATER SAMPLING

GROUNDWATER ANALYTICAL RESULTS

PROJECT No.
21.0056546.20

FIGURE No.
1

NORTH

NOTES:

1. BASE MAP ADAPTED FROM A 2005 AERIAL PHOTOGRAPH DOWNLOADED FROM http://www.nysgis.state.ny.us/gateway/mg/interactive_main.html AND SITE OBSERVATIONS.

2. ANALYTICAL TESTING WAS COMPLETED BY TEST AMERICA LABORATORIES.

3. UNITS ARE LISTED IN MILLIGRAMS PER LITER (mg/l). (< - INDICATES COMPOUND NOT DETECTED ABOVE THE SPECIFIED DETECTION LIMIT)

4. THE SIZE AND LOCATION OF EXISTING SITE FEATURES SHOULD BE CONSIDERED APPROXIMATE.

LEGEND:

50 — APPROXIMATE LOCATION AND CONCENTRATION OF TOTAL VOC CONTOUR

MW-4 (69) — APPROXIMATE LOCATION AND DESIGNATION OF MONITORING WELL INSTALLED BY GZA SHOWN WITH TOTAL VOC CONCENTRATION

NS = NOT SAMPLED

ND = NON-DETECT

DRAWN BY: **DEW**

DATE: **OCTOBER 2019**

GZA GeoEnvironmental of New York

APPROXIMATE SCALE IN FEET

0 90 180 360

GM COMPONENTS HOLDINGS, LLC

DELPHI HARRISON THERMAL SYSTEMS SITE

200 UPPER MOUNTAIN ROAD

LOCKPORT, NEW YORK

MAY 2019 GROUNDWATER SAMPLING

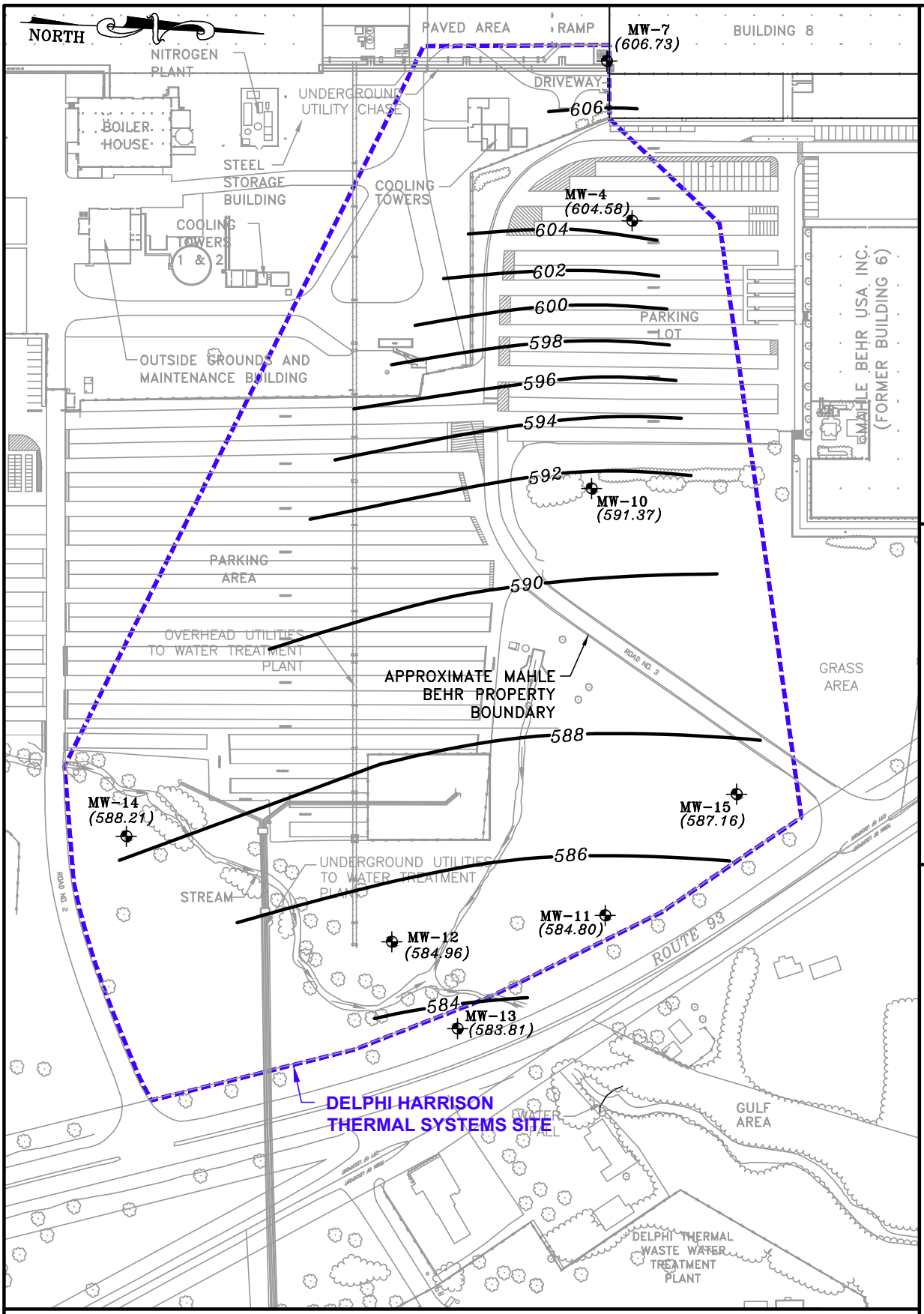
TOTAL COC CONTOUR MAP

PROJECT No.

21.0056546.20

FIGURE No.

2



LEGEND:

MW-4 (604.58) — APPROXIMATE LOCATION AND DESIGNATION OF EXISTING MONITORING WELL INSTALLED BY GZA

APPROXIMATE GROUNDWATER ELEVATION MEASURED ON DATE SHOWN IN TITLE BLOCK

NOTES:

1. BASE MAP ADAPTED FROM AN AUTOCAD FILE PROVIDED BY DELPHI HARRISON THERMAL SYSTEMS.

2. GROUNDWATER ELEVATIONS MEASURED ON 5-13-19.

DRAWN BY: DEW

DATE: OCTOBER 2019

GZA GeoEnvironmental of New York

SCALE IN FEET

0 100 200 400

GM COMPONENTS HOLDINGS, LLC

DELPHI HARRISON THERMAL SYSTEMS SITE

200 UPPER MOUNTAIN ROAD

LOCKPORT, NEW YORK

MAY 2019 GROUNDWATER SAMPLING

GROUNDWATER ISOPOTENTIAL MAP

(MAY 13, 2019)

PROJECT No.

21.0056546.20

FIGURE No.

3

GZA-K:\PROJECTS\56500s\56546 GM Component LLC\TCE Release Area MNA Sampling\2019 Figures\Figure 3 GW Contours.dwg [FIGURE 3] October 09, 2019 - 3:59pm daniel.wulf

APPENDIX A

GROUNDWATER SAMPLING LOGS

SAMPLE COLLECTION DATA SHEET - GROUNDWATER SAMPLING PROGRAM

PROJECT NAME: Delphi Harrison Thermal Systems Site　　PROJECT NO. 56546.20 T.4

SAMPLING CREW MEMBERS: T. Bohlen　　SUPERVISOR: Richert

DATE OF SAMPLE COLLECTION: 5/16/19 - 5/21/19

[Note: For 2" dia. well, 1 ft. = 0.14 gal (imp) or 0.16 gal (us)]

Sample I.D. Number	Well No.	Measuring Point Elev. (ft. AMSL)	Bottom Depth (ft. btoc)	Water Depth (ft. btoc)	Water Elevation (ft. AMSL)	Well Volume (gallons)	Bailer Volume No. Bails	Volume Purged (gallons)	Field pH	Field Temp.	Field Cond.	Time	Sample Description & Analysis
MW-4	MW-4	613.07	34.93	8.48	604.09	4.3	/	0.4	7.05	12.1	9.203	1107	VOC + MNA + H2
MW-7	MW-7	613.86	28.96	7.17	606.69	3.6	/	3.8	7.59	15.0	2.923	913	VOC + MNA + VFA ~~+H2~~
MW-10	MW-10	604.70	23.72	13.37	591.33	1.7	/	0.4	7.00	11.6	0.439	1345	VOC + MNA + H2
MW-11	MW-11	590.16	25.18	5.42	584.74	3.2	/	0.4	7.63	9.7	1.261	1020	VOC + MNA + H2
MW-12	MW-12	590.71	16.42	5.74	584.97	1.7	/	0.7	6.97	9.4	9.2	1506	VOC + MNA + H2
MW-13	MW-13	589.02	14.28	5.32	583.70	1.5	/	0.4	7.21	10.5	6.49	1137	VOC + MNA + H2
MW-14	MW-14	592.77	21.40	5.30	587.47	2.6	/	0.4	7.31	10.4	6.351	1142	VOC + MNA + H2
MW-15	MW-15	594.04	16.93	6.88	587.16	1.6	/	0.5	7.16	10.4	2.713	1514	VOC + MNA + H2

Additional Comments:

Copies to:

FMG MODIFICATIONS MUST BE ACCOMPANIED BY A REVISION REQUEST FORM APPROVED BY THE PROJECT MANAGER

12300 (2) PART C FMG-[illegible]
Revision 3, October 29, 2002

PID @ TOR = 7.31ppm   PID @ Breathing Space = 0.0ppm

MONITORING WELL RECORD FOR LOW-FLOW PURGING

Project Data:

Project Name: Delphi Harrison Thermal Systems Site
Ref. No.: 56546.20 Task 4

Date: 5/16/19
Personnel: T. Kohler

Monitoring Well Data:

Well No.: MW-4
Measurement Point: TOR
Constructed Well Depth (ft): 32.5
Measured Well Depth (ft): 34.93
Depth of Sediment (ft):

Screen Length (ft): 17.5 - 32.5 = 17'
Depth to Pump Intake (ft)(1): 26
Well Diameter, D (in): 2
Well Screen Volume, V_s (mL)(2): 4.3 941
Initial Depth to Water (ft): 8.48

Time	Pumping Rate (mL/min)	Depth to Water (ft)	Drawdown from Initial Water Level(3) (ft)	pH	Temperature °C	Conductivity (mS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Volume Purged, Vp (mL)	No. of Well Screen Volumes Purged(4)
1039	90	8.87		7.05	12.7	9.242	178.1	4.05	5.51	0	
1053		9.26		7.04	12.2	9.286	136.8	-0.16	12.73	0.2	
1102		9.34		7.05	12.1	9.291	107.8	-0.22	2.96	0.3	
1107		9.38		7.05	12.1	9.283	99.2	-0.23	3.83	0.4	

Notes:

(1) The pump intake will be placed at the well screen mid-point or at a minimum of 2 ft above any sediment accumulated at the well bottom.

(2) The well screen volume will be based on a 5-foot screen length. $V_s = p^*(D/2)^{2*}(5^*12)^*(2.54)^3$

(3) The drawdown from the initial water level should not exceed 0.3 ft.

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

* 81 mL/min

WELL PURGING FIELD INFORMATION FORM

SITE/PROJECT NAME: Delphi Harrison Thermal Systems Site

JOB# 565446-20

WELL# MW-4

WELL PURGING INFORMATION

PURGE DATE (MM DD YY)	SAMPLE DATE (MM DD YY)	WATER VOL. IN CASING (LITRES/GALLONS)	ACTUAL VOLUME PURGED (LITRES/GALLONS)
05/16/19	05/16/19	4.3	3.8

PURGING AND SAMPLING EQUIPMENT

PURGING EQUIPMENT ... DEDICATED (Y) N (CIRCLE ONE) — Y circled

SAMPLING EQIPMENT ... DEDICATED (Y) N (CIRCLE ONE) — Y circled

	Entry	Options			Other
PURGING DEVICE	B	A - SUBMERSIBLE PUMP	D - GAS LIFT PUMP	G - BAILER	X- ______ PURGING OTHER (SPECIFY)
SAMPLING DEVICE	B	B - PERISTALTIC PUMP; C - BLADDER PUMP	E - PURGE PUMP; F - DIPPER BOTTLE	H - WATERRA®	X- ______ SAMPLING OTHER (SPECIFY)
PURGING DEVICE	E	A - TEFLON; B - STAINLESS STEEL	D - PVC		X- ______ PURGING OTHER (SPECIFY)
SAMPLING DEVICE	E	C - POLYPROPYLENE	E - POLYETHYLENE		X- ______ SAMPLING OTHER (SPECIFY)
PURGING DEVICE	E	A - TEFLON; B - TYGON	D - POLYPROPYLENE	F - SILICONE	X- ______ PURGING OTHER (SPECIFY)
SAMPLING DEVICE	E	C - ROPE; X- ______ (SPECIFY)	E - POLYETHYLENE	G - COMBINATION TEFLON/POLYPROPYLENE	X- ______ SAMPLING OTHER (SPECIFY)

FILTERING DEVICES 0.45 [ ] A - IN-LINE DISPOSABLE   B - PRESSURE   C - VACUUM

FIELD MEASUREMENTS

WELL ELEVATION	613.07 (m/ft)	GROUNDWATER ELEVATION	604.59 (m/ft)
DEPTH TO WATER	8.48 (m/ft)	WELL DEPTH	34.93 (m/ft)

pH (std)	TURBIDITY (ntu)	CONDUCTIVITY (µm/cm AT 25°C)	ORP (mV)	DO (mg/L)	SAMPLE TEMPERATURE (°C)

FIELD COMMENTS

SAMPLE APPEARANCE: Good   ODOR: None   COLOR: Clear   TURBIDITY: Clear

WEATHER CONDITIONS: WIND SPEED: 0-5   DIRECTION: SW   PRECIPITATION Y/N OUTLOOK: N

SPECIFIC COMMENTS:

I CERTIFY THAT SAMPLING PROCEDURES WERE IN ACCORDANCE WITH APPLICABLE GM PROTOCOLS

DATE	PRINT	SIGNATURE
5/16/19	Thomas Bohler	Thomas Bohler

FMG MODIFICATIONS MUST BE ACCOMPANIED BY A REVISION REQUEST FORM APPROVED BY THE PROJECT MANAGER

PID @ TOR = 1039 ppm PID @ Breathing Space = 0.0 ppm

MONITORING WELL RECORD FOR LOW-FLOW PURGING

Project Data:

Project Name: Delphi Harrison Thermal Systems Site
Ref. No.: 56546.20 Task 4

Date: 5/16/19
Personnel: T. Bohlen

Monitoring Well Data:

Well No.: MW-7
Measurement Point: TOR
Constructed Well Depth (ft): 27.20
Measured Well Depth (ft): 28.96
Depth of Sediment (ft):

Screen Length (ft): 15
Depth to Pump Intake (ft)[1]: 22
Well Diameter, D (in): 2
Well Screen Volume, V_s (~~mL~~ gal)[2]: 3.6
Initial Depth to Water (ft): 7.17

	Time	Pumping Rate (mL/min)	Depth to Water (ft)	Drawdown from Initial Water Level[3] (ft)	pH	Temperature °C	Conductivity (mS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Volume Purged, Vp (~~mL~~ gal)	No. of Well Screen Volumes Purged[4]
5/16/19	942		7.72		7.42	14.3	~~2.332~~ 1.739	233.9	1.00	3.69	0.2	-
	952		12.69		7.44	13.9	1.733	245.5	0.21	300.38	1.2	*
	1000		18.72		7.42	13.8	1.823	116.8	0.79	297.41	2.9	
	1006		22.00	Dry	7.46	13.8	1.741	77.1	1.60	266.24	3.8	
5/17/19	913		7.63		7.59	15.0	2.193	200.2	5.53	5.44	0	

Notes:

(1) The pump intake will be placed at the well screen mid-point or at a minimum of 2 ft above any sediment accumulated at the well bottom.

(2) The well screen volume will be based on a 5-foot screen length. $V_s = p*(D/2)^2*(5*12)*(2.54)^3$

(3) The drawdown from the initial water level should not exceed 0.3 ft.

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

* bubbles in flow through cell from max pump speed

WELL PURGING FIELD INFORMATION FORM

SITE/PROJECT NAME: Delphi Harrison Thermal Systems Site

JOB# 56546 - 20

WELL# MW-7

WELL PURGING INFORMATION

PURGE DATE (MM DD YY)	SAMPLE DATE (MM DD YY)	WATER VOL. IN CASING (LITRES/GALLONS)	ACTUAL VOLUME PURGED (LITRES/GALLONS)
05/16/19	05/17/19	36	38

PURGING AND SAMPLING EQUIPMENT

PURGING EQUIPMENT.......DEDICATED (Y) N (CIRCLE ONE)

SAMPLING EQIPMENT ......DEDICATED (Y) N (CIRCLE ONE)

PURGING DEVICE: B — A - SUBMERSIBLE PUMP; B - PERISTALTIC PUMP; C - BLADDER PUMP; D - GAS LIFT PUMP; E - PURGE PUMP; F - DIPPER BOTTLE; G - BAILER; H - WATERRA®; X- ____ PURGING OTHER (SPECIFY)

SAMPLING DEVICE: B — X- ____ SAMPLING OTHER (SPECIFY)

PURGING DEVICE: E — A - TEFLON; B - STAINLESS STEEL; C - POLYPROPYLENE; D - PVC; E - POLYETHYLENE; X- ____ PURGING OTHER (SPECIFY)

SAMPLING DEVICE: E — X- ____ SAMPLING OTHER (SPECIFY)

PURGING DEVICE: E — A - TEFLON; B - TYGON; C - ROPE; X- ____ (SPECIFY); D - POLYPROPYLENE; E - POLYETHYLENE; F - SILICONE; G - COMBINATION TEFLON/POLYPROPYLENE; X- ____ PURGING OTHER (SPECIFY)

SAMPLING DEVICE: E — X- ____ SAMPLING OTHER (SPECIFY)

FILTERING DEVICES 0.45 ____ A - IN-LINE DISPOSABLE; B - PRESSURE; C - VACUUM

FIELD MEASUREMENTS

WELL ELEVATION	613.86 (m/ft)	GROUNDWATER ELEVATION	606.69 (m/ft)
DEPTH TO WATER	7.17 (m/ft)	WELL DEPTH	28.96 (m/ft)

pH (std)	TURBIDITY (ntu)	CONDUCTIVITY (µm/cm AT 25°C)	ORP (mV)	DO (mg/L)	SAMPLE TEMPERATURE (°C)

FIELD COMMENTS

SAMPLE APPEARANCE: Good/clean ODOR: Solvent COLOR: Clear TURBIDITY: Clear

WEATHER CONDITIONS: WIND SPEED: SW DIRECTION: 0-5 PRECIPITATION Y/N OUTLOOK: N

SPECIFIC COMMENTS:

I CERTIFY THAT SAMPLING PROCEDURES WERE IN ACCORDANCE WITH APPLICABLE CM PROTOCOLS

DATE	PRINT	SIGNATURE
5/17/19	Thomas Bohler	Thomas Bohler

FMG MODIFICATIONS MUST BE ACCOMPANIED BY A REVISION REQUEST FORM APPROVED BY THE PROJECT MANAGER

PID @ TOR = 0.0 ppm PID @ Breathing Space = 0.0 ppm

MONITORING WELL RECORD FOR LOW-FLOW PURGING

Project Data:

Project Name: Delphi Harrison Thermal Systems Site
Ref. No.: 56546.20 Task 4

Date: 5/16/19
Personnel: T. Bohlen

Monitoring Well Data:

Well No.: MW-10
Measurement Point: TOR
Constructed Well Depth (ft): 21.3
Measured Well Depth (ft): 23.72
Depth of Sediment (ft):

Screen Length (ft): 8.8'
Depth to Pump Intake (ft)[1]: ~17'
Well Diameter, D (in): 2
Well Screen Volume, V_s (mL)[2]: 1.7 qal
Initial Depth to Water (ft): 13.37

Time	Pumping Rate (mL/min)	Depth to Water (ft)	Drawdown from Initial Water Level[3] (ft)	pH	Temperature °C	Conductivity (mS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Volume Purged, Vp (mL)	No. of Well Screen Volumes Purged[4]
1304	*	13.72		7.04	12.3	6.643	188.5	0.78	2.47	0	
1335		13.79		6.98	11.5	9.099	196.6	-0.25	0.79	0.2	
1340		13.79		7.00	11.6	10.371	198.5	-0.28	0.67	0.3	
1345		13.79		7.00	11.6	10.439	198.6	-0.28	0.64	0.4	

* - 80 mL/min

Notes:

(1) The pump intake will be placed at the well screen mid-point or at a minimum of 2 ft above any sediment accumulated at the well bottom.

(2) The well screen volume will be based on a 5-foot screen length, $V_s = p*(D/2)^2*(5*12)*(2.54)^3$

(3) The drawdown from the initial water level should not exceed 0.3 ft.

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

WELL PURGING FIELD INFORMATION FORM

JOB# 56546-20

SITE/PROJECT NAME: Delphi Harrison Thermal Systems Site

WELL# MW-110

WELL PURGING INFORMATION

PURGE DATE (MM DD YY)	SAMPLE DATE (MM DD YY)	WATER VOL. IN CASING (LITRES/GALLONS)	ACTUAL VOLUME PURGED (LITRES/GALLONS)
05/16/19	05/16/19	1.7	0.4

PURGING AND SAMPLING EQUIPMENT

PURGING EQUIPMENT.......DEDICATED (Y) N (CIRCLE ONE)

SAMPLING EQUIPMENT.......DEDICATED (Y) N (CIRCLE ONE)

PURGING DEVICE	B	A - SUBMERSIBLE PUMP B - PERISTALTIC PUMP C - BLADDER PUMP	D - GAS LIFT PUMP E - PURGE PUMP F - DIPPER BOTTLE	G - BAILER H - WATERRA®	X- ______ PURGING OTHER (SPECIFY)
SAMPLING DEVICE	B				X- ______ SAMPLING OTHER (SPECIFY)
PURGING DEVICE	E	A - TEFLON B - STAINLESS STEEL C - POLYPROPYLENE	D - PVC E - POLYETHYLENE		X- ______ PURGING OTHER (SPECIFY)
SAMPLING DEVICE	E				X- ______ SAMPLING OTHER (SPECIFY)
PURGING DEVICE	E	A - TEFLON B - TYGON C - ROPE X- ______ (SPECIFY)	D - POLYPROPYLENE E - POLYETHYLENE	F - SILICONE G - COMBINATION TEFLON/POLYPROPYLENE	X- ______ PURGING OTHER (SPECIFY)
SAMPLING DEVICE	E				X- ______ SAMPLING OTHER (SPECIFY)
FILTERING DEVICES 0.45		A - IN-LINE DISPOSABLE	B - PRESSURE	C - VACUUM	

FIELD MEASUREMENTS

WELL ELEVATION	604.70	(m/ft)	GROUNDWATER ELEVATION	591.33	(m/ft)
DEPTH TO WATER	13.37	(m/ft)	WELL DEPTH	23.72	(m/ft)

pH (std)	TURBIDITY (ntu)	CONDUCTIVITY (µm/cm) AT 25°C	ORP (mV)	DO (mg/L)	SAMPLE TEMPERATURE (°C)

FIELD COMMENTS

SAMPLE APPEARANCE Good ODOR none COLOR Clear TURBIDITY Clear

WEATHER CONDITIONS WIND SPEED 5-10 DIRECTION SW PRECIPITATION Y/N OUTLOOK N

SPECIFIC COMMENTS

I CERTIFY THAT SAMPLING PROCEDURES WERE IN ACCORDANCE WITH APPLICABLE CM PROTOCOLS

DATE	PRINT	SIGNATURE
5/16/	Thomas Bohlen	Thomas Bohlen

FMG MODIFICATIONS MUST BE ACCOMPANIED BY A REVISION REQUEST FORM APPROVED BY THE PROJECT MANAGER

PID @ TOR = 0.0 ppm PID @ Breathing Space = 0.0 ppm

MONITORING WELL RECORD FOR LOW-FLOW PURGING

Project Data:

Project Name: Delphi Harrison Thermal Systems Site
Ref. No.: 56546.20 Task 4

Date: 5/17/19
Personnel: T. Bohlen

Monitoring Well Data:

Well No.: MW-11
Measurement Point: TOR
Constructed Well Depth (ft): 24.10
Measured Well Depth (ft): 25.18
Depth of Sediment (ft):

Screen Length (ft): 9 - 21.4
Depth to Pump Intake (ft)[1]: 15
Well Diameter, D (in): 2
Well Screen Volume, V_s (mL)[2]: 3.2
Initial Depth to Water (ft): 5.49

Time	Pumping Rate (mL/min)	Depth to Water (ft)	Drawdown from Initial Water Level[3] (ft)	pH	Temperature °C	Conductivity (mS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Volume Purged, V_p (mL)	No. of Well Screen Volumes Purged[4]
957	*	5.79		7.75	10.5	1.287	183.1	0.92	0.71	0	
1010		6.15		7.63	9.7	1.261	181.1	-0.21	2.63	0.2	
1015		6.15		7.63	9.7	1.261	179.6	-0.23	1.52	0.3	
1020		6.15		7.63	9.7	1.261	179.5	-0.23	1.80	0.4	

Notes: * - 85 mL/min

(1) The pump intake will be placed at the well screen mid-point or at a minimum of 2 ft above any sediment accumulated at the well bottom.

(2) The well screen volume will be based on a 5-foot screen length, $V_s = p*(D/2)^2*(5*12)*(2.54)^3$

(3) The drawdown from the initial water level should not exceed 0.3 ft.

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

WELL PURGING FIELD INFORMATION FORM

JOB# 56546-20

SITE/PROJECT NAME: Delphi Harrison Thermal Systems Site

WELL# MW-11

WELL PURGING INFORMATION

PURGE DATE (MM DD YY)	SAMPLE DATE (MM DD YY)	WATER VOL IN CASING (LITRES/GALLONS)	ACTUAL VOLUME PURGED (LITRES/GALLONS)
05/17/19	05/17/19	32	104

PURGING AND SAMPLING EQUIPMENT

PURGING EQUIPMENT ..... DEDICATED (Y) N (CIRCLE ONE)

SAMPLING EQIPMENT ..... DEDICATED (Y) N (CIRCLE ONE)

PURGING DEVICE	B	A - SUBMERSIBLE PUMP B - PERISTALTIC PUMP	D - GAS LIFT PUMP E - PURGE PUMP	G - BAILER H - WATERRA®	X- PURGING OTHER (SPECIFY)
SAMPLING DEVICE	B	C - BLADDER PUMP	F - DIPPER BOTTLE		X- SAMPLING OTHER (SPECIFY)
PURGING DEVICE	E	A - TEFLON B - STAINLESS STEEL	D - PVC E - POLYETHYLENE		X- PURGING OTHER (SPECIFY)
SAMPLING DEVICE	E	C - POLYPROPYLENE			X- SAMPLING OTHER (SPECIFY)
PURGING DEVICE	E	A - TEFLON B - TYGON	D - POLYPROPYLENE E - POLYETHYLENE	F - SILICONE G - COMBINATION TEFLON/ POLYPROPYLENE	X- PURGING OTHER (SPECIFY)
SAMPLING DEVICE	E	C - ROPE	X- (SPECIFY)		X- SAMPLING OTHER (SPECIFY)
FILTERING DEVICES 0.45		A - IN-LINE DISPOSABLE	B - PRESSURE	C - VACUUM	

FIELD MEASUREMENTS

WELL ELEVATION	590.16 (m/ft)	GROUNDWATER ELEVATION	584.74 (m/ft)
DEPTH TO WATER	5.42 (m/ft)	WELL DEPTH	25.18 (m/ft)

pH	TURBIDITY	CONDUCTIVITY	ORP	DO	SAMPLE TEMPERATURE
(std)	(ntu)	(µm/cm) AT 25°C	(mV)	(mg/L)	(°C)
(std)	(ntu)	(µm/cm) AT 25°C	(mV)	(mg/L)	(°C)
(std)	(ntu)	(µm/cm) AT 25°C	(mV)	(mg/L)	(°C)
(std)	(ntu)	(µm/cm) AT 25°C	(mV)	(mg/L)	(°C)
(std)	(ntu)	(µm/cm) AT 25°C	(mV)	(mg/L)	(°C)

FIELD COMMENTS

SAMPLE APPEARANCE: Good ODOR: none COLOR: Clear TURBIDITY: Clear

WEATHER CONDITIONS: WIND SPEED: 0-5 DIRECTION: SW PRECIPITATION Y/N OUTLOOK: n

SPECIFIC COMMENTS:

I CERTIFY THAT SAMPLING PROCEDURES WERE IN ACCORDANCE WITH APPLICABLE GM PROTOCOLS

DATE	PRINT	SIGNATURE
5/17/19	Thomas Bohler	Thomas Bohler

FMG MODIFICATIONS MUST BE ACCOMPANIED BY A REVISION REQUEST FORM APPROVED BY THE PROJECT MANAGER

PID @ TOR = 0.0ppm PID @ Breathing Space = 0.0ppm

MONITORING WELL RECORD FOR LOW-FLOW PURGING

Project Data:

Project Name: Delphi Harrison Thermal Systems Site
Ref. No.: 56546.20 Task 4

Date: 5/17/19
Personnel: T. Bohlen

Monitoring Well Data:

Well No.: MW-12
Measurement Point: TOR
Constructed Well Depth (ft): 15.10
Measured Well Depth (ft): 16.42
Depth of Sediment (ft):

Screen Length (ft): 7.1
Depth to Pump Intake (ft)[1]: 13
Well Diameter, D (in): 2
Well Screen Volume, V_s (gal)[2]: 1.7
Initial Depth to Water (ft): 5.74

Time	Pumping Rate (mL/min)	Depth to Water (ft)	Drawdown from Initial Water Level[3] (ft)	pH	Temperature °C	Conductivity (mS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Volume Purged, Vp (mL)	No. of Well Screen Volumes Purged[4]
1428	*	6.19		6.97	9.4	9.987	195.7	0.06	8.01	0.1	-
1436		6.19		6.95	9.5	9.726	102.0	-0.19	13.45	0.2	
1441		6.19		6.95	9.4	9.614	83.4	-0.25	7.98	0.3	
1446		6.19		6.95	9.5	9.519	63.4	-0.30	9.34	0.3	
1451		6.19		6.96	9.5	9.330	41.0	-0.33	5.78	0.4	
1456		6.19		6.96	9.5	9.287	33.9	-0.36	5.82	0.5	
1501		6.19		6.97	9.5	9.240	32.1	-0.36	8.95	0.6	
1506		6.19		6.97	9.4	9.200	32.3	-0.37	9.01	0.7	

* - 80mL/min

Notes:

(1) The pump intake will be placed at the well screen mid-point or at a minimum of 2 ft above any sediment accumulated at the well bottom.

(2) The well screen volume will be based on a 5-foot screen length, $V_s = p*(D/2)^2*(5*12)*(2.54)^3$

(3) The drawdown from the initial water level should not exceed 0.3 ft.

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

WELL PURGING FIELD INFORMATION FORM

SITE/PROJECT NAME: Delphi Harrison Thermal Systems Site

JOB# 56546.20

WELL# MW-12

WELL PURGING INFORMATION

05/17/19	05/17/19	11.7	0.7
PURGE DATE (MM DD YY)	SAMPLE DATE (MM DD YY)	WATER VOL. IN CASING (LITRES/GALLONS)	ACTUAL VOLUME PURGED (LITRES/GALLONS)

PURGING AND SAMPLING EQUIPMENT

PURGING EQUIPMENT.......DEDICATED (Y) N (CIRCLE ONE)

SAMPLING EQUIPMENT.......DEDICATED (Y) N (CIRCLE ONE)

PURGING DEVICE: B
SAMPLING DEVICE: B
A - SUBMERSIBLE PUMP; B - PERISTALTIC PUMP; C - BLADDER PUMP; D - GAS LIFT PUMP; E - PURGE PUMP; F - DIPPER BOTTLE; G - BAILER; H - WATERRA®
X- ____ PURGING OTHER (SPECIFY)
X- ____ SAMPLING OTHER (SPECIFY)

PURGING DEVICE: E
SAMPLING DEVICE: E
A - TEFLON; B - STAINLESS STEEL; C - POLYPROPYLENE; D - PVC; E - POLYETHYLENE
X- ____ PURGING OTHER (SPECIFY)
X- ____ SAMPLING OTHER (SPECIFY)

PURGING DEVICE: E
SAMPLING DEVICE: E
A - TEFLON; B - TYGON; C - ROPE; X- ____ (SPECIFY); D - POLYPROPYLENE; E - POLYETHYLENE; F - SILICONE; G - COMBINATION TEFLON/POLYPROPYLENE
X- ____ PURGING OTHER (SPECIFY)
X- ____ SAMPLING OTHER (SPECIFY)

FILTERING DEVICES 0.45 ____ A - IN-LINE DISPOSABLE; B - PRESSURE; C - VACUUM

FIELD MEASUREMENTS

WELL ELEVATION: 590.71 (m/ft)
DEPTH TO WATER: 5.74 (m/ft)
GROUNDWATER ELEVATION: 584.97 (m/ft)
WELL DEPTH: 16.42 (m/ft)

pH (std)	TURBIDITY (ntu)	CONDUCTIVITY (µm/cm) AT 25°C	ORP (mV)	DO (mg/L)	SAMPLE TEMPERATURE (°C)

FIELD COMMENTS

SAMPLE APPEARANCE: Good ODOR: None COLOR: Clear TURBIDITY: Clear

WEATHER CONDITIONS: WIND SPEED: 0-5 DIRECTION: E PRECIPITATION Y/N OUTLOOK: n

SPECIFIC COMMENTS

I CERTIFY THAT SAMPLING PROCEDURES WERE IN ACCORDANCE WITH APPLICABLE CRA PROTOCOLS

DATE: 5/17/19 PRINT: Thomas Bohler SIGNATURE: Thomas Bohler

FMG MODIFICATIONS MUST BE ACCOMPANIED BY A REVISION REQUEST FORM APPROVED BY THE PROJECT MANAGER

17500 (2) PART 1 C) MU 06-4-01
Revision 3 October 29, 2001

PID @ TOR = 0.0 ppm PID @ Breathing Space = 0.0ppm

MONITORING WELL RECORD FOR LOW-FLOW PURGING

Project Data:

Project Name: Delphi Harrison Thermal Systems Site
Ref. No.: 56546.20 Task 4

Date: 5/17/19
Personnel: T. Bohlen

Monitoring Well Data:

Well No.: MW-13
Measurement Point: TOR
Constructed Well Depth (ft): 15
Measured Well Depth (ft): 14.28
Depth of Sediment (ft):

Screen Length (ft): 7
Depth to Pump Intake (ft)[1]: ~12
Well Diameter, D (in): 2
Well Screen Volume, V_s (mL)[2]: 1.5
Initial Depth to Water (ft): 5.32

Time	Pumping Rate (mL/min)	Depth to Water (ft)	Drawdown from Initial Water Level[3] (ft)	pH	Temperature °C	Conductivity (mS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Volume Purged, Vp (mL)	No. of Well Screen Volumes Purged[4]
1120	*	5.67		7.23	11.0	6.489	215.1	3.63	2.32	0	
1127		5.67		7.21	10.6	6.516	220.8	2.41	2.04	0.7	
1132				7.21	10.5	6.505	222.3	2.20	2.62	0.3	
1137		↓		7.21	10.5	6.490	221.7	1.96	2.61	0.4	

Notes:

* 82 mL/min

(1) The pump intake will be placed at the well screen mid-point or at a minimum of 2 ft above any sediment accumulated at the well bottom.

(2) The well screen volume will be based on a 5-foot screen length. $V_s = p^*(D/2)^{2*}(5*12)*(2.54)^3$

(3) The drawdown from the initial water level should not exceed 0.3 ft.

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

WELL PURGING FIELD INFORMATION FORM

JOB# 56546-20

SITE/PROJECT NAME: Delphi Harrison Thermal Systems Site

WELL# MW-13

WELL PURGING INFORMATION

05/17/19	05/17/19	1.5	10.4
PURGE DATE (MM DD YY)	SAMPLE DATE (MM DD YY)	WATER VOL. IN CASING (LITRES/GALLONS)	ACTUAL VOLUME PURGED (LITRES/GALLONS)

PURGING AND SAMPLING EQUIPMENT

PURGING EQUIPMENT......DEDICATED (Y) N (CIRCLE ONE)

SAMPLING EQUIPMENT......DEDICATED (Y) N (CIRCLE ONE)

PURGING DEVICE: B — A - SUBMERSIBLE PUMP, B - PERISTALTIC PUMP, C - BLADDER PUMP, D - GAS LIFT PUMP, E - PURGE PUMP, F - DIPPER BOTTLE, G - BAILER, H - WATERRA® — X- ______ PURGING OTHER (SPECIFY)

SAMPLING DEVICE: B — X- ______ SAMPLING OTHER (SPECIFY)

PURGING DEVICE: E — A - TEFLON, B - STAINLESS STEEL, C - POLYPROPYLENE, D - PVC, E - POLYETHYLENE — X- ______ PURGING OTHER (SPECIFY)

SAMPLING DEVICE: E — X- ______ SAMPLING OTHER (SPECIFY)

PURGING DEVICE: E — A - TEFLON, B - TYGON, C - ROPE, X- ______ (SPECIFY), D - POLYPROPYLENE, E - POLYETHYLENE, F - SILICONE, G - COMBINATION TEFLON/POLYPROPYLENE — X- ______ PURGING OTHER (SPECIFY)

SAMPLING DEVICE: E — X- ______ SAMPLING OTHER (SPECIFY)

FILTERING DEVICES 0.45 [ ] A - IN-LINE DISPOSABLE, B - PRESSURE, C - VACUUM

FIELD MEASUREMENTS

WELL ELEVATION: 589.02 (m/ft)

GROUNDWATER ELEVATION: 583.70 (m/ft)

DEPTH TO WATER: 5.32 (m/ft)

WELL DEPTH: 14.28 (m/ft)

pH (std)	TURBIDITY (ntu)	CONDUCTIVITY (µm/cm) AT 25°C	ORP (mV)	DO (mg/L)	SAMPLE TEMPERATURE (°C)

FIELD COMMENTS

SAMPLE APPEARANCE: Good ODOR: None COLOR: Clear TURBIDITY: Clear

WEATHER CONDITIONS: WIND SPEED 0-5 DIRECTION E PRECIPITATION Y/N OUTLOOK n

SPECIFIC COMMENTS

I CERTIFY THAT SAMPLING PROCEDURES WERE IN ACCORDANCE WITH APPLICABLE CRA PROTOCOLS

5/7/19	Thomas Bohler	Thomas Bohler
DATE	PRINT	SIGNATURE

FMG MODIFICATIONS MUST BE ACCOMPANIED BY A REVISION REQUEST FORM APPROVED BY THE PROJECT MANAGER

PID @ TOR = 0.0ppm PID @ Breathing Space = 0.0ppm

MONITORING WELL RECORD FOR LOW-FLOW PURGING

Project Data:

Project Name: Delphi Harrison Thermal Systems Site
Ref. No.: 56546.20 Task 4

Date: 5/21/19
Personnel: T. Bohen / T. Nyenyk

Monitoring Well Data:

Well No.: MW-14
Measurement Point: TOR
Constructed Well Depth (ft): 19.1
Measured Well Depth (ft): 21.40
Depth of Sediment (ft):

Screen Length (ft): 9.1 - 19.1
Depth to Pump Intake (ft)[1]: 14
Well Diameter, D (in): 2
Well Screen Volume, V_s (mL)[2]: 2.6
Initial Depth to Water (ft): 5.30

Time	Pumping Rate (mL/min)	Depth to Water (ft)	Drawdown from Initial Water Level[3] (ft)	pH	Temperature °C	Conductivity (mS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Volume Purged, Vp (mL)	No. of Well Screen Volumes Purged[4]
1016		6.18		7.33	10.4	6.318	198.4	-0.01	2.38	0	
1032		6.81		7.31	10.6	6.341	180.5	-0.01	3.61	0.2	
1037		7.09		7.31	10.4	6.348	175.2	-0.06	4.72	0.3	
1042		7.12		7.31	10.4	6.351	172.9	-0.06	4.79	0.4	

Notes:

(1) The pump intake will be placed at the well screen mid-point or at a minimum of 2 ft above any sediment accumulated at the well bottom.

(2) The well screen volume will be based on a 5-foot screen length. $V_s = p*(D/2)^2*(5*12)*(2.54)^3$

(3) The drawdown from the initial water level should not exceed 0.3 ft.

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

WELL PURGING FIELD INFORMATION FORM

SITE/PROJECT NAME: Delphi Harrison Thermal Systems Site

JOB# 56546-20

WELL# MW-114

WELL PURGING INFORMATION

PURGE DATE (MM DD YY)	SAMPLE DATE (MM DD YY)	WATER VOL. IN CASING (LITRES/GALLONS)	ACTUAL VOLUME PURGED (LITRES/GALLONS)
05/21/19	05/21/19	2.6	0.4

PURGING AND SAMPLING EQUIPMENT

PURGING EQUIPMENT.......DEDICATED (Y) N (CIRCLE ONE)

SAMPLING EQUIPMENT.......DEDICATED (Y) N (CIRCLE ONE)

PURGING DEVICE: B
SAMPLING DEVICE: B

A - SUBMERSIBLE PUMP; B - PERISTALTIC PUMP; C - BLADDER PUMP; D - GAS LIFT PUMP; E - PURGE PUMP; F - DIPPER BOTTLE; G - BAILER; H - WATERRA®

X- ________ PURGING OTHER (SPECIFY)
X- ________ SAMPLING OTHER (SPECIFY)

PURGING DEVICE: E
SAMPLING DEVICE: E

A - TEFLON; B - STAINLESS STEEL; C - POLYPROPYLENE; D - PVC; E - POLYETHYLENE

X- ________ PURGING OTHER (SPECIFY)
X- ________ SAMPLING OTHER (SPECIFY)

PURGING DEVICE: E
SAMPLING DEVICE: E

A - TEFLON; B - TYGON; C - ROPE; X- ________ (SPECIFY); D - POLYPROPYLENE; E - POLYETHYLENE; F - SILICONE; G - COMBINATION TEFLON/POLYPROPYLENE

X- ________ PURGING OTHER (SPECIFY)
X- ________ SAMPLING OTHER (SPECIFY)

FILTERING DEVICES 0.45: ____ A - IN-LINE DISPOSABLE; B - PRESSURE; C - VACUUM

FIELD MEASUREMENTS

WELL ELEVATION	592.77	(m/ft)	GROUNDWATER ELEVATION	587.47	(m/ft)
DEPTH TO WATER	5.30	(m/ft)	WELL DEPTH	21.40	(m/ft)

pH (std)	TURBIDITY (ntu)	CONDUCTIVITY (µm/cm) AT 25°C	ORP (mV)	DO (mg/L)	SAMPLE TEMPERATURE (°C)

FIELD COMMENTS

SAMPLE APPEARANCE: Good ODOR: None COLOR: Clear TURBIDITY: Clear

WEATHER CONDITIONS: WIND SPEED 5-10 DIRECTION SW PRECIPITATION Y/N OUTLOOK N

SPECIFIC COMMENTS: ________

I CERTIFY THAT SAMPLING PROCEDURES WERE IN ACCORDANCE WITH APPLICABLE GM PROTOCOLS

DATE	PRINT	SIGNATURE
5/21/19	Thomas Bohler	Thomas Bohler

FMG MODIFICATIONS MUST BE ACCOMPANIED BY A REVISION REQUEST FORM APPROVED BY THE PROJECT MANAGER

17809 (2) PART C) MG-0-44-1
Revision 3, October 29, 2003

PID @ TOR = 0.0 ppm   PID @ Breathing Space = 0.0 ppm

MONITORING WELL RECORD FOR LOW-FLOW PURGING

Project Data:

Project Name: Delphi Harrison Thermal Systems Site
Ref. No.: 56546.20 Task 4

Date: 5/16/19
Personnel: T. Bohlen

Monitoring Well Data:

Well No.: MW-15
Measurement Point: TOR
Constructed Well Depth (ft): 17.90
Measured Well Depth (ft): 16.93
Depth of Sediment (ft):

Screen Length (ft): 7
Depth to Pump Intake (ft)(1): 13
Well Diameter, D (in): 2
Well Screen Volume, V_s (~~mL~~ gal)(2): 1.6
Initial Depth to Water (ft): 6.88

Time	Pumping Rate (mL/min)	Depth to Water (ft)	Drawdown from Initial Water Level(3) (ft)	pH	Temperature °C	Conductivity (mS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Volume Purged, Vp (mL)	No. of Well Screen Volumes Purged(4)
1452	*	7.07		7.23	11.3	2.831	187.8	1.33	1.51	0	
1459		7.11		7.17	10.4	2.731	193.4	-0.13	0.67	0.2	
1504		7.11		7.16	10.3	2.722	194.5	-0.33	0.64	0.3	
1509		7.11		7.16	10.4	2.721	194.5	-0.31	0.56	0.4	
1514		7.11		7.16	10.4	2.713	194.6	-0.30	0.55	0.5	

Notes: * - 80 mL/min

(1) The pump intake will be placed at the well screen mid-point or at a minimum of 2 ft above any sediment accumulated at the well bottom.

(2) The well screen volume will be based on a 5-foot screen length. $V_s = p*(D/2)^2*(5*12)*(2.54)^3$

(3) The drawdown from the initial water level should not exceed 0.3 ft.

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

FMG MODIFICATIONS MUST BE ACCOMPANIED BY A REVISION REQUEST FORM APPROVED BY THE PROJECT MANAGER

WELL PURGING FIELD INFORMATION FORM

SITE/PROJECT NAME: Delphi Harrison Thermal Systems Site

JOB# 56546-20
WELL# MW-15

WELL PURGING INFORMATION

05/16/19	05/16/19	1.6	0.5
PURGE DATE (MM DD YY)	SAMPLE DATE (MM DD YY)	WATER VOL. IN CASING (LITRES/GALLONS)	ACTUAL VOLUME PURGED (LITRES/GALLONS)

PURGING AND SAMPLING EQUIPMENT

PURGING EQUIPMENT........DEDICATED (Y) N (CIRCLE ONE)

SAMPLING EQUIPMENT........DEDICATED (Y) N (CIRCLE ONE)

PURGING DEVICE: B — A - SUBMERSIBLE PUMP; B - PERISTALTIC PUMP; C - BLADDER PUMP; D - GAS LIFT PUMP; E - PURGE PUMP; F - DIPPER BOTTLE; G - BAILER; H - WATERRA®; X- ______ PURGING OTHER (SPECIFY)

SAMPLING DEVICE: B — X- ______ SAMPLING OTHER (SPECIFY)

PURGING DEVICE: E — A - TEFLON; B - STAINLESS STEEL; C - POLYPROPYLENE; D - PVC; E - POLYETHYLENE; X- ______ PURGING OTHER (SPECIFY)

SAMPLING DEVICE: E — X- ______ SAMPLING OTHER (SPECIFY)

PURGING DEVICE: E — A - TEFLON; B - TYGON; C - ROPE; X- ______ (SPECIFY); D - POLYPROPYLENE; E - POLYETHYLENE; F - SILICONE; G - COMBINATION TEFLON/POLYPROPYLENE; X- ______ PURGING OTHER (SPECIFY)

SAMPLING DEVICE: E — X- ______ SAMPLING OTHER (SPECIFY)

FILTERING DEVICES 0.45: ____ A - IN-LINE DISPOSABLE; B - PRESSURE; C - VACUUM

FIELD MEASUREMENTS

WELL ELEVATION	594.04 (m/ft)		GROUNDWATER ELEVATION	587.16 (m/ft)
DEPTH TO WATER	6.88 (m/ft)		WELL DEPTH	16.93 (m/ft)

pH (std)	TURBIDITY (ntu)	CONDUCTIVITY (µm/cm) AT 25°C	ORP (mV)	DO (mg/L)	SAMPLE TEMPERATURE (°C)

FIELD COMMENTS

SAMPLE APPEARANCE: Good ODOR: none COLOR: Clear TURBIDITY: Clear

WEATHER CONDITIONS: WIND SPEED: 0-5 DIRECTION: SW PRECIPITATION Y/N OUTLOOK: n

SPECIFIC COMMENTS:

I CERTIFY THAT SAMPLING PROCEDURES WERE IN ACCORDANCE WITH APPLICABLE CM PROTOCOLS

5/16/19	Thomas Bohlen	Thomas Bohlen
DATE	PRINT	SIGNATURE

FMG MODIFICATIONS MUST BE ACCOMPANIED BY A REVISION REQUEST FORM APPROVED BY THE PROJECT MANAGER

APPENDIX B

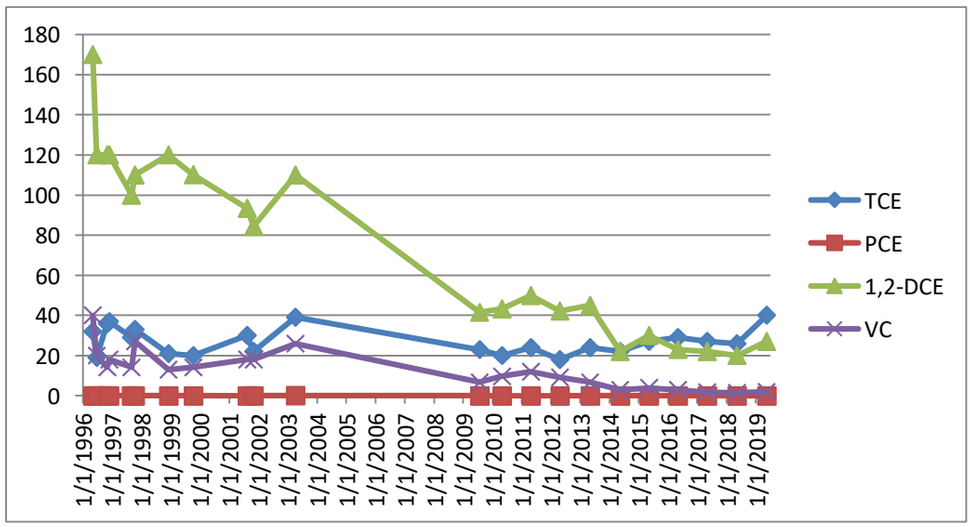
COC DATA GRAPHS

MW-4 Groundwater Data
Delphi Harrison Thermal Systems Site
GM Components Holdings, LLC
Lockport, New York

Date	TCE	PCE	1,2-DCE	VC
4/30/1996	32	<0.5	170	40
6/20/1996	19	<0.5	120	20
10/30/1996	36	<0.5	120	14
11/21/1996	37	<0.5	120	18
8/28/1997	29	<0.5	100	14
10/10/1997	33	<0.2	110	27
12/2/1998	21	<0.2	120	13
10/7/1999	20	<0.05	110.14	14
8/9/2001	30	0.003	93.28	18
10/31/2001	22	<0.002	84.25	18
4/7/2003	39	0.08	110	26
7/20/2009	23	<0.05	41.5	6.7
4/29/2010	20	0.0012	43.2	9.6
4/22/2011	24	0.0018	50	12
4/20/2012	18	0.0014	42.16	9.1
5/1/2013	24	<0.18	45	6.6
5/13/2014	22	<0.18	22	2.9
5/8/2015	27	<0.36	30	3.8
5/5/2016	29	<.36	23	2.9
5/2/2017	27	<.18	22	1.8
5/8/2018	26	<.18	20	1.4
5/16/2019	40	0.005	27	1.9

Notes:
Results are provided in parts per million (ppm)
1,2 DCE value includes total cis-1,2 DCE and trans 1,2 DCE. If "<" value, the listed value is the higher of the two method detection limits.

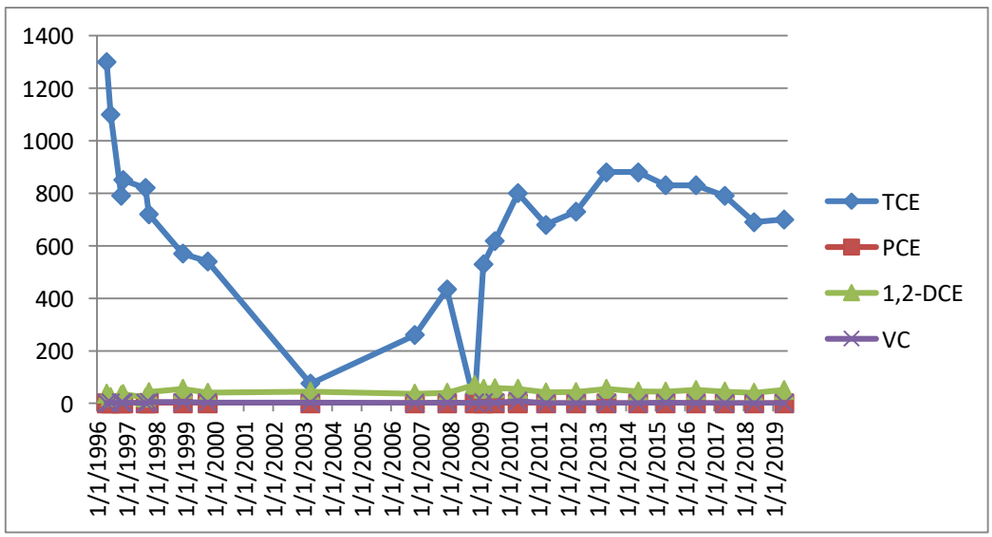
Duplicate samples were collected from this location on 6/20/96, 10/30/96 and 12/2/98. The higher of the two concentrations were recorded in this graph.



MW-7 Groundwater Data
Delphi Harrison Thermal Systems Site
GM Components Holdings, LLC
Lockport, New York

Date	TCE	PCE	1,2-DCE	VC
4/30/1996	1300	<0.5	37	1.8
6/20/1996	1100	<0.5	24	2.4
10/30/1996	790	<0.5	32	2.3
11/21/1996	850	<0.5	35	3.1
8/28/1997	820	<0.2	22	1.1
10/10/1997	720	<0.2	43	4.8
12/3/1998	570	<0.2	55	4.2
10/7/1999	540	<0.5	41	3.5
4/7/2003	75	<0.2	45	3
10/25/2006	260	0.077	36	1.7
11/29/2007	434	0.049	40	3.2
11/5/2008	1.1	<0.2	70	2.6
2/24/2009	530	0.071	56	3.6
7/15/2009	618	0.112	58.3	2.5
4/29/2010	800	0.14	55.2	9
4/11/2011	680	<1.8	42	<4.5
4/20/2012	730	<1.8	43	<4.5
5/3/2013	880	<3.6	55	<9
5/30/2014	880	<7.2	46	<18
5/7/2015	830	0.14	45	3
5/17/2016	830	<3.6	51	<9
5/11/2017	790	<7.2	45	<18
5/10/2018	690	<7.2	40	<18
5/17/2019	700	<7.2	51	<18

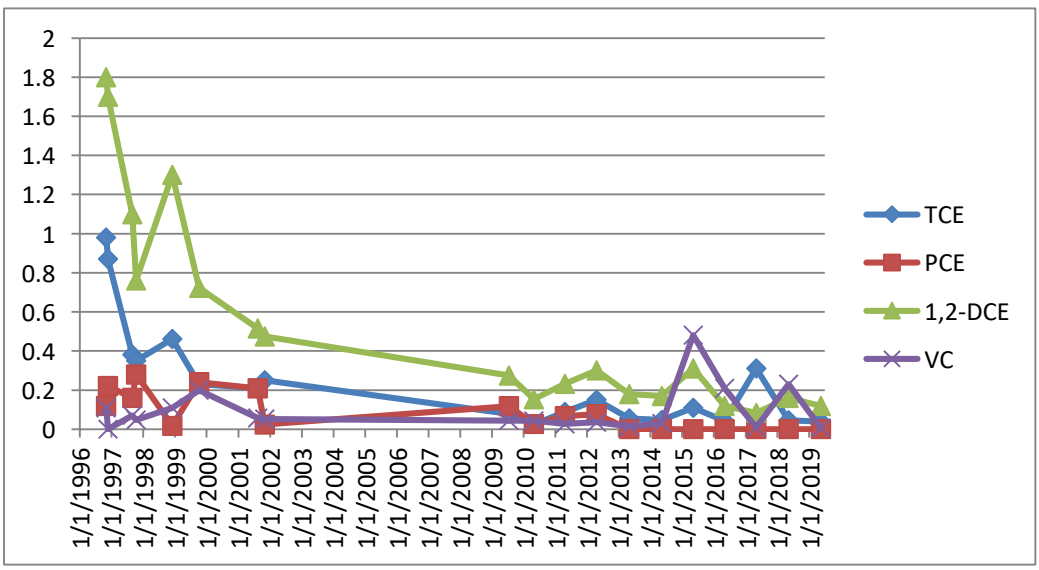
Notes:
Results are provided in parts per million (ppm)
1,2 DCE value includes total cis-1,2 DCE and trans 1,2 DCE. If "<" value, the listed value is the higher of the two method detection limits.



MW-10 Groundwater Data
Delphi Harrison Thermal Systems Site
GM Components Holdings, LLC
Lockport, New York

Date	TCE	PCE	1,2-DCE	VC
10/30/1996	0.98	0.12	1.8	0.11
11/21/1996	0.87	0.22	1.7	<0.1
8/28/1997	0.38	0.16	1.1	0.07
10/10/1997	0.35	0.28	0.76	0.047
12/1/1998	0.46	0.016	1.3	0.11
10/6/1999	0.23	0.24	0.722	0.2
8/9/2001	0.21	0.21	0.514	0.057
10/31/2001	0.25	0.023	0.473	0.053
7/15/2009	0.079	0.118	0.275	0.044
4/28/2010	0.024	0.026	0.153	0.042
4/21/2011	0.088	0.067	0.232	0.027
4/19/2012	0.15	0.077	0.3	0.035
5/1/2013	0.056	<0.0014	0.18	0.014
5/14/2014	0.048	<0.0014	0.17	0.029
5/8/2015	0.11	<0.0014	0.31	0.48
5/5/2016	0.041	<0.0014	0.12	0.21
5/2/2017	0.31	<.0007	0.083	0.008
5/9/2018	0.046	<.0007	0.16	0.23
5/16/2019	0.038	<.00072	0.12	0.007

Notes:
Results are provided in parts per million (ppm)
1,2 DCE value includes total cis-1,2 DCE and trans 1,2 DCE. If "<" value, the listed value is the higher of the two method detection limits.

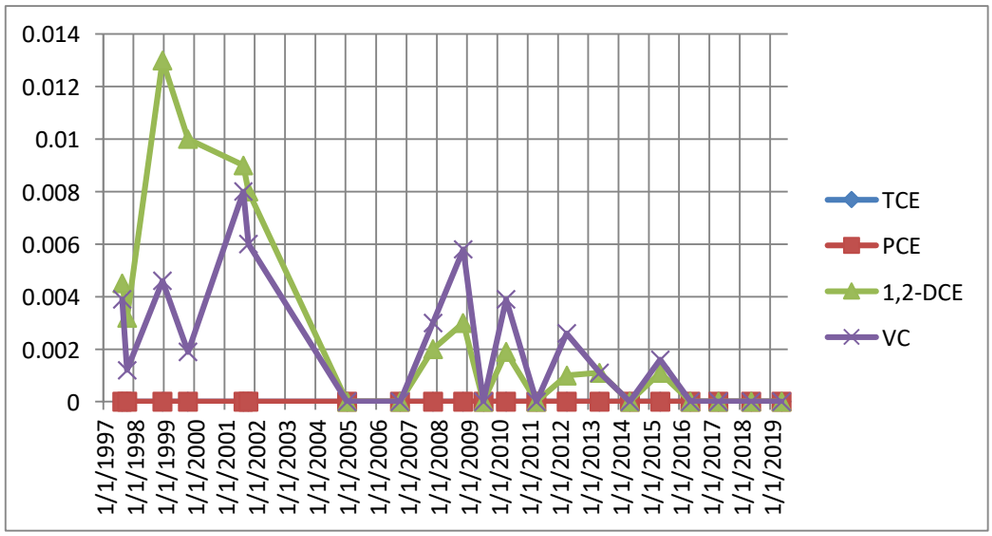


MW-11 Groundwater Data
Delphi Harrison Thermal Systems Site
GM Components Holdings, LLC
Lockport, New York

Date	TCE	PCE	1,2-DCE	VC
8/28/1997	<0.0005	<0.0005	0.0045	0.0039
10/10/1997	<0.0005	<0.0005	0.0032	0.0012
12/1/1998	<0.0005	<0.0005	0.013	0.0046
10/5/1999	<0.0005	<0.0005	0.01	0.0019
8/8/2001	<0.002	<0.002	0.009	0.008
10/30/2001	<0.002	<0.002	0.008	0.006
1/12/2005	<0.002	<0.002	<0.002	<0.002
10/24/2006	<0.002	<0.002	<0.002	<0.002
11/28/2007	<0.002	<0.002	0.002	0.003
11/4/2008	<0.002	<0.002	0.003	0.0058
7/16/2009	<0.005	<0.005	<0.005	<0.005
4/28/2010	<0.0005	<0.0004	0.0019	0.0039
4/21/2011	<0.0005	<0.0004	<0.0008	<0.0009
4/19/2012	<0.0005	<0.0004	0.001	0.0026
5/2/2013	<0.00046	<0.00036	0.0011	0.0011
5/20/2014	<0.00046	<0.00036	<0.00081	<0.0009
5/6/2015	<0.00046	<0.00036	0.0011	0.0016
5/5/2016	<0.00046	<0.00036	<0.0009	<0.0009
4/28/2017	<0.00046	<0.00036	<0.00090	<0.0009
5/10/2018	<0.00046	<0.00036	<0.00090	<0.0009
5/17/2019	< 0.0005	<0.0004	<0.0009	<0.0009

Notes:
Results are provided in parts per million (ppm)
1,2 DCE value includes total cis-1,2 DCE and trans 1,2 DCE. If "<" value, the listed value is the higher of the two method detection limits.

Duplicate samples were collected from this location on 10/10/97. The higher of the two concentrations were recorded in this graph.

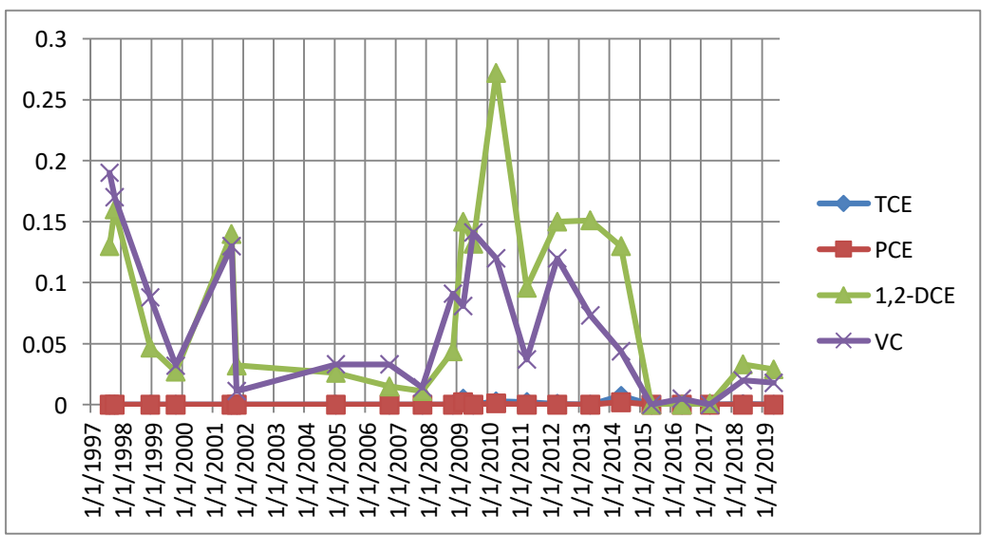


MW-12 Groundwater Data
Delphi Harrison Thermal Systems Site
GM Components Holdings, LLC
Lockport, New York

Date	TCE	PCE	1,2-DCE	VC
8/28/1997	<0.0005	<0.0005	0.13	0.19
10/10/1997	<0.0005	<0.0005	0.16	0.17
12/1/1998	<0.0005	<0.0005	0.047	0.088
10/6/1999	<0.0005	<0.0005	0.027	0.032
8/8/2001	<0.002	<0.002	0.14	0.13
10/30/2001	<0.002	<0.002	0.032	0.011
1/12/2005	<0.002	<0.002	0.026	0.033
10/25/2006	<0.002	<0.002	0.015	0.033
11/28/2007	<0.002	<0.002	0.011	0.014
11/14/2008	<0.002	<0.002	0.044	0.091
3/16/2009	0.005	0.002	0.15	0.081
7/16/2009	<0.005	<0.005	0.132	0.141
4/28/2010	0.0028	0.0011	0.272	0.12
4/20/2011	0.0021	<0.0004	0.096	0.037
4/18/2012	0.00083	<0.0004	0.15	0.12
5/3/2013	<0.002	<0.00036	0.151	0.073
5/19/2014	0.0074	0.002	0.13	0.044
5/7/2015	<0.00046	<0.00036	<0.00081	<0.0009
5/6/2016	<0.00046	<0.00036	<0.0051	0.0049
4/28/2017	<0.00046	<0.00036	0.001	<0.0009
5/9/2018	0.0007	<0.00036	0.033	0.02
5/17/2019	<0.00092	<0.00072	0.029	0.018

Notes:
Results are provided in parts per million (ppm)
1,2 DCE value includes total cis-1,2 DCE and trans 1,2 DCE. If "<" value, the listed value is the higher of the two method detection limits.

Duplicate samples were collected from this location on 8/28/97 and 8/8/01. The higher of the two concentrations were recorded in this graph.

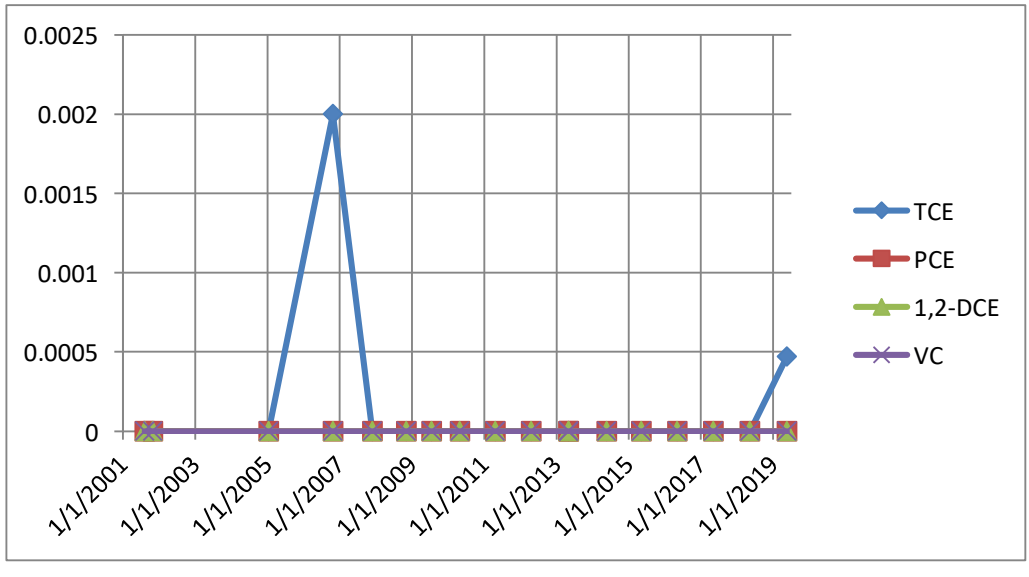


MW-13 Groundwater Data
Delphi Harrison Thermal Systems Site
GM Components Holdings, LLC
Lockport, New York

Date	TCE	PCE	1,2-DCE	VC
8/8/2001	<0.002	<0.002	<0.002	<0.002
10/29/2001	<0.002	<0.002	<0.002	<0.002
1/12/2005	<0.002	<0.002	<0.002	<0.002
10/24/2006	0.002	<0.002	<0.002	<0.002
11/28/2007	<0.002	<0.002	<0.002	<0.002
11/5/2008	<0.002	<0.002	<0.002	<0.002
7/16/2009	<0.005	<0.005	<0.005	<0.005
4/28/2010	<0.0005	<0.0004	<0.0008	<0.0009
4/21/2011	<0.0005	<0.0004	<0.0008	<0.0009
4/19/2012	<0.0005	<0.0004	<0.0008	<0.0009
5/2/2013	<0.00046	<0.00036	<0.00081	<0.0009
5/2/2013	<0.00046	<0.00036	<0.00081	<0.0009
5/20/2014	<0.00046	<0.00036	<0.00081	<0.0009
5/7/2015	<0.00046	<0.00036	<0.00081	<0.0009
5/5/2016	<0.00046	<0.00036	<0.0009	<0.0009
5/3/2017	<0.00046	<0.00036	<0.0009	<0.0009
5/10/2018	<0.00046	<0.00036	<0.0009	<0.0009
5/17/2019	0.00047	<0.00036	<0.0009	<0.0009

Notes:
Results are provided in parts per million (ppm)
1,2 DCE value includes total cis-1,2 DCE and trans 1,2 DCE. If "<" value, the listed value is the higher of the two method detection limits.

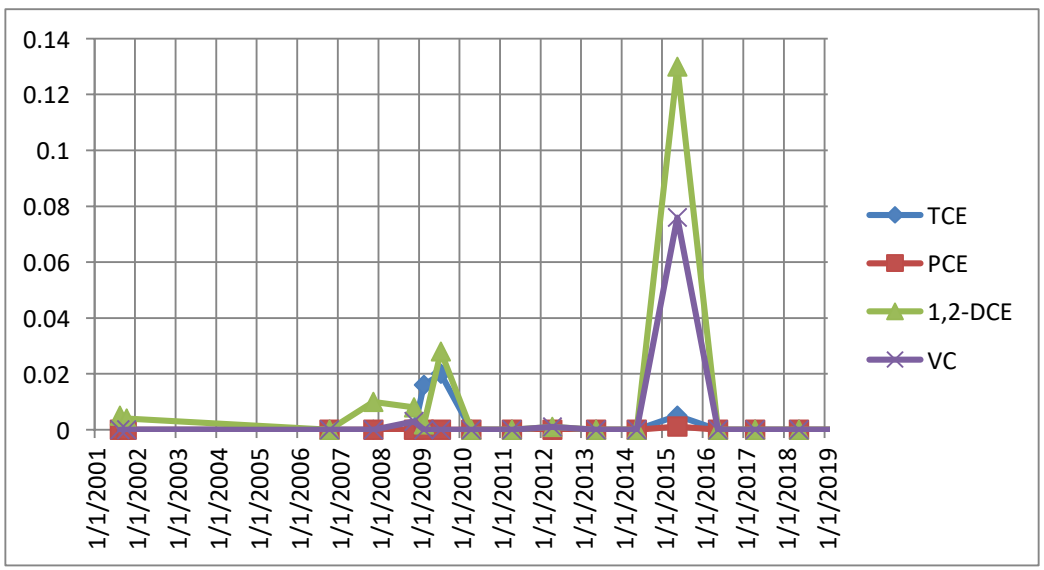
A duplicate sample was collected from this location on 4/19/2012.
The higher of the two concentrations were recorded in this graph.



MW-14 Groundwater Data
Delphi Harrison Thermal Systems Site
GM Components Holdings, LLC
Lockport, New York

Date	TCE	PCE	1,2-DCE	VC
8/10/2001	<0.002	<0.002	0.005	<0.002
10/30/2001	<0.002	<0.002	0.004	<0.002
10/24/2006	<0.002	<0.002	<0.002	<0.002
11/29/2007	<0.002	<0.002	0.01	<0.002
11/4/2008	<0.002	<0.002	0.008	0.003
2/24/2009	0.016	<0.002	0.002	<0.002
7/19/2009	0.02	<0.005	0.028	<0.005
4/27/2010	<0.005	<0.0004	<0.0008	<0.0009
4/21/2011	<0.005	<0.0004	<0.0008	<0.0009
4/19/2012	<0.005	<0.0004	0.001	0.001
5/3/2013	<0.00046	<0.00036	<0.00081	<0.0009
5/23/2014	<0.00046	<0.00036	<0.00081	<0.0009
5/7/2015	0.0051	0.0011	0.13	0.076
5/6/2016	<0.00046	<0.00036	<0.0009	<0.0009
4/28/2017	<0.00046	<0.00036	<0.0009	<0.0009
5/11/2018	<0.00046	<0.00036	<0.0009	<0.0009
5/21/2019	<0.00046	<0.00036	<0.0009	<0.0009

Notes:
Results are provided in parts per million (ppm)
1,2 DCE value includes total cis-1,2 DCE and trans 1,2 DCE. If "<" value, the listed value is the higher of the two method detection limits.

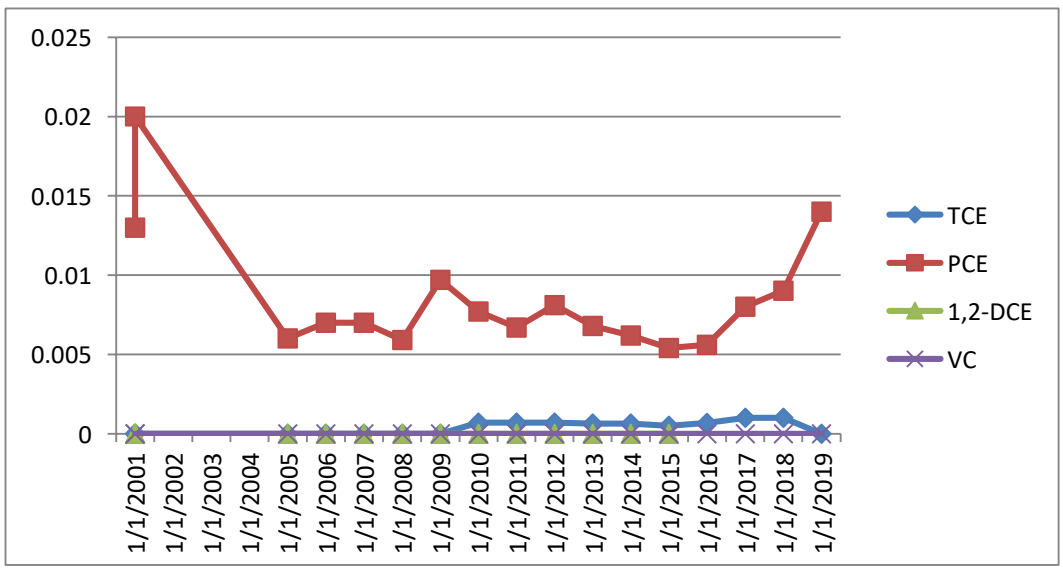


MW-15 Groundwater Data
Delphi Harrison Thermal Systems Site
GM Components Holdings, LLC
Lockport, New York

Date	TCE	PCE	1,2-DCE	VC
8/8/2001	<0.002	0.013	<0.002	<0.002
10/30/2001	<0.002	0.02	<0.002	<0.002
1/12/2005	<0.002	0.006	<0.002	<0.002
10/24/2006	<0.002	0.007	<0.002	<0.002
11/28/2007	<0.002	0.007	<0.002	<0.002
11/4/2008	<0.002	0.0059	<0.002	<0.002
7/16/2009	<0.005	0.0097	<0.005	<0.005
4/28/2010	0.0007	0.0077	<0.0008	<0.0009
4/21/2011	0.0007	0.0067	<0.0008	<0.0009
4/18/2012	0.0007	0.0081	<0.0008	<0.0009
5/1/2013	0.00064	0.0068	<0.00081	<0.0009
5/19/2014	0.00064	0.0062	<0.00081	<0.0009
5/6/2015	0.0005	0.0054	<0.00081	<0.0009
5/5/2016	0.00068	0.0056	<0.0009	<0.0009
4/27/2017	0.001	0.008	0.003	<0.0009
5/9/2018	0.001	0.009	0.002	<0.0009
5/16/2019	< 0.0026	0.014	0.0038	<0.0009

Notes:
Results are provided in parts per million (ppm)
1,2 DCE value includes total cis-1,2 DCE and trans 1,2 DCE. If "<" value, the listed value is the higher of the two method detection limits.

Duplicate samples were collected from this location on 10/30/01. The higher of the two concentrations were recorded in this graph.



APPENDIX C

RESULTS EPA CVOC MONITORED NATURAL ATTENUATION RANKING SYSTEM

EPA cVOC MONITORED NATURAL ATTENUATION RANKING SYSTEM

2019 Strength of Evidence Scorecard
Delphi Harrison Thermal Systems Site
GM Component Holdings, LLC
Lockport, New York

Analysis	Concentration in Most Contaminated Zone	Value	EXAMPLE Lab or Field Analysis Value (mg/L)	EXAMPLE Score	MW-4	MW-7	MW-10	MW-11	MW-12	MW-13	MW-14	MW-15
DO	<0.5 mg/L	3	3.5		3	0	3	3	3	0	3	3
DO	>5 mg/l	-3										
Nitrate	<1 mg/L	2	ND	2	2	2	2	2	2	0	2	2
Iron II	>1 mg/l	2	0.2		0	0	0	0	2	0	0	0
Sulfate	<20 mg/L	2	243		0	0	0	0	0	0	0	0
Sulfide	>1 mg/L	3	0.6		NT	NT	NT	NT	NT	NT	NT	NT
Methane	<0.5 mg/L	0	0.26	0	3	0	0	0	0	0	0	0
Methane	>0.5 mg/L	3										
ORP	<50 mV	1	-98.5	1	0	0	0	0	1	0	0	0
ORP	<-100 mV	2										
pH	5< pH <9	0	6.8	0	0	0	0	0	0	0	0	0
pH	5> pH >10	-2										
TOC	>20 mg/L	2	1.5		0	0	0	0	0	0	0	0
Temp	> 20^{o}C	1	20.4	1	0	0	0	0	0	0	0	0
Carbon Dioxide	>2 times background (4.2)	1	6.8		1	1	NT	1	1	1	1	1
Alkalinity	>2 times background (200)	1	372		0	0	0	0	0	0	0	0
Chloride	>2 times background (1440)	2	338		2	0	2	0	2	0	2	0
Hydrogen	>1 nM	3	NT		3	NT	3	3	3	3	3	3
Hydrogen	<1nM	0	NT									
Volatile Fatty Acids	>0.1 mg/L	2	ND		NT	NT	NT	NT	NT	NT	NT	NT
BTEX	>0.1 mg/L	2	ND		NT	NT	NT	NT	NT	NT	NT	NT
PCE		0	ND		0	0	0	0	0	0	0	0
TCE	If Daughter Product	2	190		0	0	0	0	0	0	0	0
DCE	If Daughter Product	2	10,034	2	2	2	2	0	2	0	0	2
VC	If Daughter Product	2	380.00	2	2	2	2	0	2	0	0	0
1,1,1-TCA		0	ND		NT	NT	NT	NT	NT	NT	NT	NT
DCA	If Daughter Product	2	ND		NT	NT	NT	NT	NT	NT	NT	NT
Carbon Tetrachloride		0	ND		NT	NT	NT	NT	NT	NT	NT	NT
Chloroethane	If Daughter Product	2	ND		NT	NT	NT	NT	NT	NT	NT	NT
Ethene/Ethane	>0.01 mg/L or	2	0.0097		3	3	0	0	0	0	0	0
	>0.1 mg/L	3										
Chloroform	If Daughter Product	2	ND		NT	NT	NT	NT	NT	NT	NT	NT
Dichloromethane	If Daughter Product	2	ND		NT	NT	NT	NT	NT	NT	NT	NT
				8	**21**	**10**	**14**	**9**	**18**	**4**	**11**	**11**

Scoring Interpretation	
0 to 5	Inadequate evidence for anaerobic biodegradation* of chlorinated organics
6 to 14	Limited evidence for anaerobic biodegradation* of chlorinated organics
15 to 20	Adequate evidence for anaerobic biodegradation* of chlorinated organics
>20	Strong evidence for anaerobic biodegradation* of chlorinated organics
*reductive dechlorination	

Values Taken from EPA Document **EPA/600/R-98/128,** *Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Ground Water* , 1998, Table 2.3 and Table 2.4

Notes:
1. ND=not detected
2. NT=not tested

APPENDIX D

ANALYTICAL LABORATORY REPORTS

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Tel: (716)691-2600

Laboratory Job ID: 480-153637-1
Laboratory Sample Delivery Group: DHTSS
Client Project/Site: 058507, GM-Lockport Groundwater Sampling

For:
GHD Services Inc.
2055 Niagara Falls Blvd., Suite 3
Niagara Falls, New York 14304

Attn: Kathleen Willy

Authorized for release by:
6/17/2019 12:03:23 PM
Rebecca Jones, Project Management Assistant I
rebecca.jones@testamericainc.com

Designee for

Melissa Deyo, Project Manager I
(716)504-9874
melissa.deyo@testamericainc.com

Table of Contents

Definitions/Glossary

Client: GHD Services Inc.
Project/Site: 058507, GM-Lockport Groundwater Sampling

Job ID: 480-153637-1
SDG: DHTSS

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

GC VOA

Qualifier	Qualifier Description
*	LCS or LCSD is outside acceptance limits.
E	Result exceeded calibration range.
H	Sample was prepped or analyzed beyond the specified holding time
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Metals

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
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
^	ICV,CCV,ICB,CCB, ISA, ISB, CRI, CRA, DLCK or MRL standard: Instrument related QC is outside acceptance limits.
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
B	Compound was found in the blank and sample.
F1	MS and/or MSD Recovery is outside acceptance limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	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)

Job ID: 480-153637-1

Laboratory: Eurofins TestAmerica, Buffalo

Narrative

Job Narrative
480-153637-1

Receipt
The samples were received on 5/16/2019 4:25 PM, 5/17/2019 5:32 PM and 5/21/2019 4:15 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 1.5º C, 2.4º C and 2.6º C.

Receipt Exceptions

Method(s) RSK-175: The vials for the following sample was received empty: MW-10-2019 (480-153637-2).

GC/MS VOA
Method(s) 8260C: The following volatiles sample was diluted due to foaming at the time of purging during the original sample analysis: MW-12-2019 (480-153682-4). Elevated reporting limits (RLs) are provided.

Method(s) 8260C: The continuing calibration verification (CCV) associated with batch 480-474552 recovered above the upper control limit for Tetrachloroethene. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following sample is impacted: MW-10-2019 (480-153637-2).

Method(s) 8260C: The following sample was diluted to bring the concentration of target analytes within the calibration range: MW-10-2019 (480-153637-2). Elevated reporting limits (RLs) are provided.

Method(s) 8260C: The following sample was diluted to bring the concentration of target analytes within the calibration range: MW-7-2019 (480-153682-1). Elevated reporting limits (RLs) are provided.

Method(s) 8260C: The following sample had carry over from previous samples within this job: TRIP BLANK (480-153637-4). There was not enough volume to rerun the sample.

Method(s) 8260C: The following sample was diluted to bring the concentration of target analytes within the calibration range: MW-4-2019 (480-153637-1). 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.

HPLC/IC
Method(s) VFA-IC: The following samples were diluted due to the nature of the sample matrix: MW-4-2019 (480-153637-1), MW-10-2019 (480-153637-2) and MW-15-2019 (480-153637-3). Elevated reporting limits (RLs) are provided.

Method(s) VFA-IC: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for analytical batch 480-474105 were outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method(s) 300.0: The following samples were diluted to bring the concentration of target analytes within the calibration range: MW-4-2019 (480-153637-1), MW-10-2019 (480-153637-2) and MW-15-2019 (480-153637-3). Elevated reporting limits (RLs) are provided.

Method(s) 300.0: The following samples were diluted to bring the concentration of target analytes within the calibration range: MW-7-2019 (480-153682-1), MW-11-2019 (480-153682-2), MW-13-2019 (480-153682-3) and MW-12-2019 (480-153682-4). Elevated reporting limits (RLs) are provided.

Method(s) 300.0: The following sample was diluted to bring the concentration of target analytes within the calibration range: MW-14-2019 (480-153840-1). Elevated reporting limits (RLs) are provided.

Method(s) VFA-IC: The following samples were diluted due to the nature of the sample matrix: MW-7-2019 (480-153682-1), MW-11-2019 (480-153682-2), MW-13-2019 (480-153682-3) and MW-12-2019 (480-153682-4). Elevated reporting limits (RLs) are provided.

Method(s) VFA-IC: The following sample was diluted due to the nature of the sample matrix: MW-14-2019 (480-153840-1). Elevated

Job ID: 480-153637-1 (Continued)

Laboratory: Eurofins TestAmerica, Buffalo (Continued)

reporting limits (RLs) are provided.

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

GC VOA

Method(s) RSK-175: The laboratory control sample (LCS) and / or laboratory control sample duplicate (LCSD) for analytical batch 480-475110 recovered outside control limits for the following analytes: Ethane, Ethene and Methane. These analytes were biased high in the LCS and were not detected in the associated samples; therefore, the data have been reported: MW-15-2019 (480-153637-3).

Method(s) RSK-175: The following sample was diluted to bring the concentration of target analytes within the calibration range: MW-4-2019 (480-153637-1). Elevated reporting limits (RLs) are provided.

Method(s) RSK-175: The following sample was diluted to bring the concentration of target analytes within the calibration range: MW-7-2019 (480-153682-1). Elevated reporting limits (RLs) are provided.

Method(s) RSK-175: Reanalysis of the following sample was performed outside of the analytical holding time due to due to the initial results yielding outside the working calibration curve range : MW-7-2019 (480-153682-1).

Method(s) RSK-175_CO2: Due to a login error,the following samples were received with insufficient time remaining to perform the analysis within hol time: MW-7-2019 (480-153682-1), MW-11-2019 (480-153682-2), MW-13-2019 (480-153682-3) and MW-12-2019 (480-153682-4).

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

Metals

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

General Chemistry

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

Detection Summary

Client: GHD Services Inc.
Project/Site: 058507, GM-Lockport Groundwater Sampling

Job ID: 480-153637-1
SDG: DHTSS

Client Sample ID: MW-4-2019 — Lab Sample ID: 480-153637-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Tetrachloroethene	5.0		1.0	0.36	ug/L	1		8260C	Total/NA
trans-1,2-Dichloroethene	84		1.0	0.90	ug/L	1		8260C	Total/NA
cis-1,2-Dichloroethene - DL	27000		800	650	ug/L	800		8260C	Total/NA
Trichloroethene - DL	40000		800	370	ug/L	800		8260C	Total/NA
Vinyl chloride - DL	1900		800	720	ug/L	800		8260C	Total/NA
Hydrogen	1.8		1.0		nm	1		AM20GAX	Total/NA
Carbon dioxide	43000		5000	5000	ug/L	1		RSK-175	Total/NA
Ethane	53	J	170	33	ug/L	22		RSK-175	Total/NA
Ethene	330		150	33	ug/L	22		RSK-175	Total/NA
Methane	1100		88	22	ug/L	22		RSK-175	Total/NA
Iron	0.88		0.050	0.019	mg/L	1		6010C	Total/NA
Magnesium	98.0		0.20	0.043	mg/L	1		6010C	Total/NA
Manganese	0.60		0.0030	0.00040	mg/L	1		6010C	Total/NA
Potassium	28.2		0.50	0.10	mg/L	1		6010C	Total/NA
Sodium	1470	B	10.0	3.2	mg/L	10		6010C	Total/NA
Chloride	2840		25.0	14.1	mg/L	50		300.0	Total/NA
Sulfate	238		100	17.5	mg/L	50		300.0	Total/NA
Ammonia	1.8		0.020	0.0090	mg/L	1		350.1	Total/NA
Total Organic Carbon	1.9		1.0	0.43	mg/L	1		9060A	Total/NA
Total Alkalinity	252	B	5.0	0.79	mg/L	1		SM 2320B	Total/NA

Client Sample ID: MW-10-2019 — Lab Sample ID: 480-153637-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	120		2.0	1.6	ug/L	2		8260C	Total/NA
Trichloroethene	38		2.0	0.92	ug/L	2		8260C	Total/NA
Vinyl chloride	6.6		2.0	1.8	ug/L	2		8260C	Total/NA
Hydrogen	1.5		1.0		nm	1		AM20GAX	Total/NA
Methane	10		4.0	1.0	ug/L	1		RSK-175	Total/NA
Iron	0.11		0.050	0.019	mg/L	1		6010C	Total/NA
Magnesium	57.5		0.20	0.043	mg/L	1		6010C	Total/NA
Manganese	1.0		0.0030	0.00040	mg/L	1		6010C	Total/NA
Potassium	6.0		0.50	0.10	mg/L	1		6010C	Total/NA
Sodium	1740	B	10.0	3.2	mg/L	10		6010C	Total/NA
Chloride	3450		25.0	14.1	mg/L	50		300.0	Total/NA
Sulfate	205		100	17.5	mg/L	50		300.0	Total/NA
Nitrate	0.75		0.050	0.020	mg/L	1		353.2	Total/NA
Total Organic Carbon	3.1		1.0	0.43	mg/L	1		9060A	Total/NA
Total Alkalinity	302	B	5.0	0.79	mg/L	1		SM 2320B	Total/NA

Client Sample ID: MW-15-2019 — Lab Sample ID: 480-153637-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	3.8		1.0	0.81	ug/L	1		8260C	Total/NA
Tetrachloroethene	14		1.0	0.36	ug/L	1		8260C	Total/NA
Trichloroethene	2.6		1.0	0.46	ug/L	1		8260C	Total/NA
Hydrogen	1.1		1.0		nm	1		AM20GAX	Total/NA
Carbon dioxide	69000		5000	5000	ug/L	1		RSK-175	Total/NA
Magnesium	44.6		0.20	0.043	mg/L	1		6010C	Total/NA
Manganese	0.46		0.0030	0.00040	mg/L	1		6010C	Total/NA
Potassium	4.4		0.50	0.10	mg/L	1		6010C	Total/NA
Sodium	326		1.0	0.32	mg/L	1		6010C	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-15-2019 (Continued) — Lab Sample ID: 480-153637-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	618		10.0	5.6	mg/L	20		300.0	Total/NA
Sulfate	31.2	J	40.0	7.0	mg/L	20		300.0	Total/NA
Nitrate	0.65		0.050	0.020	mg/L	1		353.2	Total/NA
Total Organic Carbon	2.1		1.0	0.43	mg/L	1		9060A	Total/NA
Total Alkalinity	371	B	5.0	0.79	mg/L	1		SM 2320B	Total/NA
Formic-acid	1.9	J	5.0	1.3	mg/L	5		VFA-IC	Total/NA

Client Sample ID: TRIP BLANK — Lab Sample ID: 480-153637-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	1.7		1.0	0.46	ug/L	1		8260C	Total/NA

Client Sample ID: MW-7-2019 — Lab Sample ID: 480-153682-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	51000		20000	16000	ug/L	20000		8260C	Total/NA
Trichloroethene	700000		20000	9200	ug/L	20000		8260C	Total/NA
Carbon dioxide	18000	H	5000	5000	ug/L	1		RSK-175	Total/NA
Ethane	180		7.5	1.5	ug/L	1		RSK-175	Total/NA
Ethene	970	E	7.0	1.5	ug/L	1		RSK-175	Total/NA
Methane	130		4.0	1.0	ug/L	1		RSK-175	Total/NA
Ethene - DL	540	H	150	33	ug/L	22		RSK-175	Total/NA
Iron	0.042	J	0.050	0.019	mg/L	1		6010C	Total/NA
Magnesium	56.3		0.20	0.043	mg/L	1		6010C	Total/NA
Manganese	0.018		0.0030	0.00040	mg/L	1		6010C	Total/NA
Potassium	11.8		0.50	0.10	mg/L	1		6010C	Total/NA
Sodium	220	B	1.0	0.32	mg/L	1		6010C	Total/NA
Chloride	497		5.0	2.8	mg/L	10		300.0	Total/NA
Sulfate	151		20.0	3.5	mg/L	10		300.0	Total/NA
Ammonia	0.67		0.020	0.0090	mg/L	1		350.1	Total/NA
Total Organic Carbon	7.3		1.0	0.43	mg/L	1		9060A	Total/NA
Total Alkalinity	226		5.0	0.79	mg/L	1		SM 2320B	Total/NA
Acetic acid	7.2	J	10.0	2.9	mg/L	10		VFA-IC	Total/NA

Client Sample ID: MW-11-2019 — Lab Sample ID: 480-153682-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	0.49	J	1.0	0.46	ug/L	1		8260C	Total/NA
Hydrogen	1.3		1.0		nm	1		AM20GAX	Total/NA
Carbon dioxide	16000	H	5000	5000	ug/L	1		RSK-175	Total/NA
Methane	4.2		4.0	1.0	ug/L	1		RSK-175	Total/NA
Iron	0.26		0.050	0.019	mg/L	1		6010C	Total/NA
Magnesium	33.9		0.20	0.043	mg/L	1		6010C	Total/NA
Manganese	0.027		0.0030	0.00040	mg/L	1		6010C	Total/NA
Potassium	8.0		0.50	0.10	mg/L	1		6010C	Total/NA
Sodium	126	B	1.0	0.32	mg/L	1		6010C	Total/NA
Chloride	195		2.5	1.4	mg/L	5		300.0	Total/NA
Sulfate	116		10.0	1.7	mg/L	5		300.0	Total/NA
Nitrate	0.78		0.050	0.020	mg/L	1		353.2	Total/NA
Nitrite	0.020	J	0.050	0.020	mg/L	1		353.2	Total/NA
Total Organic Carbon	1.3		1.0	0.43	mg/L	1		9060A	Total/NA
Total Alkalinity	244		5.0	0.79	mg/L	1		SM 2320B	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: GHD Services Inc.
Project/Site: 058507, GM-Lockport Groundwater Sampling

Job ID: 480-153637-1
SDG: DHTSS

Client Sample ID: MW-13-2019 — Lab Sample ID: 480-153682-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	0.47	J	1.0	0.46	ug/L	1		8260C	Total/NA
Hydrogen	1.4		1.0		nm	1		AM20GAX	Total/NA
Carbon dioxide	37000	H	5000	5000	ug/L	1		RSK-175	Total/NA
Iron	0.31		0.050	0.019	mg/L	1		6010C	Total/NA
Magnesium	53.0		0.20	0.043	mg/L	1		6010C	Total/NA
Manganese	0.16		0.0030	0.00040	mg/L	1		6010C	Total/NA
Potassium	13.1		0.50	0.10	mg/L	1		6010C	Total/NA
Sodium	992		2.0	0.65	mg/L	2		6010C	Total/NA
Chloride	1830		10.0	5.6	mg/L	20		300.0	Total/NA
Sulfate	113		40.0	7.0	mg/L	20		300.0	Total/NA
Nitrate	3.9		0.050	0.020	mg/L	1		353.2	Total/NA
Total Organic Carbon	2.3	B ^	1.0	0.43	mg/L	1		9060A	Total/NA
Total Organic Carbon	1.5		1.0	0.43	mg/L	1		9060A	Total/NA
Total Alkalinity	318		5.0	0.79	mg/L	1		SM 2320B	Total/NA

Client Sample ID: MW-12-2019 — Lab Sample ID: 480-153682-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	29		2.0	1.6	ug/L	2		8260C	Total/NA
Vinyl chloride	18		2.0	1.8	ug/L	2		8260C	Total/NA
Hydrogen	1.1		1.0		nm	1		AM20GAX	Total/NA
Carbon dioxide	57000	H	5000	5000	ug/L	1		RSK-175	Total/NA
Ethene	1.8	J	7.0	1.5	ug/L	1		RSK-175	Total/NA
Methane	94		4.0	1.0	ug/L	1		RSK-175	Total/NA
Iron	4.2		0.050	0.019	mg/L	1		6010C	Total/NA
Magnesium	60.4		0.20	0.043	mg/L	1		6010C	Total/NA
Manganese	6.0		0.0030	0.00040	mg/L	1		6010C	Total/NA
Potassium	4.3		1.0	0.20	mg/L	2		6010C	Total/NA
Sodium	1590		2.0	0.65	mg/L	2		6010C	Total/NA
Chloride	2770		25.0	14.1	mg/L	50		300.0	Total/NA
Ammonia	1.3		0.020	0.0090	mg/L	1		350.1	Total/NA
Nitrate	0.032	J	0.050	0.020	mg/L	1		353.2	Total/NA
Total Organic Carbon	2.8		1.0	0.43	mg/L	1		9060A	Total/NA
Total Alkalinity	259		5.0	0.79	mg/L	1		SM 2320B	Total/NA

Client Sample ID: TRIP BLANK — Lab Sample ID: 480-153682-5

No Detections.

Client Sample ID: MW-14-2019 — Lab Sample ID: 480-153840-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Hydrogen	2.1		1.0		nm	1		AM20GAX	Total/NA
Carbon dioxide	38000		5000	5000	ug/L	1		RSK-175	Total/NA
Methane	9.1		4.0	1.0	ug/L	1		RSK-175	Total/NA
Iron	0.074		0.050	0.019	mg/L	1		6010C	Total/NA
Magnesium	57.3		0.20	0.043	mg/L	1		6010C	Total/NA
Manganese	0.43		0.0030	0.00040	mg/L	1		6010C	Total/NA
Potassium	4.8	B	0.50	0.10	mg/L	1		6010C	Total/NA
Sodium	1080		2.0	0.65	mg/L	2		6010C	Total/NA
Chloride	1960		10.0	5.6	mg/L	20		300.0	Total/NA
Sulfate	73.5		40.0	7.0	mg/L	20		300.0	Total/NA
Ammonia	0.021		0.020	0.0090	mg/L	1		350.1	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-14-2019 (Continued)

Lab Sample ID: 480-153840-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Nitrate	0.031	J	0.050	0.020	mg/L	1		353.2	Total/NA
Total Organic Carbon	1.3		1.0	0.43	mg/L	1		9060A	Total/NA
Total Alkalinity	351		5.0	0.79	mg/L	1		SM 2320B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-4-2019

Date Collected: 05/16/19 12:00
Date Received: 05/16/19 16:25

Lab Sample ID: 480-153637-1

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	5.0		1.0	0.36	ug/L			05/24/19 14:37	1
trans-1,2-Dichloroethene	84		1.0	0.90	ug/L			05/24/19 14:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*83*		*77 - 120*		*05/24/19 14:37*	*1*
4-Bromofluorobenzene (Surr)	*97*		*73 - 120*		*05/24/19 14:37*	*1*
Toluene-d8 (Surr)	*105*		*80 - 120*		*05/24/19 14:37*	*1*
Dibromofluoromethane (Surr)	*94*		*75 - 123*		*05/24/19 14:37*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	27000		800	650	ug/L			05/28/19 17:43	800
Trichloroethene	40000		800	370	ug/L			05/28/19 17:43	800
Vinyl chloride	1900		800	720	ug/L			05/28/19 17:43	800

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*77 - 120*		*05/28/19 17:43*	*800*
4-Bromofluorobenzene (Surr)	*98*		*73 - 120*		*05/28/19 17:43*	*800*
Toluene-d8 (Surr)	*99*		*80 - 120*		*05/28/19 17:43*	*800*
Dibromofluoromethane (Surr)	*97*		*75 - 123*		*05/28/19 17:43*	*800*

Method: AM20GAX - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hydrogen	1.8		1.0		nm			05/22/19 12:29	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethane	53	J	170	33	ug/L			05/30/19 20:13	22
Ethene	330		150	33	ug/L			05/30/19 20:13	22
Methane	1100		88	22	ug/L			05/30/19 20:13	22

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	43000		5000	5000	ug/L			05/18/19 18:57	1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	0.88		0.050	0.019	mg/L		05/20/19 13:23	05/24/19 17:34	1
Magnesium	98.0		0.20	0.043	mg/L		05/20/19 13:23	05/24/19 17:34	1
Manganese	0.60		0.0030	0.00040	mg/L		05/20/19 13:23	05/24/19 17:34	1
Potassium	28.2		0.50	0.10	mg/L		05/20/19 13:23	05/24/19 17:34	1
Sodium	1470	B	10.0	3.2	mg/L		05/20/19 13:23	06/04/19 14:16	10

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	2840		25.0	14.1	mg/L			06/01/19 00:57	50
Sulfate	238		100	17.5	mg/L			06/01/19 00:57	50
Ammonia	1.8		0.020	0.0090	mg/L			06/03/19 12:29	1
Nitrate	ND		0.050	0.020	mg/L			05/17/19 20:49	1
Nitrite	ND		0.050	0.020	mg/L			05/17/19 20:49	1
Total Organic Carbon	1.9		1.0	0.43	mg/L			06/07/19 20:01	1
Total Alkalinity	252	B	5.0	0.79	mg/L			05/21/19 20:26	1
Sulfide	ND		1.0	0.67	mg/L			05/20/19 13:40	1

Client Sample ID: MW-4-2019

Lab Sample ID: 480-153637-1

Date Collected: 05/16/19 12:00
Matrix: Water
Date Received: 05/16/19 16:25

General Chemistry (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetic acid	ND		5.0	1.5	mg/L			05/22/19 20:17	5
Formic-acid	ND		5.0	1.3	mg/L			05/22/19 20:17	5
Lactic acid	ND		5.0	1.6	mg/L			05/22/19 20:17	5
n-Butyric Acid	ND		5.0	1.3	mg/L			05/22/19 20:17	5
Propionic acid	ND		5.0	1.8	mg/L			05/22/19 20:17	5
Pyruvic Acid	ND		7.5	1.9	mg/L			05/22/19 20:17	5

Client Sample ID: MW-10-2019

Lab Sample ID: 480-153637-2

Date Collected: 05/16/19 14:00
Matrix: Water
Date Received: 05/16/19 16:25

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	**120**		2.0	1.6	ug/L			05/24/19 12:12	2
Tetrachloroethene	ND		2.0	0.72	ug/L			05/24/19 12:12	2
trans-1,2-Dichloroethene	ND		2.0	1.8	ug/L			05/24/19 12:12	2
Trichloroethene	**38**		2.0	0.92	ug/L			05/24/19 12:12	2
Vinyl chloride	**6.6**		2.0	1.8	ug/L			05/24/19 12:12	2

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*77 - 120*		*05/24/19 12:12*	*2*
4-Bromofluorobenzene (Surr)	*107*		*73 - 120*		*05/24/19 12:12*	*2*
Toluene-d8 (Surr)	*106*		*80 - 120*		*05/24/19 12:12*	*2*
Dibromofluoromethane (Surr)	*90*		*75 - 123*		*05/24/19 12:12*	*2*

Method: AM20GAX - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hydrogen	**1.5**		1.0		nm			05/22/19 12:42	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethane	ND		7.5	1.5	ug/L			05/30/19 20:32	1
Ethene	ND		7.0	1.5	ug/L			05/30/19 20:32	1
Methane	**10**		4.0	1.0	ug/L			05/30/19 20:32	1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**0.11**		0.050	0.019	mg/L		05/20/19 13:23	05/24/19 17:38	1
Magnesium	**57.5**		0.20	0.043	mg/L		05/20/19 13:23	05/24/19 17:38	1
Manganese	**1.0**		0.0030	0.00040	mg/L		05/20/19 13:23	05/24/19 17:38	1
Potassium	**6.0**		0.50	0.10	mg/L		05/20/19 13:23	05/24/19 17:38	1
Sodium	**1740**	**B**	10.0	3.2	mg/L		05/20/19 13:23	06/04/19 14:20	10

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**3450**		25.0	14.1	mg/L			06/01/19 01:06	50
Sulfate	**205**		100	17.5	mg/L			06/01/19 01:06	50
Ammonia	ND		0.020	0.0090	mg/L			06/03/19 11:05	1
Nitrate	**0.75**		0.050	0.020	mg/L			05/18/19 01:24	1
Nitrite	ND		0.050	0.020	mg/L			05/18/19 01:24	1
Total Organic Carbon	**3.1**		1.0	0.43	mg/L			06/07/19 20:57	1

Client Sample ID: MW-10-2019

Date Collected: 05/16/19 14:00
Date Received: 05/16/19 16:25

Lab Sample ID: 480-153637-2

Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Alkalinity	**302**	**B**	5.0	0.79	mg/L			05/21/19 20:31	1
Sulfide	ND		1.0	0.67	mg/L			05/20/19 13:40	1
Acetic acid	ND		5.0	1.5	mg/L			05/22/19 20:46	5
Formic-acid	ND		5.0	1.3	mg/L			05/22/19 20:46	5
Lactic acid	ND		5.0	1.6	mg/L			05/22/19 20:46	5
n-Butyric Acid	ND		5.0	1.3	mg/L			05/22/19 20:46	5
Propionic acid	ND		5.0	1.8	mg/L			05/22/19 20:46	5
Pyruvic Acid	ND	F1	7.5	1.9	mg/L			05/22/19 20:46	5

Client Sample ID: MW-15-2019

Date Collected: 05/16/19 15:30
Date Received: 05/16/19 16:25

Lab Sample ID: 480-153637-3

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	**3.8**		1.0	0.81	ug/L			05/26/19 15:07	1
Tetrachloroethene	**14**		1.0	0.36	ug/L			05/26/19 15:07	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			05/26/19 15:07	1
Trichloroethene	**2.6**		1.0	0.46	ug/L			05/26/19 15:07	1
Vinyl chloride	ND		1.0	0.90	ug/L			05/26/19 15:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*94*		*77 - 120*		*05/26/19 15:07*	*1*
4-Bromofluorobenzene (Surr)	*93*		*73 - 120*		*05/26/19 15:07*	*1*
Toluene-d8 (Surr)	*95*		*80 - 120*		*05/26/19 15:07*	*1*
Dibromofluoromethane (Surr)	*105*		*75 - 123*		*05/26/19 15:07*	*1*

Method: AM20GAX - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hydrogen	**1.1**		1.0		nm			05/22/19 12:56	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethane	ND	*	7.5	1.5	ug/L			05/29/19 23:30	1
Ethene	ND	*	7.0	1.5	ug/L			05/29/19 23:30	1
Methane	ND	*	4.0	1.0	ug/L			05/29/19 23:30	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	**69000**		5000	5000	ug/L			05/18/19 19:06	1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	ND		0.050	0.019	mg/L		05/20/19 13:23	05/24/19 17:42	1
Magnesium	**44.6**		0.20	0.043	mg/L		05/20/19 13:23	05/24/19 17:42	1
Manganese	**0.46**		0.0030	0.00040	mg/L		05/20/19 13:23	05/24/19 17:42	1
Potassium	**4.4**		0.50	0.10	mg/L		05/20/19 13:23	05/24/19 17:42	1
Sodium	**326**		1.0	0.32	mg/L		05/20/19 13:23	05/24/19 17:42	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**618**		10.0	5.6	mg/L			06/01/19 01:14	20
Sulfate	**31.2**	**J**	40.0	7.0	mg/L			06/01/19 01:14	20

Client Sample ID: MW-15-2019

Date Collected: 05/16/19 15:30
Date Received: 05/16/19 16:25

Lab Sample ID: 480-153637-3
Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia	ND		0.020	0.0090	mg/L			06/03/19 11:07	1
Nitrate	**0.65**		0.050	0.020	mg/L			05/18/19 01:25	1
Nitrite	ND		0.050	0.020	mg/L			05/18/19 01:25	1
Total Organic Carbon	**2.1**		1.0	0.43	mg/L			06/07/19 21:53	1
Total Alkalinity	**371**	**B**	5.0	0.79	mg/L			05/21/19 20:36	1
Sulfide	ND		1.0	0.67	mg/L			05/20/19 13:40	1
Acetic acid	ND		5.0	1.5	mg/L			05/22/19 23:41	5
Formic-acid	**1.9**	**J**	5.0	1.3	mg/L			05/22/19 23:41	5
Lactic acid	ND		5.0	1.6	mg/L			05/22/19 23:41	5
n-Butyric Acid	ND		5.0	1.3	mg/L			05/22/19 23:41	5
Propionic acid	ND		5.0	1.8	mg/L			05/22/19 23:41	5
Pyruvic Acid	ND		7.5	1.9	mg/L			05/22/19 23:41	5

Client Sample ID: TRIP BLANK

Date Collected: 05/16/19 00:00
Date Received: 05/16/19 16:25

Lab Sample ID: 480-153637-4
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			05/24/19 15:32	1
Tetrachloroethene	ND		1.0	0.36	ug/L			05/24/19 15:32	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			05/24/19 15:32	1
Trichloroethene	**1.7**		1.0	0.46	ug/L			05/24/19 15:32	1
Vinyl chloride	ND		1.0	0.90	ug/L			05/24/19 15:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*77 - 120*		*05/24/19 15:32*	*1*
4-Bromofluorobenzene (Surr)	*93*		*73 - 120*		*05/24/19 15:32*	*1*
Toluene-d8 (Surr)	*99*		*80 - 120*		*05/24/19 15:32*	*1*
Dibromofluoromethane (Surr)	*97*		*75 - 123*		*05/24/19 15:32*	*1*

Client Sample ID: MW-7-2019

Date Collected: 05/17/19 09:25
Date Received: 05/17/19 17:32

Lab Sample ID: 480-153682-1
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	**51000**		20000	16000	ug/L			05/26/19 14:12	20000
Tetrachloroethene	ND		20000	7200	ug/L			05/26/19 14:12	20000
trans-1,2-Dichloroethene	ND		20000	18000	ug/L			05/26/19 14:12	20000
Trichloroethene	**700000**		20000	9200	ug/L			05/26/19 14:12	20000
Vinyl chloride	ND		20000	18000	ug/L			05/26/19 14:12	20000

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*77 - 120*		*05/26/19 14:12*	*20000*
4-Bromofluorobenzene (Surr)	*102*		*73 - 120*		*05/26/19 14:12*	*20000*
Toluene-d8 (Surr)	*104*		*80 - 120*		*05/26/19 14:12*	*20000*
Dibromofluoromethane (Surr)	*108*		*75 - 123*		*05/26/19 14:12*	*20000*

Client Sample ID: MW-7-2019

Date Collected: 05/17/19 09:25
Date Received: 05/17/19 17:32

Lab Sample ID: 480-153682-1

Matrix: Water

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethane	180		7.5	1.5	ug/L			05/31/19 17:29	1
Ethene	970	E	7.0	1.5	ug/L			05/31/19 17:29	1
Methane	130		4.0	1.0	ug/L			05/31/19 17:29	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	18000	H	5000	5000	ug/L			05/24/19 17:12	1

Method: RSK-175 - Dissolved Gases (GC) - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethene	540	H	150	33	ug/L			06/04/19 18:02	22

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	0.042	J	0.050	0.019	mg/L		05/21/19 08:35	05/31/19 20:28	1
Magnesium	56.3		0.20	0.043	mg/L		05/21/19 08:35	05/31/19 20:28	1
Manganese	0.018		0.0030	0.00040	mg/L		05/21/19 08:35	05/31/19 20:28	1
Potassium	11.8		0.50	0.10	mg/L		05/21/19 08:35	05/31/19 20:28	1
Sodium	220	B	1.0	0.32	mg/L		05/21/19 08:35	05/31/19 20:28	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	497		5.0	2.8	mg/L			06/03/19 20:55	10
Sulfate	151		20.0	3.5	mg/L			06/03/19 20:55	10
Ammonia	0.67		0.020	0.0090	mg/L			06/04/19 10:48	1
Nitrate	ND		0.050	0.020	mg/L			05/18/19 06:43	1
Nitrite	ND		0.050	0.020	mg/L			05/18/19 06:43	1
Total Organic Carbon	7.3		1.0	0.43	mg/L			06/12/19 17:35	1
Total Alkalinity	226		5.0	0.79	mg/L			05/21/19 20:40	1
Sulfide	ND		1.0	0.67	mg/L			05/20/19 13:40	1
Acetic acid	7.2	J	10.0	2.9	mg/L			06/08/19 00:54	10
Formic-acid	ND		10.0	2.6	mg/L			06/08/19 00:54	10
Lactic acid	ND		10.0	3.1	mg/L			06/08/19 00:54	10
n-Butyric Acid	ND		10.0	2.6	mg/L			06/08/19 00:54	10
Propionic acid	ND		10.0	3.5	mg/L			06/08/19 00:54	10
Pyruvic Acid	ND		15.0	3.7	mg/L			06/08/19 00:54	10

Client Sample ID: MW-11-2019

Date Collected: 05/17/19 10:30
Date Received: 05/17/19 17:32

Lab Sample ID: 480-153682-2

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			05/26/19 14:35	1
Tetrachloroethene	ND		1.0	0.36	ug/L			05/26/19 14:35	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			05/26/19 14:35	1
Trichloroethene	0.49	J	1.0	0.46	ug/L			05/26/19 14:35	1
Vinyl chloride	ND		1.0	0.90	ug/L			05/26/19 14:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*77 - 120*		*05/26/19 14:35*	*1*
4-Bromofluorobenzene (Surr)	*100*		*73 - 120*		*05/26/19 14:35*	*1*
Toluene-d8 (Surr)	*102*		*80 - 120*		*05/26/19 14:35*	*1*

Client Sample ID: MW-11-2019

Date Collected: 05/17/19 10:30
Date Received: 05/17/19 17:32

Lab Sample ID: 480-153682-2

Matrix: Water

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

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*100*		*75 - 123*		*05/26/19 14:35*	*1*

Method: AM20GAX - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hydrogen	**1.3**		1.0		nm			05/25/19 13:04	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethane	ND		7.5	1.5	ug/L			05/31/19 17:48	1
Ethene	ND		7.0	1.5	ug/L			05/31/19 17:48	1
Methane	**4.2**		4.0	1.0	ug/L			05/31/19 17:48	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	**16000**	**H**	5000	5000	ug/L			05/24/19 17:20	1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**0.26**		0.050	0.019	mg/L		05/21/19 08:35	05/31/19 20:32	1
Magnesium	**33.9**		0.20	0.043	mg/L		05/21/19 08:35	05/31/19 20:32	1
Manganese	**0.027**		0.0030	0.00040	mg/L		05/21/19 08:35	05/31/19 20:32	1
Potassium	**8.0**		0.50	0.10	mg/L		05/21/19 08:35	05/31/19 20:32	1
Sodium	**126**	**B**	1.0	0.32	mg/L		05/21/19 08:35	05/31/19 20:32	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**195**		2.5	1.4	mg/L			06/03/19 21:03	5
Sulfate	**116**		10.0	1.7	mg/L			06/03/19 21:03	5
Ammonia	ND		0.020	0.0090	mg/L			06/04/19 10:49	1
Nitrate	**0.78**		0.050	0.020	mg/L			05/18/19 09:05	1
Nitrite	**0.020**	**J**	0.050	0.020	mg/L			05/18/19 09:05	1
Total Organic Carbon	**1.3**		1.0	0.43	mg/L			06/12/19 18:08	1
Total Alkalinity	**244**		5.0	0.79	mg/L			05/21/19 20:47	1
Sulfide	ND		1.0	0.67	mg/L			05/20/19 13:40	1
Acetic acid	ND		10.0	2.9	mg/L			06/08/19 01:23	10
Formic-acid	ND		10.0	2.6	mg/L			06/08/19 01:23	10
Lactic acid	ND		10.0	3.1	mg/L			06/08/19 01:23	10
n-Butyric Acid	ND		10.0	2.6	mg/L			06/08/19 01:23	10
Propionic acid	ND		10.0	3.5	mg/L			06/08/19 01:23	10
Pyruvic Acid	ND		15.0	3.7	mg/L			06/08/19 01:23	10

Client Sample ID: MW-13-2019

Date Collected: 05/17/19 11:55
Date Received: 05/17/19 17:32

Lab Sample ID: 480-153682-3

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			05/24/19 19:15	1
Tetrachloroethene	ND		1.0	0.36	ug/L			05/24/19 19:15	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			05/24/19 19:15	1
Trichloroethene	**0.47**	**J**	1.0	0.46	ug/L			05/24/19 19:15	1
Vinyl chloride	ND		1.0	0.90	ug/L			05/24/19 19:15	1

Client Sample ID: MW-13-2019

Lab Sample ID: 480-153682-3

Date Collected: 05/17/19 11:55
Matrix: Water
Date Received: 05/17/19 17:32

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*77 - 120*		*05/24/19 19:15*	*1*
4-Bromofluorobenzene (Surr)	*85*		*73 - 120*		*05/24/19 19:15*	*1*
Toluene-d8 (Surr)	*90*		*80 - 120*		*05/24/19 19:15*	*1*
Dibromofluoromethane (Surr)	*94*		*75 - 123*		*05/24/19 19:15*	*1*

Method: AM20GAX - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hydrogen	**1.4**		1.0		nm			05/25/19 13:16	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethane	ND		7.5	1.5	ug/L			05/31/19 18:07	1
Ethene	ND		7.0	1.5	ug/L			05/31/19 18:07	1
Methane	ND		4.0	1.0	ug/L			05/31/19 18:07	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	**37000**	**H**	5000	5000	ug/L			05/24/19 17:29	1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**0.31**		0.050	0.019	mg/L		05/21/19 08:35	05/31/19 20:36	1
Magnesium	**53.0**		0.20	0.043	mg/L		05/21/19 08:35	05/31/19 20:36	1
Manganese	**0.16**		0.0030	0.00040	mg/L		05/21/19 08:35	05/31/19 20:36	1
Potassium	**13.1**		0.50	0.10	mg/L		05/21/19 08:35	05/31/19 20:36	1
Sodium	**992**		2.0	0.65	mg/L		05/21/19 08:35	06/01/19 21:58	2

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**1830**		10.0	5.6	mg/L			06/03/19 21:11	20
Sulfate	**113**		40.0	7.0	mg/L			06/03/19 21:11	20
Ammonia	ND		0.020	0.0090	mg/L			06/04/19 10:50	1
Nitrate	**3.9**		0.050	0.020	mg/L			05/18/19 09:07	1
Nitrite	ND		0.050	0.020	mg/L			05/18/19 09:07	1
Total Organic Carbon	**2.3**	**B ^**	1.0	0.43	mg/L			06/08/19 20:47	1
Total Organic Carbon	**1.5**		1.0	0.43	mg/L			06/12/19 18:41	1
Total Alkalinity	**318**		5.0	0.79	mg/L			05/21/19 21:06	1
Sulfide	ND		1.0	0.67	mg/L			05/20/19 13:40	1
Acetic acid	ND		10.0	2.9	mg/L			06/08/19 01:52	10
Formic-acid	ND		10.0	2.6	mg/L			06/08/19 01:52	10
Lactic acid	ND		10.0	3.1	mg/L			06/08/19 01:52	10
n-Butyric Acid	ND		10.0	2.6	mg/L			06/08/19 01:52	10
Propionic acid	ND		10.0	3.5	mg/L			06/08/19 01:52	10
Pyruvic Acid	ND		15.0	3.7	mg/L			06/08/19 01:52	10

Client Sample ID: MW-12-2019

Lab Sample ID: 480-153682-4

Date Collected: 05/17/19 15:25
Matrix: Water
Date Received: 05/17/19 17:32

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	**29**		2.0	1.6	ug/L			05/24/19 19:39	2
Tetrachloroethene	ND		2.0	0.72	ug/L			05/24/19 19:39	2

Client Sample ID: MW-12-2019

Date Collected: 05/17/19 15:25
Date Received: 05/17/19 17:32

Lab Sample ID: 480-153682-4

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
trans-1,2-Dichloroethene	ND		2.0	1.8	ug/L			05/24/19 19:39	2
Trichloroethene	ND		2.0	0.92	ug/L			05/24/19 19:39	2
Vinyl chloride	**18**		2.0	1.8	ug/L			05/24/19 19:39	2

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*77 - 120*		*05/24/19 19:39*	*2*
4-Bromofluorobenzene (Surr)	*86*		*73 - 120*		*05/24/19 19:39*	*2*
Toluene-d8 (Surr)	*93*		*80 - 120*		*05/24/19 19:39*	*2*
Dibromofluoromethane (Surr)	*99*		*75 - 123*		*05/24/19 19:39*	*2*

Method: AM20GAX - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hydrogen	**1.1**		1.0		nm			05/25/19 13:29	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethane	ND		7.5	1.5	ug/L			05/31/19 18:26	1
Ethene	**1.8**	**J**	7.0	1.5	ug/L			05/31/19 18:26	1
Methane	**94**		4.0	1.0	ug/L			05/31/19 18:26	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	**57000**	**H**	5000	5000	ug/L			05/24/19 17:38	1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**4.2**		0.050	0.019	mg/L		05/21/19 08:35	05/31/19 20:40	1
Magnesium	**60.4**		0.20	0.043	mg/L		05/21/19 08:35	05/31/19 20:40	1
Manganese	**6.0**		0.0030	0.00040	mg/L		05/21/19 08:35	05/31/19 20:40	1
Potassium	**4.3**		1.0	0.20	mg/L		05/21/19 08:35	06/01/19 22:13	2
Sodium	**1590**		2.0	0.65	mg/L		05/21/19 08:35	06/01/19 22:13	2

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**2770**		25.0	14.1	mg/L			06/03/19 21:19	50
Sulfate	ND		100	17.5	mg/L			06/03/19 21:19	50
Ammonia	**1.3**		0.020	0.0090	mg/L			06/04/19 10:51	1
Nitrate	**0.032**	**J**	0.050	0.020	mg/L			05/18/19 06:47	1
Nitrite	ND		0.050	0.020	mg/L			05/18/19 06:47	1
Total Organic Carbon	**2.8**		1.0	0.43	mg/L			06/12/19 19:14	1
Total Alkalinity	**259**		5.0	0.79	mg/L			05/21/19 21:14	1
Sulfide	ND		1.0	0.67	mg/L			05/20/19 13:40	1
Acetic acid	ND		10.0	2.9	mg/L			06/08/19 02:21	10
Formic-acid	ND		10.0	2.6	mg/L			06/08/19 02:21	10
Lactic acid	ND		10.0	3.1	mg/L			06/08/19 02:21	10
n-Butyric Acid	ND		10.0	2.6	mg/L			06/08/19 02:21	10
Propionic acid	ND		10.0	3.5	mg/L			06/08/19 02:21	10
Pyruvic Acid	ND	F1	15.0	3.7	mg/L			06/08/19 02:21	10

Client Sample ID: TRIP BLANK

Lab Sample ID: 480-153682-5
Matrix: Water
Date Collected: 05/17/19 00:00
Date Received: 05/17/19 17:32

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			05/24/19 20:03	1
Tetrachloroethene	ND		1.0	0.36	ug/L			05/24/19 20:03	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			05/24/19 20:03	1
Trichloroethene	ND		1.0	0.46	ug/L			05/24/19 20:03	1
Vinyl chloride	ND		1.0	0.90	ug/L			05/24/19 20:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*77 - 120*		*05/24/19 20:03*	*1*
4-Bromofluorobenzene (Surr)	*86*		*73 - 120*		*05/24/19 20:03*	*1*
Toluene-d8 (Surr)	*92*		*80 - 120*		*05/24/19 20:03*	*1*
Dibromofluoromethane (Surr)	*98*		*75 - 123*		*05/24/19 20:03*	*1*

Client Sample ID: MW-14-2019

Lab Sample ID: 480-153840-1
Matrix: Water
Date Collected: 05/21/19 11:30
Date Received: 05/21/19 16:15

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			05/30/19 04:14	1
Tetrachloroethene	ND		1.0	0.36	ug/L			05/30/19 04:14	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			05/30/19 04:14	1
Trichloroethene	ND		1.0	0.46	ug/L			05/30/19 04:14	1
Vinyl chloride	ND		1.0	0.90	ug/L			05/30/19 04:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*77 - 120*		*05/30/19 04:14*	*1*
4-Bromofluorobenzene (Surr)	*107*		*73 - 120*		*05/30/19 04:14*	*1*
Toluene-d8 (Surr)	*106*		*80 - 120*		*05/30/19 04:14*	*1*
Dibromofluoromethane (Surr)	*91*		*75 - 123*		*05/30/19 04:14*	*1*

Method: AM20GAX - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hydrogen	**2.1**		1.0		nm			05/25/19 12:51	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethane	ND		7.5	1.5	ug/L			06/02/19 18:48	1
Ethene	ND		7.0	1.5	ug/L			06/02/19 18:48	1
Methane	**9.1**		4.0	1.0	ug/L			06/02/19 18:48	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	**38000**		5000	5000	ug/L			05/23/19 22:08	1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**0.074**		0.050	0.019	mg/L		05/22/19 12:04	05/23/19 17:35	1
Magnesium	**57.3**		0.20	0.043	mg/L		05/22/19 12:04	05/23/19 17:35	1
Manganese	**0.43**		0.0030	0.00040	mg/L		05/22/19 12:04	05/23/19 17:35	1
Potassium	**4.8**	**B**	0.50	0.10	mg/L		05/22/19 12:04	05/23/19 17:35	1
Sodium	**1080**		2.0	0.65	mg/L		05/22/19 12:04	05/24/19 16:27	2

Client: GHD Services Inc.
Project/Site: 058507, GM-Lockport Groundwater Sampling

Job ID: 480-153637-1
SDG: DHTSS

Client Sample ID: MW-14-2019

Date Collected: 05/21/19 11:30
Date Received: 05/21/19 16:15

Lab Sample ID: 480-153840-1

Matrix: Water

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**1960**		10.0	5.6	mg/L			06/04/19 16:07	20
Sulfate	**73.5**		40.0	7.0	mg/L			06/04/19 16:07	20
Ammonia	**0.021**		0.020	0.0090	mg/L			06/10/19 10:06	1
Nitrate	**0.031**	**J**	0.050	0.020	mg/L			05/22/19 21:36	1
Nitrite	ND		0.050	0.020	mg/L			05/22/19 21:36	1
Total Organic Carbon	**1.3**		1.0	0.43	mg/L			06/12/19 20:52	1
Total Alkalinity	**351**		5.0	0.79	mg/L			05/23/19 10:59	1
Sulfide	ND		1.0	0.67	mg/L			05/28/19 12:56	1
Acetic acid	ND		10.0	2.9	mg/L			06/10/19 22:19	10
Formic-acid	ND		10.0	2.6	mg/L			06/10/19 22:19	10
Lactic acid	ND		10.0	3.1	mg/L			06/10/19 22:19	10
n-Butyric Acid	ND		10.0	2.6	mg/L			06/10/19 22:19	10
Propionic acid	ND		10.0	3.5	mg/L			06/10/19 22:19	10
Pyruvic Acid	ND		15.0	3.7	mg/L			06/10/19 22:19	10

Surrogate Summary

Client: GHD Services Inc.
Project/Site: 058507, GM-Lockport Groundwater Sampling

Job ID: 480-153637-1
SDG: DHTSS

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

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
		DCA	BFB	TOL	DBFM
Lab Sample ID	Client Sample ID	(77-120)	(73-120)	(80-120)	(75-123)
480-153637-1	MW-4-2019	83	97	105	94
480-153637-1 - DL	MW-4-2019	88	98	99	97
480-153637-2	MW-10-2019	100	107	106	90
480-153637-3	MW-15-2019	94	93	95	105
480-153637-4	TRIP BLANK	89	93	99	97
480-153682-1	MW-7-2019	103	102	104	108
480-153682-2	MW-11-2019	100	100	102	100
480-153682-3	MW-13-2019	100	85	90	94
480-153682-4	MW-12-2019	102	86	93	99
480-153682-5	TRIP BLANK	104	86	92	98
480-153840-1	MW-14-2019	99	107	106	91
LCS 480-474543/5	Lab Control Sample	84	101	100	93
LCS 480-474552/9	Lab Control Sample	96	110	103	99
LCS 480-474646/5	Lab Control Sample	99	87	97	96
LCS 480-474795/5	Lab Control Sample	103	100	100	104
LCS 480-474797/5	Lab Control Sample	93	102	101	105
LCS 480-474931/6	Lab Control Sample	85	97	100	95
LCS 480-475125/5	Lab Control Sample	94	106	107	94
MB 480-474543/7	Method Blank	85	101	100	92
MB 480-474552/7	Method Blank	98	107	103	95
MB 480-474646/7	Method Blank	95	88	92	97
MB 480-474795/7	Method Blank	101	100	102	107
MB 480-474797/7	Method Blank	92	103	101	105
MB 480-474931/8	Method Blank	91	103	103	99
MB 480-475125/7	Method Blank	96	107	102	93

Surrogate Legend

DCA = 1,2-Dichloroethane-d4 (Surr)
BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DBFM = Dibromofluoromethane (Surr)

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

Lab Sample ID: MB 480-474543/7
Matrix: Water
Analysis Batch: 474543

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			05/24/19 10:54	1
Tetrachloroethene	ND		1.0	0.36	ug/L			05/24/19 10:54	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			05/24/19 10:54	1
Trichloroethene	ND		1.0	0.46	ug/L			05/24/19 10:54	1
Vinyl chloride	ND		1.0	0.90	ug/L			05/24/19 10:54	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*85*		*77 - 120*		*05/24/19 10:54*	*1*
4-Bromofluorobenzene (Surr)	*101*		*73 - 120*		*05/24/19 10:54*	*1*
Toluene-d8 (Surr)	*100*		*80 - 120*		*05/24/19 10:54*	*1*
Dibromofluoromethane (Surr)	*92*		*75 - 123*		*05/24/19 10:54*	*1*

Lab Sample ID: LCS 480-474543/5
Matrix: Water
Analysis Batch: 474543

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,2-Dichloroethene	25.0	27.9		ug/L		111	74 - 124
Tetrachloroethene	25.0	26.6		ug/L		107	74 - 122
trans-1,2-Dichloroethene	25.0	28.5		ug/L		114	73 - 127
Trichloroethene	25.0	28.5		ug/L		114	74 - 123
Vinyl chloride	25.0	24.3		ug/L		97	65 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*84*		*77 - 120*
4-Bromofluorobenzene (Surr)	*101*		*73 - 120*
Toluene-d8 (Surr)	*100*		*80 - 120*
Dibromofluoromethane (Surr)	*93*		*75 - 123*

Lab Sample ID: MB 480-474552/7
Matrix: Water
Analysis Batch: 474552

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			05/24/19 11:31	1
Tetrachloroethene	ND		1.0	0.36	ug/L			05/24/19 11:31	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			05/24/19 11:31	1
Trichloroethene	ND		1.0	0.46	ug/L			05/24/19 11:31	1
Vinyl chloride	ND		1.0	0.90	ug/L			05/24/19 11:31	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*77 - 120*		*05/24/19 11:31*	*1*
4-Bromofluorobenzene (Surr)	*107*		*73 - 120*		*05/24/19 11:31*	*1*
Toluene-d8 (Surr)	*103*		*80 - 120*		*05/24/19 11:31*	*1*
Dibromofluoromethane (Surr)	*95*		*75 - 123*		*05/24/19 11:31*	*1*

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

Lab Sample ID: LCS 480-474552/9
Matrix: Water
Analysis Batch: 474552

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,2-Dichloroethene	25.0	24.6		ug/L		98	74 - 124
Tetrachloroethene	25.0	29.9		ug/L		120	74 - 122
trans-1,2-Dichloroethene	25.0	25.2		ug/L		101	73 - 127
Trichloroethene	25.0	25.8		ug/L		103	74 - 123
Vinyl chloride	25.0	23.9		ug/L		96	65 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*77 - 120*
4-Bromofluorobenzene (Surr)	*110*		*73 - 120*
Toluene-d8 (Surr)	*103*		*80 - 120*
Dibromofluoromethane (Surr)	*99*		*75 - 123*

Lab Sample ID: MB 480-474646/7
Matrix: Water
Analysis Batch: 474646

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			05/24/19 18:51	1
Tetrachloroethene	ND		1.0	0.36	ug/L			05/24/19 18:51	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			05/24/19 18:51	1
Trichloroethene	ND		1.0	0.46	ug/L			05/24/19 18:51	1
Vinyl chloride	ND		1.0	0.90	ug/L			05/24/19 18:51	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*95*		*77 - 120*		*05/24/19 18:51*	*1*
4-Bromofluorobenzene (Surr)	*88*		*73 - 120*		*05/24/19 18:51*	*1*
Toluene-d8 (Surr)	*92*		*80 - 120*		*05/24/19 18:51*	*1*
Dibromofluoromethane (Surr)	*97*		*75 - 123*		*05/24/19 18:51*	*1*

Lab Sample ID: LCS 480-474646/5
Matrix: Water
Analysis Batch: 474646

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,2-Dichloroethene	25.0	22.6		ug/L		90	74 - 124
Tetrachloroethene	25.0	19.7		ug/L		79	74 - 122
trans-1,2-Dichloroethene	25.0	25.3		ug/L		101	73 - 127
Trichloroethene	25.0	23.6		ug/L		94	74 - 123
Vinyl chloride	25.0	22.4		ug/L		90	65 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*99*		*77 - 120*
4-Bromofluorobenzene (Surr)	*87*		*73 - 120*
Toluene-d8 (Surr)	*97*		*80 - 120*
Dibromofluoromethane (Surr)	*96*		*75 - 123*

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

Lab Sample ID: MB 480-474795/7
Matrix: Water
Analysis Batch: 474795

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			05/26/19 13:36	1
Tetrachloroethene	ND		1.0	0.36	ug/L			05/26/19 13:36	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			05/26/19 13:36	1
Trichloroethene	ND		1.0	0.46	ug/L			05/26/19 13:36	1
Vinyl chloride	ND		1.0	0.90	ug/L			05/26/19 13:36	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*77 - 120*		*05/26/19 13:36*	*1*
4-Bromofluorobenzene (Surr)	*100*		*73 - 120*		*05/26/19 13:36*	*1*
Toluene-d8 (Surr)	*102*		*80 - 120*		*05/26/19 13:36*	*1*
Dibromofluoromethane (Surr)	*107*		*75 - 123*		*05/26/19 13:36*	*1*

Lab Sample ID: LCS 480-474795/5
Matrix: Water
Analysis Batch: 474795

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,2-Dichloroethene	25.0	25.3		ug/L		101	74 - 124
Tetrachloroethene	25.0	26.0		ug/L		104	74 - 122
trans-1,2-Dichloroethene	25.0	26.0		ug/L		104	73 - 127
Trichloroethene	25.0	26.6		ug/L		106	74 - 123
Vinyl chloride	25.0	24.9		ug/L		99	65 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*103*		*77 - 120*
4-Bromofluorobenzene (Surr)	*100*		*73 - 120*
Toluene-d8 (Surr)	*100*		*80 - 120*
Dibromofluoromethane (Surr)	*104*		*75 - 123*

Lab Sample ID: MB 480-474797/7
Matrix: Water
Analysis Batch: 474797

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			05/26/19 14:06	1
Tetrachloroethene	ND		1.0	0.36	ug/L			05/26/19 14:06	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			05/26/19 14:06	1
Trichloroethene	ND		1.0	0.46	ug/L			05/26/19 14:06	1
Vinyl chloride	ND		1.0	0.90	ug/L			05/26/19 14:06	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*92*		*77 - 120*		*05/26/19 14:06*	*1*
4-Bromofluorobenzene (Surr)	*103*		*73 - 120*		*05/26/19 14:06*	*1*
Toluene-d8 (Surr)	*101*		*80 - 120*		*05/26/19 14:06*	*1*
Dibromofluoromethane (Surr)	*105*		*75 - 123*		*05/26/19 14:06*	*1*

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

Lab Sample ID: LCS 480-474797/5
Matrix: Water
Analysis Batch: 474797

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,2-Dichloroethene	25.0	30.2		ug/L		121	74 - 124
Tetrachloroethene	25.0	26.0		ug/L		104	74 - 122
trans-1,2-Dichloroethene	25.0	30.1		ug/L		120	73 - 127
Trichloroethene	25.0	30.4		ug/L		121	74 - 123
Vinyl chloride	25.0	25.2		ug/L		101	65 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*93*		*77 - 120*
4-Bromofluorobenzene (Surr)	*102*		*73 - 120*
Toluene-d8 (Surr)	*101*		*80 - 120*
Dibromofluoromethane (Surr)	*105*		*75 - 123*

Lab Sample ID: MB 480-474931/8
Matrix: Water
Analysis Batch: 474931

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			05/28/19 15:54	1
Tetrachloroethene	ND		1.0	0.36	ug/L			05/28/19 15:54	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			05/28/19 15:54	1
Trichloroethene	ND		1.0	0.46	ug/L			05/28/19 15:54	1
Vinyl chloride	ND		1.0	0.90	ug/L			05/28/19 15:54	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*77 - 120*		*05/28/19 15:54*	*1*
4-Bromofluorobenzene (Surr)	*103*		*73 - 120*		*05/28/19 15:54*	*1*
Toluene-d8 (Surr)	*103*		*80 - 120*		*05/28/19 15:54*	*1*
Dibromofluoromethane (Surr)	*99*		*75 - 123*		*05/28/19 15:54*	*1*

Lab Sample ID: LCS 480-474931/6
Matrix: Water
Analysis Batch: 474931

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,2-Dichloroethene	25.0	27.5		ug/L		110	74 - 124
Tetrachloroethene	25.0	27.4		ug/L		110	74 - 122
trans-1,2-Dichloroethene	25.0	27.5		ug/L		110	73 - 127
Trichloroethene	25.0	28.5		ug/L		114	74 - 123
Vinyl chloride	25.0	21.8		ug/L		87	65 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*85*		*77 - 120*
4-Bromofluorobenzene (Surr)	*97*		*73 - 120*
Toluene-d8 (Surr)	*100*		*80 - 120*
Dibromofluoromethane (Surr)	*95*		*75 - 123*

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

Lab Sample ID: MB 480-475125/7
Matrix: Water
Analysis Batch: 475125

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	ND		1.0	0.81	ug/L			05/29/19 22:52	1
Tetrachloroethene	ND		1.0	0.36	ug/L			05/29/19 22:52	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			05/29/19 22:52	1
Trichloroethene	ND		1.0	0.46	ug/L			05/29/19 22:52	1
Vinyl chloride	ND		1.0	0.90	ug/L			05/29/19 22:52	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*77 - 120*		*05/29/19 22:52*	*1*
4-Bromofluorobenzene (Surr)	*107*		*73 - 120*		*05/29/19 22:52*	*1*
Toluene-d8 (Surr)	*102*		*80 - 120*		*05/29/19 22:52*	*1*
Dibromofluoromethane (Surr)	*93*		*75 - 123*		*05/29/19 22:52*	*1*

Lab Sample ID: LCS 480-475125/5
Matrix: Water
Analysis Batch: 475125

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,2-Dichloroethene	25.0	25.5		ug/L		102	74 - 124
Tetrachloroethene	25.0	29.1		ug/L		117	74 - 122
trans-1,2-Dichloroethene	25.0	26.6		ug/L		107	73 - 127
Trichloroethene	25.0	25.8		ug/L		103	74 - 123
Vinyl chloride	25.0	24.7		ug/L		99	65 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*94*		*77 - 120*
4-Bromofluorobenzene (Surr)	*106*		*73 - 120*
Toluene-d8 (Surr)	*107*		*80 - 120*
Dibromofluoromethane (Surr)	*94*		*75 - 123*

Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: MB 200-143166/24
Matrix: Water
Analysis Batch: 143166

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

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	ND		5000	5000	ug/L			05/18/19 17:04	1

Lab Sample ID: MB 200-143166/4
Matrix: Water
Analysis Batch: 143166

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

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	ND		5000	5000	ug/L			05/18/19 14:10	1

Method: RSK-175 - Dissolved Gases (GC) (Continued)

Lab Sample ID: LCS 200-143166/22
Matrix: Water
Analysis Batch: 143166

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Carbon dioxide			40000	42000		ug/L		105	70 - 130		

Lab Sample ID: LCSD 200-143166/23
Matrix: Water
Analysis Batch: 143166

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Carbon dioxide			40000	40800		ug/L		102	70 - 130	3	30

Lab Sample ID: MB 200-143355/4
Matrix: Water
Analysis Batch: 143355

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

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	ND		5000	5000	ug/L			05/23/19 13:38	1

Lab Sample ID: LCS 200-143355/2
Matrix: Water
Analysis Batch: 143355

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Carbon dioxide			40000	41600		ug/L		104	70 - 130		

Lab Sample ID: LCSD 200-143355/3
Matrix: Water
Analysis Batch: 143355

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Carbon dioxide			40000	44700		ug/L		112	70 - 130	7	30

Lab Sample ID: MB 200-143429/4
Matrix: Water
Analysis Batch: 143429

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

Analyte	MB Result	MB Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	ND		5000	5000	ug/L			05/24/19 17:03	1

Lab Sample ID: LCS 200-143429/2
Matrix: Water
Analysis Batch: 143429

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Carbon dioxide			40000	41900		ug/L		105	70 - 130		

Lab Sample ID: LCSD 200-143429/3
Matrix: Water
Analysis Batch: 143429

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Carbon dioxide			40000	45900		ug/L		115	70 - 130	9	30

Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: MB 480-475110/20
Matrix: Water
Analysis Batch: 475110

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethane	ND		7.5	1.5	ug/L			05/29/19 18:09	1
Ethene	ND		7.0	1.5	ug/L			05/29/19 18:09	1
Methane	ND		4.0	1.0	ug/L			05/29/19 18:09	1

Lab Sample ID: LCS 480-475110/23
Matrix: Water
Analysis Batch: 475110

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ethane	14.5	18.7	*	ug/L		129	79 - 120
Ethene	13.5	16.3		ug/L		120	85 - 120
Methane	7.67	10.3	*	ug/L		134	85 - 120

Lab Sample ID: LCSD 480-475110/22
Matrix: Water
Analysis Batch: 475110

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ethane	14.5	19.4	*	ug/L		134	79 - 120	4	50
Ethene	13.5	17.0	*	ug/L		126	85 - 120	5	50
Methane	7.67	10.3	*	ug/L		135	85 - 120	1	50

Lab Sample ID: MB 480-475433/2
Matrix: Water
Analysis Batch: 475433

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethane	ND		7.5	1.5	ug/L			05/30/19 17:01	1
Ethene	ND		7.0	1.5	ug/L			05/30/19 17:01	1
Methane	ND		4.0	1.0	ug/L			05/30/19 17:01	1

Lab Sample ID: LCS 480-475433/3
Matrix: Water
Analysis Batch: 475433

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ethane	58.1	52.2		ug/L		90	79 - 120
Ethene	47.3	41.6		ug/L		88	85 - 120
Methane	58.6	51.5		ug/L		88	85 - 120

Lab Sample ID: MB 480-475570/13
Matrix: Water
Analysis Batch: 475570

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethane	ND		7.5	1.5	ug/L			05/31/19 14:21	1
Ethene	ND		7.0	1.5	ug/L			05/31/19 14:21	1
Methane	ND		4.0	1.0	ug/L			05/31/19 14:21	1

Method: RSK-175 - Dissolved Gases (GC) (Continued)

Lab Sample ID: LCS 480-475570/14
Matrix: Water
Analysis Batch: 475570

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ethane	58.1	52.0		ug/L		90	79 - 120
Ethene	47.3	42.8		ug/L		90	85 - 120
Methane	58.6	51.7		ug/L		88	85 - 120

Lab Sample ID: LCSD 480-475570/15
Matrix: Water
Analysis Batch: 475570

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Ethane	58.1	50.9		ug/L		88	79 - 120	2	50
Ethene	47.3	40.4		ug/L		85	85 - 120	6	50
Methane	58.6	52.0		ug/L		89	85 - 120	1	50

Lab Sample ID: MB 480-475769/4
Matrix: Water
Analysis Batch: 475769

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethane	ND		7.5	1.5	ug/L			06/02/19 13:54	1
Ethene	ND		7.0	1.5	ug/L			06/02/19 13:54	1
Methane	ND		4.0	1.0	ug/L			06/02/19 13:54	1

Lab Sample ID: LCS 480-475769/5
Matrix: Water
Analysis Batch: 475769

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ethane	58.1	53.8		ug/L		93	79 - 120
Ethene	47.3	41.0		ug/L		87	85 - 120
Methane	58.6	54.5		ug/L		93	85 - 120

Lab Sample ID: MB 480-476071/4
Matrix: Water
Analysis Batch: 476071

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethane	ND		7.5	1.5	ug/L			06/04/19 11:13	1
Ethene	ND		7.0	1.5	ug/L			06/04/19 11:13	1
Methane	ND		4.0	1.0	ug/L			06/04/19 11:13	1

Lab Sample ID: LCS 480-476071/5
Matrix: Water
Analysis Batch: 476071

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ethane	36.2	33.7		ug/L		93	79 - 120
Ethene	33.8	30.9		ug/L		91	85 - 120
Methane	19.2	18.3		ug/L		95	85 - 120

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 480-473684/1-A
Matrix: Water
Analysis Batch: 474726

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 473684

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	ND		0.050	0.019	mg/L		05/20/19 13:23	05/24/19 15:36	1
Magnesium	ND		0.20	0.043	mg/L		05/20/19 13:23	05/24/19 15:36	1
Manganese	ND		0.0030	0.00040	mg/L		05/20/19 13:23	05/24/19 15:36	1
Potassium	ND		0.50	0.10	mg/L		05/20/19 13:23	05/24/19 15:36	1
Sodium	ND		1.0	0.32	mg/L		05/20/19 13:23	05/24/19 15:36	1

Lab Sample ID: LCS 480-473684/2-A
Matrix: Water
Analysis Batch: 474726

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 473684

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	10.0	10.36		mg/L		104	80 - 120
Magnesium	10.0	10.31		mg/L		103	80 - 120
Manganese	0.200	0.204		mg/L		102	80 - 120
Potassium	10.0	8.94		mg/L		89	80 - 120
Sodium	10.0	9.17		mg/L		92	80 - 120

Lab Sample ID: MB 480-473772/1-A
Matrix: Water
Analysis Batch: 475741

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 473772

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	ND		0.050	0.019	mg/L		05/21/19 08:35	05/31/19 19:13	1
Magnesium	ND		0.20	0.043	mg/L		05/21/19 08:35	05/31/19 19:13	1
Manganese	ND		0.0030	0.00040	mg/L		05/21/19 08:35	05/31/19 19:13	1
Sodium	0.332	J	1.0	0.32	mg/L		05/21/19 08:35	05/31/19 19:13	1

Lab Sample ID: MB 480-473772/1-A
Matrix: Water
Analysis Batch: 475825

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 473772

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Potassium	ND		0.50	0.10	mg/L		05/21/19 08:35	06/01/19 20:58	1

Lab Sample ID: LCS 480-473772/2-A
Matrix: Water
Analysis Batch: 475741

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 473772

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	10.0	9.76		mg/L		98	80 - 120
Magnesium	10.0	9.98		mg/L		100	80 - 120
Manganese	0.200	0.197		mg/L		99	80 - 120
Sodium	10.0	9.74		mg/L		97	80 - 120

Lab Sample ID: LCS 480-473772/2-A
Matrix: Water
Analysis Batch: 475825

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 473772

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Potassium	10.0	9.94		mg/L		99	80 - 120

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 480-474144/1-A
Matrix: Water
Analysis Batch: 474561

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 474144

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	ND		0.050	0.019	mg/L		05/22/19 12:04	05/23/19 16:00	1
Magnesium	ND		0.20	0.043	mg/L		05/22/19 12:04	05/23/19 16:00	1
Manganese	ND		0.0030	0.00040	mg/L		05/22/19 12:04	05/23/19 16:00	1
Potassium	0.299	J	0.50	0.10	mg/L		05/22/19 12:04	05/23/19 16:00	1

Lab Sample ID: MB 480-474144/1-A
Matrix: Water
Analysis Batch: 474742

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 474144

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium	ND		1.0	0.32	mg/L		05/22/19 12:04	05/24/19 14:56	1

Lab Sample ID: LCS 480-474144/2-A
Matrix: Water
Analysis Batch: 474561

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 474144

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	10.0	9.46		mg/L		95	80 - 120
Magnesium	10.0	9.46		mg/L		95	80 - 120
Manganese	0.200	0.196		mg/L		98	80 - 120
Potassium	10.0	9.55		mg/L		95	80 - 120

Lab Sample ID: LCS 480-474144/2-A
Matrix: Water
Analysis Batch: 474742

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 474144

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sodium	10.0	9.45		mg/L		94	80 - 120

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 480-475659/28
Matrix: Water
Analysis Batch: 475659

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50	0.28	mg/L			05/31/19 23:20	1
Sulfate	ND		2.0	0.35	mg/L			05/31/19 23:20	1

Lab Sample ID: LCS 480-475659/27
Matrix: Water
Analysis Batch: 475659

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	50.0	50.13		mg/L		100	90 - 110
Sulfate	50.0	49.67		mg/L		99	90 - 110

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: MB 480-475895/4
Matrix: Water
Analysis Batch: 475895

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50	0.28	mg/L			06/03/19 19:01	1
Sulfate	ND		2.0	0.35	mg/L			06/03/19 19:01	1

Lab Sample ID: LCS 480-475895/3
Matrix: Water
Analysis Batch: 475895

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	50.0	49.04		mg/L		98	90 - 110
Sulfate	50.0	49.57		mg/L		99	90 - 110

Lab Sample ID: MB 480-475948/4
Matrix: Water
Analysis Batch: 475948

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.50	0.28	mg/L			06/04/19 12:32	1
Sulfate	ND		2.0	0.35	mg/L			06/04/19 12:32	1

Lab Sample ID: LCS 480-475948/3
Matrix: Water
Analysis Batch: 475948

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	50.0	52.66		mg/L		105	90 - 110
Sulfate	50.0	54.39		mg/L		109	90 - 110

Method: 350.1 - Nitrogen, Ammonia

Lab Sample ID: MB 480-475876/123
Matrix: Water
Analysis Batch: 475876

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia	ND		0.020	0.0090	mg/L			06/03/19 12:16	1

Lab Sample ID: MB 480-475876/27
Matrix: Water
Analysis Batch: 475876

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia	ND		0.020	0.0090	mg/L			06/03/19 10:54	1

Lab Sample ID: MB 480-475876/3
Matrix: Water
Analysis Batch: 475876

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia	ND		0.020	0.0090	mg/L			06/03/19 10:34	1

Method: 350.1 - Nitrogen, Ammonia (Continued)

Lab Sample ID: LCS 480-475876/124
Matrix: Water
Analysis Batch: 475876

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia	1.00	1.01		mg/L		101	90 - 110

Lab Sample ID: LCS 480-475876/28
Matrix: Water
Analysis Batch: 475876

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia	1.00	1.01		mg/L		101	90 - 110

Lab Sample ID: LCS 480-475876/4
Matrix: Water
Analysis Batch: 475876

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia	1.00	1.01		mg/L		101	90 - 110

Lab Sample ID: 480-153637-1 MS
Matrix: Water
Analysis Batch: 475876

Client Sample ID: MW-4-2019
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia	1.8		0.200	2.02	4	mg/L		110	90 - 110

Lab Sample ID: 480-153637-2 MS
Matrix: Water
Analysis Batch: 475876

Client Sample ID: MW-10-2019
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia	ND		0.200	0.182		mg/L		91	90 - 110

Lab Sample ID: 480-153637-2 DU
Matrix: Water
Analysis Batch: 475876

Client Sample ID: MW-10-2019
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Ammonia	ND		ND		mg/L		NC	20

Lab Sample ID: MB 480-476103/3
Matrix: Water
Analysis Batch: 476103

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia	ND		0.020	0.0090	mg/L			06/04/19 10:35	1

Lab Sample ID: MB 480-476103/75
Matrix: Water
Analysis Batch: 476103

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia	ND		0.020	0.0090	mg/L			06/04/19 11:37	1

Method: 350.1 - Nitrogen, Ammonia

Lab Sample ID: LCS 480-476103/4
Matrix: Water
Analysis Batch: 476103

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia	1.00	1.02		mg/L		102	90 - 110

Lab Sample ID: LCS 480-476103/76
Matrix: Water
Analysis Batch: 476103

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia	1.00	1.01		mg/L		101	90 - 110

Lab Sample ID: MB 480-477001/27
Matrix: Water
Analysis Batch: 477001

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia	ND		0.020	0.0090	mg/L			06/10/19 09:49	1

Lab Sample ID: MB 480-477001/51
Matrix: Water
Analysis Batch: 477001

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia	ND		0.020	0.0090	mg/L			06/10/19 10:09	1

Lab Sample ID: LCS 480-477001/28
Matrix: Water
Analysis Batch: 477001

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia	1.00	0.999		mg/L		100	90 - 110

Lab Sample ID: LCS 480-477001/52
Matrix: Water
Analysis Batch: 477001

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia	1.00	0.996		mg/L		100	90 - 110

Method: 353.2 - Nitrogen, Nitrite

Lab Sample ID: MB 480-473518/27
Matrix: Water
Analysis Batch: 473518

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrite	ND		0.050	0.020	mg/L			05/18/19 01:18	1

Method: 353.2 - Nitrogen, Nitrite (Continued)

Lab Sample ID: LCS 480-473518/28
Matrix: Water
Analysis Batch: 473518

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Nitrite			1.50	1.54		mg/L		103	90 - 110		

Lab Sample ID: MB 480-473542/3
Matrix: Water
Analysis Batch: 473542

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrite	ND		0.050	0.020	mg/L			05/18/19 08:48	1

Lab Sample ID: LCS 480-473542/4
Matrix: Water
Analysis Batch: 473542

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Nitrite			1.50	1.57		mg/L		105	90 - 110		

Method: 9060A - Organic Carbon, Total (TOC)

Lab Sample ID: MB 480-476867/51
Matrix: Water
Analysis Batch: 476867

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	ND		1.0	0.43	mg/L			06/07/19 19:06	1

Lab Sample ID: LCS 480-476867/52
Matrix: Water
Analysis Batch: 476867

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Organic Carbon			60.0	60.89		mg/L		101	90 - 110		

Lab Sample ID: 480-153637-1 MS
Matrix: Water
Analysis Batch: 476867

Client Sample ID: MW-4-2019
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Organic Carbon	1.9		22.7	21.47		mg/L		86	54 - 131		

Lab Sample ID: 480-153637-2 DU
Matrix: Water
Analysis Batch: 476867

Client Sample ID: MW-10-2019
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Organic Carbon	3.1			3.10		mg/L				0.4	20

Method: 9060A - Organic Carbon, Total (TOC) (Continued)

Lab Sample ID: MB 480-477275/4
Matrix: Water
Analysis Batch: 477275

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	1.01		1.0	0.43	mg/L			06/08/19 18:04	1

Lab Sample ID: LCS 480-477275/5
Matrix: Water
Analysis Batch: 477275

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	60.0	62.22		mg/L		104	90 - 110

Lab Sample ID: MB 480-477704/4
Matrix: Water
Analysis Batch: 477704

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	ND		1.0	0.43	mg/L			06/12/19 17:02	1

Lab Sample ID: LCS 480-477704/5
Matrix: Water
Analysis Batch: 477704

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	60.0	65.25		mg/L		109	90 - 110

Lab Sample ID: 480-153682-1 MS
Matrix: Water
Analysis Batch: 477704

Client Sample ID: MW-7-2019
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	7.3		22.7	31.77		mg/L		108	54 - 131

Lab Sample ID: 480-153682-2 DU
Matrix: Water
Analysis Batch: 477704

Client Sample ID: MW-11-2019
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Organic Carbon	1.3		1.30		mg/L		0.7	20

Lab Sample ID: 480-153840-1 DU
Matrix: Water
Analysis Batch: 477704

Client Sample ID: MW-14-2019
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Organic Carbon	1.3		1.23		mg/L		8	20

Method: SM 2320B - Alkalinity

Lab Sample ID: MB 480-474102/30
Matrix: Water
Analysis Batch: 474102

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Alkalinity	1.45	J	5.0	0.79	mg/L			05/21/19 18:52	1

Lab Sample ID: MB 480-474102/54
Matrix: Water
Analysis Batch: 474102

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Alkalinity	2.32	J	5.0	0.79	mg/L			05/21/19 21:01	1

Lab Sample ID: LCS 480-474102/31
Matrix: Water
Analysis Batch: 474102

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Alkalinity	100	95.89		mg/L		96	90 - 110

Lab Sample ID: LCS 480-474102/55
Matrix: Water
Analysis Batch: 474102

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Alkalinity	100	98.10		mg/L		98	90 - 110

Lab Sample ID: MB 480-474103/30
Matrix: Water
Analysis Batch: 474103

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Alkalinity	ND		5.0	0.79	mg/L			05/21/19 19:45	1

Lab Sample ID: LCS 480-474103/31
Matrix: Water
Analysis Batch: 474103

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Alkalinity	100	94.80		mg/L		95	90 - 110

Lab Sample ID: MB 480-474581/7
Matrix: Water
Analysis Batch: 474581

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Alkalinity	ND		5.0	0.79	mg/L			05/23/19 10:10	1

Lab Sample ID: LCS 480-474581/8
Matrix: Water
Analysis Batch: 474581

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Alkalinity	100	95.24		mg/L		95	90 - 110

Method: SM 4500 S2 F - Sulfide, Total

Lab Sample ID: MB 480-473781/27
Matrix: Water
Analysis Batch: 473781

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide	ND		1.0	0.67	mg/L			05/20/19 13:40	1

Lab Sample ID: MB 480-473781/3
Matrix: Water
Analysis Batch: 473781

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide	ND		1.0	0.67	mg/L			05/20/19 13:40	1

Lab Sample ID: LCS 480-473781/28
Matrix: Water
Analysis Batch: 473781

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Sulfide			8.40	8.40		mg/L		100	90 - 110		

Lab Sample ID: LCS 480-473781/4
Matrix: Water
Analysis Batch: 473781

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Sulfide			8.40	8.40		mg/L		100	90 - 110		

Lab Sample ID: 480-153682-3 MS
Matrix: Water
Analysis Batch: 473781

Client Sample ID: MW-13-2019
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Sulfide	ND		2.50	2.40		mg/L		96	40 - 150		

Lab Sample ID: 480-153682-2 DU
Matrix: Water
Analysis Batch: 473781

Client Sample ID: MW-11-2019
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Sulfide	ND			ND		mg/L				NC	20

Lab Sample ID: 480-153682-4 DU
Matrix: Water
Analysis Batch: 473781

Client Sample ID: MW-12-2019
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Sulfide	ND			ND		mg/L				NC	20

Lab Sample ID: MB 480-474948/3
Matrix: Water
Analysis Batch: 474948

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide	ND		1.0	0.67	mg/L			05/28/19 12:56	1

Method: SM 4500 S2 F - Sulfide, Total

Lab Sample ID: LCS 480-474948/4
Matrix: Water
Analysis Batch: 474948

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfide	7.20	7.20		mg/L		100	90 - 110

Method: VFA-IC - Volatile Fatty Acids, Ion Chromatography

Lab Sample ID: MB 480-474105/28
Matrix: Water
Analysis Batch: 474105

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetic acid	ND		1.0	0.29	mg/L			05/22/19 23:12	1
Formic-acid	ND		1.0	0.26	mg/L			05/22/19 23:12	1
Lactic acid	ND		1.0	0.31	mg/L			05/22/19 23:12	1
n-Butyric Acid	ND		1.0	0.26	mg/L			05/22/19 23:12	1
Propionic acid	ND		1.0	0.35	mg/L			05/22/19 23:12	1
Pyruvic Acid	ND		1.5	0.37	mg/L			05/22/19 23:12	1

Lab Sample ID: MB 480-474105/4
Matrix: Water
Analysis Batch: 474105

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetic acid	ND		1.0	0.29	mg/L			05/22/19 11:32	1
Formic-acid	ND		1.0	0.26	mg/L			05/22/19 11:32	1
Lactic acid	ND		1.0	0.31	mg/L			05/22/19 11:32	1
n-Butyric Acid	ND		1.0	0.26	mg/L			05/22/19 11:32	1
Propionic acid	ND		1.0	0.35	mg/L			05/22/19 11:32	1
Pyruvic Acid	ND		1.5	0.37	mg/L			05/22/19 11:32	1

Lab Sample ID: LCS 480-474105/27
Matrix: Water
Analysis Batch: 474105

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetic acid	10.0	10.47		mg/L		105	80 - 120
Formic-acid	10.0	9.84		mg/L		98	80 - 120
Lactic acid	10.0	10.18		mg/L		102	80 - 120
n-Butyric Acid	10.0	10.27		mg/L		103	80 - 120
Propionic acid	10.0	10.34		mg/L		103	80 - 120
Pyruvic Acid	10.0	10.72		mg/L		107	80 - 120

Lab Sample ID: LCS 480-474105/3
Matrix: Water
Analysis Batch: 474105

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetic acid	10.0	10.28		mg/L		103	80 - 120
Formic-acid	10.0	9.82		mg/L		98	80 - 120
Lactic acid	10.0	9.99		mg/L		100	80 - 120
n-Butyric Acid	10.0	10.21		mg/L		102	80 - 120
Propionic acid	10.0	9.92		mg/L		99	80 - 120

Method: VFA-IC - Volatile Fatty Acids, Ion Chromatography (Continued)

Lab Sample ID: LCS 480-474105/3
Matrix: Water
Analysis Batch: 474105

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Pyruvic Acid	10.0	10.52		mg/L		105	80 - 120

Lab Sample ID: 480-153637-2 MS
Matrix: Water
Analysis Batch: 474105

Client Sample ID: MW-10-2019
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetic acid	ND		50.0	51.73		mg/L		103	80 - 120
Formic-acid	ND		50.0	45.52		mg/L		91	80 - 120
Lactic acid	ND		50.0	45.36		mg/L		91	80 - 120
n-Butyric Acid	ND		50.0	50.38		mg/L		101	80 - 120
Propionic acid	ND		50.0	52.15		mg/L		104	80 - 120
Pyruvic Acid	ND	F1	50.0	19.84	F1	mg/L		40	80 - 120

Lab Sample ID: 480-153637-3 MS
Matrix: Water
Analysis Batch: 474105

Client Sample ID: MW-15-2019
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetic acid	ND		50.0	50.90		mg/L		102	80 - 120
Formic-acid	1.9	J	50.0	43.94		mg/L		84	80 - 120
Lactic acid	ND		50.0	43.36		mg/L		87	80 - 120
n-Butyric Acid	ND		50.0	48.97		mg/L		98	80 - 120
Propionic acid	ND		50.0	53.04		mg/L		106	80 - 120
Pyruvic Acid	ND		50.0	50.70		mg/L		101	80 - 120

Lab Sample ID: 480-153637-3 MSD
Matrix: Water
Analysis Batch: 474105

Client Sample ID: MW-15-2019
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acetic acid	ND		50.0	54.15		mg/L		108	80 - 120	6	20
Formic-acid	1.9	J	50.0	47.26		mg/L		91	80 - 120	7	20
Lactic acid	ND		50.0	46.38		mg/L		93	80 - 120	7	20
n-Butyric Acid	ND		50.0	52.89		mg/L		106	80 - 120	8	20
Propionic acid	ND		50.0	54.62		mg/L		109	80 - 120	3	20
Pyruvic Acid	ND		50.0	55.16		mg/L		110	80 - 120	8	20

Lab Sample ID: MB 480-476783/4
Matrix: Water
Analysis Batch: 476783

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetic acid	ND		1.0	0.29	mg/L			06/07/19 17:07	1
Formic-acid	ND		1.0	0.26	mg/L			06/07/19 17:07	1
Lactic acid	ND		1.0	0.31	mg/L			06/07/19 17:07	1
n-Butyric Acid	ND		1.0	0.26	mg/L			06/07/19 17:07	1
Propionic acid	ND		1.0	0.35	mg/L			06/07/19 17:07	1
Pyruvic Acid	ND		1.5	0.37	mg/L			06/07/19 17:07	1

Method: VFA-IC - Volatile Fatty Acids, Ion Chromatography (Continued)

Lab Sample ID: LCS 480-476783/3
Matrix: Water
Analysis Batch: 476783

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Acetic acid			10.0	10.78		mg/L		108	80 - 120		
Formic-acid			10.0	9.65		mg/L		96	80 - 120		
Lactic acid			10.0	9.59		mg/L		96	80 - 120		
n-Butyric Acid			10.0	11.29		mg/L		113	80 - 120		
Propionic acid			10.0	11.47		mg/L		115	80 - 120		
Pyruvic Acid			10.0	10.17		mg/L		102	80 - 120		

Lab Sample ID: 480-153682-4 MS
Matrix: Water
Analysis Batch: 476783

Client Sample ID: MW-12-2019
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Acetic acid	ND		100	107.5		mg/L		107	80 - 120		
Formic-acid	ND		100	95.93		mg/L		96	80 - 120		
Lactic acid	ND		100	95.20		mg/L		95	80 - 120		
n-Butyric Acid	ND		100	112.7		mg/L		113	80 - 120		
Propionic acid	ND		100	110.8		mg/L		111	80 - 120		
Pyruvic Acid	ND	F1	100	63.72	F1	mg/L		64	80 - 120		

Lab Sample ID: MB 480-477030/4
Matrix: Water
Analysis Batch: 477030

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetic acid	ND		1.0	0.29	mg/L			06/10/19 15:02	1
Formic-acid	ND		1.0	0.26	mg/L			06/10/19 15:02	1
Lactic acid	ND		1.0	0.31	mg/L			06/10/19 15:02	1
n-Butyric Acid	ND		1.0	0.26	mg/L			06/10/19 15:02	1
Propionic acid	ND		1.0	0.35	mg/L			06/10/19 15:02	1
Pyruvic Acid	ND		1.5	0.37	mg/L			06/10/19 15:02	1

Lab Sample ID: LCS 480-477030/3
Matrix: Water
Analysis Batch: 477030

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Acetic acid			10.0	10.57		mg/L		106	80 - 120		
Formic-acid			10.0	9.32		mg/L		93	80 - 120		
Lactic acid			10.0	9.19		mg/L		92	80 - 120		
n-Butyric Acid			10.0	11.03		mg/L		110	80 - 120		
Propionic acid			10.0	11.17		mg/L		112	80 - 120		
Pyruvic Acid			10.0	10.50		mg/L		105	80 - 120		

QC Association Summary

Client: GHD Services Inc.
Project/Site: 058507, GM-Lockport Groundwater Sampling

Job ID: 480-153637-1
SDG: DHTSS

GC/MS VOA

Analysis Batch: 474543

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-153637-1	MW-4-2019	Total/NA	Water	8260C	
480-153637-4	TRIP BLANK	Total/NA	Water	8260C	
MB 480-474543/7	Method Blank	Total/NA	Water	8260C	
LCS 480-474543/5	Lab Control Sample	Total/NA	Water	8260C	

Analysis Batch: 474552

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-153637-2	MW-10-2019	Total/NA	Water	8260C	
MB 480-474552/7	Method Blank	Total/NA	Water	8260C	
LCS 480-474552/9	Lab Control Sample	Total/NA	Water	8260C	

Analysis Batch: 474646

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-153682-3	MW-13-2019	Total/NA	Water	8260C	
480-153682-4	MW-12-2019	Total/NA	Water	8260C	
480-153682-5	TRIP BLANK	Total/NA	Water	8260C	
MB 480-474646/7	Method Blank	Total/NA	Water	8260C	
LCS 480-474646/5	Lab Control Sample	Total/NA	Water	8260C	

Analysis Batch: 474795

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-153682-1	MW-7-2019	Total/NA	Water	8260C	
480-153682-2	MW-11-2019	Total/NA	Water	8260C	
MB 480-474795/7	Method Blank	Total/NA	Water	8260C	
LCS 480-474795/5	Lab Control Sample	Total/NA	Water	8260C	

Analysis Batch: 474797

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-153637-3	MW-15-2019	Total/NA	Water	8260C	
MB 480-474797/7	Method Blank	Total/NA	Water	8260C	
LCS 480-474797/5	Lab Control Sample	Total/NA	Water	8260C	

Analysis Batch: 474931

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-153637-1 - DL	MW-4-2019	Total/NA	Water	8260C	
MB 480-474931/8	Method Blank	Total/NA	Water	8260C	
LCS 480-474931/6	Lab Control Sample	Total/NA	Water	8260C	

Analysis Batch: 475125

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-153840-1	MW-14-2019	Total/NA	Water	8260C	
MB 480-475125/7	Method Blank	Total/NA	Water	8260C	
LCS 480-475125/5	Lab Control Sample	Total/NA	Water	8260C	

GC VOA

Analysis Batch: 143166

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-153637-1	MW-4-2019	Total/NA	Water	RSK-175	
480-153637-3	MW-15-2019	Total/NA	Water	RSK-175	
MB 200-143166/24	Method Blank	Total/NA	Water	RSK-175	

GC VOA (Continued)

Analysis Batch: 143166 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 200-143166/4	Method Blank	Total/NA	Water	RSK-175	
LCS 200-143166/22	Lab Control Sample	Total/NA	Water	RSK-175	
LCSD 200-143166/23	Lab Control Sample Dup	Total/NA	Water	RSK-175	

Analysis Batch: 143355

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-153840-1	MW-14-2019	Total/NA	Water	RSK-175	
MB 200-143355/4	Method Blank	Total/NA	Water	RSK-175	
LCS 200-143355/2	Lab Control Sample	Total/NA	Water	RSK-175	
LCSD 200-143355/3	Lab Control Sample Dup	Total/NA	Water	RSK-175	

Analysis Batch: 143429

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-153682-1	MW-7-2019	Total/NA	Water	RSK-175	
480-153682-2	MW-11-2019	Total/NA	Water	RSK-175	
480-153682-3	MW-13-2019	Total/NA	Water	RSK-175	
480-153682-4	MW-12-2019	Total/NA	Water	RSK-175	
MB 200-143429/4	Method Blank	Total/NA	Water	RSK-175	
LCS 200-143429/2	Lab Control Sample	Total/NA	Water	RSK-175	
LCSD 200-143429/3	Lab Control Sample Dup	Total/NA	Water	RSK-175	

Analysis Batch: 475110

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-153637-3	MW-15-2019	Total/NA	Water	RSK-175	
MB 480-475110/20	Method Blank	Total/NA	Water	RSK-175	
LCS 480-475110/23	Lab Control Sample	Total/NA	Water	RSK-175	
LCSD 480-475110/22	Lab Control Sample Dup	Total/NA	Water	RSK-175	

Analysis Batch: 475433

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-153637-1	MW-4-2019	Total/NA	Water	RSK-175	
480-153637-2	MW-10-2019	Total/NA	Water	RSK-175	
MB 480-475433/2	Method Blank	Total/NA	Water	RSK-175	
LCS 480-475433/3	Lab Control Sample	Total/NA	Water	RSK-175	

Analysis Batch: 475570

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-153682-1	MW-7-2019	Total/NA	Water	RSK-175	
480-153682-2	MW-11-2019	Total/NA	Water	RSK-175	
480-153682-3	MW-13-2019	Total/NA	Water	RSK-175	
480-153682-4	MW-12-2019	Total/NA	Water	RSK-175	
MB 480-475570/13	Method Blank	Total/NA	Water	RSK-175	
LCS 480-475570/14	Lab Control Sample	Total/NA	Water	RSK-175	
LCSD 480-475570/15	Lab Control Sample Dup	Total/NA	Water	RSK-175	

Analysis Batch: 475769

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-153840-1	MW-14-2019	Total/NA	Water	RSK-175	
MB 480-475769/4	Method Blank	Total/NA	Water	RSK-175	
LCS 480-475769/5	Lab Control Sample	Total/NA	Water	RSK-175	

GC VOA

Analysis Batch: 476071

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-153682-1 - DL	MW-7-2019	Total/NA	Water	RSK-175	
MB 480-476071/4	Method Blank	Total/NA	Water	RSK-175	
LCS 480-476071/5	Lab Control Sample	Total/NA	Water	RSK-175	

Analysis Batch: 477508

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-153637-1	MW-4-2019	Total/NA	Water	AM20GAX	
480-153637-2	MW-10-2019	Total/NA	Water	AM20GAX	
480-153637-3	MW-15-2019	Total/NA	Water	AM20GAX	
480-153682-2	MW-11-2019	Total/NA	Water	AM20GAX	
480-153682-3	MW-13-2019	Total/NA	Water	AM20GAX	
480-153682-4	MW-12-2019	Total/NA	Water	AM20GAX	
480-153840-1	MW-14-2019	Total/NA	Water	AM20GAX	

Metals

Prep Batch: 473684

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-153637-1	MW-4-2019	Total/NA	Water	3005A	
480-153637-2	MW-10-2019	Total/NA	Water	3005A	
480-153637-3	MW-15-2019	Total/NA	Water	3005A	
MB 480-473684/1-A	Method Blank	Total/NA	Water	3005A	
LCS 480-473684/2-A	Lab Control Sample	Total/NA	Water	3005A	

Prep Batch: 473772

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-153682-1	MW-7-2019	Total/NA	Water	3005A	
480-153682-2	MW-11-2019	Total/NA	Water	3005A	
480-153682-3	MW-13-2019	Total/NA	Water	3005A	
480-153682-4	MW-12-2019	Total/NA	Water	3005A	
MB 480-473772/1-A	Method Blank	Total/NA	Water	3005A	
LCS 480-473772/2-A	Lab Control Sample	Total/NA	Water	3005A	

Prep Batch: 474144

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-153840-1	MW-14-2019	Total/NA	Water	3005A	
MB 480-474144/1-A	Method Blank	Total/NA	Water	3005A	
LCS 480-474144/2-A	Lab Control Sample	Total/NA	Water	3005A	

Analysis Batch: 474561

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-153840-1	MW-14-2019	Total/NA	Water	6010C	474144
MB 480-474144/1-A	Method Blank	Total/NA	Water	6010C	474144
LCS 480-474144/2-A	Lab Control Sample	Total/NA	Water	6010C	474144

Analysis Batch: 474726

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-153637-1	MW-4-2019	Total/NA	Water	6010C	473684
480-153637-2	MW-10-2019	Total/NA	Water	6010C	473684
480-153637-3	MW-15-2019	Total/NA	Water	6010C	473684
MB 480-473684/1-A	Method Blank	Total/NA	Water	6010C	473684

Metals (Continued)

Analysis Batch: 474726 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 480-473684/2-A	Lab Control Sample	Total/NA	Water	6010C	473684

Analysis Batch: 474742

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-153840-1	MW-14-2019	Total/NA	Water	6010C	474144
MB 480-474144/1-A	Method Blank	Total/NA	Water	6010C	474144
LCS 480-474144/2-A	Lab Control Sample	Total/NA	Water	6010C	474144

Analysis Batch: 475741

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-153682-1	MW-7-2019	Total/NA	Water	6010C	473772
480-153682-2	MW-11-2019	Total/NA	Water	6010C	473772
480-153682-3	MW-13-2019	Total/NA	Water	6010C	473772
480-153682-4	MW-12-2019	Total/NA	Water	6010C	473772
MB 480-473772/1-A	Method Blank	Total/NA	Water	6010C	473772
LCS 480-473772/2-A	Lab Control Sample	Total/NA	Water	6010C	473772

Analysis Batch: 475825

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-153682-3	MW-13-2019	Total/NA	Water	6010C	473772
480-153682-4	MW-12-2019	Total/NA	Water	6010C	473772
MB 480-473772/1-A	Method Blank	Total/NA	Water	6010C	473772
LCS 480-473772/2-A	Lab Control Sample	Total/NA	Water	6010C	473772

Analysis Batch: 476250

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-153637-1	MW-4-2019	Total/NA	Water	6010C	473684
480-153637-2	MW-10-2019	Total/NA	Water	6010C	473684

General Chemistry

Analysis Batch: 473518

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-153637-2	MW-10-2019	Total/NA	Water	353.2	
480-153637-3	MW-15-2019	Total/NA	Water	353.2	
MB 480-473518/27	Method Blank	Total/NA	Water	353.2	
LCS 480-473518/28	Lab Control Sample	Total/NA	Water	353.2	

Analysis Batch: 473519

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-153637-1	MW-4-2019	Total/NA	Water	353.2	

Analysis Batch: 473520

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-153637-1	MW-4-2019	Total/NA	Water	353.2	
480-153637-2	MW-10-2019	Total/NA	Water	353.2	
480-153637-3	MW-15-2019	Total/NA	Water	353.2	

Analysis Batch: 473542

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-153682-2	MW-11-2019	Total/NA	Water	353.2	

General Chemistry (Continued)

Analysis Batch: 473542 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-153682-3	MW-13-2019	Total/NA	Water	353.2	
MB 480-473542/3	Method Blank	Total/NA	Water	353.2	
LCS 480-473542/4	Lab Control Sample	Total/NA	Water	353.2	

Analysis Batch: 473543

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-153682-1	MW-7-2019	Total/NA	Water	353.2	
480-153682-4	MW-12-2019	Total/NA	Water	353.2	

Analysis Batch: 473544

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-153682-1	MW-7-2019	Total/NA	Water	353.2	
480-153682-2	MW-11-2019	Total/NA	Water	353.2	
480-153682-3	MW-13-2019	Total/NA	Water	353.2	
480-153682-4	MW-12-2019	Total/NA	Water	353.2	

Analysis Batch: 473781

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-153637-1	MW-4-2019	Total/NA	Water	SM 4500 S2 F	
480-153637-2	MW-10-2019	Total/NA	Water	SM 4500 S2 F	
480-153637-3	MW-15-2019	Total/NA	Water	SM 4500 S2 F	
480-153682-1	MW-7-2019	Total/NA	Water	SM 4500 S2 F	
480-153682-2	MW-11-2019	Total/NA	Water	SM 4500 S2 F	
480-153682-3	MW-13-2019	Total/NA	Water	SM 4500 S2 F	
480-153682-4	MW-12-2019	Total/NA	Water	SM 4500 S2 F	
MB 480-473781/27	Method Blank	Total/NA	Water	SM 4500 S2 F	
MB 480-473781/3	Method Blank	Total/NA	Water	SM 4500 S2 F	
LCS 480-473781/28	Lab Control Sample	Total/NA	Water	SM 4500 S2 F	
LCS 480-473781/4	Lab Control Sample	Total/NA	Water	SM 4500 S2 F	
480-153682-3 MS	MW-13-2019	Total/NA	Water	SM 4500 S2 F	
480-153682-2 DU	MW-11-2019	Total/NA	Water	SM 4500 S2 F	
480-153682-4 DU	MW-12-2019	Total/NA	Water	SM 4500 S2 F	

Analysis Batch: 474102

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-153637-1	MW-4-2019	Total/NA	Water	SM 2320B	
480-153637-2	MW-10-2019	Total/NA	Water	SM 2320B	
480-153637-3	MW-15-2019	Total/NA	Water	SM 2320B	
MB 480-474102/30	Method Blank	Total/NA	Water	SM 2320B	
MB 480-474102/54	Method Blank	Total/NA	Water	SM 2320B	
LCS 480-474102/31	Lab Control Sample	Total/NA	Water	SM 2320B	
LCS 480-474102/55	Lab Control Sample	Total/NA	Water	SM 2320B	

Analysis Batch: 474103

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-153682-1	MW-7-2019	Total/NA	Water	SM 2320B	
480-153682-2	MW-11-2019	Total/NA	Water	SM 2320B	
480-153682-3	MW-13-2019	Total/NA	Water	SM 2320B	
480-153682-4	MW-12-2019	Total/NA	Water	SM 2320B	
MB 480-474103/30	Method Blank	Total/NA	Water	SM 2320B	
LCS 480-474103/31	Lab Control Sample	Total/NA	Water	SM 2320B	

General Chemistry

Analysis Batch: 474105

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-153637-1	MW-4-2019	Total/NA	Water	VFA-IC	
480-153637-2	MW-10-2019	Total/NA	Water	VFA-IC	
480-153637-3	MW-15-2019	Total/NA	Water	VFA-IC	
MB 480-474105/28	Method Blank	Total/NA	Water	VFA-IC	
MB 480-474105/4	Method Blank	Total/NA	Water	VFA-IC	
LCS 480-474105/27	Lab Control Sample	Total/NA	Water	VFA-IC	
LCS 480-474105/3	Lab Control Sample	Total/NA	Water	VFA-IC	
480-153637-2 MS	MW-10-2019	Total/NA	Water	VFA-IC	
480-153637-3 MS	MW-15-2019	Total/NA	Water	VFA-IC	
480-153637-3 MSD	MW-15-2019	Total/NA	Water	VFA-IC	

Analysis Batch: 474276

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-153840-1	MW-14-2019	Total/NA	Water	353.2	

Analysis Batch: 474278

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-153840-1	MW-14-2019	Total/NA	Water	353.2	

Analysis Batch: 474581

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-153840-1	MW-14-2019	Total/NA	Water	SM 2320B	
MB 480-474581/7	Method Blank	Total/NA	Water	SM 2320B	
LCS 480-474581/8	Lab Control Sample	Total/NA	Water	SM 2320B	

Analysis Batch: 474948

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-153840-1	MW-14-2019	Total/NA	Water	SM 4500 S2 F	
MB 480-474948/3	Method Blank	Total/NA	Water	SM 4500 S2 F	
LCS 480-474948/4	Lab Control Sample	Total/NA	Water	SM 4500 S2 F	

Analysis Batch: 475659

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-153637-1	MW-4-2019	Total/NA	Water	300.0	
480-153637-2	MW-10-2019	Total/NA	Water	300.0	
480-153637-3	MW-15-2019	Total/NA	Water	300.0	
MB 480-475659/28	Method Blank	Total/NA	Water	300.0	
LCS 480-475659/27	Lab Control Sample	Total/NA	Water	300.0	

Analysis Batch: 475876

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-153637-1	MW-4-2019	Total/NA	Water	350.1	
480-153637-2	MW-10-2019	Total/NA	Water	350.1	
480-153637-3	MW-15-2019	Total/NA	Water	350.1	
MB 480-475876/123	Method Blank	Total/NA	Water	350.1	
MB 480-475876/27	Method Blank	Total/NA	Water	350.1	
MB 480-475876/3	Method Blank	Total/NA	Water	350.1	
LCS 480-475876/124	Lab Control Sample	Total/NA	Water	350.1	
LCS 480-475876/28	Lab Control Sample	Total/NA	Water	350.1	
LCS 480-475876/4	Lab Control Sample	Total/NA	Water	350.1	
480-153637-1 MS	MW-4-2019	Total/NA	Water	350.1	

General Chemistry (Continued)

Analysis Batch: 475876 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-153637-2 MS	MW-10-2019	Total/NA	Water	350.1	
480-153637-2 DU	MW-10-2019	Total/NA	Water	350.1	

Analysis Batch: 475895

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-153682-1	MW-7-2019	Total/NA	Water	300.0	
480-153682-2	MW-11-2019	Total/NA	Water	300.0	
480-153682-3	MW-13-2019	Total/NA	Water	300.0	
480-153682-4	MW-12-2019	Total/NA	Water	300.0	
MB 480-475895/4	Method Blank	Total/NA	Water	300.0	
LCS 480-475895/3	Lab Control Sample	Total/NA	Water	300.0	

Analysis Batch: 475948

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-153840-1	MW-14-2019	Total/NA	Water	300.0	
MB 480-475948/4	Method Blank	Total/NA	Water	300.0	
LCS 480-475948/3	Lab Control Sample	Total/NA	Water	300.0	

Analysis Batch: 476103

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-153682-1	MW-7-2019	Total/NA	Water	350.1	
480-153682-2	MW-11-2019	Total/NA	Water	350.1	
480-153682-3	MW-13-2019	Total/NA	Water	350.1	
480-153682-4	MW-12-2019	Total/NA	Water	350.1	
MB 480-476103/3	Method Blank	Total/NA	Water	350.1	
MB 480-476103/75	Method Blank	Total/NA	Water	350.1	
LCS 480-476103/4	Lab Control Sample	Total/NA	Water	350.1	
LCS 480-476103/76	Lab Control Sample	Total/NA	Water	350.1	

Analysis Batch: 476783

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-153682-1	MW-7-2019	Total/NA	Water	VFA-IC	
480-153682-2	MW-11-2019	Total/NA	Water	VFA-IC	
480-153682-3	MW-13-2019	Total/NA	Water	VFA-IC	
480-153682-4	MW-12-2019	Total/NA	Water	VFA-IC	
MB 480-476783/4	Method Blank	Total/NA	Water	VFA-IC	
LCS 480-476783/3	Lab Control Sample	Total/NA	Water	VFA-IC	
480-153682-4 MS	MW-12-2019	Total/NA	Water	VFA-IC	

Analysis Batch: 476867

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-153637-1	MW-4-2019	Total/NA	Water	9060A	
480-153637-2	MW-10-2019	Total/NA	Water	9060A	
480-153637-3	MW-15-2019	Total/NA	Water	9060A	
MB 480-476867/51	Method Blank	Total/NA	Water	9060A	
LCS 480-476867/52	Lab Control Sample	Total/NA	Water	9060A	
480-153637-1 MS	MW-4-2019	Total/NA	Water	9060A	
480-153637-2 DU	MW-10-2019	Total/NA	Water	9060A	

General Chemistry

Analysis Batch: 477001

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-153840-1	MW-14-2019	Total/NA	Water	350.1	
MB 480-477001/27	Method Blank	Total/NA	Water	350.1	
MB 480-477001/51	Method Blank	Total/NA	Water	350.1	
LCS 480-477001/28	Lab Control Sample	Total/NA	Water	350.1	
LCS 480-477001/52	Lab Control Sample	Total/NA	Water	350.1	

Analysis Batch: 477030

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-153840-1	MW-14-2019	Total/NA	Water	VFA-IC	
MB 480-477030/4	Method Blank	Total/NA	Water	VFA-IC	
LCS 480-477030/3	Lab Control Sample	Total/NA	Water	VFA-IC	

Analysis Batch: 477275

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-153682-3	MW-13-2019	Total/NA	Water	9060A	
MB 480-477275/4	Method Blank	Total/NA	Water	9060A	
LCS 480-477275/5	Lab Control Sample	Total/NA	Water	9060A	

Analysis Batch: 477704

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-153682-1	MW-7-2019	Total/NA	Water	9060A	
480-153682-2	MW-11-2019	Total/NA	Water	9060A	
480-153682-3	MW-13-2019	Total/NA	Water	9060A	
480-153682-4	MW-12-2019	Total/NA	Water	9060A	
480-153840-1	MW-14-2019	Total/NA	Water	9060A	
MB 480-477704/4	Method Blank	Total/NA	Water	9060A	
LCS 480-477704/5	Lab Control Sample	Total/NA	Water	9060A	
480-153682-1 MS	MW-7-2019	Total/NA	Water	9060A	
480-153682-2 DU	MW-11-2019	Total/NA	Water	9060A	
480-153840-1 DU	MW-14-2019	Total/NA	Water	9060A	

Lab Chronicle

Client: GHD Services Inc.
Project/Site: 058507, GM-Lockport Groundwater Sampling

Job ID: 480-153637-1
SDG: DHTSS

Client Sample ID: MW-4-2019

Date Collected: 05/16/19 12:00
Date Received: 05/16/19 16:25

Lab Sample ID: 480-153637-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	474543	05/24/19 14:37	OMI	TAL BUF
Total/NA	Analysis	8260C	DL	800	474931	05/28/19 17:43	RJF	TAL BUF
Total/NA	Analysis	AM20GAX		1	477508	05/22/19 12:29	CTB	SC0015
Total/NA	Analysis	RSK-175		1	143166	05/18/19 18:57	MLT	TAL BUR
Total/NA	Analysis	RSK-175		22	475433	05/30/19 20:13	DSC	TAL BUF
Total/NA	Prep	3005A			473684	05/20/19 13:23	EMB	TAL BUF
Total/NA	Analysis	6010C		1	474726	05/24/19 17:34	LMH	TAL BUF
Total/NA	Prep	3005A			473684	05/20/19 13:23	EMB	TAL BUF
Total/NA	Analysis	6010C		10	476250	06/04/19 14:16	LMH	TAL BUF
Total/NA	Analysis	300.0		50	475659	06/01/19 00:57	RJS	TAL BUF
Total/NA	Analysis	350.1		1	475876	06/03/19 12:29	CLT	TAL BUF
Total/NA	Analysis	353.2		1	473519	05/17/19 20:49	SMH	TAL BUF
Total/NA	Analysis	353.2		1	473520	05/17/19 20:49	SMH	TAL BUF
Total/NA	Analysis	9060A		1	476867	06/07/19 20:01	CLA	TAL BUF
Total/NA	Analysis	SM 2320B		1	474102	05/21/19 20:26	KMF	TAL BUF
Total/NA	Analysis	SM 4500 S2 F		1	473781	05/20/19 13:40	MJB	TAL BUF
Total/NA	Analysis	VFA-IC		5	474105	05/22/19 20:17	CLA	TAL BUF

Client Sample ID: MW-10-2019

Date Collected: 05/16/19 14:00
Date Received: 05/16/19 16:25

Lab Sample ID: 480-153637-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		2	474552	05/24/19 12:12	KMN	TAL BUF
Total/NA	Analysis	AM20GAX		1	477508	05/22/19 12:42	CTB	SC0015
Total/NA	Analysis	RSK-175		1	475433	05/30/19 20:32	DSC	TAL BUF
Total/NA	Prep	3005A			473684	05/20/19 13:23	EMB	TAL BUF
Total/NA	Analysis	6010C		1	474726	05/24/19 17:38	LMH	TAL BUF
Total/NA	Prep	3005A			473684	05/20/19 13:23	EMB	TAL BUF
Total/NA	Analysis	6010C		10	476250	06/04/19 14:20	LMH	TAL BUF
Total/NA	Analysis	300.0		50	475659	06/01/19 01:06	RJS	TAL BUF
Total/NA	Analysis	350.1		1	475876	06/03/19 11:05	CLT	TAL BUF
Total/NA	Analysis	353.2		1	473520	05/18/19 01:24	SMH	TAL BUF
Total/NA	Analysis	353.2		1	473518	05/18/19 01:24	SMH	TAL BUF
Total/NA	Analysis	9060A		1	476867	06/07/19 20:57	CLA	TAL BUF
Total/NA	Analysis	SM 2320B		1	474102	05/21/19 20:31	KMF	TAL BUF
Total/NA	Analysis	SM 4500 S2 F		1	473781	05/20/19 13:40	MJB	TAL BUF
Total/NA	Analysis	VFA-IC		5	474105	05/22/19 20:46	CLA	TAL BUF

Lab Chronicle

Client: GHD Services Inc.
Project/Site: 058507, GM-Lockport Groundwater Sampling

Job ID: 480-153637-1
SDG: DHTSS

Client Sample ID: MW-15-2019

Lab Sample ID: 480-153637-3

Date Collected: 05/16/19 15:30
Matrix: Water
Date Received: 05/16/19 16:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	474797	05/26/19 15:07	RJF	TAL BUF
Total/NA	Analysis	AM20GAX		1	477508	05/22/19 12:56	CTB	SC0015
Total/NA	Analysis	RSK-175		1	143166	05/18/19 19:06	MLT	TAL BUR
Total/NA	Analysis	RSK-175		1	475110	05/29/19 23:30	DSC	TAL BUF
Total/NA	Prep	3005A			473684	05/20/19 13:23	EMB	TAL BUF
Total/NA	Analysis	6010C		1	474726	05/24/19 17:42	LMH	TAL BUF
Total/NA	Analysis	300.0		20	475659	06/01/19 01:14	RJS	TAL BUF
Total/NA	Analysis	350.1		1	475876	06/03/19 11:07	CLT	TAL BUF
Total/NA	Analysis	353.2		1	473520	05/18/19 01:25	SMH	TAL BUF
Total/NA	Analysis	353.2		1	473518	05/18/19 01:25	SMH	TAL BUF
Total/NA	Analysis	9060A		1	476867	06/07/19 21:53	CLA	TAL BUF
Total/NA	Analysis	SM 2320B		1	474102	05/21/19 20:36	KMF	TAL BUF
Total/NA	Analysis	SM 4500 S2 F		1	473781	05/20/19 13:40	MJB	TAL BUF
Total/NA	Analysis	VFA-IC		5	474105	05/22/19 23:41	CLA	TAL BUF

Client Sample ID: TRIP BLANK

Lab Sample ID: 480-153637-4

Date Collected: 05/16/19 00:00
Matrix: Water
Date Received: 05/16/19 16:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	474543	05/24/19 15:32	OMI	TAL BUF

Client Sample ID: MW-7-2019

Lab Sample ID: 480-153682-1

Date Collected: 05/17/19 09:25
Matrix: Water
Date Received: 05/17/19 17:32

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		20000	474795	05/26/19 14:12	AMM	TAL BUF
Total/NA	Analysis	RSK-175		1	143429	05/24/19 17:12	MLT	TAL BUR
Total/NA	Analysis	RSK-175	DL	22	476071	06/04/19 18:02	DSC	TAL BUF
Total/NA	Analysis	RSK-175		1	475570	05/31/19 17:29	DSC	TAL BUF
Total/NA	Prep	3005A			473772	05/21/19 08:35	EMB	TAL BUF
Total/NA	Analysis	6010C		1	475741	05/31/19 20:28	AMH	TAL BUF
Total/NA	Analysis	300.0		10	475895	06/03/19 20:55	RJS	TAL BUF
Total/NA	Analysis	350.1		1	476103	06/04/19 10:48	CLT	TAL BUF
Total/NA	Analysis	353.2		1	473543	05/18/19 06:43	SMH	TAL BUF
Total/NA	Analysis	353.2		1	473544	05/18/19 06:43	SMH	TAL BUF
Total/NA	Analysis	9060A		1	477704	06/12/19 17:35	CLA	TAL BUF
Total/NA	Analysis	SM 2320B		1	474103	05/21/19 20:40	KMF	TAL BUF
Total/NA	Analysis	SM 4500 S2 F		1	473781	05/20/19 13:40	MJB	TAL BUF
Total/NA	Analysis	VFA-IC		10	476783	06/08/19 00:54	RJS	TAL BUF

Lab Chronicle

Client: GHD Services Inc.
Project/Site: 058507, GM-Lockport Groundwater Sampling

Job ID: 480-153637-1
SDG: DHTSS

Client Sample ID: MW-11-2019

Date Collected: 05/17/19 10:30
Date Received: 05/17/19 17:32

Lab Sample ID: 480-153682-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	474795	05/26/19 14:35	AMM	TAL BUF
Total/NA	Analysis	AM20GAX		1	477508	05/25/19 13:04	CTB	SC0015
Total/NA	Analysis	RSK-175		1	143429	05/24/19 17:20	MLT	TAL BUR
Total/NA	Analysis	RSK-175		1	475570	05/31/19 17:48	DSC	TAL BUF
Total/NA	Prep	3005A			473772	05/21/19 08:35	EMB	TAL BUF
Total/NA	Analysis	6010C		1	475741	05/31/19 20:32	AMH	TAL BUF
Total/NA	Analysis	300.0		5	475895	06/03/19 21:03	RJS	TAL BUF
Total/NA	Analysis	350.1		1	476103	06/04/19 10:49	CLT	TAL BUF
Total/NA	Analysis	353.2		1	473544	05/18/19 09:05	SMH	TAL BUF
Total/NA	Analysis	353.2		1	473542	05/18/19 09:05	SMH	TAL BUF
Total/NA	Analysis	9060A		1	477704	06/12/19 18:08	CLA	TAL BUF
Total/NA	Analysis	SM 2320B		1	474103	05/21/19 20:47	KMF	TAL BUF
Total/NA	Analysis	SM 4500 S2 F		1	473781	05/20/19 13:40	MJB	TAL BUF
Total/NA	Analysis	VFA-IC		10	476783	06/08/19 01:23	RJS	TAL BUF

Client Sample ID: MW-13-2019

Date Collected: 05/17/19 11:55
Date Received: 05/17/19 17:32

Lab Sample ID: 480-153682-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	474646	05/24/19 19:15	OMI	TAL BUF
Total/NA	Analysis	AM20GAX		1	477508	05/25/19 13:16	CTB	SC0015
Total/NA	Analysis	RSK-175		1	143429	05/24/19 17:29	MLT	TAL BUR
Total/NA	Analysis	RSK-175		1	475570	05/31/19 18:07	DSC	TAL BUF
Total/NA	Prep	3005A			473772	05/21/19 08:35	EMB	TAL BUF
Total/NA	Analysis	6010C		1	475741	05/31/19 20:36	AMH	TAL BUF
Total/NA	Prep	3005A			473772	05/21/19 08:35	EMB	TAL BUF
Total/NA	Analysis	6010C		2	475825	06/01/19 21:58	AMH	TAL BUF
Total/NA	Analysis	300.0		20	475895	06/03/19 21:11	RJS	TAL BUF
Total/NA	Analysis	350.1		1	476103	06/04/19 10:50	CLT	TAL BUF
Total/NA	Analysis	353.2		1	473542	05/18/19 09:07	SMH	TAL BUF
Total/NA	Analysis	353.2		1	473544	05/18/19 09:07	SMH	TAL BUF
Total/NA	Analysis	9060A		1	477275	06/08/19 20:47	CLA	TAL BUF
Total/NA	Analysis	9060A		1	477704	06/12/19 18:41	CLA	TAL BUF
Total/NA	Analysis	SM 2320B		1	474103	05/21/19 21:06	KMF	TAL BUF
Total/NA	Analysis	SM 4500 S2 F		1	473781	05/20/19 13:40	MJB	TAL BUF
Total/NA	Analysis	VFA-IC		10	476783	06/08/19 01:52	RJS	TAL BUF

Client Sample ID: MW-12-2019
Date Collected: 05/17/19 15:25
Date Received: 05/17/19 17:32

Lab Sample ID: 480-153682-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		2	474646	05/24/19 19:39	OMI	TAL BUF
Total/NA	Analysis	AM20GAX		1	477508	05/25/19 13:29	CTB	SC0015
Total/NA	Analysis	RSK-175		1	143429	05/24/19 17:38	MLT	TAL BUR
Total/NA	Analysis	RSK-175		1	475570	05/31/19 18:26	DSC	TAL BUF
Total/NA	Prep	3005A			473772	05/21/19 08:35	EMB	TAL BUF
Total/NA	Analysis	6010C		1	475741	05/31/19 20:40	AMH	TAL BUF
Total/NA	Prep	3005A			473772	05/21/19 08:35	EMB	TAL BUF
Total/NA	Analysis	6010C		2	475825	06/01/19 22:13	AMH	TAL BUF
Total/NA	Analysis	300.0		50	475895	06/03/19 21:19	RJS	TAL BUF
Total/NA	Analysis	350.1		1	476103	06/04/19 10:51	CLT	TAL BUF
Total/NA	Analysis	353.2		1	473543	05/18/19 06:47	SMH	TAL BUF
Total/NA	Analysis	353.2		1	473544	05/18/19 06:47	SMH	TAL BUF
Total/NA	Analysis	9060A		1	477704	06/12/19 19:14	CLA	TAL BUF
Total/NA	Analysis	SM 2320B		1	474103	05/21/19 21:14	KMF	TAL BUF
Total/NA	Analysis	SM 4500 S2 F		1	473781	05/20/19 13:40	MJB	TAL BUF
Total/NA	Analysis	VFA-IC		10	476783	06/08/19 02:21	RJS	TAL BUF

Client Sample ID: TRIP BLANK
Date Collected: 05/17/19 00:00
Date Received: 05/17/19 17:32

Lab Sample ID: 480-153682-5
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	474646	05/24/19 20:03	OMI	TAL BUF

Client Sample ID: MW-14-2019
Date Collected: 05/21/19 11:30
Date Received: 05/21/19 16:15

Lab Sample ID: 480-153840-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	475125	05/30/19 04:14	S1V	TAL BUF
Total/NA	Analysis	AM20GAX		1	477508	05/25/19 12:51	CTB	SC0015
Total/NA	Analysis	RSK-175		1	143355	05/23/19 22:08	MLT	TAL BUR
Total/NA	Analysis	RSK-175		1	475769	06/02/19 18:48	DSC	TAL BUF
Total/NA	Prep	3005A			474144	05/22/19 12:04	EMB	TAL BUF
Total/NA	Analysis	6010C		1	474561	05/23/19 17:35	LMH	TAL BUF
Total/NA	Prep	3005A			474144	05/22/19 12:04	EMB	TAL BUF
Total/NA	Analysis	6010C		2	474742	05/24/19 16:27	LMH	TAL BUF
Total/NA	Analysis	300.0		20	475948	06/04/19 16:07	RJS	TAL BUF
Total/NA	Analysis	350.1		1	477001	06/10/19 10:06	CLT	TAL BUF
Total/NA	Analysis	353.2		1	474276	05/22/19 21:36	SMH	TAL BUF
Total/NA	Analysis	353.2		1	474278	05/22/19 21:36	SMH	TAL BUF
Total/NA	Analysis	9060A		1	477704	06/12/19 20:52	CLA	TAL BUF

Lab Chronicle

Client: GHD Services Inc.
Project/Site: 058507, GM-Lockport Groundwater Sampling

Job ID: 480-153637-1
SDG: DHTSS

Client Sample ID: MW-14-2019

Date Collected: 05/21/19 11:30
Date Received: 05/21/19 16:15

Lab Sample ID: 480-153840-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 2320B		1	474581	05/23/19 10:59	KMF	TAL BUF
Total/NA	Analysis	SM 4500 S2 F		1	474948	05/28/19 12:56	MJB	TAL BUF
Total/NA	Analysis	VFA-IC		10	477030	06/10/19 22:19	RJS	TAL BUF

Laboratory References:

SC0015 = Pittsburgh, PA (formerly Microseeps), 220 William Pitt Way, Pittsburgh, PA 15238, TEL (412)826-5245

TAL BUF = Eurofins TestAmerica, Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

TAL BUR = Eurofins TestAmerica, Burlington, 30 Community Drive, Suite 11, South Burlington, VT 05403, TEL (802)660-1990

Accreditation/Certification Summary

Client: GHD Services Inc.
Project/Site: 058507, GM-Lockport Groundwater Sampling

Job ID: 480-153637-1
SDG: DHTSS

Laboratory: Eurofins TestAmerica, Buffalo

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

Authority	Program	EPA Region	Identification Number	Expiration Date
New York	NELAP	2	10026	03-31-20

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

Analysis Method	Prep Method	Matrix	Analyte
VFA-IC		Water	Acetic acid
VFA-IC		Water	Formic-acid
VFA-IC		Water	Lactic acid
VFA-IC		Water	n-Butyric Acid
VFA-IC		Water	Propionic acid
VFA-IC		Water	Pyruvic Acid

Laboratory: Eurofins TestAmerica, Burlington

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
ANAB	DoD		L2336	02-25-20
Connecticut	State Program	1	PH-0751	09-30-19
DE Haz. Subst. Cleanup Act (HSCA)	State Program	3	NA	02-01-20
Florida	NELAP	4	E87467	06-30-19 *
Minnesota	NELAP	5	050-999-436	12-31-19
New Hampshire	NELAP	1	2006	12-18-19
New Jersey	NELAP	2	VT972	06-30-19 *
New York	NELAP	2	10391	04-01-20
Pennsylvania	NELAP	3	68-00489	04-30-20
Rhode Island	State Program	1	LAO00298	12-30-19
US Fish & Wildlife	Federal		LE-058448-0	07-31-19
USDA	Federal		P330-11-00093	07-24-20
Vermont	State Program	1	VT-4000	12-31-19
Virginia	NELAP	3	460209	12-14-19

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

Method Summary

Client: GHD Services Inc.
Project/Site: 058507, GM-Lockport Groundwater Sampling

Job ID: 480-153637-1
SDG: DHTSS

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds by GC/MS	SW846	TAL BUF
AM20GAX	Dissolved Gases (GC)	None	SC0015
RSK-175	Dissolved Gases (GC)	RSK	TAL BUF
RSK-175	Dissolved Gases (GC)	RSK	TAL BUR
6010C	Metals (ICP)	SW846	TAL BUF
300.0	Anions, Ion Chromatography	MCAWW	TAL BUF
350.1	Nitrogen, Ammonia	MCAWW	TAL BUF
353.2	Nitrate	EPA	TAL BUF
353.2	Nitrogen, Nitrite	MCAWW	TAL BUF
9060A	Organic Carbon, Total (TOC)	SW846	TAL BUF
SM 2320B	Alkalinity	SM	TAL BUF
SM 4500 S2 F	Sulfide, Total	SM	TAL BUF
VFA-IC	Volatile Fatty Acids, Ion Chromatography	TestAmerica SOP	TAL BUF
3005A	Preparation, Total Metals	SW846	TAL BUF
5030C	Purge and Trap	SW846	TAL BUF

Protocol References:

EPA = US Environmental Protection Agency

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

None = None

RSK = Sample Prep And Calculations For Dissolved Gas Analysis In Water Samples Using A GC Headspace Equilibration Technique, RSKSOP-175, Rev. 0, 8/11/94, USEPA Research Lab

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

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

TestAmerica SOP = TestAmerica, Inc., Standard Operating Procedure

Laboratory References:

SC0015 = Pittsburgh, PA (formerly Microseeps), 220 William Pitt Way, Pittsburgh, PA 15238, TEL (412)826-5245

TAL BUF = Eurofins TestAmerica, Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

TAL BUR = Eurofins TestAmerica, Burlington, 30 Community Drive, Suite 11, South Burlington, VT 05403, TEL (802)660-1990

Sample Summary

Client: GHD Services Inc.
Project/Site: 058507, GM-Lockport Groundwater Sampling

Job ID: 480-153637-1
SDG: DHTSS

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
480-153637-1	MW-4-2019	Water	05/16/19 12:00	05/16/19 16:25	
480-153637-2	MW-10-2019	Water	05/16/19 14:00	05/16/19 16:25	
480-153637-3	MW-15-2019	Water	05/16/19 15:30	05/16/19 16:25	
480-153637-4	TRIP BLANK	Water	05/16/19 00:00	05/16/19 16:25	
480-153682-1	MW-7-2019	Water	05/17/19 09:25	05/17/19 17:32	
480-153682-2	MW-11-2019	Water	05/17/19 10:30	05/17/19 17:32	
480-153682-3	MW-13-2019	Water	05/17/19 11:55	05/17/19 17:32	
480-153682-4	MW-12-2019	Water	05/17/19 15:25	05/17/19 17:32	
480-153682-5	TRIP BLANK	Water	05/17/19 00:00	05/17/19 17:32	
480-153840-1	MW-14-2019	Water	05/21/19 11:30	05/21/19 16:15	

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

May 30, 2019

Melissa Deyo
Test America
10 Hazelwood Drive
Buffalo, NY 14228

RE: **480-153637-1**

Pace Workorder: 30395

Dear Melissa Deyo:

Enclosed are the analytical results for sample(s) received by the laboratory on Monday, May 20, 2019. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

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

Sincerely,

Ruth Welsh 05/30/2019
Ruth.Welsh@pacelabs.com

Customer Service Representative

Enclosures

As a valued client we would appreciate your comments on our service.
Please email PAESfeedback@pacelabs.com.

Total Number of Pages 11

CERTIFICATE OF ANALYSIS

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

LABORATORY ACCREDITATIONS & CERTIFICATIONS

Accreditor:	Pennsylvania Department of Environmental Protection, Bureau of Laboratories
Accreditation ID:	02-00538
Scope:	NELAP Non-Potable Water
Accreditor:	West Virginia Department of Environmental Protection, Division of Water and Waste Management
Accreditation ID:	395
Scope:	Non-Potable Water
Accreditor:	South Carolina Department of Health and Environmental Control, Office of Environmental Laboratory Certification
Accreditation ID:	89009003
Scope:	Clean Water Act (CWA); Resource Conservation and Recovery Act (RCRA)
Accreditor:	State of Virginia
Accreditation ID:	460201
Scope:	Non-Potable Water
Accreditor:	NELAP: New Jersey, Department of Environmental Protection
Accreditation ID:	PA026
Scope:	Non-Potable Water
Accreditor:	NELAP: New York, Department of Health Wadsworth Center
Accreditation ID:	11815
Scope:	Non-Potable Water
Accreditor:	State of Connecticut, Department of Public Health, Division of Environmental Health
Accreditation ID:	PH-0263
Scope:	Clean Water Act (CWA) Resource Conservation and Recovery Act (RCRA)
Accreditor:	NELAP: Texas, Commission on Environmental Quality
Accreditation ID:	T104704453-09-TX
Scope:	Non-Potable Water
Accreditor:	State of New Hampshire
Accreditation ID:	299409
Scope:	Non-potable water
Accreditor:	State of Georgia
Accreditation ID:	Chapter 391-3-26
Scope:	As per the Georgia EPD Rules and Regulations for Commercial Laboratories, PAES is accredited by the Pennsylvania Department of Environmental Protection Bureau of Laboratories under the National Environmental Laboratory Approval Program (NELAC).

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

SAMPLE SUMMARY

Workorder: 30395 480-153637-1

Lab ID	Sample ID	Matrix	Date Collected	Date Received
303950001	MW-4-2019-AIR (480-153637-5)	Bubble Strip	5/16/2019 12:00	5/20/2019 07:30
303950002	MW-10-2019-AIR (480-153637-6)	Bubble Strip	5/16/2019 14:00	5/20/2019 07:30
303950003	MW-15-2019-AIR (480-153637-7)	Bubble Strip	5/16/2019 15:30	5/20/2019 07:30

Pace Analytical Energy Services LLC
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ANALYTICAL RESULTS

Workorder: 30395 480-153637-1

Lab ID: **303950001** Date Received: 5/20/2019 07:30 Matrix: Bubble Strip

Sample ID: **MW-4-2019-AIR (480-153637-5)** Date Collected: 5/16/2019 12:00

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
RISK - PAES								
Analysis Desc: AM20GAX		Analytical Method: AM20GAX						
Hydrogen	**1.8**	nM	1.0	0.75	1	5/22/2019 12:29	TD	n

Pace Analytical Energy Services LLC
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Pittsburgh, PA 15238
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ANALYTICAL RESULTS

Workorder: 30395 480-153637-1

Lab ID: **303950002** Date Received: 5/20/2019 07:30 Matrix: Bubble Strip

Sample ID: **MW-10-2019-AIR (480-153637-6)** Date Collected: 5/16/2019 14:00

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
RISK - PAES								
Analysis Desc: AM20GAX		Analytical Method: AM20GAX						
Hydrogen	**1.5**	nM	1.0	0.75	1	5/22/2019 12:42	TD	n

Pace Analytical Energy Services LLC
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ANALYTICAL RESULTS

Workorder: 30395 480-153637-1

Lab ID: **303950003** Date Received: 5/20/2019 07:30 Matrix: Bubble Strip

Sample ID: **MW-15-2019-AIR (480-153637-7)** Date Collected: 5/16/2019 15:30

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
RISK - PAES								
Analysis Desc: AM20GAX			Analytical Method: AM20GAX					
Hydrogen	**1.1**	nM	1.0	0.75	1	5/22/2019 12:56	TD	n

Pace Analytical Energy Services LLC
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Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

ANALYTICAL RESULTS QUALIFIERS

Workorder: 30395 480-153637-1

DEFINITIONS/QUALIFIERS

MDL	Method Detection Limit. Can be used synonymously with LOD; Limit Of Detection.
PQL	Practical Quanitation Limit. Can be used synonymously with LOQ; Limit Of Quantitation.
ND	Not detected at or above reporting limit.
DF	Dilution Factor.
S	Surrogate.
RPD	Relative Percent Difference.
% Rec	Percent Recovery.
U	Indicates the compound was analyzed for, but not detected at or above the noted concentration.
J	Estimated concentration greater than the set method detection limit (MDL) and less than the set reporting limit (PQL).
n	The laboratory does not hold NELAP/TNI accreditation for this method or analyte.

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

QUALITY CONTROL DATA

Workorder: 30395 480-153637-1

QC Batch: DISG/7551 Analysis Method: AM20GAX

QC Batch Method: AM20GAX

Associated Lab Samples: 303950001, 303950002, 303950003

METHOD BLANK: 61330

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
RISK				
Hydrogen	nM	1.0 U	1.0	n

LABORATORY CONTROL SAMPLE & LCSD: 61331 61332

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
Hydrogen	nM	24	25	25	103	103	80-120	0.68	20	n

Pace Analytical Energy Services LLC
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Pittsburgh, PA 15238
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QUALITY CONTROL DATA QUALIFIERS

Workorder: 30395 480-153637-1

QUALITY CONTROL PARAMETER QUALIFIERS

n	The laboratory does not hold NELAP/TNI accreditation for this method or analyte.

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: 30395 480-153637-1

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
303950001	MW-4-2019-AIR (480-153637-5)			AM20GAX	DISG/7551
303950002	MW-10-2019-AIR (480-153637-6)			AM20GAX	DISG/7551
303950003	MW-15-2019-AIR (480-153637-7)			AM20GAX	DISG/7551

Eurofins TestAmerica, Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

30395

Chain of Custody Record

eurofins | Environment Testing TestAmerica

6/17/2019

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Deyo, Melissa L	Carrier Tracking No(s):	COC No: 480-49765.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: melissa.deyo@testamericainc.com	State of Origin: New York	Page: Page 1 of 1
Company: Pace Analytical Energy Services, LLC		Accreditations Required (See note): NELAP - New York		Job #: 480-153637-1
Address: 220 William Pitt Way, ,	Due Date Requested: 5/29/2019			
City: Pittsburgh	TAT Requested (days):			
State, Zip: PA, 15238				
Phone: 412-826-5245(Tel)	PO #:			
Email:	WO #:			
Project Name: 058507, GM-Lockport Groundwater Sampling	Project #: 48004014			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	AM20GAX/ Hydrogen	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
MW-4-2019-AIR (480-153637-5)	5/16/19	12:00 Eastern		Water			X	1	
MW-10-2019-AIR (480-153637-6)	5/16/19	14:00 Eastern		Water			X	1	
MW-15-2019-AIR (480-153637-7)	5/16/19	15:30 Eastern		Water			X	1	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)***
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		5-17-19 1650	PACE		5.20.19 0730	PACE
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

May 30, 2019

Melissa Deyo
Test America
10 Hazelwood Drive
Buffalo, NY 14228

RE: **480-153682-1**

Pace Workorder: 30406

Dear Melissa Deyo:

Enclosed are the analytical results for sample(s) received by the laboratory on Tuesday, May 21, 2019. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

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

Sincerely,

Ruth Welsh 05/30/2019
Ruth.Welsh@pacelabs.com

Customer Service Representative

Enclosures

As a valued client we would appreciate your comments on our service.
Please email PAESfeedback@pacelabs.com.

Total Number of Pages 11

CERTIFICATE OF ANALYSIS

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

LABORATORY ACCREDITATIONS & CERTIFICATIONS

Accreditor:	Pennsylvania Department of Environmental Protection, Bureau of Laboratories
Accreditation ID:	02-00538
Scope:	NELAP Non-Potable Water
Accreditor:	West Virginia Department of Environmental Protection, Division of Water and Waste Management
Accreditation ID:	395
Scope:	Non-Potable Water
Accreditor:	South Carolina Department of Health and Environmental Control, Office of Environmental Laboratory Certification
Accreditation ID:	89009003
Scope:	Clean Water Act (CWA); Resource Conservation and Recovery Act (RCRA)
Accreditor:	State of Virginia
Accreditation ID:	460201
Scope:	Non-Potable Water
Accreditor:	NELAP: New Jersey, Department of Environmental Protection
Accreditation ID:	PA026
Scope:	Non-Potable Water
Accreditor:	NELAP: New York, Department of Health Wadsworth Center
Accreditation ID:	11815
Scope:	Non-Potable Water
Accreditor:	State of Connecticut, Department of Public Health, Division of Environmental Health
Accreditation ID:	PH-0263
Scope:	Clean Water Act (CWA) Resource Conservation and Recovery Act (RCRA)
Accreditor:	NELAP: Texas, Commission on Environmental Quality
Accreditation ID:	T104704453-09-TX
Scope:	Non-Potable Water
Accreditor:	State of New Hampshire
Accreditation ID:	299409
Scope:	Non-potable water
Accreditor:	State of Georgia
Accreditation ID:	Chapter 391-3-26
Scope:	As per the Georgia EPD Rules and Regulations for Commercial Laboratories, PAES is accredited by the Pennsylvania Department of Environmental Protection Bureau of Laboratories under the National Environmental Laboratory Approval Program (NELAC).

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

SAMPLE SUMMARY

Workorder: 30406 480-153682-1

Lab ID	Sample ID	Matrix	Date Collected	Date Received
304060001	MW-11-2019 (480-153682-2)	Bubble Strip	5/17/2019 10:30	5/21/2019 10:30
304060002	MW-13-2019 (480-153682-3)	Bubble Strip	5/17/2019 11:55	5/21/2019 10:30
304060003	MW-12-2019 (480-153682-4)	Bubble Strip	5/17/2019 15:25	5/21/2019 10:30

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

ANALYTICAL RESULTS

Workorder: 30406 480-153682-1

Lab ID: **304060001** Date Received: 5/21/2019 10:30 Matrix: Bubble Strip

Sample ID: **MW-11-2019 (480-153682-2)** Date Collected: 5/17/2019 10:30

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
RISK - PAES								
Analysis Desc: AM20GAX			Analytical Method: AM20GAX					
Hydrogen	**1.3**	nM	1.0	0.75	1	5/25/2019 13:04	TD	n

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

ANALYTICAL RESULTS

Workorder: 30406 480-153682-1

Lab ID: **304060002** Date Received: 5/21/2019 10:30 Matrix: Bubble Strip

Sample ID: **MW-13-2019 (480-153682-3)** Date Collected: 5/17/2019 11:55

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
RISK - PAES								
Analysis Desc: AM20GAX		Analytical Method: AM20GAX						
Hydrogen	**1.4**	nM	1.0	0.75	1	5/25/2019 13:16	TD	n

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

ANALYTICAL RESULTS

Workorder: 30406 480-153682-1

Lab ID: **304060003** Date Received: 5/21/2019 10:30 Matrix: Bubble Strip

Sample ID: **MW-12-2019 (480-153682-4)** Date Collected: 5/17/2019 15:25

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
RISK - PAES								
Analysis Desc: AM20GAX			Analytical Method: AM20GAX					
Hydrogen	**1.1**	nM	1.0	0.75	1	5/25/2019 13:29	TD	n

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

ANALYTICAL RESULTS QUALIFIERS

Workorder: 30406 480-153682-1

DEFINITIONS/QUALIFIERS

MDL	Method Detection Limit. Can be used synonymously with LOD; Limit Of Detection.
PQL	Practical Quanitation Limit. Can be used synonymously with LOQ; Limit Of Quantitation.
ND	Not detected at or above reporting limit.
DF	Dilution Factor.
S	Surrogate.
RPD	Relative Percent Difference.
% Rec	Percent Recovery.
U	Indicates the compound was analyzed for, but not detected at or above the noted concentration.
J	Estimated concentration greater than the set method detection limit (MDL) and less than the set reporting limit (PQL).
n	The laboratory does not hold NELAP/TNI accreditation for this method or analyte.

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

QUALITY CONTROL DATA

Workorder: 30406 480-153682-1

QC Batch: DISG/7557 Analysis Method: AM20GAX

QC Batch Method: AM20GAX

Associated Lab Samples: 304060001, 304060002, 304060003

METHOD BLANK: 61363

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
RISK				
Hydrogen	nM	1.0 U	1.0	n

LABORATORY CONTROL SAMPLE & LCSD: 61364 61365

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
Hydrogen	nM	24	24	24	99	99	80-120	0.081	20	n

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

QUALITY CONTROL DATA QUALIFIERS

Workorder: 30406 480-153682-1

QUALITY CONTROL PARAMETER QUALIFIERS

n	The laboratory does not hold NELAP/TNI accreditation for this method or analyte.

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: 30406 480-153682-1

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
304060001	MW-11-2019 (480-153682-2)			AM20GAX	DISG/7557
304060002	MW-13-2019 (480-153682-3)			AM20GAX	DISG/7557
304060003	MW-12-2019 (480-153682-4)			AM20GAX	DISG/7557

Eurofins TestAmerica, Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

30406

Chain of Custody Record

eurofins | Environment Testing TestAmerica

6/17/2019

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Deyo, Melissa L	Carrier Tracking No(s):	COC No: 480-49799.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: melissa.deyo@testamericainc.com	State of Origin: New York	Page: Page 1 of 1
Company: Pace Analytical Energy Services, LLC		Accreditations Required (See note): NELAP - New York		Job #: 480-153682-1
Address: 220 William Pitt Way, ,	Due Date Requested: 5/30/2019			
City: Pittsburgh	TAT Requested (days):			
State, Zip: PA, 15238				
Phone: 412-826-5245(Tel)	PO #:			
Email:	WO #:			
Project Name: 058507, GM-Lockport Groundwater Sampling	Project #: 48004014			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	AM20GAX/ Hydrogen	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
MW-11-2019 (480-153682-2)	5/17/19	10:30 Eastern		Water			X	1	
MW-13-2019 (480-153682-3)	5/17/19	11:55 Eastern		Water			X	1	
MW-12-2019 (480-153682-4)	5/17/19	15:25 Eastern		Water			X	1	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification *Unconfirmed*	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*** ☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	5-20-19 1500	PAES		5.21.19 1030	PAES
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

May 30, 2019

Melissa Deyo
Test America
10 Hazelwood Drive
Buffalo, NY 14228

RE: **480-153840-1**

Pace Workorder: 30431

Dear Melissa Deyo:

Enclosed are the analytical results for sample(s) received by the laboratory on Thursday, May 23, 2019. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

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

Sincerely,

Ruth Welsh 05/30/2019
Ruth.Welsh@pacelabs.com

Customer Service Representative

Enclosures

As a valued client we would appreciate your comments on our service.
Please email PAESfeedback@pacelabs.com.

Total Number of Pages 9

CERTIFICATE OF ANALYSIS

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

LABORATORY ACCREDITATIONS & CERTIFICATIONS

Accreditor:	Pennsylvania Department of Environmental Protection, Bureau of Laboratories
Accreditation ID:	02-00538
Scope:	NELAP Non-Potable Water
Accreditor:	West Virginia Department of Environmental Protection, Division of Water and Waste Management
Accreditation ID:	395
Scope:	Non-Potable Water
Accreditor:	South Carolina Department of Health and Environmental Control, Office of Environmental Laboratory Certification
Accreditation ID:	89009003
Scope:	Clean Water Act (CWA); Resource Conservation and Recovery Act (RCRA)
Accreditor:	State of Virginia
Accreditation ID:	460201
Scope:	Non-Potable Water
Accreditor:	NELAP: New Jersey, Department of Environmental Protection
Accreditation ID:	PA026
Scope:	Non-Potable Water
Accreditor:	NELAP: New York, Department of Health Wadsworth Center
Accreditation ID:	11815
Scope:	Non-Potable Water
Accreditor:	State of Connecticut, Department of Public Health, Division of Environmental Health
Accreditation ID:	PH-0263
Scope:	Clean Water Act (CWA) Resource Conservation and Recovery Act (RCRA)
Accreditor:	NELAP: Texas, Commission on Environmental Quality
Accreditation ID:	T104704453-09-TX
Scope:	Non-Potable Water
Accreditor:	State of New Hampshire
Accreditation ID:	299409
Scope:	Non-potable water
Accreditor:	State of Georgia
Accreditation ID:	Chapter 391-3-26
Scope:	As per the Georgia EPD Rules and Regulations for Commercial Laboratories, PAES is accredited by the Pennsylvania Department of Environmental Protection Bureau of Laboratories under the National Environmental Laboratory Approval Program (NELAC).

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

SAMPLE SUMMARY

Workorder: 30431 480-153840-1

Lab ID	Sample ID	Matrix	Date Collected	Date Received
304310001	MW-14-2019 (480-153840-1)	Bubble Strip	5/21/2019 11:30	5/23/2019 11:00

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

ANALYTICAL RESULTS

Workorder: 30431 480-153840-1

Lab ID: **304310001** Date Received: 5/23/2019 11:00 Matrix: Bubble Strip

Sample ID: **MW-14-2019 (480-153840-1)** Date Collected: 5/21/2019 11:30

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
RISK - PAES								
Analysis Desc: AM20GAX			Analytical Method: AM20GAX					
Hydrogen	**2.1**	nM	1.0	0.75	1	5/25/2019 12:51	TD	n

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

ANALYTICAL RESULTS QUALIFIERS

Workorder: 30431 480-153840-1

DEFINITIONS/QUALIFIERS

MDL	Method Detection Limit. Can be used synonymously with LOD; Limit Of Detection.
PQL	Practical Quanitation Limit. Can be used synonymously with LOQ; Limit Of Quantitation.
ND	Not detected at or above reporting limit.
DF	Dilution Factor.
S	Surrogate.
RPD	Relative Percent Difference.
% Rec	Percent Recovery.
U	Indicates the compound was analyzed for, but not detected at or above the noted concentration.
J	Estimated concentration greater than the set method detection limit (MDL) and less than the set reporting limit (PQL).
n	The laboratory does not hold NELAP/TNI accreditation for this method or analyte.

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

QUALITY CONTROL DATA

Workorder: 30431 480-153840-1

QC Batch: DISG/7557 Analysis Method: AM20GAX

QC Batch Method: AM20GAX

Associated Lab Samples: 304310001

METHOD BLANK: 61363

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
RISK				
Hydrogen	nM	1.0 U	1.0	n

LABORATORY CONTROL SAMPLE & LCSD: 61364 61365

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
Hydrogen	nM	24	24	24	99	99	80-120	0.081	20	n

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

QUALITY CONTROL DATA QUALIFIERS

Workorder: 30431 480-153840-1

QUALITY CONTROL PARAMETER QUALIFIERS

n	The laboratory does not hold NELAP/TNI accreditation for this method or analyte.

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: 30431 480-153840-1

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
304310001	MW-14-2019 (480-153840-1)			AM20GAX	DISG/7557

Eurofins TestAmerica, Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone: 716-691-2600 Fax: 716-691-7991

30431

Chain of Custody Record

eurofins | Environment Testing TestAmerica

6/17/2019

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Deyo, Melissa L	Carrier Tracking No(s):	COC No: 480-49860.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: melissa.deyo@testamericainc.com	State of Origin: New York	Page: Page 1 of 1
Company: Pace Analytical Energy Services, LLC		Accreditations Required (See note): NELAP - New York		Job #: 480-153840-1
Address: 220 William Pitt Way, ,	Due Date Requested: 6/3/2019			
City: Pittsburgh	TAT Requested (days):			
State, Zip: PA, 15238				
Phone: 412-826-5245(Tel)	PO #:			
Email:	WO #:			
Project Name: 058507, GM-Lockport Groundwater Sampling	Project #: 48004014			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	AM20GAX/ Hydrogen	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
MW-14-2019 (480-153840-1)	5/21/19	11:30 Eastern		Water			X	1	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)***
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
[signature]	5-22-19 1515	TAB	[signature]	5.23.19 1100	PAES
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Eurofins TestAmerica, Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information	Sampler: T. Bohlen	Lab PM: Deyo, Melissa L	Carrier Tracking No(s):	COC No: 480-130188-29372.2
Client Contact: Kathleen Willy	Phone: 716 570 5983	E-Mail: melissa.deyo@testamericainc.com		Page: Page ~~26~~ 1 of ~~2~~ 1
Company: GHD Services Inc.				Job #:

Address: 2055 Niagara Falls Blvd., Suite 3	Due Date Requested:	
City: Niagara Falls	TAT Requested (days): Std.	
State, Zip: NY, 14304		
Phone:	PO #: 34033197	
Email: kathleen.willy@ghd.com	WO #: 256038	
Project Name: 058507, GM-Lockport Groundwater Sampling	Project #: 48004014	
Site:	SSOW#:	

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260C - PCE, TCE, DCE (trans and cis) & VC	RSK_175_CO2 - Carbon dioxide	VFA_IC - VFAs	300.0_28D - Anions (Chloride & Sulfate)	350.1 - Ammonia	6010C - Metals - Fe, Mn, Mg, K & Na	RSK_175 - Methane, Ethane & Ethene	9060A - TOC	SM4500_S2_F - Sulfide	353.2, 353.2_Nitrite, Nitrate_Calc	2320B - Alkalinity	8270D - PAH Semivolatiles	Dissolved Hg for Pace	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A	N	N	N	S	D	A	A	CB	N	N	N			
MW-4-2019	5/16/19	12:00	G	Water	N	N	X	X	X	X	X	X	X	X	X	X	X		X		Delphi Harrison Thermal Systems site (DHTSS) - ~~bottle~~ report w/ other DHTSS samples - see M. Deyo
MW-10-2019	↓	14:00	↓	Water	N	N	X	X	X	X	X	X	X	X	X	X	X		X		
MW-15-2019	↓	15:30	↓	Water	N	N	X	X	X	X	X	X	X	X	X	X	X		X		
				Water																	
Trip Blank				Water			X														
				Water																	
				Water																	
				Water																	
				Water																	
				Water																	
				Water																	

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed
☐ Return To Client ☐ Disposal [illegible] Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Thomas Bohlen	5/16/19 / 1625	GEA		5/16/19 1625	TRC
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:
		1.5 #1

480-153637 Chain of Custody

Ver: 01/16/2019

Eurofins TestAmerica, Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information	Sampler: T. Bohlen	Lab PM: Deyo, Melissa L	Carrier Tracking No(s):	COC No: 480-130188-29372.3
Client Contact: Kathleen Willy	Phone: 716 570 5983	E-Mail: melissa.deyo@testamericainc.com		Page: ~~Page 3 of 9~~ 1 of 1
Company: GHD Services Inc.		**Analysis Requested**		Job #:
Address: 2055 Niagara Falls Blvd., Suite 3	Due Date Requested: Std			
City: Niagara Falls	TAT Requested (days):			
State, Zip: NY, 14304				
Phone:	PO #: 34033197			
Email: kathleen.willy@ghd.com	WO #: 256038			
Project Name: 058507, GM-Lockport Groundwater Sampling	Project #: 48004014			
Site:	SSOW#:			

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260C - PCE, TCE, DCE (trans and cis) & VC	RSK_175_CO2 - Carbon dioxide	VFA_IC - VFAs	300.0_28D - Anions (Chloride & Sulfate)	350.1 - Ammonia	6010C - Metals - Fe, Mn, Mg, K & Na	RSK_175 - Methane, Ethane & Ethene	9060A - TOC	SM4500_S2_F - Sulfide	353.2, 353.2_Nitrite, Nitrate_Calc	2320B - Alkalinity	8270D - PAH Semivolatiles	Dissolved H2 for Pace	Total Number of containers	Special Instructions/Note:
				Preservation Code:			A	N	N	N	S	D	A	A	CB	N	N	N			
MW-7-2019	5/17/19	925	G	Water	N	N	X	X	X	X	X	X	X	X	X	X	X				Delphi Harrison
MW-11-2019	↓	1030	↓	Water	↓	↓	X	X	X	X	X	X	X	X	X	X	X		X		Thermal System
MW-13-2019	↓	1155	↓	Water	↓	↓	X	X	X	X	X	X	X	X	X	X	X		X		site (DHTSS)
MW-~~14~~ 12-2019	↓	1525	↓	Water	↓	↓	X	X	X	X	X	X	X	X	X	X	X		X		wells - to be
				Water																	reported together
Trip Blank				Water			X														@ end of job
				Water																	see M. Deyo
				Water																	
				Water																	
				Water																	
				Water																	

480-153682 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samp
☐ Return To Client ☒ Disposal By Lab

Deliverable Requested: I, II, III, IV, Other (specify)
Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:		Time:		Method of Shipment:
Relinquished by: Thomas Bohlen	Date/Time: 5/17/19 / 1732	Company: GHD	Received by: [illegible]	Date/Time: 05/17/19 1732	Company: TA
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:
Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: 2.4 #1 ICE		

Ver: 01/16/2019

Eurofins TestAmerica, Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

Chain of Custody Record

eurofins | Environment Testing TestAmerica

P. Nyenyk

Client Information	Sampler: T. Bohlen	Lab PM: Deyo, Melissa L	Carrier Tracking No(s):	COC No: 480-130188-29372.5
Client Contact: Kathleen Willy	Phone: 716 570 5983	E-Mail: melissa.deyo@testamericainc.com		Page: Page 9 of 9 10 of 11
Company: GHD Services Inc.				Job #:
Address: 2055 Niagara Falls Blvd., Suite 3	Due Date Requested: 5d.		Analysis Requested	
City: Niagara Falls	TAT Requested (days):			
State, Zip: NY, 14304				
Phone:	PO #: 34033197			
Email: kathleen.willy@ghd.com	WO #: 256038			
Project Name: 058507, GM-Lockport Groundwater Sampling	Project #: 48004014			
Site:	SSOW#:			

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (Water, Solid, Oil, Tissue, Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260C - PCE, TCE, DCE (trans and cis) & VC	RSK_175_CO2 - Carbon dioxide	VFA_IC - VFAs	300.0_28D - Anions (Chloride & Sulfate)	350.1 - Ammonia	6010C - Metals - Fe, Mn, Mg, K & Na	RSK_175 - Methane, Ethane & Ethene	9060A - TOC	SM4500_S2_F - Sulfide	353.2, 353.2_Nitrite, Nitrate_Calc	2320B - Alkalinity	8270D - PAH Semivolatiles	DISSOLved Hs for Page	Total Number of containers	Special Instructions/Note:
				Preservation Code:	X	X	A	N	N	N	S	D	A	A	CB	N	N	N		X	
MW-14-2019	5/21/19	1130	G	Water	N	N	X	X	X	X	X	X	X	X	X	X	X		X		Delphi Harrison Thermal Systems Site (DHTSS) - report w/other DHTSS wells see M. Deyo
				Water																	
				Water																	
				Water																	
				Water																	
				Water																	
				Water																	
				Water																	
				Water																	
				Water																	
				Water																	

480-153840 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	5/21/19 1615			5/21/19 1615	TAB
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks: #1 2.6

Ver: 01/16/2019

Eurofins TestAmerica, Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

Chain of Custody Record

480-153637 Chain of Custody

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Deyo, Melissa L	COC No: 480-49779.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: melissa.deyo@testamericainc.com	State of Origin: New York	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): NELAP - New York	Job #: 480-153637-1
Address: 30 Community Drive, Suite 11,	Due Date Requested: 5/29/2019		
City: South Burlington	TAT Requested (days):		
State, Zip: VT, 05403			
Phone: 802-660-1990(Tel) 802-660-1919(Fax)	PO #:		
Email:	WO #:		
Project Name: 058507, GM-Lockport Groundwater Sampling	Project #: 48004014		
Site:	SSOW#:		

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	RSK_175_CO2/ Carbon dioxide	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
MW-4-2019 (480-153637-1)	5/16/19	12:00 Eastern		Water			X	3	
MW-15-2019 (480-153637-3)	5/16/19	15:30 Eastern		Water			X	3	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification *Unconfirmed*	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*** ☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:		
Relinquished by:	Date/Time: 5/17/19 1800	Company TAB BUFFALO	Received by:	Date/Time: 5/18/19 1120	Company TAB Buf
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ☒ Yes ☐ No	Custody Seal No.: N/A	Cooler Temperature(s) °C and Other Remarks: 4.3

Ver: 01/16/2019

ORIGIN ID:DKKA (716) 691-2600
CHAR BRONSON
TEST AMERICA
10 HAZELWOOD,

AMHERST , NY 14228
UNITED STATES US

SHIP DATE: 17MAY19
ACTWGT: 29.60 LB
CAD: 846654/CAFE3211
DIMS: 22x14x11 IN

BILL RECIPIENT

TO SAMPLE MGT.
TA BURLINGTON
30 COMMUNITY DRIVE
SUITE 11
SOUTH BURLINGTON VT 05403
(802) 660-1990 REF: BURLINGTON
DEPT: SAMPLE CONTROL

FedEx Express

J181118060501uv

SATURDAY 12:00P
PRIORITY OVERNIGHT

TRK# 0201 4276 0719 7839

XO BTVA

05403
VT-US BTV

Eurofins TestAmerica, Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone: 716-691-2600 Fax: 716-691-7991

Chain of Custody Record

480-153682 Chain of Custody

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Deyo, Melissa L	C No: 0-49909.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: melissa.deyo@testame	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): NELAP - New York	Job #: 480-153637-1
Address: 30 Community Drive, Suite 11,	Due Date Requested: 6/3/2019		
City: South Burlington	TAT Requested (days):		
State, Zip: VT, 05403			
Phone: 802-660-1990(Tel) 802-660-1919(Fax)	PO #:		
Email:	WO #:		
Project Name: 058507, GM-Lockport Groundwater Sampling	Project #: 48004014		
Site:	SSOW#:		

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Analysis Requested

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	RSK_175_CO2/ Carbon dioxide	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
MW-7-2019 (480-153682-1)	5/17/19	09:25 Eastern		Water			X	1	
MW-11-2019 (480-153682-2)	5/17/19	10:30 Eastern		Water			X	1	
MW-13-2019 (480-153682-3)	5/17/19	11:55 Eastern		Water			X	1	
MW-12-2019 (480-153682-4)	5/17/19	15:25 Eastern		Water			X	1	

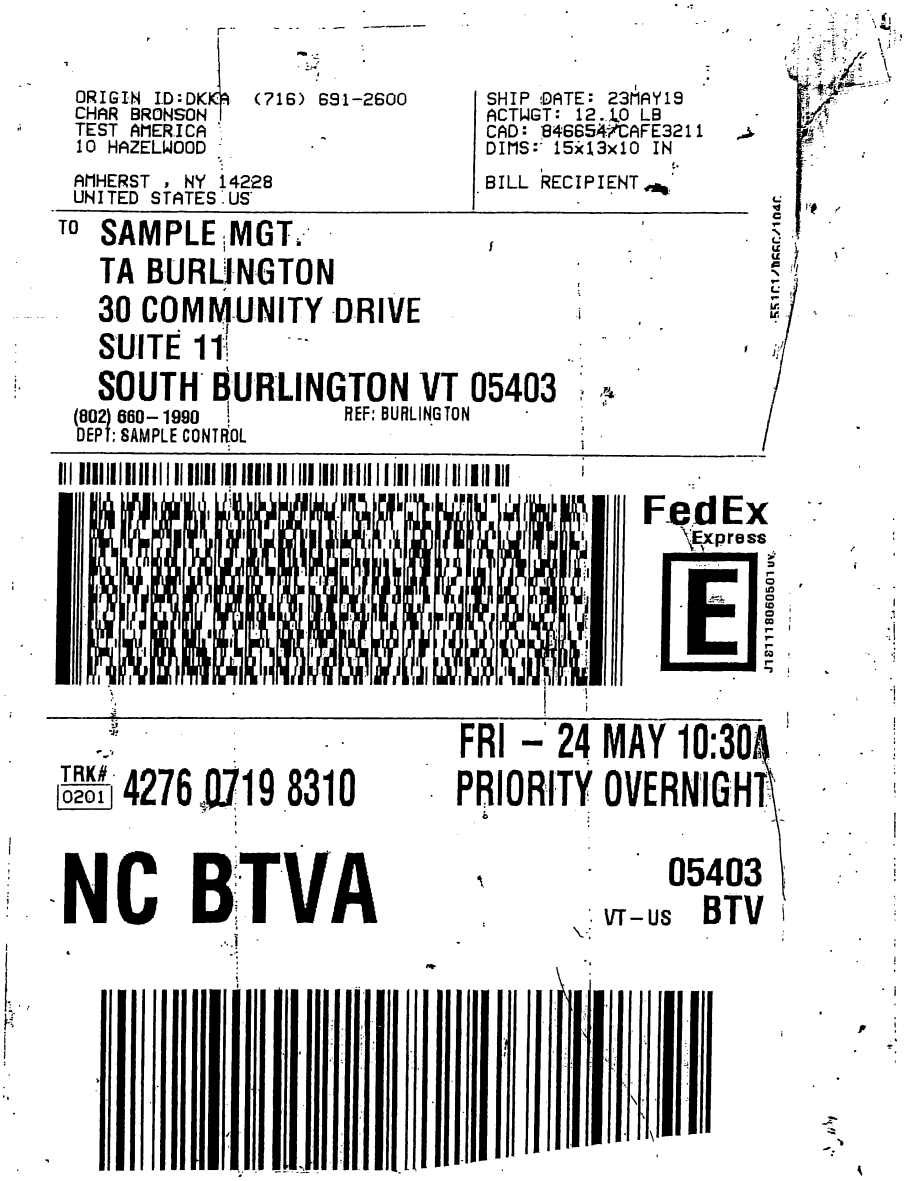
Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification *Unconfirmed*	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*** ☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:		
Relinquished by:	Date/Time: 5-23-19 1550	Company	Received by:	Date/Time: 5/24/19 10:30	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.: N/A
Cooler Temperature(s) °C and Other Remarks: 0.6	

Ver: 01/16/2019



ORIGIN ID:DKKA (716) 691-2600
CHAR BRONSON
TEST AMERICA
10 HAZELWOOD

AMHERST , NY 14228
UNITED STATES US

SHIP DATE: 23MAY19
ACTWGT: 12.10 LB
CAD: 8466547/CAFE3211
DIMS: 15x13x10 IN

BILL RECIPIENT

TO SAMPLE MGT.
TA BURLINGTON
30 COMMUNITY DRIVE
SUITE 11
SOUTH BURLINGTON VT 05403
(802) 660-1990 REF: BURLINGTON
DEPT: SAMPLE CONTROL

FedEx Express

J18111806050 1uv

FRI - 24 MAY 10:30A
PRIORITY OVERNIGHT

TRK# 0201 4276 0719 8310

NC BTVA

05403
VT-US BTV

Eurofins TestAmerica, Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone: 716-691-2600 Fax: 716-691-7991

Chain of Custody Record

480-153840 Chain of Custody

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Deyo, Melissa L		COC No: 480-49867.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: melissa.deyo@testamericainc.com	New York	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): NELAP - New York		Job #: 480-153840-1
Address: 30 Community Drive, Suite 11,	Due Date Requested: 6/3/2019			
City: South Burlington	TAT Requested (days):			
State, Zip: VT, 05403				
Phone: 802-660-1990(Tel) 802-660-1919(Fax)	PO #:			
Email:	WO #:			
Project Name: 058507, GM-Lockport Groundwater Sampling	Project #: 48004014			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL
B - NaOH
C - Zn Acetate
D - Nitric Acid
E - NaHSO4
F - MeOH
G - Amchlor
H - Ascorbic Acid
I - Ice
J - DI Water
K - EDTA
L - EDA
M - Hexane
N - None
O - AsNaO2
P - Na2O4S
Q - Na2SO3
R - Na2S2O3
S - H2SO4
T - TSP Dodecahydrate
U - Acetone
V - MCAA
W - pH 4-5
Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	RSK_175_CO2/ Carbon dioxide	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
MW-14-2019 (480-153840-1)	5/21/19	11:30 Eastern		Water			X	3	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification *Unconfirmed*	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*** ☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
[signature]	5-22-19 1640	TAL	Taylor J Mohn	5/23/19 1220	TAL BUF
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.: NA	Cooler Temperature(s) °C and Other Remarks: 1.8

Ver: 01/16/2019

ORIGIN ID:DKKA (716) 691-2600
CHAR BRONSON
TEST AMERICA
10 HAZELWOOD

AMHERST , NY 14228
UNITED STATES US

SHIP DATE: 22MAY19
ACTWGT: 12.20 LB
CAD: 8466654/CAFE3211
DIMS: 15x13x10 IN

BILL RECIPIENT

TO SAMPLE MGT.
TA BURLINGTON
30 COMMUNITY DRIVE
SUITE 11
SOUTH BURLINGTON VT 05403
(802) 660-1990 REF: BURLINGTON
DEPT: SAMPLE CONTROL

FedEx Express

THU - 23 MAY 10:30A
PRIORITY OVERNIGHT

TRK# 0201 4276 0719 8125

NC BTVA

05403
VT-US BTV

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 480-153637-1
SDG Number: DHTSS

Login Number: 153637
List Number: 1
Creator: Harper, Marcus D

List Source: Eurofins TestAmerica, Buffalo

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time (Excluding tests with immediate HTs)..	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	GZA
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	N/A	
Chlorine Residual checked.	N/A	

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 480-153637-1
SDG Number: DHTSS

Login Number: 153637
List Number: 2
Creator: McNabb, Robert W

List Source: Eurofins TestAmerica, Burlington
List Creation: 05/18/19 12:07 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	Lab does not accept radioactive samples.
The cooler's custody seal, if present, is intact.	True	Seal present with no number.
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	4.3ºC
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 480-153637-1
SDG Number: DHTSS

Login Number: 153682
List Number: 1
Creator: Kolb, Chris M

List Source: Eurofins TestAmerica, Buffalo

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time (Excluding tests with immediate HTs)..	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	GZA
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	True	
Chlorine Residual checked.	N/A	

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 480-153637-1
SDG Number: DHTSS

Login Number: 153682
List Number: 2
Creator: Mohn, Taylor J

List Source: Eurofins TestAmerica, Burlington
List Creation: 05/24/19 12:21 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	Lab does not accept radioactive samples.
The cooler's custody seal, if present, is intact.	True	Seal present with no number.
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.6°C
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	N/A	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 480-153637-1
SDG Number: DHTSS

Login Number: 153840
List Number: 1
Creator: Wallace, Cameron

List Source: Eurofins TestAmerica, Buffalo

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time (Excluding tests with immediate HTs)..	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	True	
Chlorine Residual checked.	N/A	

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 480-153637-1
SDG Number: DHTSS

Login Number: 153840
List Number: 2
Creator: Hall, Samuel C

List Source: Eurofins TestAmerica, Burlington
List Creation: 05/23/19 02:36 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	Lab does not accept radioactive samples.
The cooler's custody seal, if present, is intact.	True	Seal present with no number.
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	1.8ºC
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	N/A	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

GZA GeoEnvironmental, Inc.