Proactive by Design

RESULTS OF MAY 2018 MONITORED NATURAL ATTENUATION GROUNDWATER SAMPLING
DELPHI HARRISON THERMAL SYSTEMS SITE
Registry Site No. 932113
GM COMPONENTS HOLDINGS, LLC
Lockport, New York

August 2018
File No. 21.0056546.20

PREPARED FOR:
New York State Department of Environmental Conservation

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August 9, 2018 VIA E-MAIL
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 2018 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 May 2018 Monitored Natural Attenuation Groundwater Sampling Report 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 — Bart A. Klettke

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

Bart A. Klettke, P.E.
Principal

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1.0 INTRODUCTION AND BACKGROUND

GZA GeoEnvironmental of New York (GZA) presents this report to summarize results of the May 2018 groundwater and monitored natural attenuation (MNA) parameter sampling event at the above-referenced Site. The groundwater sampling event was conducted from May 9th through May 11th, and included eight monitoring wells (MW-4, -7, -10, -11, -12, -13, -14 and -15) that 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 located 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 within 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 2018 GROUNDWATER MONITORING AND SAMPLING

The 2018 groundwater monitoring and sampling event was conducted from May 9 through May 11, 2018, 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, sulfide, 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 sample parameters. 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 Logs are included in **Appendix A**.

3.0 ANALYTICAL RESULTS AND DISCUSSION

Analytical results of the COCs for the current sampling event show a continued overall downward trend in total COC concentrations over time. Analytical results of the 2018 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 2018 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. reports are provided in **Appendix D**.

<u>Compounds of Concern</u>

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 2018 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 2018 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→*cis*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 0.008 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 three 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 the 1,2-DCE. Results from the last three annual sample 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 0.033 mg/l in 2018, above its NYSDEC 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 0.02 mg/L in 2018, above it's NYSDEC Class GA standard of 0.002 mg/L.

MW-13: PCE, TCE, 1,2-DCE and VC have been below method detection limits in all but one sample round (October 2006) since the start of sampling in 2001. The results for 2018 were again below method detection limits and below NYSDEC TOGS 1.1.1 GA standards

MW-14: TCE has been below method detection limits in 12 of the 16 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 and 2017, the results for 2018 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 16 sample events since the start of sampling in 2001. TCE has been detected in the last nine events at concentrations above the method detection limits (0.00064 to 0.001 mg/L), but below the NYSDEC Class GA criterion.

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 second time in this well, the first being in 2017. The detected concentration of 0.002 mg/L is below the NYSDEC Class GA standard of 0.005 mg/L.

Natural Attenuation Performance

Findings of the May 2018 groundwater analytical and water quality data are generally consistent with the substantive conclusions and trends noted in prior reports. During 2018, 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.

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 2018 groundwater monitoring round in accordance with Wiedemeier *et. al.*. (1998).

4.0 GROUNDWATER MONITORING CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the May 2018 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 2018 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

[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 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-12, and MW-13.

There continues a gradual decreasing trend of TOC concentrations over time across the Site. TOC, as discussed previously, represents a surrogate measurement of the "fuel" driving reductive dechlorination and should continue to be monitored.

RECOMMENDATIONS

Based on the results of the May 2018 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 historic 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 2020 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 natural attenuation analytical parameters measured during the 2018 sampling round should also be measured during the 2020 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 5/8/2018		MW-7 5/10/2018		MW-10 5/9/2018		MW-11 5/10/2018		MW-12 5/9/2018		MW-13 5/10/2018		MW-14 5/11/2018		MW-15 5/9/2018	
VOC Compounds of Concern (ug/L)																	
cis-1,2-Dichloroethene	5	20,000		40,000		160		< .81		33		< .81		< .81		2	
Tetrachloroethene	5	< 180		< 7200		< .72		< .36		< .36		< .36		< .36		9	
trans-1,2-dichloroethene	5	< 450		< 18000		< 1.8		< .90		< .90		< .90		< .90		< .90	
Trichloroethene	5	26,000		690,000		46		< .46		0.66	J	< .46		< .46		1.3	
Vinyl Chloride	2	1,400		< 18000		19		< .90		20		< .90		< .90		< .90	
Total VOCs	2	47,400		730,000		225		0		54		0		0		12	
Field Parameters																	
Temperature (Deg. C)	NV	13.4		16.6		13.1		11.2		11.2		11.4		8.3		11.2	
Specific Conductance (mS/cm)	NV	6.184		1.764		5.622		1.251		11.301		5.281		6.719		2.292	
Dissolved Oxygen (mg/L)	NV	0.13		4.16		0.03		2.26		0.11		2.45		0.15		0.03	
Oxygen Reduction Potential (mv)	NV	56.3		139.8		130.2		106.7		49.4		161.1		165.2		134.2	
pH (std. units)	NV	6.93		7.72		7.06		7.52		6.76		7.11		7.01		7.01	
Turbidity (NTUs)	NV	2.1		1.2		4.5		4.7		2.7		0.3		4.5		5.0	
Inorganics (mg/L)																	
Iron	0.3	0.83		0.05		0.046	J	0.075		4		0.73		0.07		< .019	
Magnesium	35 [Note 4]	75.5		39.6		37.7		37.7		78.6		50.2		67.6		35.4	
Manganese	NV	0.47		0.013		0.81		0.054		6.1		0.31		0.37	B	0.42	
Potassium	NV	17.4		11.1	B	3.2		7.7	B	5.1		15.9	B	3.9		3.3	
Sodium	20	928		196		874		112		1,910		825		1,090		275	
Miscellaneous Water Quality Parameters																	
Methane (ug/L)	NV	760		69		37		< 1.0		140		< 1.0		31		< 1.0	
Ethane (ug/L)	NV	< 17		30	J	< 1.5		< 1.5		< 1.5		< 1.5		< 1.5		< 1.5	
Ethene (ug/L)	NV	170		380		< 1.5		< 1.5		< 1.5		< 1.5		< 1.5		< 1.5	
Carbon Dioxide (ug/L)	NV	42,000		21,000		36,000		14,000		59,000		34,000		37,000		65,000	
Total Organic Carbon (mg/L)	NV	1.7	J	8.4	B	3.1	JHB	1.1	B	2.9	JHB	1.6	J B	1.6	J	1.8	J HB
Alkalinity (mg/L)	NV	246		243	F1	286		248		253		322		364		391	
Ammonia (mg/L)	NV	1.6		0.66		0.09		0.065		1.4		< .009		0.11		0.081	
Chloride (mg/L)	NV	1,790		299		1,500		190		3,390		1,740		2,020		495	
Nitrate (mg/L)	NV	< .02		<.02		0.210		0.25		0.43		1.600		< .02		0.28	
Nitrite (mg/L)	NV	< .02		< .02		< .02		< .02		< .02		< .02		< .02		< .02	
Sulfate (mg/L)	NV	292		180		259		140		102		148		117		71.8	
Hydrogen (nm)	NV	4.1		NA		2.6		1.9		2.3		2.2		2.2		2.8	

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.
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.
9. Shaded concentrations exceed Class GA criteria.

Table 2
Summary of Groundwater Field Measurements and Analytical Test Results for Natural Attenuation Parameters
May 2018 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)	Nitrate Nitrite (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)	Calcium (mg/L)	Dissolved Calcium (mg/L)	Iron (mg/L)	Dissolved Iron (mg/L)	Magnesium (mg/L)	Dissolved Magnesium (mg/L)	Manganese (mg/L)	Dissolved Manganese (mg/L)	Sodium (mg/L)	Dissolved Sodium (mg/L)	Potassium (mg/L)	Dissolved Potassium (mg/L)	Volatile Fatty Acids (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	0.2	503	443	0.58	0.51	105	106	0.40	0.32	282	293	13.3	12.8	
MW-4 DUP	12/2/1998	NA	NA	NA	NA	NA	5.5					8	368	1.57	971	0.05	<0.05		120	0.2	431	335	0.59	0.52	107	100	0.39	0.34	282	306	13.2	13.5	
MW-4	10/7/1999	13.8	3.412	0.08	-92.8	6.7	4.2					47	360	1.03	1,010			0.08	110	0.3	269	318	0.42	0.45	98	116	0.23	0.34	240	305	10.4	13.1	
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	0.2	371		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	1.2			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	2.0				3.21		193		2.64		2,100		50.5	
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	<1.0				3.15		152		1.86		1,700		26.1	
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	<0.1	493		3.1		139		1.6		1420		17.8		
MW-4	4/20/2012 [3]	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	<0.1			2.7		138		1.5		1400		15.6		ND
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	<0.052			3.9		163		2.0		2080		20.2		ND
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	<0.052			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	<0.052			0.70		65.8		0.38						13
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	<0.052			0.50		51.9		0.26		695		14.1		ND
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	NM			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	42,000	4.1	1.7	246	1.6	1,790	<.02	<.02		292	NM			0.83		75.5		0.47		928		17.4		
MW-6	12/2/1998	19.5	3740.000	0.30	-67	6.8	0.84					9	319	0.45	897	0.22	<0.05		160	0.2	161	156	7.98	1.13	35.6	28.8	0.48	0.29	619	638	9.64	9.51	
MW-6	10/7/1999	21.9	3283.000	0.12	-145.8	7.1	0.34					30	260	0.32	476			0.09	140	0.4	86.4	108	3.62	0.55	24	30.2	0.24	0.19	300	311	7.4	8.8	
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	0.4	382	375	0.14	0.02	118	136	<0.01	<0.01	288	351	20.5	23.0	
MW-7 [3]	10/7/1999	19.4	3.049	0.69	-52	7.1	0.02					58	420	1.10	1,180			0.11	180	0.4	286	255	0.86	0.05	138	145	0.05	0.02	292	306	21.4	24.0	
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	<0.01			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	0.8			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	<0.1	327		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	<0.1	193		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	2.4				0.03		84.9		0.03		230		24.1		
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	<1.0				0.41		70.2		0.02		204		13.9		
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	<0.1	121		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	<0.1			0.06		67.1		0.024		193		13.2		Note 8
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	<0.052			0.02		76		0.190		254		14.3		Note 8
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	<0.052			<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	<0.052			0.39		41.4		0.019						5.2
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	<0.052			0.41		42		0.019						46.0
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	<0.052			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	NM			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	21000	NM	8.4	243	0.66	299	<.02	<.02		180	NM			0.050		39.6		0.013		196		11.1		
MW-8	12/2/1998	16.7	3.210	0.90	-68	6.9	0.09					12	300	0.40	138	<0.05	<0.05		550	0.2	215	227	0.33	0.17	76	78	0.31	0.32	102	114	6.31	6.67	
MW-8	10/7/1999	19.7	1.640	0.08	-116.1	7.1	0.04					19	280	0.33	144			0.10	570	0.3	174	188	0.22	0.15	82.4	97.5	0.30	0.31	112	110	7.6	8.1	
MW-8	7/15/2009	16.3	2.408	0.20	-48.6	6.9	2.0					22	300	0.76	457	<0.6	<0.6		588	2				0.03		102		0.40		246		15.7		
MW-8	4/22/2011	9.39	2.327	4.56	-334	7.26	0.018					<1	244	0.30	683	<0.05	<0.05		562	<0.1	220		0.12		102		0.53		355		7.9		
MW-9	12/2/1998	16.2	7.150	1.6	120	6.9	0.04					3	309	0.23	640	0.25	<0.05		680	<0.1	330	300	0.33	<0.01	89	84.5	1.74	0.93	444	445	5.52	5.91	
MW-9	10/5/1999	18.7	4.042	0.08	103.5	6.9	0.02					24	330	0.20	963	0.46	<0.05		520	<0.1	250	283	0.20	0.02	63.8	89	1.36	0.99	476	535	4.6	26.5	
MW-9 DUP	10/5/1999	NA	NA	NA	NA	NA	0.02					27	340	0.14	833	0.63	<0.05		490	<0.1	252	284	0.20	0.02	72	86	1.46	0.94	478	560	5.0	5.6	
MW-9	7/20/2009	17.8	8.381	0.41	109.1	6.7	0.03					17	290	0.26	3,100	<0.6	0.9		379	1.2				<0.01		117		0.31		1,600		19.0		
MW-9	4/22/2011	9.49	7.263	0.24	-345	7.08	0.0069					<1	233	0.11	3,410	0.39	<0.05		362	<0.1	392		0.03		94.9		0.11		1,710		6.9		
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	0.2	310	305	1.95	0.76	54.6	85.5	2.30	2.07	584	645	13.4	13.2	
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	<0.1	39.8	254	0.73	0.04	9.94	102	0.99	1.12	33.2	635	18.8	10.1	
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	0.1	330		0.14		98.9	99.6	1.66		857	845	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	1.6			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	0.8				0.08		103		2.63		1,950		21.1		
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	<1.0				10.5		35.0		1.31		890		4.57		
MW-10	4/19/2012 [3]	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	<0.1			0.32		95.5		2.40		2110		7		ND
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	<0.052			0.48		31.8		1.50		845		3.4		ND
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	<0.052			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	<0.052			0.035		40.5		1.30						12.5
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	<0.052			0.035		40.5		1.30						12.5
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	36000.0	2.6	3.1	286	0.09	1,500	0.21	<.02		259				0.046		37.7		0.81		874		3.2		
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	0.2	122	97.3	1.00	0.26	39.0	36.4	0.11	0.08	116	129	8.88	10.1	
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	0.5	93.4	150	0.34	0.30	46.4	103	0.08	0.08	180	695	10.9	27	
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	0.1	111		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	2.8			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	<0.1			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	1.0			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	0.2	95.6		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	2.0				0.11		41.3		0.11		138		11.4		
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	<1.0				2.55		44.3		0.220		152		8.94		
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	<0.1	92.5		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	0.053			0.20		48.5		0.14		143		8.3		ND
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	<0.052			0.70		47.0		0.17		151		9.0		ND
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	<0.052			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	<0.052			0.13		48.2		0.08						40.1
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	<0.052			0.64		38.2		0.13		144		8.5		ND
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		

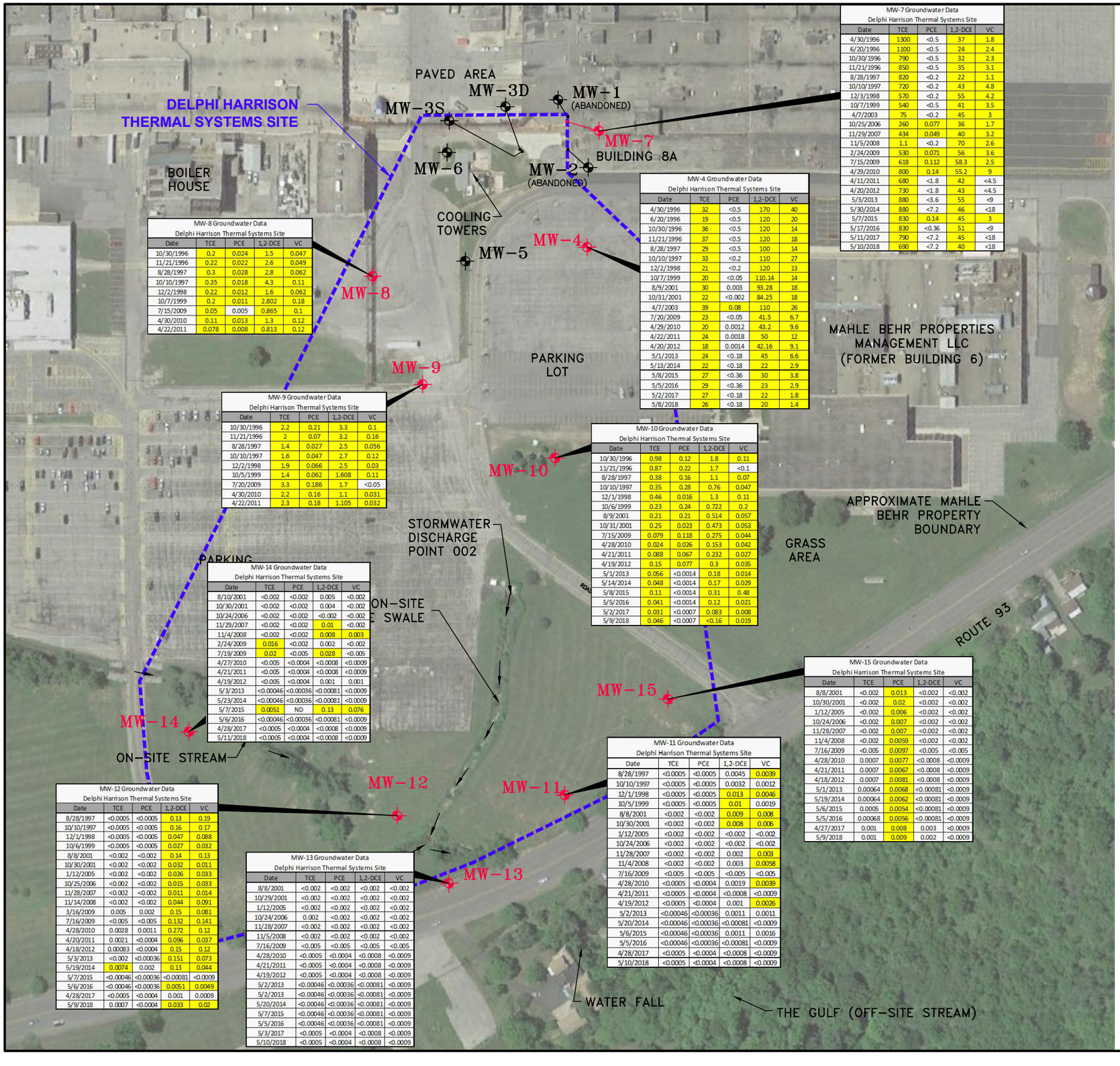
Notes:
1. In general the field parameters were stable with very little variation. However, as noted, some readings varied.
2. Readings were collected using a low flow peristalic pump and water quailty meter with flow through cell..
3. Analytical Testing completed by TestAmerica Laboratories, Inc.
4. < - Indicates compound not detected above the specified detection limit.
5. Blank = Not tested.
6. NM = not measured
7. ND = non-detect for tested volatile fatty acids: acetic acid, formic acid, lactic acid, n-Butyric acid, propionic acid, and pyruvic acid.
8. All tested volatile fatty acids = ND; except acetic acid (7.0 ppm).

Table 2
Summary of Groundwater Field Measurements and Analytical Test Results for Natural Attenuation Parameters
May 2018 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)	Nitrate Nitrite (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)	Calcium (mg/L)	Dissolved Calcium (mg/L)	Iron (mg/L)	Dissolved Iron (mg/L)	Magnesium (mg/L)	Dissolved Magnesium (mg/L)	Manganese (mg/L)	Dissolved Manganese (mg/L)	Sodium (mg/L)	Dissolved Sodium (mg/L)	Potassium (mg/L)	Dissolved Potassium (mg/L)	Volatile Fatty Acids (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	0.2	119	104	7.48	4.01	26.8	25.3	4.41	4.40	183	197	4.1	3.81	3.81
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	0.2	104	126	<0.01	3.66	27.8	31.6	<0.01	4.90	166	226	4.9	5.3	5.3
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	<0.1	217		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	<0.1	217		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	3.5			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	<0.1			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	<0.04			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	<0.1	259		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	<0.1	269		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	0.8				15.10		79.1		9.07		1,170		10.9	10.9
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	<1.0				14.0		98.0		10.40		1,470		5.22	5.22
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	<1.0	227		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	<1.0			12.7		84.3		9.1		1250		3.7		ND
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	<0.052			8.1		76.4		7.4		1260		3.9		ND
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	<0.052			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	<0.052			0.0		60.1		0.3						48
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	<0.052			2.5		51.0		4.3		974		3.4		ND
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-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	<0.1	209		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	2.2			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	<0.1			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	0.4			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	<0.1	196		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	<0.5				1.75		53.9		6.51		1,390		18.9	18.9
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	<1.0				9.12		59.9		7.18		1,380		11.2	11.2
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	<0.1	210		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	<0.1			5.8		38.5		4.40		940		5.4		ND
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	<0.052			4.7		39.4		4.30		964		6.2		ND
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	<0.052			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	<0.052			5.9		61.7		5.80						ND
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	<0.052			5.6		55.8		4.60		969		9.8		ND
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-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	<0.1	144		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	2.5			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	<0.1			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	0.12			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	<0.1	320		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	<0.1	165		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	1.2				0.11		132		0.53		931		21.1	21.1
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	<1.0				0.06		70.2		0.194		870		6.22	6.22
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	<0.1	149		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	<0.1			0.140		86.7		0.29		916		6.2		ND
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	<0.052			0.038		59.4		0.20		850		5.1		ND
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	<0.052			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	<0.052			11.3		81.7		7.90						27.5
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	<0.052			0.2		55.4		0.34		760		3.2		ND
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	37000	2.2	NT	364	0.11	2,020	<.02	<.02		117				0.1		67.6		0.37		1090		3.9		
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	1.4			0.02		47.5		0.40		196		3.8		
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	<0.1	327		<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	1.6				0.02		65.0		0.14		475		7.94	7.94
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	<0.7				<0.019		48.2		0.13		318		3.14	3.14
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	<0.1	217		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	<0.1			<0.05		54.4		0.24		424		3.3		ND
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	<0.052			<0.019		43.7		0.21		384		3.2		ND
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	<0.052			<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	<0.052			<0.019		44.8		0.13						1.5
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	<0.052			<0.019		41.5		0.18		334		3.5		ND
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	65000	2.8	1.8	391	0.081	95	0.28	<.02		71.8				<.019		35.4		0.42		275		3.3		
TK-2	10/6/1999	13.3	7.02	0.19	66.9	7.5							380		20.2																		
Stream (SS-1)	12/2/1998	8.0	300	10.0	50	8.0																											
Stream (SS-2)	10/7/1999	10.2	718	17.5	53.1	8.4																											
Stream (SS-3)	10/7/1999	8.5	1552	8.9	-28.9	7.7																											

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
7. ND = non-detect for tested volatile fatty acids: acetic acid, formic acid, lactic acid, n-Butyric acid, propionic acid, and pyruvic acid.
8. All tested volatile fatty acids = ND; except acetic acid (7.0 ppm).

FIGURES



MW-8 Groundwater Data
Delphi Harrison Thermal Systems Site

Date	TCE	PCE	1,2-DCE	VC
10/30/1996	0.2	0.024	1.5	0.047
11/21/1996	0.22	0.022	2.6	0.049
8/28/1997	0.3	0.028	2.8	0.062
10/10/1997	0.35	0.018	4.3	0.11
12/2/1998	0.22	0.012	1.6	0.062
10/7/1999	0.2	0.011	2.802	0.18
7/15/2009	0.05	0.005	0.865	0.1
4/30/2010	0.11	0.013	1.3	0.12
4/22/2011	0.078	0.008	0.813	0.12

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-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

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

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
5/20/2014	<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

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

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

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

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

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

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: MDK

DATE: JULY 2018

GZA GeoEnvironmental of New York

APPROXIMATE SCALE IN FEET

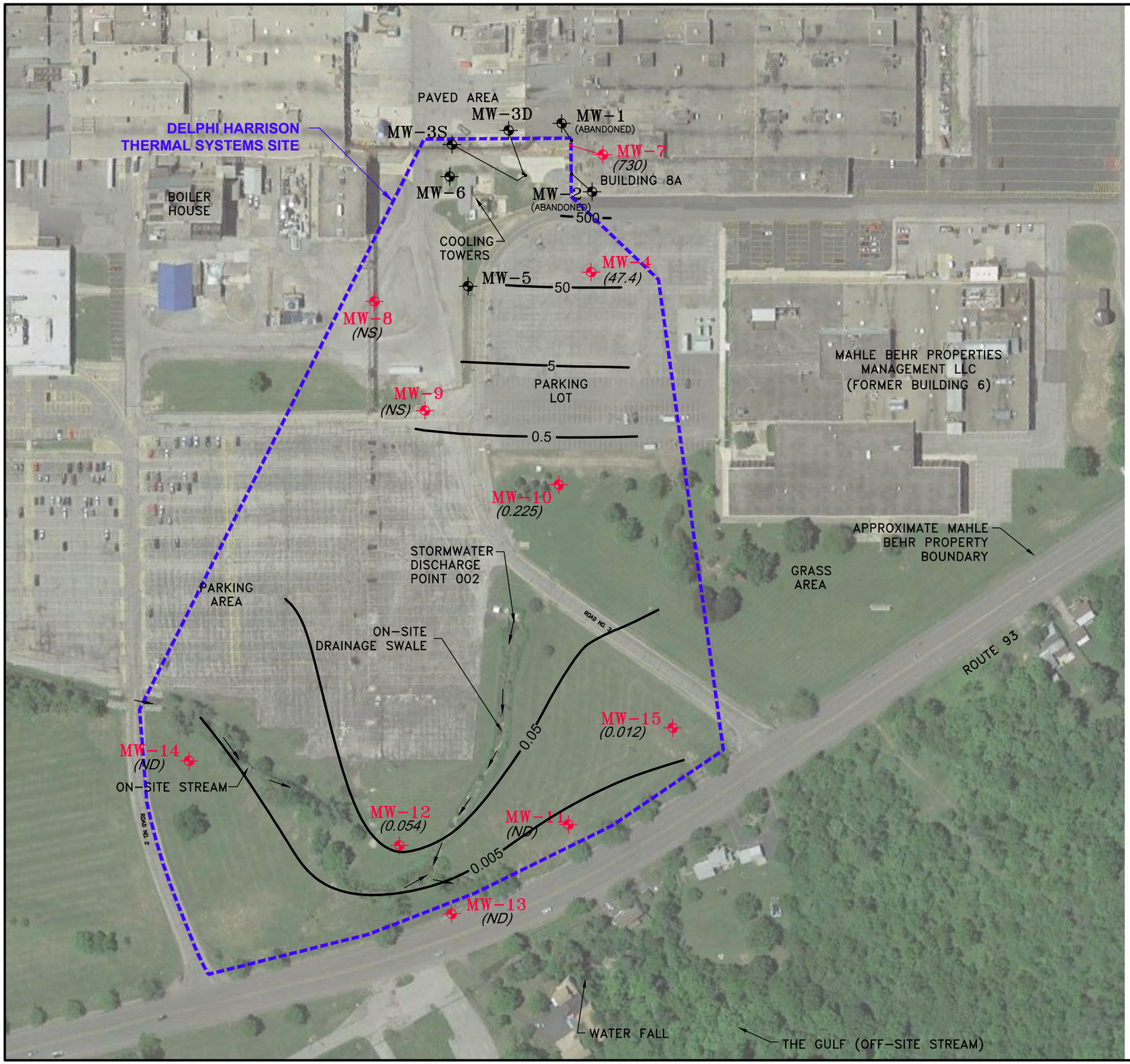
0 90 180 360

GM COMPONENTS HOLDINGS, LLC
DELPHI HARRISON THERMAL SYSTEMS SITE
200 UPPER MOUNTAIN ROAD
LOCKPORT, NEW YORK
MAY 2018 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 (50.8) — APPROXIMATE LOCATION AND DESIGNATION OF MONITORING WELL INSTALLED BY GZA SHOWN WITH TOTAL VOC CONCENTRATION

NS = NOT SAMPLED

ND = NON-DETECT

DRAWN BY: MDK

DATE: JULY 2018

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 2018 GROUNDWATER SAMPLING

TOTAL COC CONTOUR MAP

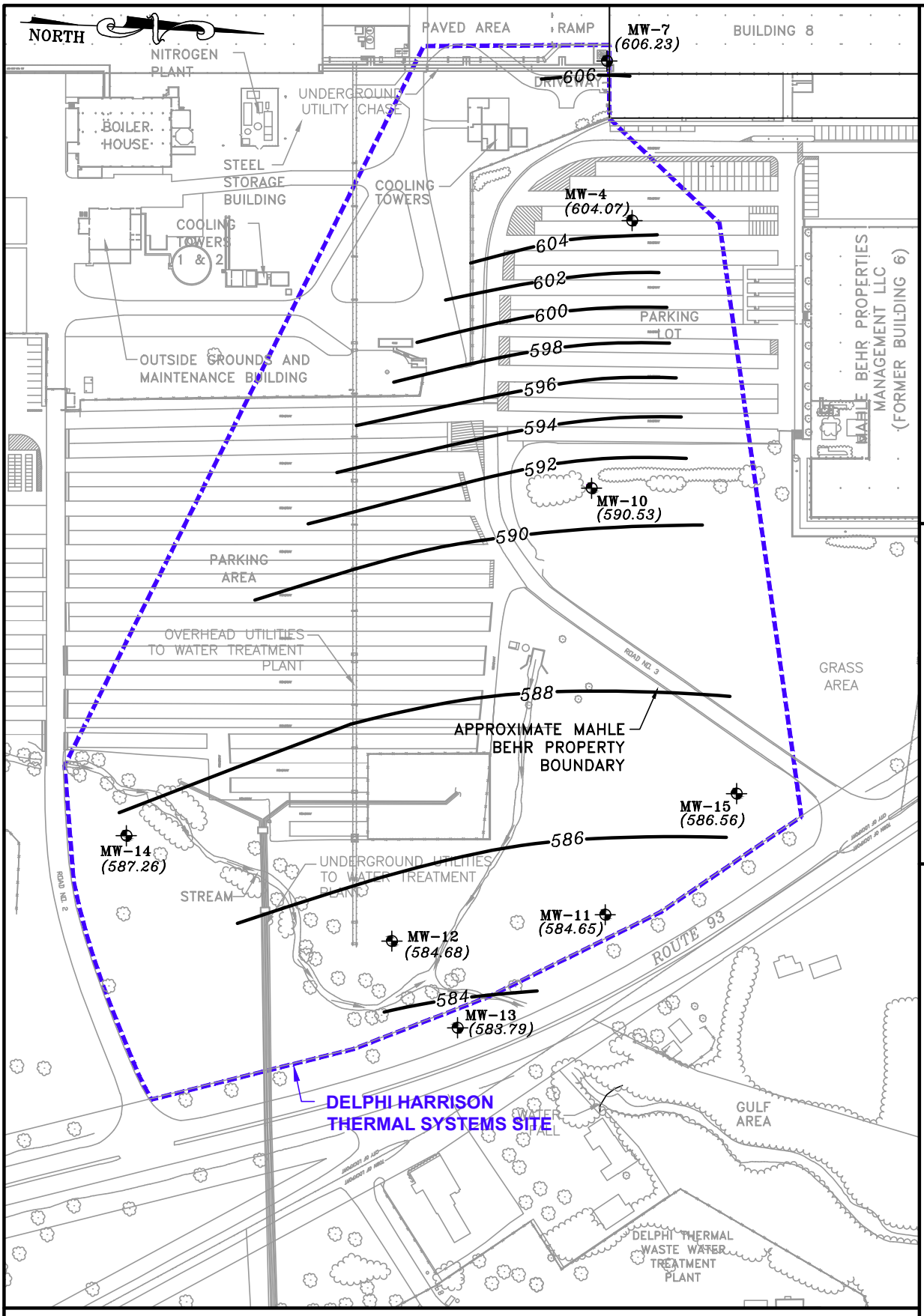
PROJECT No.

21.0056546.20

FIGURE No.

2

G:\Projects\56500s\56546 GM Component LLC\TCE Release Area MNA Sampling\2018 Figures\Figures 1-2.dwg [Figure 2 VOC Contours] June 22, 2018 - 3:32pm Michael.Kress



LEGEND:

MW-4 (604.51) ⊕ 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 5-7-18.

DRAWN BY: MDK

DATE: JULY 2018

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 2018 GROUNDWATER SAMPLING

GROUNDWATER ISOPOTENTIAL MAP

(MAY 2018)

PROJECT No.

21.0056546.20

FIGURE No.

3

GZA-K:\PROJECTS\56500s\56546 GM Component LLC\TCE Release Area MNA Sampling\2018 Figures\Figure 3 GW Contours.dwg [FIGURE 3] June 22, 2018 - 4:06pm Michael.Kress

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: 5/8/18 – 5/11/18

[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	35.32	9.06	604.01	4.2	/	0.7	6.93	13.4	6.184	1530	VOC MNA+H_2
MW-7	MW-7	613.86	27.41	7.57	606.29	3.23	/	3.8	7.72	16.6	1.769	1544	VOC MNA
MW-10	MW-10	604.70	23.7	14.29	590.41	1.5	/	0.4	7.06	13.1	5.622	1120	VOC MNA+H_2
MW-11	MW-11	590.16	25.22	5.47	584.69	3.2	/	0.4	7.52	11.2	1.251	1320	VOC MNA+H_2
MW-12	MW-12	590.71	16.42	5.96	584.75	1.7	/	0.4	6.76	11.2	11.301	1530	VOC MNA+H_2
MW-13	MW-13	589.02	14.04	5.22	583.80	1.4	/	0.6	7.11	11.4	5.281	1445	VOC MNA+H_2
MW-14	MW-14	592.77	21.36	5.59	587.18	2.6	/	0.4	7.01	8.3	6.719	955	VOC MNA+H_2
MW-15	MW-15	594.04	16.90	7.49	586.55	1.5	/	0.8	7.01	11.2	2.282	1330	VOC MNA+H_2

Additional Comments:

Copies to:

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

PID @ TOR = 5.6ppm   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: 5/8/18
Personnel: T. Bohlen

Monitoring Well Data:

Well No.: MW-4
Measurement Point: TOR
Constructed Well Depth (ft): 32.5
Measured Well Depth (ft): 35.32
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~~ gal)(2): 4.3
Initial Depth to Water (ft): 9.06

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)
1438	68 *	9.41		6.91	14.7	6.188	193.6	1.15	2.8	0	
1445				6.95	13.6	6.134	179.0	0.35	0.3	0.2	
1450				6.96	13.4	6.150	171.0	0.28	0.4	0.3	
1455				6.96	13.6	6.146	160.7	0.22	1.5	0.3	
1500				6.96	13.6	6.143	147.1	0.19	3.3	0.4	
1505				6.94	13.5	6.200	95.3	0.17	1.3	0.5	
1510				6.93	13.5	6.189	60.7	0.14	3.2	0.6	
1515				6.93	13.5	6.188	56.1	0.13	2.4	0.6	
1520	↓	↓		6.93	13.4	6.184	56.3	0.13	2.1	0.7	

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.

* - calculated

WELL PURGING FIELD INFORMATION FORM

JOB# 56546-20

SITE/PROJECT NAME: Delphi Harrison Thermal Systems Site

WELL# MW-4

WELL PURGING INFORMATION

050818	050818	43	07
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: 613.07 (m/ft) — GROUNDWATER ELEVATION: 604.01 (m/ft)

DEPTH TO WATER: 9.06 (m/ft) — WELL DEPTH: 35.32 (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 - 10 — DIRECTION: N — PRECIPITATION Y/N OUTLOOK: N

SPECIFIC COMMENTS:

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

DATE: 5/8/18 — PRINT: Thomas Bohler — SIGNATURE: Thomas Bohler

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

PID @ TOR = 40.1 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: 5/9/18 / 5/10/18
Personnel: T. Bohlen

Monitoring Well Data:

Well No.: MW-7
Measurement Point: TOR
Constructed Well Depth (ft): 27.20
Measured Well Depth (ft): 27.41
Depth of Sediment (ft):

Screen Length (ft): 15
Depth to Pump Intake (ft)[1]: ~~22~~ -21
Well Diameter, D (in): 2
Well ~~Screen~~ Volume, V_s (~~mL~~ gal)[2]: 3.23
Initial Depth to Water (ft): 7.57

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]
936		7.94		7.46	16.7	1.615	148.5	0.88	3.2	0	
941		10.31		7.40	16.1	1.610	69.2	0.11	3.4	1.5	
1002		17.25		7.34	16.1	1.596	1.9	0.80	3.1	2.8	
1015		20.62		7.36	16.1	1.601	4.1	0.85	3.5	3.8	
		Dry									
1544		7.83		7.72	16.6	1.764	139.8	4.16	1.2	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.

WELL PURGING FIELD INFORMATION FORM

JOB# 56546 - 20

SITE/PROJECT NAME: Delphi Harrison Thermal Systems Site

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 09 18	05 10 18	32	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	606.29	(m/ft)
DEPTH TO WATER	7.57	(m/ft)	WELL DEPTH	27.41	(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 Yes COLOR Clear TURBIDITY Clear

WEATHER CONDITIONS WIND SPEED 0-30 DIRECTION NW PRECIPITATION Y/N OUTLOOK 70

SPECIFIC COMMENTS

I CERTIFY THAT SAMPLING PROCEDURES WERE IN ACCORDANCE WITH APPLICABLE PROTOCOLS

DATE	PRINT	SIGNATURE
5/10/18	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: 5/9/18
Personnel: T. Bohlen

Monitoring Well Data:

Well No.: MW-10
Measurement Point: TOR
Constructed Well Depth (ft): 21.3
Measured Well Depth (ft): 23.7
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 (gal)[2]: 1.53
Initial Depth to Water (ft): 14.39

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]
1055	750*	14.61		7.01	13.1	6.215	140.2	0.18	4.2	0	
1100				7.01	13.3	5.285	132.1	0.17	4.4	0.1	
1110				7.03	13.1	5.377	131.7	0.13	4.7	0.1	
1115				7.05	13.0	5.612	130.9	0.07	4.6	0.2	
1120	↓	↓		7.06	13.1	5.622	130.2	0.03	4.5	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.

* - calculated

WELL PURGING FIELD INFORMATION FORM

SITE/PROJECT NAME: Delphi Harrison Thermal Systems Site

JOB# 56546.20

WELL# MW-10

WELL PURGING INFORMATION

PURGE DATE (MM DD YY)	SAMPLE DATE (MM DD YY)	WATER VOL. IN CASING (LITRES/GALLONS)	ACTUAL VOLUME PURGED (LITRES/GALLONS)
05/09/18	05/09/18	1.5	0.4

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	D - POLYPROPYLENE E - POLYETHYLENE X- ______ (SPECIFY)	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	590.41	(m/ft)
DEPTH TO WATER	14.29	(m/ft)	WELL DEPTH	27.30	(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: 0-10 DIRECTION: SW PRECIPITATION Y/N: N OUTLOOK:

SPECIFIC COMMENTS:

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

DATE: 5/9/18 PRINT: Thomas Bohler SIGNATURE: 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: 5/10/18
Personnel: T. Bohlen

Monitoring Well Data:

Well No.: MW-11
Measurement Point: TOR
Constructed Well Depth (ft): 24.10
Measured Well Depth (ft): 25.22
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~~ gal)[2]: 3.2
Initial Depth to Water (ft): 5.47

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]
1245	78*	5.80		7.60	10.5	1.270	112.5	4.03	4.0	0	
1255				7.54	11.2	1.250	108.6	2.38	4.8	0.2	
1300				7.53	11.2	1.250	106.5	2.29	4.7	0.3	
1310				7.52	11.2	1.251	106.7	2.26	4.7	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= V_p/V_s.

* : calculated

WELL PURGING FIELD INFORMATION FORM

SITE/PROJECT NAME: Delphi Harrison Thermal Systems Site

JOB# 56546-20

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)
05/10/18	05/10/18	32	

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	590.16	(m/ft)	GROUNDWATER ELEVATION	584.69	(m/ft)
DEPTH TO WATER	5.47	(m/ft)	WELL DEPTH	25.22	(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 5-30 DIRECTION NW PRECIPITATION Y/N OUTLOOK no

SPECIFIC COMMENTS

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

DATE	PRINT	SIGNATURE
5/10/18	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: 5/9/18
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 (~~mL~~ 441)[2]: 1.7
Initial Depth to Water (ft): 5.96

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]
1503	70	6.35		6.80	11.6	11.591	172.8	0.87	4.6	0	
1510				6.80	11.2	11.594	173.2	0.36	1.4	0.1	
1515				6.79	11.2	11.479	169.0	0.26	0.9	0.1	
1520				6.78	11.2	11.401	103.2	0.21	2.1	0.2	
1525				6.77	11.1	11.333	48.5	0.14	0.9	0.2	
1530				6.77	11.2	11.303	47.3	0.12	0.9	0.3	
1535				6.76	11.2	11.301	49.4	0.11	2.7	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.

* - calculated

WELL PURGING FIELD INFORMATION FORM

SITE/PROJECT NAME: Delphi Harrison Thermal Systems Site

JOB# 56546 - 20

WELL# MW-12

WELL PURGING INFORMATION

05/09/18	05/09/18	7	04
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 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	590.71	(m/ft)	GROUNDWATER ELEVATION	584.75	(m/ft)
DEPTH TO WATER	5.96	(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 5-15 DIRECTION SW PRECIPITATION Y/N OUTLOOK no

SPECIFIC COMMENTS

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

DATE: 5/9/18 PRINT: Thomas Bohler SIGNATURE: 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: 5/10/18
Personnel: T. Bohlen

Monitoring Well Data:

Well No.: MW-13
Measurement Point: TOR
Constructed Well Depth (ft): 15
Measured Well Depth (ft): 14.84
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~~ qal)[2]: 1.4
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]
1417	68*	5.51		7.14	12.6	5.093	159.7	3.36	12.9	0	
1423				7.13	11.5	5.151	160.2	2.64	0.7	0.3	
1430				7.11	11.5	5.270	160.8	2.50	0.9	0.5	
1437				7.11	11.4	5.281	161.1	2.45	0.3	0.6	

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.

* - calculated

WELL PURGING FIELD INFORMATION FORM

JOB# 5 6 5 4 6 - 2 0

SITE/PROJECT NAME: Delphi Harrison Thermal Systems Site

WELL# M W - 1 3

WELL PURGING INFORMATION

PURGE DATE (MM DD YY)	SAMPLE DATE (MM DD YY)	WATER VOL IN CASING (LITRES/GALLONS)	ACTUAL VOLUME PURGED (LITRES/GALLONS)
05/01/18	05/01/18	1.4	10

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	589.02 (m/ft)	GROUNDWATER ELEVATION	583.80 (m/ft)
DEPTH TO WATER	5.22 (m/ft)	WELL DEPTH	17.04 (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: 5-30 DIRECTION: NW PRECIPITATION Y/N OUTLOOK: no

SPECIFIC COMMENTS:

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

5/10/18 DATE — Thomas Bohler PRINT — Thomas Bohler SIGNATURE

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

1024 - 1054

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: 5/11/18
Personnel: T. Bohlen

Monitoring Well Data:

Well No.: MW-14
Measurement Point: TOR
Constructed Well Depth (ft): 19.1
Measured Well Depth (ft): 21.36
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~~ gal)[2]: 2.6
Initial Depth to Water (ft): 5.59

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]
928	65 *	6.16		6.95	8.6	6.690	200.4	1.52	4.6	0	
938		7.00		7.00	8.3	6.699	175.6	0.26	4.7	0.1	
945		7.00		7.01	8.3	6.697	168.8	0.18	4.8	0.2	
950				7.01	8.3	6.706	167.2	0.16	3.8	0.3	
955	↓	↓		7.01	8.3	6.719	165.2	0.15	4.5	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.

* - calculated

WELL PURGING FIELD INFORMATION FORM

SITE/PROJECT NAME: Delphi Harrison Thermal Systems Site

JOB# 56546-20

WELL# MW-14

WELL PURGING INFORMATION

PURGE DATE (MM DD YY)	SAMPLE DATE (MM DD YY)	WATER VOL. IN CASING (LITRES/GALLONS)	ACTUAL VOLUME PURGED (LITRES/GALLONS)
05/11/18	05/11/18	2.6	0.4

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	592.77	(m/ft)	GROUNDWATER ELEVATION	587.18	(m/ft)
DEPTH TO WATER	5.59	(m/ft)	WELL DEPTH	21.36	(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 no

SPECIFIC COMMENTS

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

DATE	PRINT	SIGNATURE
5/11/18	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: 5/9/18
Personnel: T. Bohlen

Monitoring Well Data:

Well No.: MW-15
Measurement Point: TOR
Constructed Well Depth (ft): 17.90
Measured Well Depth (ft): 16.90
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)[2]: 1.53 gal
Initial Depth to Water (ft): 7.49

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, Vp (mL)	No. of Well Screen Volumes Purged[4]
1235	98 *	7.71		7.08	12.4	2.340	140.1	0.99	4.6	0	
1245	↓	7.71		7.03	11.3	2.297	139.4	0.13	5.1	0.5	
1250		↓		7.02	11.3	2.279	138.0	0.07	5.0	0.6	
1255				7.02	11.2	2.279	136.5	0.05	5.0	0.7	
1300	↓			7.01	11.2	2.292	134.2	0.03	5.0	0.8	

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.

* calculated

WELL PURGING FIELD INFORMATION FORM

JOB# 56546-20

SITE/PROJECT NAME: Delphi Harrison Thermal Systems Site

WELL# MW-15

WELL PURGING INFORMATION

PURGE DATE (MM DD YY)	SAMPLE DATE (MM DD YY)	WATER VOL. IN CASING (LITRES/GALLONS)	ACTUAL VOLUME PURGED (LITRES/GALLONS)
05/09/18	05/09/18	1.5	0.8

PURGING AND SAMPLING EQUIPMENT

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

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

	Code	Options			Other
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	586.55 (m/ft)
DEPTH TO WATER	7.49 (m/ft)	WELL DEPTH	16.90 (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 5-15 DIRECTION SW PRECIPITATION Y/N No OUTLOOK

SPECIFIC COMMENTS

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

DATE	PRINT	SIGNATURE
5/9/18	Thomas Bohler	Thomas Bohler

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

APPENDIX B

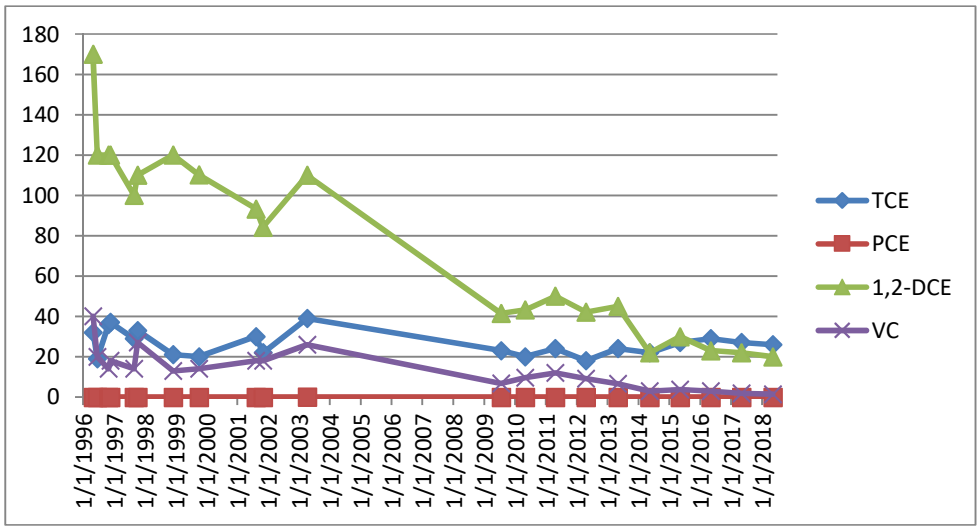
COC DATA GRAPHS

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

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.

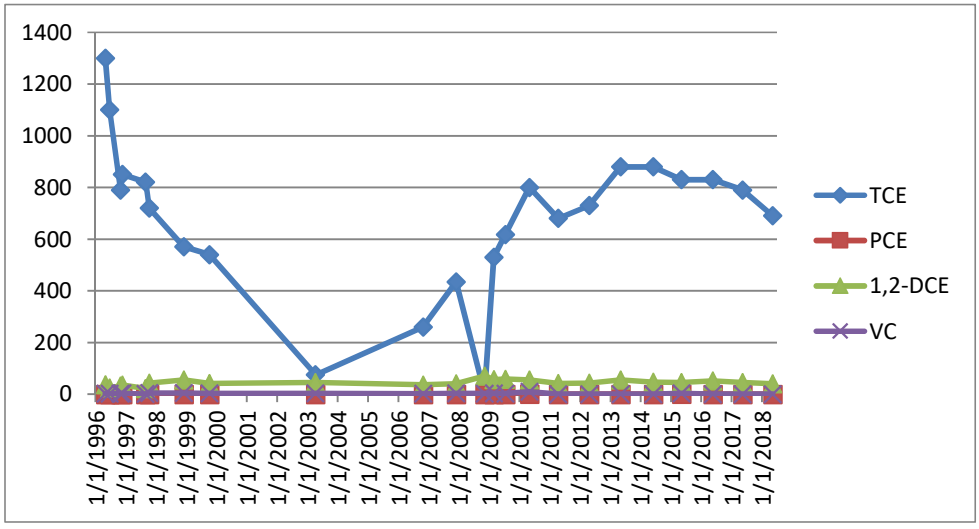
Duplicate samples were collected from this location on 6/20/96, 10/30/96 and 12/2/98. The higher of the two concentrations were recorded in this graph.



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

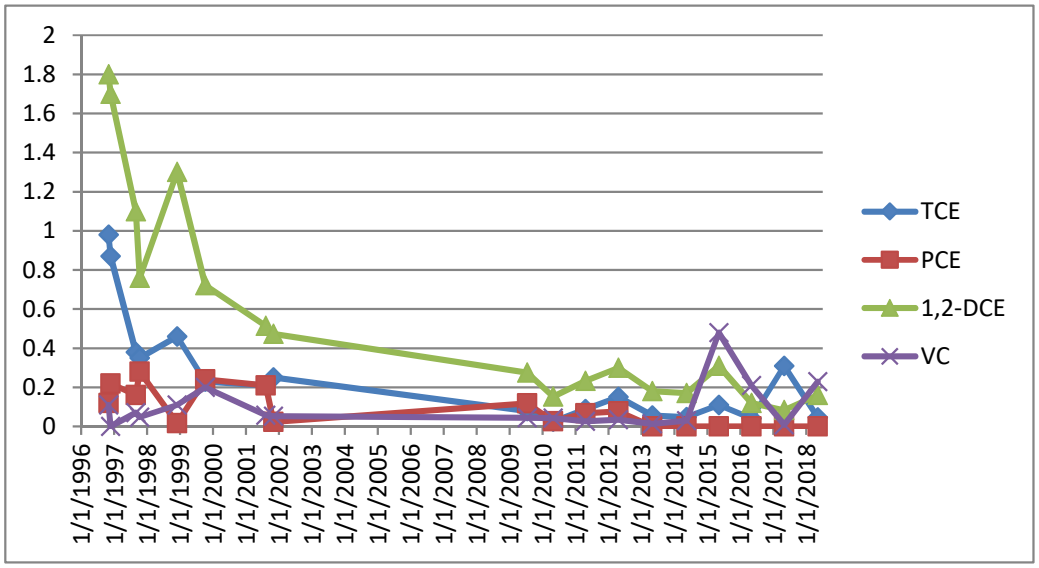
Notes:
Results are provided in parts per million (ppm)
1,2 DCE value includes total cis-1,2 DCE and trans 1,2 DCE. If "<" value, the listed value is the higher of the two method detection limits.



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

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.

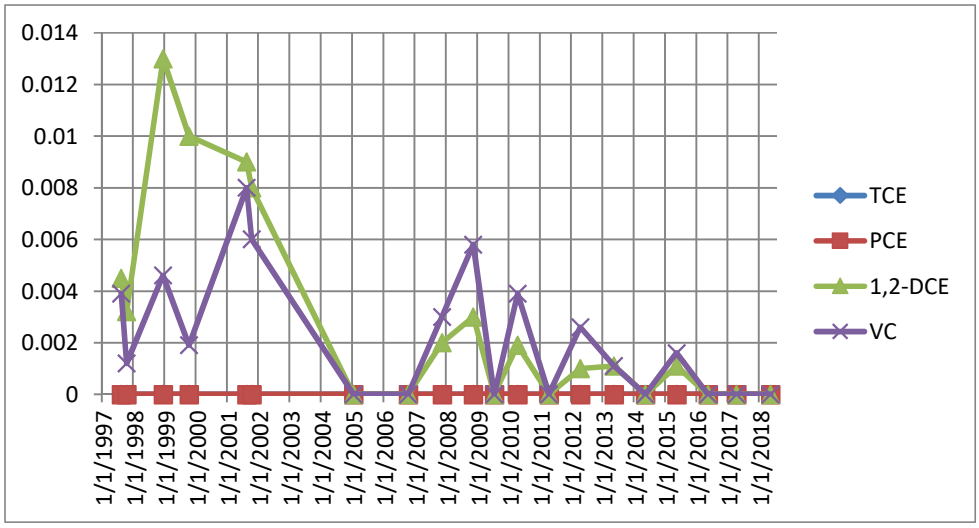


MW-11 Groundwater Data
Delphi Harrison Thermal Systems Site
GM Components Holdings, LLC
Lockport, New York

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

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.

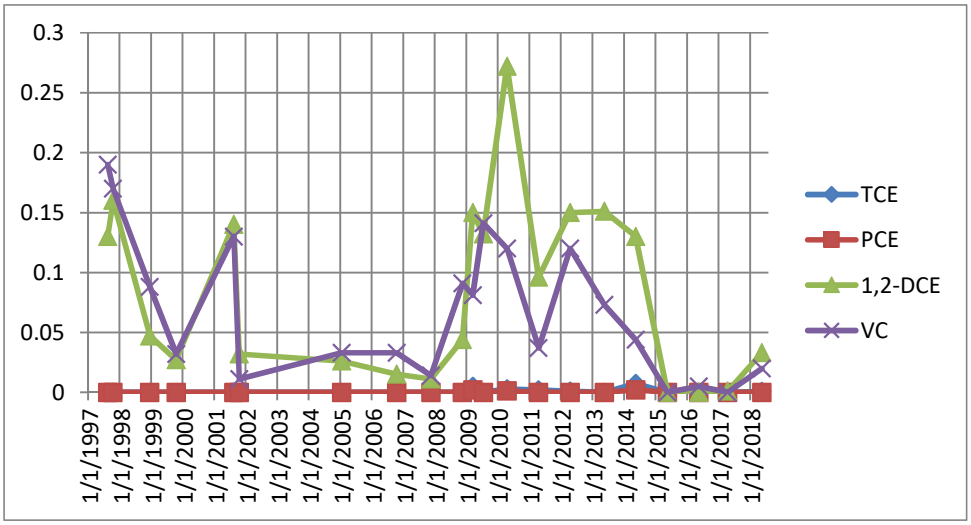


MW-12 Groundwater Data
Delphi Harrison Thermal Systems Site
GM Components Holdings, LLC
Lockport, New York

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

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.

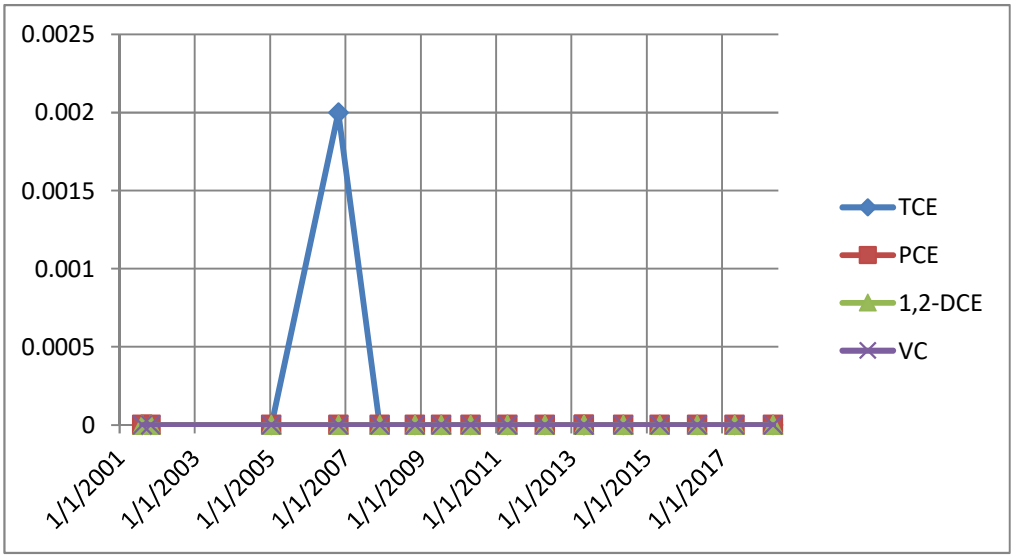


MW-13 Groundwater Data
Delphi Harrison Thermal Systems Site
GM Components Holdings, LLC
Lockport, New York

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

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.

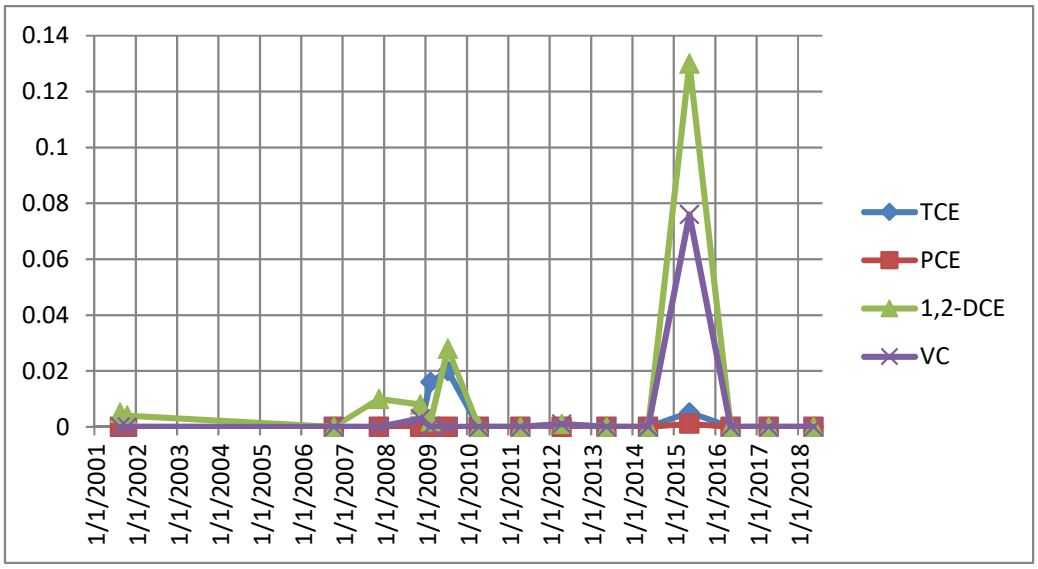
A duplicate sample was collected from this location on 4/19/2012.
The higher of the two concentrations were recorded in this graph.



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

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.

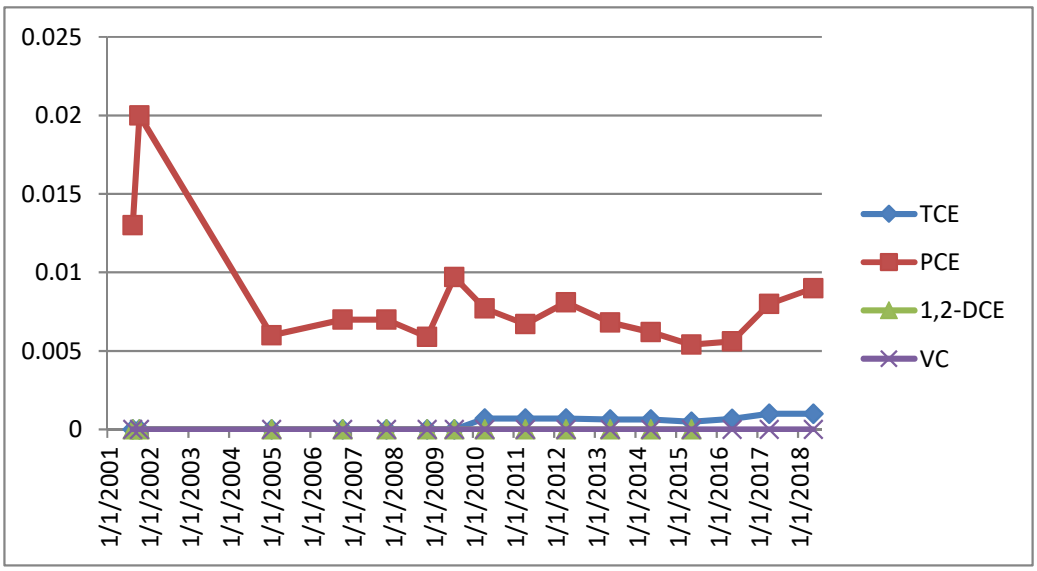


MW-15 Groundwater Data
Delphi Harrison Thermal Systems Site
GM Components Holdings, LLC
Lockport, New York

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

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

2018 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	0	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	3	3	0	3	0	3	0
Methane	>0.5 mg/L	3										
ORP	<50 mV	1	-98.5	1	1	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	NT	0
Temp	> 20^{0}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	1	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		0	0	0	0	2	0	0	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	2
DCE	If Daughter Product	2	10,034	2	0	2	0	0	0	0	0	2
VC	If Daughter Product	2	380.00	2	0	0	0	0	0	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	0	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	**16**	**8**	**12**	**6**	**17**	**4**	**12**	**13**

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

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

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

TestAmerica Job ID: 480-135543-1
TestAmerica Sample Delivery Group: Delphi Harrison
Client Project/Site: 058507, GM-Lockport Groundwater Sampling
Revision: 2

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

Attn: Kathleen Willy

Melissa Deyo

Authorized for release by:
6/27/2018 1:16:08 PM

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

Table of Contents

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
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
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.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
B	Compound was found in the blank and sample.

General Chemistry

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
H	Sample was prepped or analyzed beyond the specified holding time
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: 480-135543-1

Laboratory: TestAmerica Buffalo

Narrative

Job Narrative
480-135543-1

Revision I
This report was revised to report only the Delphi Harrison samples. The other samples were moved to another job.

Revision II
This report was revisedto include TOC on sample MW-14-2018 (480-135810-1).

Receipt
The samples were received on 5/8/2018 5:15 PM, 5/9/2018 5:00 PM, 5/10/2018 4:50 PM, 5/11/2018 3:15 PM and 5/16/2018 4:00 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 4 coolers at receipt time were 1.4º C, 4.0º C, 4.4º C and 8.8º C.

Receipt Exceptions
Method(s) AM20GAX: The container for the following sample was received broken by the subcontract lab: MW-4-2018 (480-135543-1). The client recollected the sample on 05/16/18 at 15:28.

GC/MS VOA
Method(s) 8260C: The following sample was diluted to bring the concentration of target analytes within the calibration range: MW-4-2018 (480-135543-1). 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-10-2018 (480-135622-1). 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-7-2018 (480-135737-3). Elevated reporting limits (RLs) are provided.

Method(s) 8260C: The continuing calibration verification (CCV) associated with batch 480-415302 recovered outside acceptance criteria, low biased, for Vinyl chloride. A reporting limit (RL) standard was analyzed, and the target analyte was detected. Since the associated samples were non-detect for this analyte, the data have been reported.

Method(s) 8260C: The continuing calibration verification (CCV) associated with batch 480-415410 recovered outside acceptance criteria, low biased, for Vinyl Chloride. A reporting limit (RL) standard was analyzed, and the target analyte was detected. Since the associated samples were non-detect for this analyte, the data have been reported.

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

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

HPLC/IC
Method(s) 300.0: The following sample was diluted to bring the concentration of target analytes within the calibration range: MW-4-2018 (480-135543-1). 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-10-2018 (480-135622-1), MW-15-2018 (480-135622-2) and MW-12-2018 (480-135622-3). 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-11-2018 (480-135737-1), MW-13-2018 (480-135737-2) and MW-7-2018 (480-135737-3). 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-14-2018 (480-135810-1), MW-8-4-2018 (480-135811-1) and MW-8-3-2018 (480-135811-2). Elevated reporting limits (RLs) are

Job ID: 480-135543-1 (Continued)

Laboratory: TestAmerica Buffalo (Continued)

provided.

Method(s) 300.0: The following sample was diluted to bring the concentration of target analytes within the calibration range: MW-14-2018 (480-135810-1). Elevated reporting limits (RLs) are provided.

Method(s) VFA-IC: The following samples were diluted due to the nature of the sample matrix: MW-4-2018 (480-135543-1), MW-10-2018 (480-135622-1), MW-15-2018 (480-135622-2), MW-12-2018 (480-135622-3), MW-11-2018 (480-135737-1), MW-13-2018 (480-135737-2), MW-7-2018 (480-135737-3) and MW-14-2018 (480-135810-1). 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.

GC VOA

Method(s) RSK-175: The following sample was diluted to bring the concentration of target analytes within the calibration range: MW-4-2018 (480-135543-1). 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-7-2018 (480-135737-3). Elevated reporting limits (RLs) are provided.

Method(s) RSK-175: The following volatile sample was analyzed with significant headspace in the sample container(s): MW-14-2018 (480-135810-1). Significant headspace is defined as a bubble greater than 6 mm in diameter.

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

Metals

Method(s) 3005A: The following samples for metals were received unpreserved and were preserved upon receipt to the laboratory: MW-4-2018 (480-135543-1), (480-135543-B-1 MS) and (480-135543-B-1 MSD). Regulatory documents require a 24-hour waiting period from the time of the addition of the acid preservative to the time of digestion.

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

General Chemistry

Method(s) SM 2320B: The following sample(s) was received with headspace in the sample container. This sample container was received with headspace. MW-4-2018 (480-135543-1).

Method(s) SM 2320B: The following sample(s) was received with headspace in the sample container. This sample container was received with headspace. MW-10-2018 (480-135622-1), MW-15-2018 (480-135622-2) and MW-12-2018 (480-135622-3).

Method(s) SM 2320B: The following samples were received with headspace in the sample container. MW-11-2018 (480-135737-1), MW-13-2018 (480-135737-2), MW-7-2018 (480-135737-3) and MW-14-2018 (480-135810-1).

Method(s) 9060A: The following samples were analyzed outside of analytical holding time due to analyst oversight. MW-4-2018 (480-135543-1), MW-10-2018 (480-135622-1), MW-15-2018 (480-135622-2) and MW-12-2018 (480-135622-3).

Method(s) 9060A: The following sample was analyzed outside of analytical holding time due to laboratory error. MW-14-2018 (480-135810-1).

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

Organic Prep

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

Detection Summary

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

TestAmerica Job ID: 480-135543-1
SDG: Delphi Harrison

Client Sample ID: MW-4-2018 — Lab Sample ID: 480-135543-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	20000		500	410	ug/L	500		8260C	Total/NA
Trichloroethene	26000		500	230	ug/L	500		8260C	Total/NA
Vinyl chloride	1400		500	450	ug/L	500		8260C	Total/NA
Hydrogen	4.1		0.60		nm	1		AM20GAX	Total/NA
Ethene	170		77	17	ug/L	11		RSK-175	Total/NA
Methane	760		44	11	ug/L	11		RSK-175	Total/NA
Iron	0.83		0.050	0.019	mg/L	1		6010C	Total/NA
Magnesium	75.5		0.20	0.043	mg/L	1		6010C	Total/NA
Manganese	0.47		0.0030	0.00040	mg/L	1		6010C	Total/NA
Potassium	17.4		0.50	0.10	mg/L	1		6010C	Total/NA
Sodium	928		5.0	1.6	mg/L	5		6010C	Total/NA
Chloride	1790		10.0	5.6	mg/L	20		300.0	Total/NA
Sulfate	292		40.0	7.0	mg/L	20		300.0	Total/NA
Ammonia	1.6		0.020	0.0090	mg/L	1		350.1	Total/NA
Total Organic Carbon	1.7	H B	1.0	0.43	mg/L	1		9060A	Total/NA
Total Alkalinity	246		5.0	0.79	mg/L	1		SM 2320B	Total/NA

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Carbon dioxide	42000		5000	5000	ug/L	1		RSK-175	Total/NA

Client Sample ID: TRIP BLANK — Lab Sample ID: 480-135543-2

No Detections.

Client Sample ID: MW-10-2018 — Lab Sample ID: 480-135622-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	160		2.0	1.6	ug/L	2		8260C	Total/NA
Trichloroethene	46		2.0	0.92	ug/L	2		8260C	Total/NA
Vinyl chloride	19		2.0	1.8	ug/L	2		8260C	Total/NA
Hydrogen	2.6		0.60		nm	1		AM20GAX	Total/NA
Methane	37		4.0	1.0	ug/L	1		RSK-175	Total/NA
Iron	0.046	J	0.050	0.019	mg/L	1		6010C	Total/NA
Magnesium	37.7		0.20	0.043	mg/L	1		6010C	Total/NA
Manganese	0.81		0.0030	0.00040	mg/L	1		6010C	Total/NA
Potassium	3.2		0.50	0.10	mg/L	1		6010C	Total/NA
Sodium	874		1.0	0.32	mg/L	1		6010C	Total/NA
Chloride	1500		10.0	5.6	mg/L	20		300.0	Total/NA
Sulfate	259		40.0	7.0	mg/L	20		300.0	Total/NA
Ammonia	0.091		0.020	0.0090	mg/L	1		350.1	Total/NA
Nitrate	0.21		0.050	0.020	mg/L	1		353.2	Total/NA
Total Organic Carbon	3.1	H B	1.0	0.43	mg/L	1		9060A	Total/NA
Total Alkalinity	286		5.0	0.79	mg/L	1		SM 2320B	Total/NA

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Carbon dioxide	36000		5000	5000	ug/L	1		RSK-175	Total/NA

Client Sample ID: MW-15-2018 — Lab Sample ID: 480-135622-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	2.0		1.0	0.81	ug/L	1		8260C	Total/NA
Tetrachloroethene	9.0		1.0	0.36	ug/L	1		8260C	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Buffalo

Client Sample ID: MW-15-2018 (Continued) — Lab Sample ID: 480-135622-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	1.3		1.0	0.46	ug/L	1		8260C	Total/NA
Hydrogen	2.8		0.60		nm	1		AM20GAX	Total/NA
Magnesium	35.4		0.20	0.043	mg/L	1		6010C	Total/NA
Manganese	0.42		0.0030	0.00040	mg/L	1		6010C	Total/NA
Potassium	3.3		0.50	0.10	mg/L	1		6010C	Total/NA
Sodium	275		1.0	0.32	mg/L	1		6010C	Total/NA
Chloride	495		2.5	1.4	mg/L	5		300.0	Total/NA
Sulfate	71.8		10.0	1.7	mg/L	5		300.0	Total/NA
Ammonia	0.081		0.020	0.0090	mg/L	1		350.1	Total/NA
Nitrate	0.28		0.050	0.020	mg/L	1		353.2	Total/NA
Total Organic Carbon	1.8	H B	1.0	0.43	mg/L	1		9060A	Total/NA
Total Alkalinity	391		5.0	0.79	mg/L	1		SM 2320B	Total/NA

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Carbon dioxide	65000		5000	5000	ug/L	1		RSK-175	Total/NA

Client Sample ID: MW-12-2018 — Lab Sample ID: 480-135622-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	33		1.0	0.81	ug/L	1		8260C	Total/NA
Trichloroethene	0.66	J	1.0	0.46	ug/L	1		8260C	Total/NA
Vinyl chloride	20		1.0	0.90	ug/L	1		8260C	Total/NA
Hydrogen	2.3		0.60		nm	1		AM20GAX	Total/NA
Methane	140		4.0	1.0	ug/L	1		RSK-175	Total/NA
Iron	4.0		0.050	0.019	mg/L	1		6010C	Total/NA
Magnesium	78.6		0.20	0.043	mg/L	1		6010C	Total/NA
Manganese	6.1		0.0030	0.00040	mg/L	1		6010C	Total/NA
Potassium	5.1		0.50	0.10	mg/L	1		6010C	Total/NA
Sodium	1910		5.0	1.6	mg/L	5		6010C	Total/NA
Chloride	3390		25.0	14.1	mg/L	50		300.0	Total/NA
Sulfate	102		100	17.5	mg/L	50		300.0	Total/NA
Ammonia	1.4		0.020	0.0090	mg/L	1		350.1	Total/NA
Nitrate	0.43		0.050	0.020	mg/L	1		353.2	Total/NA
Total Organic Carbon	2.9	H B	1.0	0.43	mg/L	1		9060A	Total/NA
Total Alkalinity	253		5.0	0.79	mg/L	1		SM 2320B	Total/NA

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Carbon dioxide	59000		5000	5000	ug/L	1		RSK-175	Total/NA

Client Sample ID: MW-11-2018 — Lab Sample ID: 480-135737-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Hydrogen	1.9		0.60		nm	1		AM20GAX	Total/NA
Iron	0.075		0.050	0.019	mg/L	1		6010C	Total/NA
Magnesium	37.7		0.20	0.043	mg/L	1		6010C	Total/NA
Manganese	0.054		0.0030	0.00040	mg/L	1		6010C	Total/NA
Potassium	7.7	B	0.50	0.10	mg/L	1		6010C	Total/NA
Sodium	112		1.0	0.32	mg/L	1		6010C	Total/NA
Chloride	190		2.5	1.4	mg/L	5		300.0	Total/NA
Sulfate	140		10.0	1.7	mg/L	5		300.0	Total/NA
Ammonia	0.065		0.020	0.0090	mg/L	1		350.1	Total/NA
Nitrate	0.25		0.050	0.020	mg/L	1		353.2	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-11-2018 (Continued) — Lab Sample ID: 480-135737-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Total Organic Carbon	1.1	B	1.0	0.43	mg/L	1		9060A	Total/NA
Total Alkalinity	248		5.0	0.79	mg/L	1		SM 2320B	Total/NA

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Carbon dioxide	14000		5000	5000	ug/L	1		RSK-175	Total/NA

Client Sample ID: MW-13-2018 — Lab Sample ID: 480-135737-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Hydrogen	2.2		0.60		nm	1		AM20GAX	Total/NA
Iron	0.73		0.050	0.019	mg/L	1		6010C	Total/NA
Magnesium	50.2		0.20	0.043	mg/L	1		6010C	Total/NA
Manganese	0.31		0.0030	0.00040	mg/L	1		6010C	Total/NA
Potassium	15.9	B	0.50	0.10	mg/L	1		6010C	Total/NA
Sodium	825		1.0	0.32	mg/L	1		6010C	Total/NA
Chloride	1740		10.0	5.6	mg/L	20		300.0	Total/NA
Sulfate	148		40.0	7.0	mg/L	20		300.0	Total/NA
Nitrate	1.6		0.050	0.020	mg/L	1		353.2	Total/NA
Total Organic Carbon	1.6	B	1.0	0.43	mg/L	1		9060A	Total/NA
Total Alkalinity	322		5.0	0.79	mg/L	1		SM 2320B	Total/NA

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Carbon dioxide	34000		5000	5000	ug/L	1		RSK-175	Total/NA

Client Sample ID: MW-7-2018 — Lab Sample ID: 480-135737-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	40000		20000	16000	ug/L	20000		8260C	Total/NA
Trichloroethene	690000		20000	9200	ug/L	20000		8260C	Total/NA
Ethane	30	J	83	17	ug/L	11		RSK-175	Total/NA
Ethene	380		77	17	ug/L	11		RSK-175	Total/NA
Methane	69		44	11	ug/L	11		RSK-175	Total/NA
Iron	0.050		0.050	0.019	mg/L	1		6010C	Total/NA
Magnesium	39.6		0.20	0.043	mg/L	1		6010C	Total/NA
Manganese	0.013		0.0030	0.00040	mg/L	1		6010C	Total/NA
Potassium	11.1	B	0.50	0.10	mg/L	1		6010C	Total/NA
Sodium	196		1.0	0.32	mg/L	1		6010C	Total/NA
Chloride	299		2.5	1.4	mg/L	5		300.0	Total/NA
Sulfate	180		10.0	1.7	mg/L	5		300.0	Total/NA
Ammonia	0.66		0.020	0.0090	mg/L	1		350.1	Total/NA
Total Organic Carbon	8.4	B	1.0	0.43	mg/L	1		9060A	Total/NA
Total Alkalinity	243	F1	5.0	0.79	mg/L	1		SM 2320B	Total/NA
Acetic acid	7.5	J	10.0	2.9	mg/L	10		VFA-IC	Total/NA

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Carbon dioxide	21000		5000	5000	ug/L	1		RSK-175	Total/NA

Client Sample ID: TRIP BLANK — Lab Sample ID: 480-135737-4

No Detections.

Client Sample ID: MW-14-2018 — Lab Sample ID: 480-135810-1

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-14-2018 (Continued)

Lab Sample ID: 480-135810-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Hydrogen	2.2		0.60		nm	1		AM20GAX	Total/NA
Methane	31		4.0	1.0	ug/L	1		RSK-175	Total/NA
Iron	0.066		0.050	0.019	mg/L	1		6010C	Total/NA
Magnesium	67.6		0.20	0.043	mg/L	1		6010C	Total/NA
Manganese	0.37	B	0.0030	0.00040	mg/L	1		6010C	Total/NA
Potassium	3.9		0.50	0.10	mg/L	1		6010C	Total/NA
Sodium	1090		5.0	1.6	mg/L	5		6010C	Total/NA
Chloride	2020		25.0	14.1	mg/L	50		300.0	Total/NA
Sulfate	117		40.0	7.0	mg/L	20		300.0	Total/NA
Ammonia	0.11		0.020	0.0090	mg/L	1		350.1	Total/NA
Total Organic Carbon	1.6	H B	1.0	0.43	mg/L	1		9060A	Total/NA
Total Alkalinity	364		5.0	0.79	mg/L	1		SM 2320B	Total/NA

Analyte	Result	Qualifier	RL	RL	Unit	Dil Fac	D	Method	Prep Type
Carbon dioxide	37000		5000	5000	ug/L	1		RSK-175	Total/NA

This Detection Summary does not include radiochemical test results.

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

TestAmerica Job ID: 480-135543-1
SDG: Delphi Harrison

Client Sample ID: MW-4-2018
Date Collected: 05/08/18 15:30
Date Received: 05/08/18 17:15

Lab Sample ID: 480-135543-1
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	20000		500	410	ug/L			05/16/18 01:56	500
Tetrachloroethene	ND		500	180	ug/L			05/16/18 01:56	500
trans-1,2-Dichloroethene	ND		500	450	ug/L			05/16/18 01:56	500
Trichloroethene	26000		500	230	ug/L			05/16/18 01:56	500
Vinyl chloride	1400		500	450	ug/L			05/16/18 01:56	500

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*89*		*77 - 120*		*05/16/18 01:56*	*500*
4-Bromofluorobenzene (Surr)	*90*		*73 - 120*		*05/16/18 01:56*	*500*
Toluene-d8 (Surr)	*95*		*80 - 120*		*05/16/18 01:56*	*500*
Dibromofluoromethane (Surr)	*90*		*75 - 123*		*05/16/18 01:56*	*500*

Method: AM20GAX - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hydrogen	4.1		0.60		nm			05/18/18 12:37	1

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethane	ND		83	17	ug/L			05/16/18 16:15	11
Ethene	170		77	17	ug/L			05/16/18 16:15	11
Methane	760		44	11	ug/L			05/16/18 16:15	11

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	42000		5000	5000	ug/L			05/11/18 17:27	1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	0.83		0.050	0.019	mg/L		05/10/18 08:35	05/10/18 16:30	1
Magnesium	75.5		0.20	0.043	mg/L		05/10/18 08:35	05/10/18 16:30	1
Manganese	0.47		0.0030	0.00040	mg/L		05/10/18 08:35	05/10/18 16:30	1
Potassium	17.4		0.50	0.10	mg/L		05/10/18 08:35	05/10/18 16:30	1
Sodium	928		5.0	1.6	mg/L		05/10/18 08:35	05/18/18 13:20	5

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	1790		10.0	5.6	mg/L			05/10/18 17:35	20
Sulfate	292		40.0	7.0	mg/L			05/10/18 17:35	20
Ammonia	1.6		0.020	0.0090	mg/L			05/22/18 16:47	1
Nitrate	ND		0.050	0.020	mg/L			05/08/18 22:08	1
Nitrite	ND		0.050	0.020	mg/L			05/08/18 22:08	1
Total Organic Carbon	1.7	H B	1.0	0.43	mg/L			06/07/18 06:53	1
Total Alkalinity	246		5.0	0.79	mg/L			05/10/18 13:36	1
Sulfide	ND		1.0	0.67	mg/L			05/13/18 13:00	1
Acetic acid	ND		10.0	2.9	mg/L			06/01/18 21:29	10
Formic-acid	ND		10.0	2.6	mg/L			06/01/18 21:29	10
Lactic acid	ND		10.0	3.1	mg/L			06/01/18 21:29	10
n-Butyric Acid	ND		10.0	2.6	mg/L			06/01/18 21:29	10
Propionic acid	ND		10.0	3.5	mg/L			06/01/18 21:29	10
Pyruvic Acid	ND		15.0	3.7	mg/L			06/01/18 21:29	10

Client Sample ID: TRIP BLANK

Lab Sample ID: 480-135543-2

Date Collected: 05/08/18 00:00
Matrix: Water
Date Received: 05/08/18 17:15

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			05/16/18 02:24	1
Tetrachloroethene	ND		1.0	0.36	ug/L			05/16/18 02:24	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			05/16/18 02:24	1
Trichloroethene	ND		1.0	0.46	ug/L			05/16/18 02:24	1
Vinyl chloride	ND		1.0	0.90	ug/L			05/16/18 02:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*77 - 120*		*05/16/18 02:24*	*1*
4-Bromofluorobenzene (Surr)	*88*		*73 - 120*		*05/16/18 02:24*	*1*
Toluene-d8 (Surr)	*94*		*80 - 120*		*05/16/18 02:24*	*1*
Dibromofluoromethane (Surr)	*90*		*75 - 123*		*05/16/18 02:24*	*1*

Client Sample ID: MW-10-2018

Lab Sample ID: 480-135622-1

Date Collected: 05/09/18 11:30
Matrix: Water
Date Received: 05/09/18 17:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	**160**		2.0	1.6	ug/L			05/17/18 21:23	2
Tetrachloroethene	ND		2.0	0.72	ug/L			05/17/18 21:23	2
trans-1,2-Dichloroethene	ND		2.0	1.8	ug/L			05/17/18 21:23	2
Trichloroethene	**46**		2.0	0.92	ug/L			05/17/18 21:23	2
Vinyl chloride	**19**		2.0	1.8	ug/L			05/17/18 21:23	2

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*77 - 120*		*05/17/18 21:23*	*2*
4-Bromofluorobenzene (Surr)	*100*		*73 - 120*		*05/17/18 21:23*	*2*
Toluene-d8 (Surr)	*104*		*80 - 120*		*05/17/18 21:23*	*2*
Dibromofluoromethane (Surr)	*109*		*75 - 123*		*05/17/18 21:23*	*2*

Method: AM20GAX - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hydrogen	**2.6**		0.60		nm			05/18/18 11:18	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			05/17/18 10:53	1
Ethene	ND		7.0	1.5	ug/L			05/17/18 10:53	1
Methane	**37**		4.0	1.0	ug/L			05/17/18 10:53	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	**36000**		5000	5000	ug/L			05/11/18 17:44	1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**0.046**	**J**	0.050	0.019	mg/L		05/10/18 11:46	05/11/18 10:07	1
Magnesium	**37.7**		0.20	0.043	mg/L		05/10/18 11:46	05/11/18 10:07	1
Manganese	**0.81**		0.0030	0.00040	mg/L		05/10/18 11:46	05/11/18 10:07	1
Potassium	**3.2**		0.50	0.10	mg/L		05/10/18 11:46	05/11/18 10:07	1
Sodium	**874**		1.0	0.32	mg/L		05/10/18 11:46	05/11/18 10:07	1

Client Sample ID: MW-10-2018

Lab Sample ID: 480-135622-1

Date Collected: 05/09/18 11:30
Matrix: Water
Date Received: 05/09/18 17:00

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**1500**		10.0	5.6	mg/L			05/10/18 19:02	20
Sulfate	**259**		40.0	7.0	mg/L			05/10/18 19:02	20
Ammonia	**0.091**		0.020	0.0090	mg/L			05/22/18 17:53	1
Nitrate	**0.21**		0.050	0.020	mg/L			05/10/18 21:05	1
Nitrite	ND		0.050	0.020	mg/L			05/10/18 21:05	1
Total Organic Carbon	**3.1**	**H B**	1.0	0.43	mg/L			06/07/18 07:21	1
Total Alkalinity	**286**		5.0	0.79	mg/L			05/21/18 17:30	1
Sulfide	ND		1.0	0.67	mg/L			05/14/18 11:45	1
Acetic acid	ND		10.0	2.9	mg/L			06/01/18 21:58	10
Formic-acid	ND		10.0	2.6	mg/L			06/01/18 21:58	10
Lactic acid	ND		10.0	3.1	mg/L			06/01/18 21:58	10
n-Butyric Acid	ND		10.0	2.6	mg/L			06/01/18 21:58	10
Propionic acid	ND		10.0	3.5	mg/L			06/01/18 21:58	10
Pyruvic Acid	ND		15.0	3.7	mg/L			06/01/18 21:58	10

Client Sample ID: MW-15-2018

Lab Sample ID: 480-135622-2

Date Collected: 05/09/18 13:30
Matrix: Water
Date Received: 05/09/18 17:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	**2.0**		1.0	0.81	ug/L			05/17/18 11:41	1
Tetrachloroethene	**9.0**		1.0	0.36	ug/L			05/17/18 11:41	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			05/17/18 11:41	1
Trichloroethene	**1.3**		1.0	0.46	ug/L			05/17/18 11:41	1
Vinyl chloride	ND		1.0	0.90	ug/L			05/17/18 11:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*77 - 120*		*05/17/18 11:41*	*1*
4-Bromofluorobenzene (Surr)	*101*		*73 - 120*		*05/17/18 11:41*	*1*
Toluene-d8 (Surr)	*101*		*80 - 120*		*05/17/18 11:41*	*1*
Dibromofluoromethane (Surr)	*108*		*75 - 123*		*05/17/18 11:41*	*1*

Method: AM20GAX - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hydrogen	**2.8**		0.60		nm			05/18/18 11:30	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			05/17/18 11:12	1
Ethene	ND		7.0	1.5	ug/L			05/17/18 11:12	1
Methane	ND		4.0	1.0	ug/L			05/17/18 11:12	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	**65000**		5000	5000	ug/L			05/11/18 17:53	1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	ND		0.050	0.019	mg/L		05/10/18 11:46	05/11/18 10:36	1
Magnesium	**35.4**		0.20	0.043	mg/L		05/10/18 11:46	05/11/18 10:36	1
Manganese	**0.42**		0.0030	0.00040	mg/L		05/10/18 11:46	05/11/18 10:36	1

Client Sample ID: MW-15-2018

Date Collected: 05/09/18 13:30
Date Received: 05/09/18 17:00

Lab Sample ID: 480-135622-2

Matrix: Water

Method: 6010C - Metals (ICP) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Potassium	3.3		0.50	0.10	mg/L		05/10/18 11:46	05/11/18 10:36	1
Sodium	275		1.0	0.32	mg/L		05/10/18 11:46	05/11/18 10:36	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	495		2.5	1.4	mg/L			05/10/18 19:11	5
Sulfate	71.8		10.0	1.7	mg/L			05/10/18 19:11	5
Ammonia	0.081		0.020	0.0090	mg/L			05/22/18 17:54	1
Nitrate	0.28		0.050	0.020	mg/L			05/10/18 21:06	1
Nitrite	ND		0.050	0.020	mg/L			05/10/18 21:06	1
Total Organic Carbon	1.8	H B	1.0	0.43	mg/L			06/07/18 07:48	1
Total Alkalinity	391		5.0	0.79	mg/L			05/21/18 17:37	1
Sulfide	ND		1.0	0.67	mg/L			05/14/18 11:45	1
Acetic acid	ND		10.0	2.9	mg/L			06/02/18 00:23	10
Formic-acid	ND		10.0	2.6	mg/L			06/02/18 00:23	10
Lactic acid	ND		10.0	3.1	mg/L			06/02/18 00:23	10
n-Butyric Acid	ND		10.0	2.6	mg/L			06/02/18 00:23	10
Propionic acid	ND		10.0	3.5	mg/L			06/02/18 00:23	10
Pyruvic Acid	ND		15.0	3.7	mg/L			06/02/18 00:23	10

Client Sample ID: MW-12-2018

Date Collected: 05/09/18 15:30
Date Received: 05/09/18 17:00

Lab Sample ID: 480-135622-3

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	33		1.0	0.81	ug/L			05/17/18 21:46	1
Tetrachloroethene	ND		1.0	0.36	ug/L			05/17/18 21:46	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			05/17/18 21:46	1
Trichloroethene	0.66	J	1.0	0.46	ug/L			05/17/18 21:46	1
Vinyl chloride	20		1.0	0.90	ug/L			05/17/18 21:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*77 - 120*		*05/17/18 21:46*	*1*
4-Bromofluorobenzene (Surr)	*101*		*73 - 120*		*05/17/18 21:46*	*1*
Toluene-d8 (Surr)	*103*		*80 - 120*		*05/17/18 21:46*	*1*
Dibromofluoromethane (Surr)	*109*		*75 - 123*		*05/17/18 21:46*	*1*

Method: AM20GAX - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hydrogen	2.3		0.60		nm			05/18/18 11:43	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			05/17/18 11:30	1
Ethene	ND		7.0	1.5	ug/L			05/17/18 11:30	1
Methane	140		4.0	1.0	ug/L			05/17/18 11:30	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	59000		5000	5000	ug/L			05/11/18 18:02	1

Client Sample ID: MW-12-2018

Lab Sample ID: 480-135622-3

Date Collected: 05/09/18 15:30
Matrix: Water
Date Received: 05/09/18 17:00

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	4.0		0.050	0.019	mg/L		05/10/18 11:46	05/11/18 10:40	1
Magnesium	78.6		0.20	0.043	mg/L		05/10/18 11:46	05/11/18 10:40	1
Manganese	6.1		0.0030	0.00040	mg/L		05/10/18 11:46	05/11/18 10:40	1
Potassium	5.1		0.50	0.10	mg/L		05/10/18 11:46	05/11/18 10:40	1
Sodium	1910		5.0	1.6	mg/L		05/10/18 11:46	05/18/18 14:04	5

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	3390		25.0	14.1	mg/L			05/10/18 19:19	50
Sulfate	102		100	17.5	mg/L			05/10/18 19:19	50
Ammonia	1.4		0.020	0.0090	mg/L			05/22/18 17:55	1
Nitrate	0.43		0.050	0.020	mg/L			05/10/18 21:07	1
Nitrite	ND		0.050	0.020	mg/L			05/10/18 21:07	1
Total Organic Carbon	2.9	H B	1.0	0.43	mg/L			06/07/18 12:51	1
Total Alkalinity	253		5.0	0.79	mg/L			05/21/18 17:43	1
Sulfide	ND		1.0	0.67	mg/L			05/14/18 11:45	1
Acetic acid	ND		10.0	2.9	mg/L			06/02/18 00:53	10
Formic-acid	ND		10.0	2.6	mg/L			06/02/18 00:53	10
Lactic acid	ND		10.0	3.1	mg/L			06/02/18 00:53	10
n-Butyric Acid	ND		10.0	2.6	mg/L			06/02/18 00:53	10
Propionic acid	ND		10.0	3.5	mg/L			06/02/18 00:53	10
Pyruvic Acid	ND		15.0	3.7	mg/L			06/02/18 00:53	10

Client Sample ID: MW-11-2018

Lab Sample ID: 480-135737-1

Date Collected: 05/10/18 13:20
Matrix: Water
Date Received: 05/10/18 16:50

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			05/19/18 00:29	1
Tetrachloroethene	ND		1.0	0.36	ug/L			05/19/18 00:29	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			05/19/18 00:29	1
Trichloroethene	ND		1.0	0.46	ug/L			05/19/18 00:29	1
Vinyl chloride	ND		1.0	0.90	ug/L			05/19/18 00:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*77 - 120*		*05/19/18 00:29*	*1*
4-Bromofluorobenzene (Surr)	*86*		*73 - 120*		*05/19/18 00:29*	*1*
Toluene-d8 (Surr)	*94*		*80 - 120*		*05/19/18 00:29*	*1*
Dibromofluoromethane (Surr)	*88*		*75 - 123*		*05/19/18 00:29*	*1*

Method: AM20GAX - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hydrogen	1.9		0.60		nm			05/18/18 12:08	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			05/17/18 16:14	1
Ethene	ND		7.0	1.5	ug/L			05/17/18 16:14	1
Methane	ND		4.0	1.0	ug/L			05/17/18 16:14	1

Client Sample ID: MW-11-2018

Lab Sample ID: 480-135737-1

Date Collected: 05/10/18 13:20
Matrix: Water
Date Received: 05/10/18 16:50

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	14000		5000	5000	ug/L			05/16/18 15:50	1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	0.075		0.050	0.019	mg/L		05/12/18 09:19	05/14/18 19:12	1
Magnesium	37.7		0.20	0.043	mg/L		05/12/18 09:19	05/14/18 19:12	1
Manganese	0.054		0.0030	0.00040	mg/L		05/12/18 09:19	05/14/18 19:12	1
Potassium	7.7	B	0.50	0.10	mg/L		05/12/18 09:19	05/14/18 19:12	1
Sodium	112		1.0	0.32	mg/L		05/12/18 09:19	05/14/18 19:12	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	190		2.5	1.4	mg/L			05/12/18 21:00	5
Sulfate	140		10.0	1.7	mg/L			05/12/18 21:00	5
Ammonia	0.065		0.020	0.0090	mg/L			05/22/18 19:31	1
Nitrate	0.25		0.050	0.020	mg/L			05/11/18 21:38	1
Nitrite	ND		0.050	0.020	mg/L			05/11/18 21:38	1
Total Organic Carbon	1.1	B	1.0	0.43	mg/L			06/07/18 13:19	1
Total Alkalinity	248		5.0	0.79	mg/L			05/23/18 20:25	1
Sulfide	ND		1.0	0.67	mg/L			05/14/18 11:45	1
Acetic acid	ND		10.0	2.9	mg/L			06/02/18 01:22	10
Formic-acid	ND		10.0	2.6	mg/L			06/02/18 01:22	10
Lactic acid	ND		10.0	3.1	mg/L			06/02/18 01:22	10
n-Butyric Acid	ND		10.0	2.6	mg/L			06/02/18 01:22	10
Propionic acid	ND		10.0	3.5	mg/L			06/02/18 01:22	10
Pyruvic Acid	ND		15.0	3.7	mg/L			06/02/18 01:22	10

Client Sample ID: MW-13-2018

Lab Sample ID: 480-135737-2

Date Collected: 05/10/18 14:45
Matrix: Water
Date Received: 05/10/18 16:50

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			05/19/18 00:56	1
Tetrachloroethene	ND		1.0	0.36	ug/L			05/19/18 00:56	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			05/19/18 00:56	1
Trichloroethene	ND		1.0	0.46	ug/L			05/19/18 00:56	1
Vinyl chloride	ND		1.0	0.90	ug/L			05/19/18 00:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*88*		*77 - 120*		*05/19/18 00:56*	*1*
4-Bromofluorobenzene (Surr)	*88*		*73 - 120*		*05/19/18 00:56*	*1*
Toluene-d8 (Surr)	*92*		*80 - 120*		*05/19/18 00:56*	*1*
Dibromofluoromethane (Surr)	*89*		*75 - 123*		*05/19/18 00:56*	*1*

Method: AM20GAX - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hydrogen	2.2		0.60		nm			05/18/18 12:20	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			05/17/18 15:04	1

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

TestAmerica Job ID: 480-135543-1
SDG: Delphi Harrison

Client Sample ID: MW-13-2018

Lab Sample ID: 480-135737-2

Date Collected: 05/10/18 14:45
Matrix: Water
Date Received: 05/10/18 16:50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethene	ND		7.0	1.5	ug/L			05/17/18 15:04	1
Methane	ND		4.0	1.0	ug/L			05/17/18 15:04	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	**34000**		5000	5000	ug/L			05/16/18 15:59	1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**0.73**		0.050	0.019	mg/L		05/12/18 09:19	05/14/18 19:16	1
Magnesium	**50.2**		0.20	0.043	mg/L		05/12/18 09:19	05/14/18 19:16	1
Manganese	**0.31**		0.0030	0.00040	mg/L		05/12/18 09:19	05/14/18 19:16	1
Potassium	**15.9**	**B**	0.50	0.10	mg/L		05/12/18 09:19	05/14/18 19:16	1
Sodium	**825**		1.0	0.32	mg/L		05/12/18 09:19	05/14/18 19:16	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**1740**		10.0	5.6	mg/L			05/12/18 21:15	20
Sulfate	**148**		40.0	7.0	mg/L			05/12/18 21:15	20
Ammonia	ND		0.020	0.0090	mg/L			05/22/18 19:32	1
Nitrate	**1.6**		0.050	0.020	mg/L			05/11/18 21:39	1
Nitrite	ND		0.050	0.020	mg/L			05/11/18 21:39	1
Total Organic Carbon	**1.6**	**B**	1.0	0.43	mg/L			06/07/18 22:58	1
Total Alkalinity	**322**		5.0	0.79	mg/L			05/23/18 20:51	1
Sulfide	ND		1.0	0.67	mg/L			05/14/18 11:45	1
Acetic acid	ND		10.0	2.9	mg/L			06/02/18 01:51	10
Formic-acid	ND		10.0	2.6	mg/L			06/02/18 01:51	10
Lactic acid	ND		10.0	3.1	mg/L			06/02/18 01:51	10
n-Butyric Acid	ND		10.0	2.6	mg/L			06/02/18 01:51	10
Propionic acid	ND		10.0	3.5	mg/L			06/02/18 01:51	10
Pyruvic Acid	ND		15.0	3.7	mg/L			06/02/18 01:51	10

Client Sample ID: MW-7-2018

Lab Sample ID: 480-135737-3

Date Collected: 05/10/18 15:50
Matrix: Water
Date Received: 05/10/18 16:50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	**40000**		20000	16000	ug/L			05/20/18 13:14	20000
Tetrachloroethene	ND		20000	7200	ug/L			05/20/18 13:14	20000
trans-1,2-Dichloroethene	ND		20000	18000	ug/L			05/20/18 13:14	20000
Trichloroethene	**690000**		20000	9200	ug/L			05/20/18 13:14	20000
Vinyl chloride	ND		20000	18000	ug/L			05/20/18 13:14	20000

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*96*		*77 - 120*		*05/20/18 13:14*	*20000*
4-Bromofluorobenzene (Surr)	*86*		*73 - 120*		*05/20/18 13:14*	*20000*
Toluene-d8 (Surr)	*95*		*80 - 120*		*05/20/18 13:14*	*20000*
Dibromofluoromethane (Surr)	*90*		*75 - 123*		*05/20/18 13:14*	*20000*

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

TestAmerica Job ID: 480-135543-1
SDG: Delphi Harrison

Client Sample ID: MW-7-2018

Lab Sample ID: 480-135737-3

Date Collected: 05/10/18 15:50
Matrix: Water
Date Received: 05/10/18 16:50

Method: RSK-175 - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethane	30	J	83	17	ug/L			05/17/18 15:21	11
Ethene	380		77	17	ug/L			05/17/18 15:21	11
Methane	69		44	11	ug/L			05/17/18 15:21	11

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	21000		5000	5000	ug/L			05/16/18 16:08	1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	0.050		0.050	0.019	mg/L		05/12/18 09:19	05/14/18 19:19	1
Magnesium	39.6		0.20	0.043	mg/L		05/12/18 09:19	05/14/18 19:19	1
Manganese	0.013		0.0030	0.00040	mg/L		05/12/18 09:19	05/14/18 19:19	1
Potassium	11.1	B	0.50	0.10	mg/L		05/12/18 09:19	05/14/18 19:19	1
Sodium	196		1.0	0.32	mg/L		05/12/18 09:19	05/14/18 19:19	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	299		2.5	1.4	mg/L			05/12/18 21:29	5
Sulfate	180		10.0	1.7	mg/L			05/12/18 21:29	5
Ammonia	0.66		0.020	0.0090	mg/L			05/22/18 19:33	1
Nitrate	ND		0.050	0.020	mg/L			05/11/18 17:38	1
Nitrite	ND		0.050	0.020	mg/L			05/11/18 17:38	1
Total Organic Carbon	8.4	B	1.0	0.43	mg/L			06/07/18 23:26	1
Total Alkalinity	243	F1	5.0	0.79	mg/L			05/23/18 21:02	1
Sulfide	ND		1.0	0.67	mg/L			05/14/18 11:45	1
Acetic acid	7.5	J	10.0	2.9	mg/L			06/02/18 02:20	10
Formic-acid	ND		10.0	2.6	mg/L			06/02/18 02:20	10
Lactic acid	ND		10.0	3.1	mg/L			06/02/18 02:20	10
n-Butyric Acid	ND		10.0	2.6	mg/L			06/02/18 02:20	10
Propionic acid	ND		10.0	3.5	mg/L			06/02/18 02:20	10
Pyruvic Acid	ND		15.0	3.7	mg/L			06/02/18 02:20	10

Client Sample ID: TRIP BLANK

Lab Sample ID: 480-135737-4

Date Collected: 05/10/18 00:00
Matrix: Water
Date Received: 05/10/18 16:50

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			05/19/18 01:51	1
Tetrachloroethene	ND		1.0	0.36	ug/L			05/19/18 01:51	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			05/19/18 01:51	1
Trichloroethene	ND		1.0	0.46	ug/L			05/19/18 01:51	1
Vinyl chloride	ND		1.0	0.90	ug/L			05/19/18 01:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*84*		*77 - 120*		*05/19/18 01:51*	*1*
4-Bromofluorobenzene (Surr)	*86*		*73 - 120*		*05/19/18 01:51*	*1*
Toluene-d8 (Surr)	*94*		*80 - 120*		*05/19/18 01:51*	*1*
Dibromofluoromethane (Surr)	*87*		*75 - 123*		*05/19/18 01:51*	*1*

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

TestAmerica Job ID: 480-135543-1
SDG: Delphi Harrison

Client Sample ID: MW-14-2018
Date Collected: 05/11/18 10:15
Date Received: 05/11/18 15:15

Lab Sample ID: 480-135810-1
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	ND		1.0	0.81	ug/L			05/19/18 12:39	1
Tetrachloroethene	ND		1.0	0.36	ug/L			05/19/18 12:39	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			05/19/18 12:39	1
Trichloroethene	ND		1.0	0.46	ug/L			05/19/18 12:39	1
Vinyl chloride	ND		1.0	0.90	ug/L			05/19/18 12:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*77 - 120*		*05/19/18 12:39*	*1*
4-Bromofluorobenzene (Surr)	*94*		*73 - 120*		*05/19/18 12:39*	*1*
Toluene-d8 (Surr)	*94*		*80 - 120*		*05/19/18 12:39*	*1*
Dibromofluoromethane (Surr)	*89*		*75 - 123*		*05/19/18 12:39*	*1*

Method: AM20GAX - Dissolved Gases (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hydrogen	**2.2**		0.60		nm			05/18/18 11:55	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			05/18/18 11:17	1
Ethene	ND		7.0	1.5	ug/L			05/18/18 11:17	1
Methane	**31**		4.0	1.0	ug/L			05/18/18 11:17	1

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon dioxide	**37000**		5000	5000	ug/L			05/16/18 16:42	1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**0.066**		0.050	0.019	mg/L		05/16/18 09:50	05/16/18 21:49	1
Magnesium	**67.6**		0.20	0.043	mg/L		05/16/18 09:50	05/16/18 21:49	1
Manganese	**0.37**	**B**	0.0030	0.00040	mg/L		05/16/18 09:50	05/16/18 21:49	1
Potassium	**3.9**		0.50	0.10	mg/L		05/16/18 09:50	05/16/18 21:49	1
Sodium	**1090**		5.0	1.6	mg/L		05/16/18 09:50	05/18/18 12:35	5

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**2020**		25.0	14.1	mg/L			05/15/18 22:45	50
Sulfate	**117**		40.0	7.0	mg/L			05/14/18 20:30	20
Ammonia	**0.11**		0.020	0.0090	mg/L			05/22/18 20:32	1
Nitrate	ND		0.050	0.020	mg/L			05/12/18 10:50	1
Nitrite	ND		0.050	0.020	mg/L			05/12/18 10:50	1
Total Organic Carbon	**1.6**	**H B**	1.0	0.43	mg/L			06/13/18 16:24	1
Total Alkalinity	**364**		5.0	0.79	mg/L			05/23/18 22:24	1
Sulfide	ND		1.0	0.67	mg/L			05/14/18 11:45	1
Acetic acid	ND		10.0	2.9	mg/L			06/02/18 02:49	10
Formic-acid	ND		10.0	2.6	mg/L			06/02/18 02:49	10
Lactic acid	ND		10.0	3.1	mg/L			06/02/18 02:49	10
n-Butyric Acid	ND		10.0	2.6	mg/L			06/02/18 02:49	10
Propionic acid	ND		10.0	3.5	mg/L			06/02/18 02:49	10
Pyruvic Acid	ND		15.0	3.7	mg/L			06/02/18 02:49	10

Surrogate Summary

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

TestAmerica Job ID: 480-135543-1
SDG: Delphi Harrison

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)
480-135543-1	MW-4-2018	89	90	95	90
480-135543-2	TRIP BLANK	91	88	94	90
480-135622-1	MW-10-2018	101	100	104	109
480-135622-2	MW-15-2018	99	101	101	108
480-135622-3	MW-12-2018	104	101	103	109
480-135737-1	MW-11-2018	90	86	94	88
480-135737-2	MW-13-2018	88	88	92	89
480-135737-3	MW-7-2018	96	86	95	90
480-135737-4	TRIP BLANK	84	86	94	87
480-135810-1	MW-14-2018	90	94	94	89
LCS 480-414529/5	Lab Control Sample	84	95	96	86
LCS 480-414830/5	Lab Control Sample	101	107	105	106
LCS 480-415054/4	Lab Control Sample	97	105	103	108
LCS 480-415302/5	Lab Control Sample	87	94	96	88
LCS 480-415315/4	Lab Control Sample	100	104	102	104
LCS 480-415410/5	Lab Control Sample	96	92	97	96
MB 480-414529/7	Method Blank	90	92	96	87
MB 480-414830/7	Method Blank	104	101	100	104
MB 480-415054/6	Method Blank	99	100	104	105
MB 480-415302/7	Method Blank	87	89	93	86
MB 480-415315/6	Method Blank	98	101	103	98
MB 480-415410/7	Method Blank	91	92	97	90

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 480-414529/7
Matrix: Water
Analysis Batch: 414529

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			05/15/18 23:20	1
Tetrachloroethene	ND		1.0	0.36	ug/L			05/15/18 23:20	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			05/15/18 23:20	1
Trichloroethene	ND		1.0	0.46	ug/L			05/15/18 23:20	1
Vinyl chloride	ND		1.0	0.90	ug/L			05/15/18 23:20	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*90*		*77 - 120*		*05/15/18 23:20*	*1*
4-Bromofluorobenzene (Surr)	*92*		*73 - 120*		*05/15/18 23:20*	*1*
Toluene-d8 (Surr)	*96*		*80 - 120*		*05/15/18 23:20*	*1*
Dibromofluoromethane (Surr)	*87*		*75 - 123*		*05/15/18 23:20*	*1*

Lab Sample ID: LCS 480-414529/5
Matrix: Water
Analysis Batch: 414529

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	22.5		ug/L		90	74 - 124
Tetrachloroethene	25.0	26.0		ug/L		104	74 - 122
trans-1,2-Dichloroethene	25.0	23.5		ug/L		94	73 - 127
Trichloroethene	25.0	23.6		ug/L		94	74 - 123
Vinyl chloride	25.0	21.6		ug/L		86	65 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*84*		*77 - 120*
4-Bromofluorobenzene (Surr)	*95*		*73 - 120*
Toluene-d8 (Surr)	*96*		*80 - 120*
Dibromofluoromethane (Surr)	*86*		*75 - 123*

Lab Sample ID: MB 480-414830/7
Matrix: Water
Analysis Batch: 414830

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			05/17/18 10:19	1
Tetrachloroethene	ND		1.0	0.36	ug/L			05/17/18 10:19	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			05/17/18 10:19	1
Trichloroethene	ND		1.0	0.46	ug/L			05/17/18 10:19	1
Vinyl chloride	ND		1.0	0.90	ug/L			05/17/18 10:19	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*77 - 120*		*05/17/18 10:19*	*1*
4-Bromofluorobenzene (Surr)	*101*		*73 - 120*		*05/17/18 10:19*	*1*
Toluene-d8 (Surr)	*100*		*80 - 120*		*05/17/18 10:19*	*1*
Dibromofluoromethane (Surr)	*104*		*75 - 123*		*05/17/18 10:19*	*1*

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

Lab Sample ID: LCS 480-414830/5
Matrix: Water
Analysis Batch: 414830

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	25.9		ug/L		104	74 - 122
trans-1,2-Dichloroethene	25.0	24.9		ug/L		100	73 - 127
Trichloroethene	25.0	23.8		ug/L		95	74 - 123
Vinyl chloride	25.0	23.5		ug/L		94	65 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*101*		*77 - 120*
4-Bromofluorobenzene (Surr)	*107*		*73 - 120*
Toluene-d8 (Surr)	*105*		*80 - 120*
Dibromofluoromethane (Surr)	*106*		*75 - 123*

Lab Sample ID: MB 480-415054/6
Matrix: Water
Analysis Batch: 415054

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			05/17/18 20:44	1
Tetrachloroethene	ND		1.0	0.36	ug/L			05/17/18 20:44	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			05/17/18 20:44	1
Trichloroethene	ND		1.0	0.46	ug/L			05/17/18 20:44	1
Vinyl chloride	ND		1.0	0.90	ug/L			05/17/18 20:44	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*77 - 120*		*05/17/18 20:44*	*1*
4-Bromofluorobenzene (Surr)	*100*		*73 - 120*		*05/17/18 20:44*	*1*
Toluene-d8 (Surr)	*104*		*80 - 120*		*05/17/18 20:44*	*1*
Dibromofluoromethane (Surr)	*105*		*75 - 123*		*05/17/18 20:44*	*1*

Lab Sample ID: LCS 480-415054/4
Matrix: Water
Analysis Batch: 415054

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	26.6		ug/L		106	74 - 124
Tetrachloroethene	25.0	27.3		ug/L		109	74 - 122
trans-1,2-Dichloroethene	25.0	26.1		ug/L		104	73 - 127
Trichloroethene	25.0	25.5		ug/L		102	74 - 123
Vinyl chloride	25.0	25.6		ug/L		102	65 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*97*		*77 - 120*
4-Bromofluorobenzene (Surr)	*105*		*73 - 120*
Toluene-d8 (Surr)	*103*		*80 - 120*
Dibromofluoromethane (Surr)	*108*		*75 - 123*

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

Lab Sample ID: MB 480-415302/7
Matrix: Water
Analysis Batch: 415302

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			05/18/18 23:55	1
Tetrachloroethene	ND		1.0	0.36	ug/L			05/18/18 23:55	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			05/18/18 23:55	1
Trichloroethene	ND		1.0	0.46	ug/L			05/18/18 23:55	1
Vinyl chloride	ND		1.0	0.90	ug/L			05/18/18 23:55	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*77 - 120*		*05/18/18 23:55*	*1*
4-Bromofluorobenzene (Surr)	*89*		*73 - 120*		*05/18/18 23:55*	*1*
Toluene-d8 (Surr)	*93*		*80 - 120*		*05/18/18 23:55*	*1*
Dibromofluoromethane (Surr)	*86*		*75 - 123*		*05/18/18 23:55*	*1*

Lab Sample ID: LCS 480-415302/5
Matrix: Water
Analysis Batch: 415302

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	22.2		ug/L		89	74 - 124
Tetrachloroethene	25.0	24.0		ug/L		96	74 - 122
trans-1,2-Dichloroethene	25.0	23.4		ug/L		93	73 - 127
Trichloroethene	25.0	23.8		ug/L		95	74 - 123
Vinyl chloride	25.0	19.2		ug/L		77	65 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*87*		*77 - 120*
4-Bromofluorobenzene (Surr)	*94*		*73 - 120*
Toluene-d8 (Surr)	*96*		*80 - 120*
Dibromofluoromethane (Surr)	*88*		*75 - 123*

Lab Sample ID: MB 480-415315/6
Matrix: Water
Analysis Batch: 415315

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			05/19/18 11:09	1
Tetrachloroethene	ND		1.0	0.36	ug/L			05/19/18 11:09	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			05/19/18 11:09	1
Trichloroethene	ND		1.0	0.46	ug/L			05/19/18 11:09	1
Vinyl chloride	ND		1.0	0.90	ug/L			05/19/18 11:09	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*77 - 120*		*05/19/18 11:09*	*1*
4-Bromofluorobenzene (Surr)	*101*		*73 - 120*		*05/19/18 11:09*	*1*
Toluene-d8 (Surr)	*103*		*80 - 120*		*05/19/18 11:09*	*1*
Dibromofluoromethane (Surr)	*98*		*75 - 123*		*05/19/18 11:09*	*1*

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

Lab Sample ID: LCS 480-415315/4
Matrix: Water
Analysis Batch: 415315

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	26.9		ug/L		107	74 - 124
Tetrachloroethene	25.0	29.6		ug/L		118	74 - 122
trans-1,2-Dichloroethene	25.0	26.2		ug/L		105	73 - 127
Trichloroethene	25.0	28.1		ug/L		113	74 - 123
Vinyl chloride	25.0	24.2		ug/L		97	65 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*100*		*77 - 120*
4-Bromofluorobenzene (Surr)	*104*		*73 - 120*
Toluene-d8 (Surr)	*102*		*80 - 120*
Dibromofluoromethane (Surr)	*104*		*75 - 123*

Lab Sample ID: MB 480-415410/7
Matrix: Water
Analysis Batch: 415410

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			05/20/18 12:17	1
Tetrachloroethene	ND		1.0	0.36	ug/L			05/20/18 12:17	1
trans-1,2-Dichloroethene	ND		1.0	0.90	ug/L			05/20/18 12:17	1
Trichloroethene	ND		1.0	0.46	ug/L			05/20/18 12:17	1
Vinyl chloride	ND		1.0	0.90	ug/L			05/20/18 12:17	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*91*		*77 - 120*		*05/20/18 12:17*	*1*
4-Bromofluorobenzene (Surr)	*92*		*73 - 120*		*05/20/18 12:17*	*1*
Toluene-d8 (Surr)	*97*		*80 - 120*		*05/20/18 12:17*	*1*
Dibromofluoromethane (Surr)	*90*		*75 - 123*		*05/20/18 12:17*	*1*

Lab Sample ID: LCS 480-415410/5
Matrix: Water
Analysis Batch: 415410

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	22.9		ug/L		91	74 - 124
Tetrachloroethene	25.0	23.3		ug/L		93	74 - 122
trans-1,2-Dichloroethene	25.0	22.9		ug/L		92	73 - 127
Trichloroethene	25.0	23.6		ug/L		95	74 - 123
Vinyl chloride	25.0	18.7		ug/L		75	65 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*96*		*77 - 120*
4-Bromofluorobenzene (Surr)	*92*		*73 - 120*
Toluene-d8 (Surr)	*97*		*80 - 120*
Dibromofluoromethane (Surr)	*96*		*75 - 123*

Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: MB 200-129375/4
Matrix: Water
Analysis Batch: 129375

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			05/11/18 17:18	1

Lab Sample ID: LCS 200-129375/3
Matrix: Water
Analysis Batch: 129375

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	33600		ug/L		84	70 - 130

Lab Sample ID: MB 200-129520/4
Matrix: Water
Analysis Batch: 129520

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			05/16/18 12:24	1

Lab Sample ID: LCS 200-129520/3
Matrix: Water
Analysis Batch: 129520

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	38800		ug/L		97	70 - 130

Lab Sample ID: MB 480-414576/3
Matrix: Water
Analysis Batch: 414576

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			05/16/18 09:38	1
Ethene	ND		7.0	1.5	ug/L			05/16/18 09:38	1
Methane	ND		4.0	1.0	ug/L			05/16/18 09:38	1

Lab Sample ID: LCS 480-414576/4
Matrix: Water
Analysis Batch: 414576

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ethane	14.6	13.0		ug/L		89	79 - 120
Ethene	13.6	12.2		ug/L		90	85 - 120
Methane	7.77	6.81		ug/L		88	85 - 120

Lab Sample ID: LCSD 480-414576/5
Matrix: Water
Analysis Batch: 414576

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	14.6	13.4		ug/L		92	79 - 120	3	50
Ethene	13.6	12.3		ug/L		91	85 - 120	1	50
Methane	7.77	6.91		ug/L		89	85 - 120	1	50

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

Lab Sample ID: MB 480-414882/3
Matrix: Water
Analysis Batch: 414882

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			05/17/18 10:04	1
Ethene	ND		7.0	1.5	ug/L			05/17/18 10:04	1
Methane	ND		4.0	1.0	ug/L			05/17/18 10:04	1

Lab Sample ID: LCS 480-414882/4
Matrix: Water
Analysis Batch: 414882

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ethane	14.6	13.0		ug/L		89	79 - 120
Ethene	13.6	12.0		ug/L		88	85 - 120
Methane	7.77	6.76		ug/L		87	85 - 120

Lab Sample ID: MB 480-414883/3
Matrix: Water
Analysis Batch: 414883

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			05/17/18 09:32	1
Ethene	ND		7.0	1.5	ug/L			05/17/18 09:32	1
Methane	ND		4.0	1.0	ug/L			05/17/18 09:32	1

Lab Sample ID: LCS 480-414883/4
Matrix: Water
Analysis Batch: 414883

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ethane	14.6	14.5		ug/L		100	79 - 120
Ethene	13.6	14.2		ug/L		104	85 - 120
Methane	7.77	7.09		ug/L		91	85 - 120

Lab Sample ID: LCSD 480-414883/5
Matrix: Water
Analysis Batch: 414883

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	14.6	14.4		ug/L		99	79 - 120	1	50
Ethene	13.6	14.0		ug/L		103	85 - 120	2	50
Methane	7.77	7.08		ug/L		91	85 - 120	0	50

Lab Sample ID: MB 480-415141/3
Matrix: Water
Analysis Batch: 415141

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			05/18/18 09:40	1
Ethene	ND		7.0	1.5	ug/L			05/18/18 09:40	1
Methane	ND		4.0	1.0	ug/L			05/18/18 09:40	1

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

Lab Sample ID: LCS 480-415141/4
Matrix: Water
Analysis Batch: 415141

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Ethane	14.6	12.9		ug/L		89	79 - 120
Ethene	13.6	11.8		ug/L		87	85 - 120
Methane	7.77	6.83		ug/L		88	85 - 120

Lab Sample ID: LCSD 480-415141/5
Matrix: Water
Analysis Batch: 415141

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	14.6	12.8		ug/L		88	79 - 120	1	50
Ethene	13.6	11.8		ug/L		87	85 - 120	0	50
Methane	7.77	6.79		ug/L		87	85 - 120	1	50

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 480-413443/1-A
Matrix: Water
Analysis Batch: 413793

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 413443

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	ND		0.050	0.019	mg/L		05/10/18 08:35	05/10/18 16:22	1
Magnesium	ND		0.20	0.043	mg/L		05/10/18 08:35	05/10/18 16:22	1
Manganese	ND		0.0030	0.00040	mg/L		05/10/18 08:35	05/10/18 16:22	1
Potassium	ND		0.50	0.10	mg/L		05/10/18 08:35	05/10/18 16:22	1
Sodium	ND		1.0	0.32	mg/L		05/10/18 08:35	05/10/18 16:22	1

Lab Sample ID: LCS 480-413443/2-A
Matrix: Water
Analysis Batch: 413793

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 413443

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	10.0	10.43		mg/L		104	80 - 120
Magnesium	10.0	10.08		mg/L		101	80 - 120
Manganese	0.200	0.201		mg/L		101	80 - 120
Potassium	10.0	9.86		mg/L		99	80 - 120
Sodium	10.0	9.68		mg/L		97	80 - 120

Lab Sample ID: 480-135543-1 MS
Matrix: Water
Analysis Batch: 413793

Client Sample ID: MW-4-2018
Prep Type: Total/NA
Prep Batch: 413443

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	0.83		10.0	10.91		mg/L		101	75 - 125
Magnesium	75.5		10.0	80.97	4	mg/L		55	75 - 125
Manganese	0.47		0.200	0.638		mg/L		85	75 - 125
Potassium	17.4		10.0	26.47		mg/L		90	75 - 125

Method: 6010C - Metals (ICP) (Continued)

Lab Sample ID: 480-135543-1 MS — **Client Sample ID: MW-4-2018**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 415352 — **Prep Batch: 413443**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Sodium	928		10.0	903.4	4	mg/L		-242	75 - 125

Lab Sample ID: 480-135543-1 MSD — **Client Sample ID: MW-4-2018**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 413793 — **Prep Batch: 413443**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Iron	0.83		10.0	10.91		mg/L		101	75 - 125	0	20
Magnesium	75.5		10.0	83.39	4	mg/L		79	75 - 125	3	20
Manganese	0.47		0.200	0.652		mg/L		92	75 - 125	2	20
Potassium	17.4		10.0	27.19		mg/L		97	75 - 125	3	20

Lab Sample ID: 480-135543-1 MSD — **Client Sample ID: MW-4-2018**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 415352 — **Prep Batch: 413443**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sodium	928		10.0	931.6	4	mg/L		39	75 - 125	3	20

Lab Sample ID: MB 480-413561/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 414408 — **Prep Batch: 413561**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	ND		0.050	0.019	mg/L		05/10/18 11:46	05/11/18 09:53	1
Magnesium	ND		0.20	0.043	mg/L		05/10/18 11:46	05/11/18 09:53	1
Manganese	ND		0.0030	0.00040	mg/L		05/10/18 11:46	05/11/18 09:53	1
Potassium	ND		0.50	0.10	mg/L		05/10/18 11:46	05/11/18 09:53	1
Sodium	ND		1.0	0.32	mg/L		05/10/18 11:46	05/11/18 09:53	1

Lab Sample ID: LCS 480-413561/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 414408 — **Prep Batch: 413561**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	10.0	10.63		mg/L		106	80 - 120
Magnesium	10.0	10.02		mg/L		100	80 - 120
Manganese	0.200	0.202		mg/L		101	80 - 120
Potassium	10.0	9.23		mg/L		92	80 - 120
Sodium	10.0	9.14		mg/L		91	80 - 120

Lab Sample ID: 480-135622-1 MS — **Client Sample ID: MW-10-2018**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 414408 — **Prep Batch: 413561**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	0.046	J	10.0	10.43		mg/L		104	75 - 125
Magnesium	37.7		10.0	47.18		mg/L		95	75 - 125
Manganese	0.81		0.200	1.01	4	mg/L		97	75 - 125

Method: 6010C - Metals (ICP) (Continued)

Lab Sample ID: 480-135622-1 MS — **Client Sample ID: MW-10-2018**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 414408 — **Prep Batch: 413561**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Potassium	3.2		10.0	13.20		mg/L		100	75 - 125
Sodium	874		10.0	894.4	4	mg/L		202	75 - 125

Lab Sample ID: 480-135622-1 MSD — **Client Sample ID: MW-10-2018**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 414408 — **Prep Batch: 413561**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Iron	0.046	J	10.0	10.53		mg/L		105	75 - 125	1	20
Magnesium	37.7		10.0	46.18		mg/L		85	75 - 125	2	20
Manganese	0.81		0.200	1.00	4	mg/L		95	75 - 125	0	20
Potassium	3.2		10.0	13.19		mg/L		100	75 - 125	0	20
Sodium	874		10.0	896.7	4	mg/L		225	75 - 125	0	20

Lab Sample ID: MB 480-413922/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 414338 — **Prep Batch: 413922**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	ND		0.050	0.019	mg/L		05/12/18 09:19	05/14/18 17:46	1
Magnesium	ND		0.20	0.043	mg/L		05/12/18 09:19	05/14/18 17:46	1
Manganese	ND		0.0030	0.00040	mg/L		05/12/18 09:19	05/14/18 17:46	1
Potassium	0.124	J	0.50	0.10	mg/L		05/12/18 09:19	05/14/18 17:46	1
Sodium	ND		1.0	0.32	mg/L		05/12/18 09:19	05/14/18 17:46	1

Lab Sample ID: LCS 480-413922/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 414338 — **Prep Batch: 413922**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	10.0	10.16		mg/L		102	80 - 120
Magnesium	10.0	9.90		mg/L		99	80 - 120
Manganese	0.200	0.205		mg/L		102	80 - 120
Potassium	10.0	9.90		mg/L		99	80 - 120
Sodium	10.0	9.72		mg/L		97	80 - 120

Lab Sample ID: LCSD 480-413922/25-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 414338 — **Prep Batch: 413922**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Iron	10.0	10.19		mg/L		102	80 - 120	0	20
Magnesium	10.0	9.98		mg/L		100	80 - 120	1	20
Manganese	0.200	0.206		mg/L		103	80 - 120	1	20
Potassium	10.0	10.08		mg/L		101	80 - 120	2	20
Sodium	10.0	9.82		mg/L		98	80 - 120	1	20

Method: 6010C - Metals (ICP) (Continued)

Lab Sample ID: MB 480-414477/1-A
Matrix: Water
Analysis Batch: 414868

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 414477

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	ND		0.050	0.019	mg/L		05/16/18 09:50	05/16/18 20:44	1
Magnesium	ND		0.20	0.043	mg/L		05/16/18 09:50	05/16/18 20:44	1
Manganese	0.00188	J	0.0030	0.00040	mg/L		05/16/18 09:50	05/16/18 20:44	1
Potassium	ND		0.50	0.10	mg/L		05/16/18 09:50	05/16/18 20:44	1
Sodium	ND		1.0	0.32	mg/L		05/16/18 09:50	05/16/18 20:44	1

Lab Sample ID: LCS 480-414477/2-A
Matrix: Water
Analysis Batch: 414868

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 414477

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	10.0	9.28		mg/L		93	80 - 120
Magnesium	10.0	9.53		mg/L		95	80 - 120
Manganese	0.200	0.200		mg/L		100	80 - 120
Potassium	10.0	9.62		mg/L		96	80 - 120
Sodium	10.0	9.48		mg/L		95	80 - 120

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 480-413612/5
Matrix: Water
Analysis Batch: 413612

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			05/10/18 12:49	1
Sulfate	ND		2.0	0.35	mg/L			05/10/18 12:49	1

Lab Sample ID: LCS 480-413612/4
Matrix: Water
Analysis Batch: 413612

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	49.48		mg/L		99	90 - 110
Sulfate	50.0	49.88		mg/L		100	90 - 110

Lab Sample ID: MB 480-413620/29
Matrix: Water
Analysis Batch: 413620

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			05/10/18 17:00	1
Sulfate	ND		2.0	0.35	mg/L			05/10/18 17:00	1

Lab Sample ID: LCS 480-413620/28
Matrix: Water
Analysis Batch: 413620

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	50.24		mg/L		100	90 - 110

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 480-413620/28
Matrix: Water
Analysis Batch: 413620

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	50.0	51.28		mg/L		103	90 - 110

Lab Sample ID: MB 480-413959/29
Matrix: Water
Analysis Batch: 413959

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			05/12/18 17:36	1
Sulfate	ND		2.0	0.35	mg/L			05/12/18 17:36	1

Lab Sample ID: LCS 480-413959/28
Matrix: Water
Analysis Batch: 413959

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	50.97		mg/L		102	90 - 110
Sulfate	50.0	51.03		mg/L		102	90 - 110

Lab Sample ID: MB 480-414163/28
Matrix: Water
Analysis Batch: 414163

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			05/14/18 19:17	1
Sulfate	ND		2.0	0.35	mg/L			05/14/18 19:17	1

Lab Sample ID: LCS 480-414163/27
Matrix: Water
Analysis Batch: 414163

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	50.17		mg/L		100	90 - 110
Sulfate	50.0	51.09		mg/L		102	90 - 110

Lab Sample ID: MB 480-414359/29
Matrix: Water
Analysis Batch: 414359

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			05/15/18 18:08	1
Sulfate	ND		2.0	0.35	mg/L			05/15/18 18:08	1

Lab Sample ID: LCS 480-414359/28
Matrix: Water
Analysis Batch: 414359

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	50.25		mg/L		100	90 - 110
Sulfate	50.0	51.24		mg/L		102	90 - 110

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 480-135810-1 MS
Matrix: Water
Analysis Batch: 414359

Client Sample ID: MW-14-2018
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	2020		2500	4613		mg/L		104	81 - 120
Sulfate	115		2500	2748		mg/L		105	80 - 120

Method: 350.1 - Nitrogen, Ammonia

Lab Sample ID: MB 480-415858/331
Matrix: Water
Analysis Batch: 415858

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			05/22/18 15:52	1

Lab Sample ID: MB 480-415858/379
Matrix: Water
Analysis Batch: 415858

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			05/22/18 16:36	1

Lab Sample ID: MB 480-415858/427
Matrix: Water
Analysis Batch: 415858

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			05/22/18 17:20	1

Lab Sample ID: MB 480-415858/451
Matrix: Water
Analysis Batch: 415858

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			05/22/18 17:41	1

Lab Sample ID: MB 480-415858/499
Matrix: Water
Analysis Batch: 415858

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			05/22/18 18:23	1

Lab Sample ID: MB 480-415858/547
Matrix: Water
Analysis Batch: 415858

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			05/22/18 19:05	1

Method: 350.1 - Nitrogen, Ammonia (Continued)

Lab Sample ID: MB 480-415858/571
Matrix: Water
Analysis Batch: 415858

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			05/22/18 19:26	1

Lab Sample ID: MB 480-415858/619
Matrix: Water
Analysis Batch: 415858

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			05/22/18 20:09	1

Lab Sample ID: MB 480-415858/643
Matrix: Water
Analysis Batch: 415858

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			05/22/18 20:30	1

Lab Sample ID: MB 480-415858/67
Matrix: Water
Analysis Batch: 415858

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			05/22/18 11:56	1

Lab Sample ID: LCS 480-415858/332
Matrix: Water
Analysis Batch: 415858

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	0.981		mg/L		98	90 - 110

Lab Sample ID: LCS 480-415858/380
Matrix: Water
Analysis Batch: 415858

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	0.976		mg/L		98	90 - 110

Lab Sample ID: LCS 480-415858/428
Matrix: Water
Analysis Batch: 415858

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 480-415858/452
Matrix: Water
Analysis Batch: 415858

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 480-415858/500
Matrix: Water
Analysis Batch: 415858

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 480-415858/548
Matrix: Water
Analysis Batch: 415858

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	0.990		mg/L		99	90 - 110

Lab Sample ID: LCS 480-415858/572
Matrix: Water
Analysis Batch: 415858

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	0.995		mg/L		100	90 - 110

Lab Sample ID: LCS 480-415858/620
Matrix: Water
Analysis Batch: 415858

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	1.00		mg/L		100	90 - 110

Lab Sample ID: LCS 480-415858/644
Matrix: Water
Analysis Batch: 415858

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 480-415858/68
Matrix: Water
Analysis Batch: 415858

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	0.990		mg/L		99	90 - 110

Lab Sample ID: 480-135737-3 MS
Matrix: Water
Analysis Batch: 415858

Client Sample ID: MW-7-2018
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Ammonia	0.66		0.200	0.873		mg/L		107	90 - 110

Method: 353.2 - Nitrogen, Nitrite

Lab Sample ID: MB 480-413260/3
Matrix: Water
Analysis Batch: 413260

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			05/08/18 22:06	1

Lab Sample ID: LCS 480-413260/4
Matrix: Water
Analysis Batch: 413260

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	1.53		mg/L		102	90 - 110

Lab Sample ID: 480-135543-1 MS
Matrix: Water
Analysis Batch: 413260

Client Sample ID: MW-4-2018
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrite	ND		1.00	1.08		mg/L		108	90 - 110

Lab Sample ID: 480-135543-1 DU
Matrix: Water
Analysis Batch: 413260

Client Sample ID: MW-4-2018
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Nitrite	ND		ND		mg/L		NC	20

Lab Sample ID: MB 480-413750/3
Matrix: Water
Analysis Batch: 413750

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			05/10/18 21:02	1

Lab Sample ID: LCS 480-413750/4
Matrix: Water
Analysis Batch: 413750

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	1.53		mg/L		102	90 - 110

Lab Sample ID: MB 480-414000/3
Matrix: Water
Analysis Batch: 414000

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			05/11/18 21:18	1

Lab Sample ID: MB 480-414000/75
Matrix: Water
Analysis Batch: 414000

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			05/11/18 22:38	1

Lab Sample ID: LCS 480-414000/4
Matrix: Water
Analysis Batch: 414000

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	1.58		mg/L		105	90 - 110

Lab Sample ID: LCS 480-414000/76
Matrix: Water
Analysis Batch: 414000

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	1.56		mg/L		104	90 - 110

Method: 9060A - Organic Carbon, Total (TOC)

Lab Sample ID: MB 480-416720/13-A
Matrix: Water
Analysis Batch: 418688

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		20.0	8.7	mg/L			06/07/18 16:33	1

Lab Sample ID: MB 480-418688/28
Matrix: Water
Analysis Batch: 418688

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	0.595	J	1.0	0.43	mg/L			06/07/18 09:11	1

Lab Sample ID: MB 480-418688/4
Matrix: Water
Analysis Batch: 418688

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	0.687	J	1.0	0.43	mg/L			06/06/18 22:19	1

Lab Sample ID: MB 480-418688/52
Matrix: Water
Analysis Batch: 418688

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	0.667	J	1.0	0.43	mg/L			06/07/18 20:13	1

Lab Sample ID: LCS 480-418688/29
Matrix: Water
Analysis Batch: 418688

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	62.28		mg/L		104	90 - 110

Method: 9060A - Organic Carbon, Total (TOC) (Continued)

Lab Sample ID: LCS 480-418688/5
Matrix: Water
Analysis Batch: 418688

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	61.46		mg/L		102	90 - 110

Lab Sample ID: LCS 480-418688/53
Matrix: Water
Analysis Batch: 418688

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	61.45		mg/L		102	90 - 110

Lab Sample ID: MB 480-419845/24
Matrix: Water
Analysis Batch: 419845

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	0.626	J	1.0	0.43	mg/L			06/13/18 14:55	1

Lab Sample ID: LCS 480-419845/25
Matrix: Water
Analysis Batch: 419845

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	57.34		mg/L		96	90 - 110

Method: SM 2320B - Alkalinity

Lab Sample ID: MB 480-413729/30
Matrix: Water
Analysis Batch: 413729

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			05/10/18 15:36	1

Lab Sample ID: MB 480-413729/7
Matrix: Water
Analysis Batch: 413729

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			05/10/18 13:18	1

Lab Sample ID: LCS 480-413729/31
Matrix: Water
Analysis Batch: 413729

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	90.02		mg/L		90	90 - 110

Method: SM 2320B - Alkalinity (Continued)

Lab Sample ID: LCS 480-413729/8
Matrix: Water
Analysis Batch: 413729

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	89.94		mg/L		90	90 - 110

Lab Sample ID: MB 480-415678/7
Matrix: Water
Analysis Batch: 415678

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			05/21/18 16:04	1

Lab Sample ID: LCS 480-415678/8
Matrix: Water
Analysis Batch: 415678

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	93.89		mg/L		94	90 - 110

Lab Sample ID: MB 480-416204/30
Matrix: Water
Analysis Batch: 416204

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			05/23/18 20:40	1

Lab Sample ID: MB 480-416204/7
Matrix: Water
Analysis Batch: 416204

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			05/23/18 18:05	1

Lab Sample ID: LCS 480-416204/31
Matrix: Water
Analysis Batch: 416204

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	94.01		mg/L		94	90 - 110

Lab Sample ID: LCS 480-416204/8
Matrix: Water
Analysis Batch: 416204

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	93.60		mg/L		94	90 - 110

Lab Sample ID: 480-135737-3 MS
Matrix: Water
Analysis Batch: 416204

Client Sample ID: MW-7-2018
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Alkalinity	243	F1	100	253.6	F1	mg/L		11	60 - 140

Lab Sample ID: 480-135737-2 DU
Matrix: Water
Analysis Batch: 416204

Client Sample ID: MW-13-2018
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Alkalinity	322		319.7		mg/L		0.9	20

Method: SM 4500 S2 F - Sulfide, Total

Lab Sample ID: MB 480-414081/3
Matrix: Water
Analysis Batch: 414081

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			05/13/18 13:00	1

Lab Sample ID: LCS 480-414081/4
Matrix: Water
Analysis Batch: 414081

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfide	9.40	8.80		mg/L		94	90 - 110

Lab Sample ID: MB 480-414268/27
Matrix: Water
Analysis Batch: 414268

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			05/14/18 11:45	1

Lab Sample ID: MB 480-414268/3
Matrix: Water
Analysis Batch: 414268

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			05/14/18 11:45	1

Lab Sample ID: LCS 480-414268/28
Matrix: Water
Analysis Batch: 414268

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfide	9.40	9.20		mg/L		98	90 - 110

Lab Sample ID: LCS 480-414268/4
Matrix: Water
Analysis Batch: 414268

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfide	9.40	8.80		mg/L		94	90 - 110

Method: VFA-IC - Volatile Fatty Acids, Ion Chromatography

Lab Sample ID: MB 480-417322/52
Matrix: Water
Analysis Batch: 417322

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			06/01/18 19:03	1
Formic-acid	ND		1.0	0.26	mg/L			06/01/18 19:03	1
Lactic acid	ND		1.0	0.31	mg/L			06/01/18 19:03	1
n-Butyric Acid	ND		1.0	0.26	mg/L			06/01/18 19:03	1
Propionic acid	ND		1.0	0.35	mg/L			06/01/18 19:03	1
Pyruvic Acid	ND		1.5	0.37	mg/L			06/01/18 19:03	1

Lab Sample ID: LCS 480-417322/51
Matrix: Water
Analysis Batch: 417322

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	10.55		mg/L		105	80 - 120
Formic-acid	10.0	9.70		mg/L		97	80 - 120
Lactic acid	10.0	9.02		mg/L		90	80 - 120
n-Butyric Acid	10.0	10.75		mg/L		108	80 - 120
Propionic acid	10.0	11.63		mg/L		116	80 - 120
Pyruvic Acid	10.0	10.02		mg/L		100	80 - 120

Lab Sample ID: 480-135622-1 MS
Matrix: Water
Analysis Batch: 417322

Client Sample ID: MW-10-2018
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Acetic acid	ND		100	115.0		mg/L		115	80 - 120
Formic-acid	ND		100	108.1		mg/L		108	80 - 120
Lactic acid	ND		100	104.6		mg/L		105	80 - 120
n-Butyric Acid	ND		100	116.5		mg/L		116	80 - 120
Propionic acid	ND		100	108.3		mg/L		108	80 - 120
Pyruvic Acid	ND		100	84.56		mg/L		85	80 - 120

Lab Sample ID: 480-135622-1 MSD
Matrix: Water
Analysis Batch: 417322

Client Sample ID: MW-10-2018
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		100	112.8		mg/L		113	80 - 120	2	20
Formic-acid	ND		100	106.9		mg/L		107	80 - 120	1	20
Lactic acid	ND		100	103.4		mg/L		103	80 - 120	1	20
n-Butyric Acid	ND		100	113.1		mg/L		113	80 - 120	3	20
Propionic acid	ND		100	108.0		mg/L		108	80 - 120	0	20
Pyruvic Acid	ND		100	82.64		mg/L		83	80 - 120	2	20

GC/MS VOA

Analysis Batch: 414529

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135543-1	MW-4-2018	Total/NA	Water	8260C	
480-135543-2	TRIP BLANK	Total/NA	Water	8260C	
MB 480-414529/7	Method Blank	Total/NA	Water	8260C	
LCS 480-414529/5	Lab Control Sample	Total/NA	Water	8260C	

Analysis Batch: 414830

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135622-2	MW-15-2018	Total/NA	Water	8260C	
MB 480-414830/7	Method Blank	Total/NA	Water	8260C	
LCS 480-414830/5	Lab Control Sample	Total/NA	Water	8260C	

Analysis Batch: 415054

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135622-1	MW-10-2018	Total/NA	Water	8260C	
480-135622-3	MW-12-2018	Total/NA	Water	8260C	
MB 480-415054/6	Method Blank	Total/NA	Water	8260C	
LCS 480-415054/4	Lab Control Sample	Total/NA	Water	8260C	

Analysis Batch: 415302

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135737-1	MW-11-2018	Total/NA	Water	8260C	
480-135737-2	MW-13-2018	Total/NA	Water	8260C	
480-135737-4	TRIP BLANK	Total/NA	Water	8260C	
MB 480-415302/7	Method Blank	Total/NA	Water	8260C	
LCS 480-415302/5	Lab Control Sample	Total/NA	Water	8260C	

Analysis Batch: 415315

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135810-1	MW-14-2018	Total/NA	Water	8260C	
MB 480-415315/6	Method Blank	Total/NA	Water	8260C	
LCS 480-415315/4	Lab Control Sample	Total/NA	Water	8260C	

Analysis Batch: 415410

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135737-3	MW-7-2018	Total/NA	Water	8260C	
MB 480-415410/7	Method Blank	Total/NA	Water	8260C	
LCS 480-415410/5	Lab Control Sample	Total/NA	Water	8260C	

GC VOA

Analysis Batch: 129375

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135543-1	MW-4-2018	Total/NA	Water	RSK-175	
480-135622-1	MW-10-2018	Total/NA	Water	RSK-175	
480-135622-2	MW-15-2018	Total/NA	Water	RSK-175	
480-135622-3	MW-12-2018	Total/NA	Water	RSK-175	
MB 200-129375/4	Method Blank	Total/NA	Water	RSK-175	
LCS 200-129375/3	Lab Control Sample	Total/NA	Water	RSK-175	

GC VOA (Continued)

Analysis Batch: 129520

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135737-1	MW-11-2018	Total/NA	Water	RSK-175	
480-135737-2	MW-13-2018	Total/NA	Water	RSK-175	
480-135737-3	MW-7-2018	Total/NA	Water	RSK-175	
480-135810-1	MW-14-2018	Total/NA	Water	RSK-175	
MB 200-129520/4	Method Blank	Total/NA	Water	RSK-175	
LCS 200-129520/3	Lab Control Sample	Total/NA	Water	RSK-175	

Analysis Batch: 414576

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135543-1	MW-4-2018	Total/NA	Water	RSK-175	
MB 480-414576/3	Method Blank	Total/NA	Water	RSK-175	
LCS 480-414576/4	Lab Control Sample	Total/NA	Water	RSK-175	
LCSD 480-414576/5	Lab Control Sample Dup	Total/NA	Water	RSK-175	

Analysis Batch: 414882

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135737-1	MW-11-2018	Total/NA	Water	RSK-175	
480-135737-2	MW-13-2018	Total/NA	Water	RSK-175	
480-135737-3	MW-7-2018	Total/NA	Water	RSK-175	
MB 480-414882/3	Method Blank	Total/NA	Water	RSK-175	
LCS 480-414882/4	Lab Control Sample	Total/NA	Water	RSK-175	

Analysis Batch: 414883

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135622-1	MW-10-2018	Total/NA	Water	RSK-175	
480-135622-2	MW-15-2018	Total/NA	Water	RSK-175	
480-135622-3	MW-12-2018	Total/NA	Water	RSK-175	
MB 480-414883/3	Method Blank	Total/NA	Water	RSK-175	
LCS 480-414883/4	Lab Control Sample	Total/NA	Water	RSK-175	
LCSD 480-414883/5	Lab Control Sample Dup	Total/NA	Water	RSK-175	

Analysis Batch: 415141

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135810-1	MW-14-2018	Total/NA	Water	RSK-175	
MB 480-415141/3	Method Blank	Total/NA	Water	RSK-175	
LCS 480-415141/4	Lab Control Sample	Total/NA	Water	RSK-175	
LCSD 480-415141/5	Lab Control Sample Dup	Total/NA	Water	RSK-175	

Analysis Batch: 415905

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135622-1	MW-10-2018	Total/NA	Water	AM20GAX	
480-135622-2	MW-15-2018	Total/NA	Water	AM20GAX	
480-135622-3	MW-12-2018	Total/NA	Water	AM20GAX	

Analysis Batch: 415956

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135737-1	MW-11-2018	Total/NA	Water	AM20GAX	
480-135737-2	MW-13-2018	Total/NA	Water	AM20GAX	
480-135810-1	MW-14-2018	Total/NA	Water	AM20GAX	

GC VOA (Continued)

Analysis Batch: 416749

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135543-1	MW-4-2018	Total/NA	Water	AM20GAX	

Metals

Prep Batch: 413443

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135543-1	MW-4-2018	Total/NA	Water	3005A	
MB 480-413443/1-A	Method Blank	Total/NA	Water	3005A	
LCS 480-413443/2-A	Lab Control Sample	Total/NA	Water	3005A	
480-135543-1 MS	MW-4-2018	Total/NA	Water	3005A	
480-135543-1 MSD	MW-4-2018	Total/NA	Water	3005A	

Prep Batch: 413561

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135622-1	MW-10-2018	Total/NA	Water	3005A	
480-135622-2	MW-15-2018	Total/NA	Water	3005A	
480-135622-3	MW-12-2018	Total/NA	Water	3005A	
MB 480-413561/1-A	Method Blank	Total/NA	Water	3005A	
LCS 480-413561/2-A	Lab Control Sample	Total/NA	Water	3005A	
480-135622-1 MS	MW-10-2018	Total/NA	Water	3005A	
480-135622-1 MSD	MW-10-2018	Total/NA	Water	3005A	

Analysis Batch: 413793

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135543-1	MW-4-2018	Total/NA	Water	6010C	413443
MB 480-413443/1-A	Method Blank	Total/NA	Water	6010C	413443
LCS 480-413443/2-A	Lab Control Sample	Total/NA	Water	6010C	413443
480-135543-1 MS	MW-4-2018	Total/NA	Water	6010C	413443
480-135543-1 MSD	MW-4-2018	Total/NA	Water	6010C	413443

Prep Batch: 413922

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135737-1	MW-11-2018	Total/NA	Water	3005A	
480-135737-2	MW-13-2018	Total/NA	Water	3005A	
480-135737-3	MW-7-2018	Total/NA	Water	3005A	
MB 480-413922/1-A	Method Blank	Total/NA	Water	3005A	
LCS 480-413922/2-A	Lab Control Sample	Total/NA	Water	3005A	
LCSD 480-413922/25-A	Lab Control Sample Dup	Total/NA	Water	3005A	

Analysis Batch: 414338

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135737-1	MW-11-2018	Total/NA	Water	6010C	413922
480-135737-2	MW-13-2018	Total/NA	Water	6010C	413922
480-135737-3	MW-7-2018	Total/NA	Water	6010C	413922
MB 480-413922/1-A	Method Blank	Total/NA	Water	6010C	413922
LCS 480-413922/2-A	Lab Control Sample	Total/NA	Water	6010C	413922
LCSD 480-413922/25-A	Lab Control Sample Dup	Total/NA	Water	6010C	413922

Metals (Continued)

Analysis Batch: 414408

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135622-1	MW-10-2018	Total/NA	Water	6010C	413561
480-135622-2	MW-15-2018	Total/NA	Water	6010C	413561
480-135622-3	MW-12-2018	Total/NA	Water	6010C	413561
MB 480-413561/1-A	Method Blank	Total/NA	Water	6010C	413561
LCS 480-413561/2-A	Lab Control Sample	Total/NA	Water	6010C	413561
480-135622-1 MS	MW-10-2018	Total/NA	Water	6010C	413561
480-135622-1 MSD	MW-10-2018	Total/NA	Water	6010C	413561

Prep Batch: 414477

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135810-1	MW-14-2018	Total/NA	Water	3005A	
MB 480-414477/1-A	Method Blank	Total/NA	Water	3005A	
LCS 480-414477/2-A	Lab Control Sample	Total/NA	Water	3005A	

Analysis Batch: 414868

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135810-1	MW-14-2018	Total/NA	Water	6010C	414477
MB 480-414477/1-A	Method Blank	Total/NA	Water	6010C	414477
LCS 480-414477/2-A	Lab Control Sample	Total/NA	Water	6010C	414477

Analysis Batch: 415350

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135810-1	MW-14-2018	Total/NA	Water	6010C	414477

Analysis Batch: 415352

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135543-1	MW-4-2018	Total/NA	Water	6010C	413443
480-135543-1 MS	MW-4-2018	Total/NA	Water	6010C	413443
480-135543-1 MSD	MW-4-2018	Total/NA	Water	6010C	413443

Analysis Batch: 415353

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135622-3	MW-12-2018	Total/NA	Water	6010C	413561

General Chemistry

Analysis Batch: 413260

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135543-1	MW-4-2018	Total/NA	Water	353.2	
MB 480-413260/3	Method Blank	Total/NA	Water	353.2	
LCS 480-413260/4	Lab Control Sample	Total/NA	Water	353.2	
480-135543-1 MS	MW-4-2018	Total/NA	Water	353.2	
480-135543-1 DU	MW-4-2018	Total/NA	Water	353.2	

Analysis Batch: 413264

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135543-1	MW-4-2018	Total/NA	Water	353.2	

General Chemistry (Continued)

Analysis Batch: 413612

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135543-1	MW-4-2018	Total/NA	Water	300.0	
MB 480-413612/5	Method Blank	Total/NA	Water	300.0	
LCS 480-413612/4	Lab Control Sample	Total/NA	Water	300.0	

Analysis Batch: 413620

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135622-1	MW-10-2018	Total/NA	Water	300.0	
480-135622-2	MW-15-2018	Total/NA	Water	300.0	
480-135622-3	MW-12-2018	Total/NA	Water	300.0	
MB 480-413620/29	Method Blank	Total/NA	Water	300.0	
LCS 480-413620/28	Lab Control Sample	Total/NA	Water	300.0	

Analysis Batch: 413729

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135543-1	MW-4-2018	Total/NA	Water	SM 2320B	
MB 480-413729/30	Method Blank	Total/NA	Water	SM 2320B	
MB 480-413729/7	Method Blank	Total/NA	Water	SM 2320B	
LCS 480-413729/31	Lab Control Sample	Total/NA	Water	SM 2320B	
LCS 480-413729/8	Lab Control Sample	Total/NA	Water	SM 2320B	

Analysis Batch: 413750

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135622-1	MW-10-2018	Total/NA	Water	353.2	
480-135622-2	MW-15-2018	Total/NA	Water	353.2	
480-135622-3	MW-12-2018	Total/NA	Water	353.2	
MB 480-413750/3	Method Blank	Total/NA	Water	353.2	
LCS 480-413750/4	Lab Control Sample	Total/NA	Water	353.2	

Analysis Batch: 413752

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135622-1	MW-10-2018	Total/NA	Water	353.2	
480-135622-2	MW-15-2018	Total/NA	Water	353.2	
480-135622-3	MW-12-2018	Total/NA	Water	353.2	

Analysis Batch: 413959

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135737-1	MW-11-2018	Total/NA	Water	300.0	
480-135737-2	MW-13-2018	Total/NA	Water	300.0	
480-135737-3	MW-7-2018	Total/NA	Water	300.0	
MB 480-413959/29	Method Blank	Total/NA	Water	300.0	
LCS 480-413959/28	Lab Control Sample	Total/NA	Water	300.0	

Analysis Batch: 414000

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135737-1	MW-11-2018	Total/NA	Water	353.2	
480-135737-2	MW-13-2018	Total/NA	Water	353.2	
MB 480-414000/3	Method Blank	Total/NA	Water	353.2	
MB 480-414000/75	Method Blank	Total/NA	Water	353.2	
LCS 480-414000/4	Lab Control Sample	Total/NA	Water	353.2	
LCS 480-414000/76	Lab Control Sample	Total/NA	Water	353.2	

General Chemistry (Continued)

Analysis Batch: 414001

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135737-3	MW-7-2018	Total/NA	Water	353.2	

Analysis Batch: 414002

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135737-1	MW-11-2018	Total/NA	Water	353.2	
480-135737-2	MW-13-2018	Total/NA	Water	353.2	
480-135737-3	MW-7-2018	Total/NA	Water	353.2	

Analysis Batch: 414030

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135810-1	MW-14-2018	Total/NA	Water	353.2	

Analysis Batch: 414033

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135810-1	MW-14-2018	Total/NA	Water	353.2	

Analysis Batch: 414081

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135543-1	MW-4-2018	Total/NA	Water	SM 4500 S2 F	
MB 480-414081/3	Method Blank	Total/NA	Water	SM 4500 S2 F	
LCS 480-414081/4	Lab Control Sample	Total/NA	Water	SM 4500 S2 F	

Analysis Batch: 414163

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135810-1	MW-14-2018	Total/NA	Water	300.0	
MB 480-414163/28	Method Blank	Total/NA	Water	300.0	
LCS 480-414163/27	Lab Control Sample	Total/NA	Water	300.0	

Analysis Batch: 414268

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135622-1	MW-10-2018	Total/NA	Water	SM 4500 S2 F	
480-135622-2	MW-15-2018	Total/NA	Water	SM 4500 S2 F	
480-135622-3	MW-12-2018	Total/NA	Water	SM 4500 S2 F	
480-135737-1	MW-11-2018	Total/NA	Water	SM 4500 S2 F	
480-135737-2	MW-13-2018	Total/NA	Water	SM 4500 S2 F	
480-135737-3	MW-7-2018	Total/NA	Water	SM 4500 S2 F	
480-135810-1	MW-14-2018	Total/NA	Water	SM 4500 S2 F	
MB 480-414268/27	Method Blank	Total/NA	Water	SM 4500 S2 F	
MB 480-414268/3	Method Blank	Total/NA	Water	SM 4500 S2 F	
LCS 480-414268/28	Lab Control Sample	Total/NA	Water	SM 4500 S2 F	
LCS 480-414268/4	Lab Control Sample	Total/NA	Water	SM 4500 S2 F	

Analysis Batch: 414359

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135810-1	MW-14-2018	Total/NA	Water	300.0	
MB 480-414359/29	Method Blank	Total/NA	Water	300.0	
LCS 480-414359/28	Lab Control Sample	Total/NA	Water	300.0	
480-135810-1 MS	MW-14-2018	Total/NA	Water	300.0	

General Chemistry (Continued)

Analysis Batch: 415678

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135622-1	MW-10-2018	Total/NA	Water	SM 2320B	
480-135622-2	MW-15-2018	Total/NA	Water	SM 2320B	
480-135622-3	MW-12-2018	Total/NA	Water	SM 2320B	
MB 480-415678/7	Method Blank	Total/NA	Water	SM 2320B	
LCS 480-415678/8	Lab Control Sample	Total/NA	Water	SM 2320B	

Analysis Batch: 415858

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135543-1	MW-4-2018	Total/NA	Water	350.1	
480-135622-1	MW-10-2018	Total/NA	Water	350.1	
480-135622-2	MW-15-2018	Total/NA	Water	350.1	
480-135622-3	MW-12-2018	Total/NA	Water	350.1	
480-135737-1	MW-11-2018	Total/NA	Water	350.1	
480-135737-2	MW-13-2018	Total/NA	Water	350.1	
480-135737-3	MW-7-2018	Total/NA	Water	350.1	
480-135810-1	MW-14-2018	Total/NA	Water	350.1	
MB 480-415858/331	Method Blank	Total/NA	Water	350.1	
MB 480-415858/379	Method Blank	Total/NA	Water	350.1	
MB 480-415858/427	Method Blank	Total/NA	Water	350.1	
MB 480-415858/451	Method Blank	Total/NA	Water	350.1	
MB 480-415858/499	Method Blank	Total/NA	Water	350.1	
MB 480-415858/547	Method Blank	Total/NA	Water	350.1	
MB 480-415858/571	Method Blank	Total/NA	Water	350.1	
MB 480-415858/619	Method Blank	Total/NA	Water	350.1	
MB 480-415858/643	Method Blank	Total/NA	Water	350.1	
MB 480-415858/67	Method Blank	Total/NA	Water	350.1	
LCS 480-415858/332	Lab Control Sample	Total/NA	Water	350.1	
LCS 480-415858/380	Lab Control Sample	Total/NA	Water	350.1	
LCS 480-415858/428	Lab Control Sample	Total/NA	Water	350.1	
LCS 480-415858/452	Lab Control Sample	Total/NA	Water	350.1	
LCS 480-415858/500	Lab Control Sample	Total/NA	Water	350.1	
LCS 480-415858/548	Lab Control Sample	Total/NA	Water	350.1	
LCS 480-415858/572	Lab Control Sample	Total/NA	Water	350.1	
LCS 480-415858/620	Lab Control Sample	Total/NA	Water	350.1	
LCS 480-415858/644	Lab Control Sample	Total/NA	Water	350.1	
LCS 480-415858/68	Lab Control Sample	Total/NA	Water	350.1	
480-135737-3 MS	MW-7-2018	Total/NA	Water	350.1	

Analysis Batch: 416204

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135737-1	MW-11-2018	Total/NA	Water	SM 2320B	
480-135737-2	MW-13-2018	Total/NA	Water	SM 2320B	
480-135737-3	MW-7-2018	Total/NA	Water	SM 2320B	
480-135810-1	MW-14-2018	Total/NA	Water	SM 2320B	
MB 480-416204/30	Method Blank	Total/NA	Water	SM 2320B	
MB 480-416204/7	Method Blank	Total/NA	Water	SM 2320B	
LCS 480-416204/31	Lab Control Sample	Total/NA	Water	SM 2320B	
LCS 480-416204/8	Lab Control Sample	Total/NA	Water	SM 2320B	
480-135737-3 MS	MW-7-2018	Total/NA	Water	SM 2320B	
480-135737-2 DU	MW-13-2018	Total/NA	Water	SM 2320B	

General Chemistry (Continued)

Leach Batch: 416720

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 480-416720/13-A	Method Blank	Total/NA	Water	D3987-85	

Analysis Batch: 417322

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135543-1	MW-4-2018	Total/NA	Water	VFA-IC	
480-135622-1	MW-10-2018	Total/NA	Water	VFA-IC	
480-135622-2	MW-15-2018	Total/NA	Water	VFA-IC	
480-135622-3	MW-12-2018	Total/NA	Water	VFA-IC	
480-135737-1	MW-11-2018	Total/NA	Water	VFA-IC	
480-135737-2	MW-13-2018	Total/NA	Water	VFA-IC	
480-135737-3	MW-7-2018	Total/NA	Water	VFA-IC	
480-135810-1	MW-14-2018	Total/NA	Water	VFA-IC	
MB 480-417322/52	Method Blank	Total/NA	Water	VFA-IC	
LCS 480-417322/51	Lab Control Sample	Total/NA	Water	VFA-IC	
480-135622-1 MS	MW-10-2018	Total/NA	Water	VFA-IC	
480-135622-1 MSD	MW-10-2018	Total/NA	Water	VFA-IC	

Analysis Batch: 418688

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135543-1	MW-4-2018	Total/NA	Water	9060A	
480-135622-1	MW-10-2018	Total/NA	Water	9060A	
480-135622-2	MW-15-2018	Total/NA	Water	9060A	
480-135622-3	MW-12-2018	Total/NA	Water	9060A	
480-135737-1	MW-11-2018	Total/NA	Water	9060A	
480-135737-2	MW-13-2018	Total/NA	Water	9060A	
480-135737-3	MW-7-2018	Total/NA	Water	9060A	
MB 480-416720/13-A	Method Blank	Total/NA	Water	9060A	416720
MB 480-418688/28	Method Blank	Total/NA	Water	9060A	
MB 480-418688/4	Method Blank	Total/NA	Water	9060A	
MB 480-418688/52	Method Blank	Total/NA	Water	9060A	
LCS 480-418688/29	Lab Control Sample	Total/NA	Water	9060A	
LCS 480-418688/5	Lab Control Sample	Total/NA	Water	9060A	
LCS 480-418688/53	Lab Control Sample	Total/NA	Water	9060A	

Analysis Batch: 419845

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-135810-1	MW-14-2018	Total/NA	Water	9060A	
MB 480-419845/24	Method Blank	Total/NA	Water	9060A	
LCS 480-419845/25	Lab Control Sample	Total/NA	Water	9060A	

Client Sample ID: MW-4-2018

Lab Sample ID: 480-135543-1

Date Collected: 05/08/18 15:30

Matrix: Water

Date Received: 05/08/18 17:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		500	414529	05/16/18 01:56	NMC	TAL BUF
Total/NA	Analysis	AM20GAX		1	416749	05/18/18 12:37	CTB	SC0015
Total/NA	Analysis	RSK-175		1	129375	05/11/18 17:27	MLT	TAL BUR
Total/NA	Analysis	RSK-175		11	414576	05/16/18 16:15	BEK	TAL BUF
Total/NA	Prep	3005A			413443	05/10/18 08:35	KMP	TAL BUF
Total/NA	Analysis	6010C		1	413793	05/10/18 16:30	LMH	TAL BUF
Total/NA	Prep	3005A			413443	05/10/18 08:35	KMP	TAL BUF
Total/NA	Analysis	6010C		5	415352	05/18/18 13:20	LMH	TAL BUF
Total/NA	Analysis	300.0		20	413612	05/10/18 17:35	CLA	TAL BUF
Total/NA	Analysis	350.1		1	415858	05/22/18 16:47	KMF	TAL BUF
Total/NA	Analysis	353.2		1	413264	05/08/18 22:08	DCB	TAL BUF
Total/NA	Analysis	353.2		1	413260	05/08/18 22:08	DCB	TAL BUF
Total/NA	Analysis	9060A		1	418688	06/07/18 06:53	SMH	TAL BUF
Total/NA	Analysis	SM 2320B		1	413729	05/10/18 13:36	DSC	TAL BUF
Total/NA	Analysis	SM 4500 S2 F		1	414081	05/13/18 13:00	MDL	TAL BUF
Total/NA	Analysis	VFA-IC		10	417322	06/01/18 21:29	RJS	TAL BUF

Client Sample ID: TRIP BLANK

Lab Sample ID: 480-135543-2

Date Collected: 05/08/18 00:00

Matrix: Water

Date Received: 05/08/18 17:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	414529	05/16/18 02:24	NMC	TAL BUF

Client Sample ID: MW-10-2018

Lab Sample ID: 480-135622-1

Date Collected: 05/09/18 11:30

Matrix: Water

Date Received: 05/09/18 17:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		2	415054	05/17/18 21:23	S1V	TAL BUF
Total/NA	Analysis	AM20GAX		1	415905	05/18/18 11:18	CTB	SC0015
Total/NA	Analysis	RSK-175		1	129375	05/11/18 17:44	MLT	TAL BUR
Total/NA	Analysis	RSK-175		1	414883	05/17/18 10:53	KEK	TAL BUF
Total/NA	Prep	3005A			413561	05/10/18 11:46	EMB	TAL BUF
Total/NA	Analysis	6010C		1	414408	05/11/18 10:07	MTM2	TAL BUF
Total/NA	Analysis	300.0		20	413620	05/10/18 19:02	CLA	TAL BUF
Total/NA	Analysis	350.1		1	415858	05/22/18 17:53	KMF	TAL BUF
Total/NA	Analysis	353.2		1	413750	05/10/18 21:05	DCB	TAL BUF
Total/NA	Analysis	353.2		1	413752	05/10/18 21:05	DCB	TAL BUF
Total/NA	Analysis	9060A		1	418688	06/07/18 07:21	SMH	TAL BUF
Total/NA	Analysis	SM 2320B		1	415678	05/21/18 17:30	DSC	TAL BUF

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 4500 S2 F		1	414268	05/14/18 11:45	MDL	TAL BUF
Total/NA	Analysis	VFA-IC		10	417322	06/01/18 21:58	RJS	TAL BUF

Client Sample ID: MW-15-2018

Lab Sample ID: 480-135622-2

Date Collected: 05/09/18 13:30

Matrix: Water

Date Received: 05/09/18 17:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	414830	05/17/18 11:41	KMN	TAL BUF
Total/NA	Analysis	AM20GAX		1	415905	05/18/18 11:30	CTB	SC0015
Total/NA	Analysis	RSK-175		1	129375	05/11/18 17:53	MLT	TAL BUR
Total/NA	Analysis	RSK-175		1	414883	05/17/18 11:12	KEK	TAL BUF
Total/NA	Prep	3005A			413561	05/10/18 11:46	EMB	TAL BUF
Total/NA	Analysis	6010C		1	414408	05/11/18 10:36	MTM2	TAL BUF
Total/NA	Analysis	300.0		5	413620	05/10/18 19:11	CLA	TAL BUF
Total/NA	Analysis	350.1		1	415858	05/22/18 17:54	KMF	TAL BUF
Total/NA	Analysis	353.2		1	413752	05/10/18 21:06	DCB	TAL BUF
Total/NA	Analysis	353.2		1	413750	05/10/18 21:06	DCB	TAL BUF
Total/NA	Analysis	9060A		1	418688	06/07/18 07:48	SMH	TAL BUF
Total/NA	Analysis	SM 2320B		1	415678	05/21/18 17:37	DSC	TAL BUF
Total/NA	Analysis	SM 4500 S2 F		1	414268	05/14/18 11:45	MDL	TAL BUF
Total/NA	Analysis	VFA-IC		10	417322	06/02/18 00:23	RJS	TAL BUF

Client Sample ID: MW-12-2018

Lab Sample ID: 480-135622-3

Date Collected: 05/09/18 15:30

Matrix: Water

Date Received: 05/09/18 17:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	415054	05/17/18 21:46	S1V	TAL BUF
Total/NA	Analysis	AM20GAX		1	415905	05/18/18 11:43	CTB	SC0015
Total/NA	Analysis	RSK-175		1	129375	05/11/18 18:02	MLT	TAL BUR
Total/NA	Analysis	RSK-175		1	414883	05/17/18 11:30	KEK	TAL BUF
Total/NA	Prep	3005A			413561	05/10/18 11:46	EMB	TAL BUF
Total/NA	Analysis	6010C		1	414408	05/11/18 10:40	MTM2	TAL BUF
Total/NA	Prep	3005A			413561	05/10/18 11:46	EMB	TAL BUF
Total/NA	Analysis	6010C		5	415353	05/18/18 14:04	LMH	TAL BUF
Total/NA	Analysis	300.0		50	413620	05/10/18 19:19	CLA	TAL BUF
Total/NA	Analysis	350.1		1	415858	05/22/18 17:55	KMF	TAL BUF
Total/NA	Analysis	353.2		1	413752	05/10/18 21:07	DCB	TAL BUF
Total/NA	Analysis	353.2		1	413750	05/10/18 21:07	DCB	TAL BUF
Total/NA	Analysis	9060A		1	418688	06/07/18 12:51	SMH	TAL BUF
Total/NA	Analysis	SM 2320B		1	415678	05/21/18 17:43	DSC	TAL BUF
Total/NA	Analysis	SM 4500 S2 F		1	414268	05/14/18 11:45	MDL	TAL BUF
Total/NA	Analysis	VFA-IC		10	417322	06/02/18 00:53	RJS	TAL BUF

Client Sample ID: MW-11-2018

Lab Sample ID: 480-135737-1

Date Collected: 05/10/18 13:20
Matrix: Water
Date Received: 05/10/18 16:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	415302	05/19/18 00:29	AMM	TAL BUF
Total/NA	Analysis	AM20GAX		1	415956	05/18/18 12:08	CTB	SC0015
Total/NA	Analysis	RSK-175		1	129520	05/16/18 15:50	MLT	TAL BUR
Total/NA	Analysis	RSK-175		1	414882	05/17/18 16:14	BEK	TAL BUF
Total/NA	Prep	3005A			413922	05/12/18 09:19	KMP	TAL BUF
Total/NA	Analysis	6010C		1	414338	05/14/18 19:12	LMH	TAL BUF
Total/NA	Analysis	300.0		5	413959	05/12/18 21:00	CLA	TAL BUF
Total/NA	Analysis	350.1		1	415858	05/22/18 19:31	KMF	TAL BUF
Total/NA	Analysis	353.2		1	414000	05/11/18 21:38	DCB	TAL BUF
Total/NA	Analysis	353.2		1	414002	05/11/18 21:38	DCB	TAL BUF
Total/NA	Analysis	9060A		1	418688	06/07/18 13:19	SMH	TAL BUF
Total/NA	Analysis	SM 2320B		1	416204	05/23/18 20:25	DSC	TAL BUF
Total/NA	Analysis	SM 4500 S2 F		1	414268	05/14/18 11:45	MDL	TAL BUF
Total/NA	Analysis	VFA-IC		10	417322	06/02/18 01:22	RJS	TAL BUF

Client Sample ID: MW-13-2018

Lab Sample ID: 480-135737-2

Date Collected: 05/10/18 14:45
Matrix: Water
Date Received: 05/10/18 16:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	415302	05/19/18 00:56	AMM	TAL BUF
Total/NA	Analysis	AM20GAX		1	415956	05/18/18 12:20	CTB	SC0015
Total/NA	Analysis	RSK-175		1	129520	05/16/18 15:59	MLT	TAL BUR
Total/NA	Analysis	RSK-175		1	414882	05/17/18 15:04	BEK	TAL BUF
Total/NA	Prep	3005A			413922	05/12/18 09:19	KMP	TAL BUF
Total/NA	Analysis	6010C		1	414338	05/14/18 19:16	LMH	TAL BUF
Total/NA	Analysis	300.0		20	413959	05/12/18 21:15	CLA	TAL BUF
Total/NA	Analysis	350.1		1	415858	05/22/18 19:32	KMF	TAL BUF
Total/NA	Analysis	353.2		1	414000	05/11/18 21:39	DCB	TAL BUF
Total/NA	Analysis	353.2		1	414002	05/11/18 21:39	DCB	TAL BUF
Total/NA	Analysis	9060A		1	418688	06/07/18 22:58	SMH	TAL BUF
Total/NA	Analysis	SM 2320B		1	416204	05/23/18 20:51	DSC	TAL BUF
Total/NA	Analysis	SM 4500 S2 F		1	414268	05/14/18 11:45	MDL	TAL BUF
Total/NA	Analysis	VFA-IC		10	417322	06/02/18 01:51	RJS	TAL BUF

Client Sample ID: MW-7-2018

Lab Sample ID: 480-135737-3

Date Collected: 05/10/18 15:50
Matrix: Water
Date Received: 05/10/18 16:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		20000	415410	05/20/18 13:14	NMC	TAL BUF

Lab Chronicle

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

TestAmerica Job ID: 480-135543-1
SDG: Delphi Harrison

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	RSK-175		1	129520	05/16/18 16:08	MLT	TAL BUR
Total/NA	Analysis	RSK-175		11	414882	05/17/18 15:21	BEK	TAL BUF
Total/NA	Prep	3005A			413922	05/12/18 09:19	KMP	TAL BUF
Total/NA	Analysis	6010C		1	414338	05/14/18 19:19	LMH	TAL BUF
Total/NA	Analysis	300.0		5	413959	05/12/18 21:29	CLA	TAL BUF
Total/NA	Analysis	350.1		1	415858	05/22/18 19:33	KMF	TAL BUF
Total/NA	Analysis	353.2		1	414001	05/11/18 17:38	DCB	TAL BUF
Total/NA	Analysis	353.2		1	414002	05/11/18 17:38	DCB	TAL BUF
Total/NA	Analysis	9060A		1	418688	06/07/18 23:26	SMH	TAL BUF
Total/NA	Analysis	SM 2320B		1	416204	05/23/18 21:02	DSC	TAL BUF
Total/NA	Analysis	SM 4500 S2 F		1	414268	05/14/18 11:45	MDL	TAL BUF
Total/NA	Analysis	VFA-IC		10	417322	06/02/18 02:20	RJS	TAL BUF

Client Sample ID: TRIP BLANK

Lab Sample ID: 480-135737-4

Date Collected: 05/10/18 00:00
Matrix: Water
Date Received: 05/10/18 16:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	415302	05/19/18 01:51	AMM	TAL BUF

Client Sample ID: MW-14-2018

Lab Sample ID: 480-135810-1

Date Collected: 05/11/18 10:15
Matrix: Water
Date Received: 05/11/18 15:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	415315	05/19/18 12:39	RLB	TAL BUF
Total/NA	Analysis	AM20GAX		1	415956	05/18/18 11:55	CTB	SC0015
Total/NA	Analysis	RSK-175		1	129520	05/16/18 16:42	MLT	TAL BUR
Total/NA	Analysis	RSK-175		1	415141	05/18/18 11:17	BEK	TAL BUF
Total/NA	Prep	3005A			414477	05/16/18 09:50	JAK	TAL BUF
Total/NA	Analysis	6010C		1	414868	05/16/18 21:49	LMH	TAL BUF
Total/NA	Prep	3005A			414477	05/16/18 09:50	JAK	TAL BUF
Total/NA	Analysis	6010C		5	415350	05/18/18 12:35	LMH	TAL BUF
Total/NA	Analysis	300.0		20	414163	05/14/18 20:30	RJS	TAL BUF
Total/NA	Analysis	300.0		50	414359	05/15/18 22:45	CLA	TAL BUF
Total/NA	Analysis	350.1		1	415858	05/22/18 20:32	KMF	TAL BUF
Total/NA	Analysis	353.2		1	414030	05/12/18 10:50	ALZ	TAL BUF
Total/NA	Analysis	353.2		1	414033	05/12/18 10:50	ALZ	TAL BUF
Total/NA	Analysis	9060A		1	419845	06/13/18 16:24	SMH	TAL BUF
Total/NA	Analysis	SM 2320B		1	416204	05/23/18 22:24	DSC	TAL BUF
Total/NA	Analysis	SM 4500 S2 F		1	414268	05/14/18 11:45	MDL	TAL BUF
Total/NA	Analysis	VFA-IC		10	417322	06/02/18 02:49	RJS	TAL BUF

Lab Chronicle

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

TestAmerica Job ID: 480-135543-1
SDG: Delphi Harrison

Laboratory References:

SC0015 = Pittsburgh, PA (formerly Microseeps), 220 William Pitt Way, Pittsburgh, PA 15238, TEL (412)826-5245

TAL BUF = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

TAL BUR = 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

TestAmerica Job ID: 480-135543-1
SDG: Delphi Harrison

Laboratory: 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	03-31-18 *

The following analytes are included in this report, but accreditation/certification is not offered by the governing authority:

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: 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 ELAP		L2336	02-25-20
Connecticut	State Program	1	PH-0751	09-30-19
DE Haz. Subst. Cleanup Act (HSCA)	State Program	3	NA	02-01-19
Florida	NELAP	4	E87467	06-30-18 *
Maine	State Program	1	VT00008	04-17-19
Minnesota	NELAP	5	050-999-436	12-31-18
New Jersey	NELAP	2	VT972	06-30-18 *
New York	NELAP	2	10391	04-01-19
Pennsylvania	NELAP	3	68-00489	04-30-19
Rhode Island	State Program	1	LAO00298	12-30-18
US Fish & Wildlife	Federal		LE-058448-0	07-31-18
USDA	Federal		P330-11-00093	07-24-20
Vermont	State Program	1	VT-4000	12-31-18
Virginia	NELAP	3	460209	12-14-18

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

Method Summary

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

TestAmerica Job ID: 480-135543-1
SDG: Delphi Harrison

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 = TestAmerica Buffalo, 10 Hazelwood Drive, Amherst, NY 14228-2298, TEL (716)691-2600

TAL BUR = 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

TestAmerica Job ID: 480-135543-1
SDG: Delphi Harrison

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
480-135543-1	MW-4-2018	Water	05/08/18 15:30	05/08/18 17:15
480-135543-2	TRIP BLANK	Water	05/08/18 00:00	05/08/18 17:15
480-135622-1	MW-10-2018	Water	05/09/18 11:30	05/09/18 17:00
480-135622-2	MW-15-2018	Water	05/09/18 13:30	05/09/18 17:00
480-135622-3	MW-12-2018	Water	05/09/18 15:30	05/09/18 17:00
480-135737-1	MW-11-2018	Water	05/10/18 13:20	05/10/18 16:50
480-135737-2	MW-13-2018	Water	05/10/18 14:45	05/10/18 16:50
480-135737-3	MW-7-2018	Water	05/10/18 15:50	05/10/18 16:50
480-135737-4	TRIP BLANK	Water	05/10/18 00:00	05/10/18 16:50
480-135810-1	MW-14-2018	Water	05/11/18 10:15	05/11/18 15:15

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

May 21, 2018

Melissa Deyo
Test America
10 Hazelwood Drive
Buffalo, NY 14228

RE: **480-135543-1**

Pace Workorder: 26720

Dear Melissa Deyo:

Enclosed are the analytical results for sample(s) received by the laboratory on Monday, May 14, 2018. 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 05/21/2018
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 ____

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
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SAMPLE SUMMARY

Workorder: 26720 480-135543-1

Lab ID	Sample ID	Matrix	Date Collected	Date Received
267200001	MW-10-2018 (480-135622-1)	Bubble Strip	5/9/2018 11:30	5/14/2018 13:25
267200002	MW-15-2018 (480-135622-2)	Bubble Strip	5/9/2018 13:30	5/14/2018 13:25
267200003	MW-12-2018 (480-135622-3)	Bubble Strip	5/9/2018 15:30	5/14/2018 13:25

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

PROJECT SUMMARY

Workorder: 26720 480-135543-1

Batch Comments

Batch: DISG/6846 - AM20GAX Bubble Strip QC

The percent recovery for the closing calibration verification analysis was above laboratory control limits. Analyte Hydrogen. Results associated to the analytes in those flagged samples may be bias high.

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

ANALYTICAL RESULTS

Workorder: 26720 480-135543-1

Lab ID: **267200001** Date Received: 5/14/2018 13:25 Matrix: Bubble Strip

Sample ID: **MW-10-2018 (480-135622-1)** Date Collected: 5/9/2018 11:30

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
RISK - PAES								
Analysis Desc: AM20GAX			Analytical Method: AM20GAX					
Hydrogen	**2.6**	nM	0.60	0.16	1	5/18/2018 11:18	MM	B,n

Pace Analytical Energy Services LLC
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Pittsburgh, PA 15238
Phone: (412) 826-5245
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ANALYTICAL RESULTS

Workorder: 26720 480-135543-1

Lab ID: **267200002** Date Received: 5/14/2018 13:25 Matrix: Bubble Strip

Sample ID: **MW-15-2018 (480-135622-2)** Date Collected: 5/9/2018 13:30

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
RISK - PAES								
Analysis Desc: AM20GAX			Analytical Method: AM20GAX					
Hydrogen	**2.8**	nM	0.60	0.16	1	5/18/2018 11:30	MM	B,n

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Phone: (412) 826-5245
Fax: (412) 826-3433

ANALYTICAL RESULTS

Workorder: 26720 480-135543-1

Lab ID: **267200003** Date Received: 5/14/2018 13:25 Matrix: Bubble Strip

Sample ID: **MW-12-2018 (480-135622-3)** Date Collected: 5/9/2018 15:30

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
RISK - PAES								
Analysis Desc: AM20GAX			Analytical Method: AM20GAX					
Hydrogen	**2.3**	nM	0.60	0.16	1	5/18/2018 11:43	MM	B,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: 26720 480-135543-1

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.
B	The analyte was detected in the associated blank.

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

QUALITY CONTROL DATA

Workorder: 26720 480-135543-1

QC Batch: DISG/6846 Analysis Method: AM20GAX

QC Batch Method: AM20GAX

Associated Lab Samples: 267200001, 267200002, 267200003

METHOD BLANK: 55352

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
RISK				
Hydrogen	nM	0.20J	0.60	B,n

LABORATORY CONTROL SAMPLE & LCSD: 55353 55354

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
RISK										
Hydrogen	nM	24	26	27	109	110	80-120	0.45	20	B,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: 26720 480-135543-1

QUALITY CONTROL PARAMETER QUALIFIERS

B	The analyte was detected in the associated blank.
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: 26720 480-135543-1

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
267200001	MW-10-2018 (480-135622-1)			AM20GAX	DISG/6846
267200002	MW-15-2018 (480-135622-2)			AM20GAX	DISG/6846
267200003	MW-12-2018 (480-135622-3)			AM20GAX	DISG/6846

TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

26720

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Deyo, Melissa L	Carrier Tracking No(s):	COC No: 480-42151.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: melissa.deyo@testamericainc.com	State of Origin: New York	Page: Page 1 of 1
Company: Pace Analytical Services, LLC		Accreditations Required (See note): NELAP - New York		Job #: 480-135543-1
Address: 220 William Pitt Way, ,	Due Date Requested: 5/21/2018			
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-10-2018 (480-135622-1)	5/9/18	11:30 Eastern		Water			X	1	
MW-15-2018 (480-135622-2)	5/9/18	13:30 Eastern		Water			X	1	
MW-12-2018 (480-135622-3)	5/9/18	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
			Leon	5.14.18 1300	PAS
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:

Page 67 of 132

6/27/2018 (Rev. 2)

Ver: 09/20/2016

TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

26120

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Deyo, Melissa L	Carrier Tracking No(s):	COC No: 480-42099.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: melissa.deyo@testamericainc.com	State of Origin: New York	Page: Page 1 of 1
Company: Pace Analytical Services, LLC		Accreditations Required (See note): NELAP - New York		Job #: 480-135543-1
Address: 220 William Pitt Way, ,	Due Date Requested: 5/18/2018			
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-4-2018 (480-135543-1)	5/8/18	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: Lepan	Date/Time: 5.10.18 1100	Company PAS
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: 09/20/2016

NON-CONFORMANCE FORM

PAES Work Order #: 26720

Date: 5.10.18 Time of Receipt: 11:00 Receiver: LY

Client: TA

REASON FOR NON-CONFORMANCE:

1. MW-4 vial was broken during shipment.
2. Also received MW-10-2018 @ 12:10
MW-12 @ 16:20
& MW-15 @ 14:00.

ACTION TAKEN:

Client name: _____ Date: _____ Time: _____

Customer Service Initials: _____ Date: _____

F-PAE-Q-014-rev.00, 20 Nov2014

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

May 23, 2018

Melissa Deyo
Test America
10 Hazelwood Drive
Buffalo, NY 14228

RE: **480-135543-1**

Pace Workorder: 26734

Dear Melissa Deyo:

Enclosed are the analytical results for sample(s) received by the laboratory on Tuesday, May 15, 2018. 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 05/23/2018
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 ____

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: 26734 480-135543-1

Lab ID	Sample ID	Matrix	Date Collected	Date Received
267340001	MW-14-2018 (480-135810-1)	Bubble Strip	5/11/2018 10:15	5/15/2018 12:15

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

PROJECT SUMMARY

Workorder: 26734 480-135543-1

Batch Comments

Batch: DISG/6846 - AM20GAX Bubble Strip QC

The percent recovery for the closing calibration verification analysis was above laboratory control limits. Analyte Hydrogen. Results associated to the analytes in those flagged samples may be bias high.

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

ANALYTICAL RESULTS

Workorder: 26734 480-135543-1

Lab ID: **267340001** Date Received: 5/15/2018 12:15 Matrix: Bubble Strip

Sample ID: **MW-14-2018 (480-135810-1)** Date Collected: 5/11/2018 10:15

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
RISK - PAES								
Analysis Desc: AM20GAX			Analytical Method: AM20GAX					
Hydrogen	**2.2**	nM	0.60	0.16	1	5/18/2018 11:55	MM	B,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: 26734 480-135543-1

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.
B	The analyte was detected in the associated blank.

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

QUALITY CONTROL DATA

Workorder: 26734 480-135543-1

QC Batch: DISG/6846 Analysis Method: AM20GAX

QC Batch Method: AM20GAX

Associated Lab Samples: 267340001

METHOD BLANK: 55352

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
RISK				
Hydrogen	nM	0.20J	0.60	B,n

LABORATORY CONTROL SAMPLE & LCSD: 55353 55354

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
RISK										
Hydrogen	nM	24	26	27	109	110	80-120	0.45	20	B,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: 26734 480-135543-1

QUALITY CONTROL PARAMETER QUALIFIERS

B	The analyte was detected in the associated blank.
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: 26734 480-135543-1

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
267340001	MW-14-2018 (480-135810-1)			AM20GAX	DISG/6846

TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

26734

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Deyo, Melissa L	Carrier Tracking No(s):	COC No: 480-42224.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: melissa.deyo@testamericainc.com	State of Origin: New York	Page: Page 1 of 1
Company: Pace Analytical Services, LLC		Accreditations Required (See note): NELAP - New York		Job #: 480-135543-1
Address: 220 William Pitt Way, ,	Due Date Requested: 5/23/2018			
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-14-2018 (480-135810-1)	5/11/18	10:15 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		5/14/18 1500			5.15.18 1215	PAS
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: 09/20/2016

6/27/2018 (Rev. 2)

TestAmerica Buffalo

10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

26734

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

480-135810 COC

Client Information	Sampler: T. Bohlen	Lab PM: Deyo, Melissa L	Carrier Tracking No(s):	COC No: 480-112812-26179.6
Client Contact: Kathleen Willy	Phone: 716 844-7050	E-Mail: melissa.deyo@testamericainc.com		Page: Page ~~6 of 8~~ 1 of 1
Company: GHD Services Inc.				Job #:
Address: 2055 Niagara Falls Blvd., Suite 3	Due Date Requested: STD			
City: Niagara Falls	TAT Requested (days):			
State, Zip: NY, 14304				
Phone:	PO #: 34025853			
Email: kathleen.willy@ghd.com	WO #: 256034			
Project Name: 058507, GM-Lockport Groundwater Sampling	Project #: 48004014			
Site: Delphi Harrison	SSOW#:			

Analysis Requested

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	~~8260C - TCL VOCs~~ Dissolved Hg*	Total Number of containers	Special Instructions/Note:
				Preservation Code:			A	N	N	N	S	D	A	A	CB	N	N	N	A		
MW-14-2018	5/11/18	1015	G	Water	N	N	X	X	X	X	X	X	X	X	X	X	X		X		* Dissolved Hg sample to Pace
				Water																	
				Water																	
				Water																	- see M. Deyo for QA/QC and report batching requirements
				Water																	
				Water																	
				Water																	
				Water																	
				Water																	
				Water																	
				Water																	

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:

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:		
Relinquished by: Thomas Bohlen	Date/Time: 5/11/18 1515	Company: GZA	Received by: [signature]	Date/Time: 05/11/18 1515	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: 4.0 #1 ICE		

Ver: 08/04/2016

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

May 23, 2018

Melissa Deyo
Test America
10 Hazelwood Drive
Buffalo, NY 14228

RE: **480-135543-1**

Pace Workorder: 26735

Dear Melissa Deyo:

Enclosed are the analytical results for sample(s) received by the laboratory on Tuesday, May 15, 2018. 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 05/23/2018
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 ____

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: 26735 480-135543-1

Lab ID	Sample ID	Matrix	Date Collected	Date Received
267350001	MW-11-2018 (480-135737-1)	Bubble Strip	5/10/2018 13:20	5/15/2018 12:15
267350002	MW-13-2018 (480-135737-2)	Bubble Strip	5/10/2018 14:45	5/15/2018 12:15

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

PROJECT SUMMARY

Workorder: 26735 480-135543-1

Batch Comments

Batch: DISG/6846 - AM20GAX Bubble Strip QC

The percent recovery for the closing calibration verification analysis was above laboratory control limits. Analyte Hydrogen. Results associated to the analytes in those flagged samples may be bias high.

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

ANALYTICAL RESULTS

Workorder: 26735 480-135543-1

Lab ID: **267350001** Date Received: 5/15/2018 12:15 Matrix: Bubble Strip

Sample ID: **MW-11-2018 (480-135737-1)** Date Collected: 5/10/2018 13:20

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
RISK - PAES								
Analysis Desc: AM20GAX			Analytical Method: AM20GAX					
Hydrogen	**1.9**	nM	0.60	0.16	1	5/18/2018 12:08	MM	B,n

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

ANALYTICAL RESULTS

Workorder: 26735 480-135543-1

Lab ID: **267350002** Date Received: 5/15/2018 12:15 Matrix: Bubble Strip

Sample ID: **MW-13-2018 (480-135737-2)** Date Collected: 5/10/2018 14:45

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
RISK - PAES								
Analysis Desc: AM20GAX		Analytical Method: AM20GAX						
Hydrogen	**2.2**	nM	0.60	0.16	1	5/18/2018 12:20	MM	B,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: 26735 480-135543-1

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.
B	The analyte was detected in the associated blank.

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
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Fax: (412) 826-3433

QUALITY CONTROL DATA

Workorder: 26735 480-135543-1

QC Batch: DISG/6846 Analysis Method: AM20GAX

QC Batch Method: AM20GAX

Associated Lab Samples: 267350001, 267350002

METHOD BLANK: 55352

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
RISK				
Hydrogen	nM	0.20J	0.60	B,n

LABORATORY CONTROL SAMPLE & LCSD: 55353 55354

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
RISK										
Hydrogen	nM	24	26	27	109	110	80-120	0.45	20	B,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: 26735 480-135543-1

QUALITY CONTROL PARAMETER QUALIFIERS

B	The analyte was detected in the associated blank.
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: 26735 480-135543-1

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
267350001	MW-11-2018 (480-135737-1)			AM20GAX	DISG/6846
267350002	MW-13-2018 (480-135737-2)			AM20GAX	DISG/6846

TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

26735

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Deyo, Melissa L	Carrier Tracking No(s):	COC No: 480-42226.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: melissa.deyo@testamericainc.com	State of Origin: New York	Page: Page 1 of 1
Company: Pace Analytical Services, LLC		Accreditations Required (See note): NELAP - New York		Job #: 480-135543-1
Address: 220 William Pitt Way, ,	Due Date Requested: 5/23/2018			
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-11-2018 (480-135737-1)	5/10/18	13:20 Eastern		Water			X	1	
MW-13-2018 (480-135737-2)	5/10/18	14:45 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	[signature]	5/14/18 1200	[illegible]	[signature]	5.15.18 1215	PAS
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: 09/20/2016

6/27/2018 (Rev. 2)

267385

TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

480-135737 COC

Client Information	Sampler: T. Bohlen	Lab PM: Deyo, Melissa L	Carrier:	COC No: 480-112812-26179.4
Client Contact: Kathleen Willy	Phone: 716 844 7050	E-Mail: melissa.deyo@testamericainc.com		Page: Page 4 of 9
Company: GHD Services Inc.				Job #:
Address: 2055 Niagara Falls Blvd., Suite 3	Due Date Requested: Std.			
City: Niagara Falls	TAT Requested (days):			
State, Zip: NY, 14304				
Phone:	PO #: 34025853			
Email: kathleen.willy@ghd.com	WO #: 256034			
Project Name: 058507, GM-Lockport Groundwater Sampling	Project #: 48004014			
Site: Delphi Harrison	SSOW#:			

Analysis Requested

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	~~8260C_TCL_VOC~~ Dissolved H2 *	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A	N	N	N	S	D	A	A	CB	N	N	N	A		
MW-11-2018	5/10/18	1320	G	Water	N	N	X	X	X	X	X	X	X	X	XX	X			X		* Dissolved H2
MW-13-2018		1445	G	Water	N	N	X	X	X	X	X	X	X	X	XX	X			X		Air Sample to
MW-7-2018		1550	G	Water	N	N	X	X	X	X	X	X	X	X	XX	X					Pace
Trip Blank				Water			X														
				Water																	- see M. Deyo
				Water																	for QA/QC
				Water																	reporting
				Water																	batching
				Water																	requirements
				Water																	
				Water																	

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:

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:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Thomas Bohlen	5/10/18 1650	GZA		5/10/18 1650	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: 4.4 #1

Ver: 08/04/2016

NON-CONFORMANCE FORM

PAES Work Order #: 26735

Date: 5.15.18 Time of Receipt: 12 15 Receiver: CJ

Client: TA

REASON FOR NON-CONFORMANCE:

MW-11 Vial time was 13:52

MW-13: — 15:20

ACTION TAKEN:

Client name: TA Date: 5/15/18 Time: 5'00

Client was informed

Customer Service Initials: Date: 5/15/18

F-PAE-Q-014-rev.00, 20 Nov2014

Lauren McGrath - 480-135543 Project 26735 NCM

From: Lauren McGrath
To: Deyo Melissa
Date: 5/15/2018 3:07 PM
Subject: 480-135543 Project 26735 NCM

I wanted to let you know that sample one had a vial time of 13:52 and sample two had a vial time of 15:20. We will continue to use the information provided by the COC. Thank you.

Lauren McGrath
Project Coordinator
Pace Analytical Energy Services, LLC
220 William Pitt Way
Pittsburgh, PA 15238
412-826-2378 (D) |412-826-5245 (O)
Lauren.McGrath@pacelabs.com
www.pacelabs.com

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

May 26, 2018

Melissa Deyo
Test America
10 Hazelwood Drive
Buffalo, NY 14228

RE: **GM-LOCKPORT DELPHI HARRISON**
Pace Workorder: 26773

Dear Melissa Deyo:

Enclosed are the analytical results for sample(s) received by the laboratory on Thursday, May 17, 2018. 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 05/26/2018
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 ____

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: 26773 GM-LOCKPORT DELPHI HARRISON

Lab ID	Sample ID	Matrix	Date Collected	Date Received
267730001	MW-4-RE-2018	Bubble Strip	5/16/2018 15:28	5/17/2018 11:15

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

PROJECT SUMMARY

Workorder: 26773 GM-LOCKPORT DELPHI HARRISON

Batch Comments

Batch: DISG/6846 - AM20GAX Bubble Strip QC

The percent recovery for the closing calibration verification analysis was above laboratory control limits. Analyte Hydrogen. Results associated to the analytes in those flagged samples may be bias high.

Pace Analytical Energy Services LLC
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Phone: (412) 826-5245
Fax: (412) 826-3433

ANALYTICAL RESULTS

Workorder: 26773 GM-LOCKPORT DELPHI HARRISON

Lab ID: **267730001** Date Received: 5/17/2018 11:15 Matrix: Bubble Strip

Sample ID: **MW-4-RE-2018** Date Collected: 5/16/2018 15:28

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
RISK - PAES								
Analysis Desc: AM20GAX		Analytical Method: AM20GAX						
Hydrogen	**4.1**	nM	0.60	0.16	1	5/18/2018 12:37	MM	B,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: 26773 GM-LOCKPORT DELPHI HARRISON

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.
B	The analyte was detected in the associated blank.

Pace Analytical Energy Services LLC
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Phone: (412) 826-5245
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QUALITY CONTROL DATA

Workorder: 26773 GM-LOCKPORT DELPHI HARRISON

QC Batch: DISG/6846 Analysis Method: AM20GAX

QC Batch Method: AM20GAX

Associated Lab Samples: 267730001

METHOD BLANK: 55352

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
RISK				
Hydrogen	nM	0.20J	0.60	B,n

LABORATORY CONTROL SAMPLE & LCSD: 55353 55354

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
RISK										
Hydrogen	nM	24	26	27	109	110	80-120	0.45	20	B,n

Pace Analytical Energy Services LLC
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Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

QUALITY CONTROL DATA QUALIFIERS

Workorder: 26773 GM-LOCKPORT DELPHI HARRISON

QUALITY CONTROL PARAMETER QUALIFIERS

B	The analyte was detected in the associated blank.
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: 26773 GM-LOCKPORT DELPHI HARRISON

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
267730001	MW-4-RE-2018			AM20GAX	DISG/6846

TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

26773

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: T. Bohlen	Lab PM: Deyo, Melissa L	Carrier Tracking No(s):	COC No: 480-112812-26179.9
Client Contact: Kathleen Willy	Phone: 716-844-7050	E-Mail: melissa.deyo@testamericainc.com		Page: ~~Page 9 of 9~~ Page 1 of 1
Company: GHD Services Inc.				Job #:
Address: 2055 Niagara Falls Blvd., Suite 3	Due Date Requested: 5d.			
City: Niagara Falls	TAT Requested (days):			
State, Zip: NY, 14304				
Phone:	PO #: 34025853			
Email: kathleen.willy@ghd.com	WO #: 256034			
Project Name: 058507, GM-Lockport Groundwater Sampling	Project #: 48004014			
Site: Delphi Harrison	SSOW#:			

Analysis Requested

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (Wwater, Ssolid, Owaste/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	~~8260B - TCL VOC~~ Dissolved H2S for Rpt	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A	N	N	N	S	D	A	A	CB	N	N	N	A	X	
MW-4-RE-2018	5/16/18	1528	G	Water	N	N													X		Re-sample of TA broken vial - see M. Deyo for QA/QC & report batching
				Water																	
				Water																	
				Water																	
				Water																	
				Water																	
				Water																	
				Water																	
				Water																	
				Water																	

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:

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:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Thomas Bohlen	5/16/18 1600			5/16/18 1600	TAB
Relinquished by:	Date/Time:	Company	Received by:	Date/Time: 5.17.18 1115	Company PACE
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: 08/04/2016

6/27/2018 (Rev. 2)

TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

480-135811 COC

Client Information	Sampler: T. Bohlen	Lab PM: Deyo, Melissa L	Ca	COC No: 480-112812-26179.5
Client Contact: Kathleen Willy	Phone: 716-844-7050	E-Mail: melissa.deyo@testamericainc.com		Page: Page 5 of 5 1 of 1
Company: GHD Services Inc.				Job #:
Address: 2055 Niagara Falls Blvd., Suite 3	Due Date Requested: STD			
City: Niagara Falls	TAT Requested (days):			
State, Zip: NY, 14304				
Phone:	PO #: 34025853			
Email: kathleen.willy@ghd.com	WO #: 256034			
Project Name: 058507, GM-Lockport Groundwater Sampling	Project #: 48004014			
Site: GM Lockport BCP Site	SSOW#:			

Analysis Requ

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	8260C - TCL VOCs	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A	N	N	N	S	D	A	A	CB	N	N	N	A		
MW-8-4-2018	5/11/18	1245	G	Water	N	N	X	X		X	X	X	X	X	X	X	X				See M. Deyo for QA/QC reporting Batching requirements
MW-8-3-2018	↓	1350	G	Water	N	N	X	X		X	X	X	X	X	X	X	X				
Trip Blank	↓	-		Water																	
				Water																	
				Water																	
				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 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:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Thomas Bohlen	5/11/18 1515	GHD	Chuck Nicolle	05/11/18 1515	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: 4.0 #1 ICE

Ver: 08/04/2016

TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

Chain of Custody Record

TestAmerica
THE LEADER IN ENVI

480-136000 COC

Client Information	Sampler: T. Bohler	Lab PM: Deyo, Melissa L	Carrier Tracking No(s):	COC No: 480-112812-26179
Client Contact: Kathleen Willy	Phone: 716 844-7050	E-Mail: melissa.deyo@testamericainc.com		Page: Page ~~7 of 9~~ 10
Company: GHD Services Inc.				Job #:

Address: 2055 Niagara Falls Blvd., Suite 3	Due Date Requested: ~~STD~~
City: Niagara Falls	TAT Requested (days):
State, Zip: NY, 14304	
Phone:	PO #: 34025853
Email: kathleen.willy@ghd.com	WO #: 256034
Project Name: 058507, GM-Lockport Groundwater Sampling	Project #: 48004014
Site: GM Lockport BCP	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 - VFA	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	8260C - TCL VOCs	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A	N	N	N	S	D	A	A	CB	N	N	N	A		
MW-6-F-8-2018	5/16/18	1210	G	Water	N	N	X	X	~~X~~	X	X	X	X	X	X	X	X				See M. Deyo for QA/QC reporting batching requirements
MW-6-2-2018		1300		Water	N	N	X	X	NO	X	X	X	X	X	X	X	X				
MW-6-1-2018		1445		Water	N	N	X	X		X	X	X	X	X	X	X	X				
Trip Blank		—	—	Water	—	—	X														
				Water																	
				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 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:

Relinquished by:	Date/Time	Company	Received by:	Date/Time	Company
Thomas Bohler	5/16/18 1600	GHD		5/16/18 16:00	TAB
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.:	Cooler Temperature(s) °C and Other Remarks: 2.9 B1

Ver: 08/04/2016

TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

480-136102 COC

Client Information	Sampler: T. Bohlen	Lab PM: Deyo, Melissa L	Carr	COC No: 480-112812-26179.8
Client Contact: Kathleen Willy	Phone: 716 8447050	E-Mail: melissa.deyo@testamericainc.com		Page: Page ~~8 of 9~~ 1 of 1
Company: GHD Services Inc.				Job #: 182
Address: 2055 Niagara Falls Blvd., Suite 3	Due Date Requested: 5d.			
City: Niagara Falls	TAT Requested (days):			
State, Zip: NY, 14304				
Phone:	PO #: 34025853			
Email: kathleen.willy@ghd.com	WO #: 256034			
Project Name: 058507, GM-Lockport Groundwater Sampling	Project #: 48004014			
Site: GM Lockport BCP Site	SSOW#:			

Analysis Requested

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_176 - Methane, Ethane & Ethene	9060A - TOC	SM4500_S2_F - Sulfide	353.2, 353.2_Nitrite, Nitrate_Calc	2320B - Alkalinity	8270D - PAH Semivolatiles	8260C - TCL VOCs	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A	N	N	N	S	D	A	A	CB	N	N	N	A		
MW-7-3-MS/MSD-2018	5/17/18	1145	G	Water	N	Y	X	X	[redacted]	X	X	X	X	X	X	X	X				MS/MSD
MW-7-1-2018	↓	1345	↓	Water	N	N	X	X	NO	X	X	X	X	X	X	X	X				
MW-7-2-2018		1440		Water	N	N	X	X	[redacted]	X	X	X	X	X	X	X	X				see M. Deyo for DAOC/
MW-7-4-2018		1540		Water	N	N	X	X	NO	X	X	X	X	X	X	X	X				reporting requirements
Trip Blank	-	-	-	Water			X														
				Water																	
				Water																	* no VFA analysis for this COC
				Water																	
				Water																	
				Water																	
				Water																	

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:

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:

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
Thomas Bohlen	5/17/18/1615	GZA	[signature]	5/17/18 1620	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: 2.7, 3.7 °C #1

Ver: 08/04/2016

TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: T. Bohlen	Lab PM: Deyo, Melissa L	COC No: 480-112812-26179.8
Client Contact: Kathleen Willy	Phone: 716-844-7050	E-Mail: melissa.deyo@testamericainc.com	Page: Page 8 of 9
Company: GHD Services Inc.		Analysis Req 480-136214 COC	Job #:
Address: 2055 Niagara Falls Blvd., Suite 3	Due Date Requested: Std.		
City: Niagara Falls	TAT Requested (days):		
State, Zip: NY, 14304			
Phone:	PO #: 34025853		
Email: kathleen.willy@ghd.com	WO #: 256034		
Project Name: 058507, GM-Lockport Groundwater Sampling	Project #: 48004014		
Site: GM Lockport BCP	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 (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	8260C - TCL VOCs	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A	N	N	N	S	D	A	A	CB	N	N	N	A		
MW-10-3-2018	5/18/18	0955	G	Water	N	N	X	X		X	X	X	X	X	X	X	X				See M. Deyo for QA/QC & report batching requirements
MW-7-7-2018		1145	G	Water	N	N	X	X		X	X	X	X	X	X	X	X				
MW-7-A-6-2018		1300	G	Water	N	N	X	X		X	X	X	X	X	X	X	X				
Dup-2018		-	G	Water	N	N	X	X		X	X	X	X	X	X	X	X				
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 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:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Thomas J. Bohlen	5/18/18 / 1340			5/18/18 1340	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:

Ver: 08/04/2016

4,5 #1

TestAmerica Buffalo
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Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

480-136686 COC

Client Information	Sampler: T. Bohlen	Lab PM: Deyo, Melissa L	Ca	COC No: 480-112812-26179.8
Client Contact: Kathleen Willy	Phone: 716-844-7050	E-Mail: melissa.deyo@testamericainc.com		Page: Page 6 of 8 1 of 1
Company: GHD Services Inc.				Job #:
Address: 2055 Niagara Falls Blvd., Suite 3	Due Date Requested: STD.			
City: Niagara Falls	TAT Requested (days):			
State, Zip: NY, 14304				
Phone:	PO #: 34025853			
Email: kathleen.willy@ghd.com	WO #: 256034			
Project Name: 058507, GM-Lockport Groundwater Sampling	Project #: 48004014			
Site: GM Lockport BCP	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	8260C - TCL VOCs	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A	N	N	N	S	D	A	A	CB	N	N	N	A		
MW-7-5-2018	5/30/18	1130	G	Water	N	N	X	X		X	X	X	X	X	X	X	X				See M. Deyo for QA/QC & report batching requirements
MW-7-6-2018		1245		Water	N	N	X	X		X	X	X	X	X	X	X	X				
MW-8-003-B-2018		1400		Water	N	N	X	X		X	X	X	X	X	X	X	X				
MW-7-8-2018		1430		Water	N	N	X	X		X	X	X	X	X	X	X	X				
MW-10-2-2018		1620		Water	N	N	X	X		X	X	X	X	X	X	X	X				
MW-7-C-2-2018		1730		Water	N	N	X	X		X	X	X	X	X	X	X	X				
Trip Blank		-	-	Water	-		X														
				Water																	
				Water																	
				Water																	
				Water																	

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:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Thomas Bohlen	5/30/18 1810	GHD	[illegible]	05/30/18 1810	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: 2.0, 3.4 #1

Ver: 08/04/2016

TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

480-136763 COC

Client Information	Sampler: T. Bohlen	Lab PM: Deyo, Melissa L	COC No: 480-112812-26179.8
Client Contact: Kathleen Willy	Phone: 716-844-7050	E-Mail: melissa.deyo@testamericainc.com	Page: Page 8 of 9
Company: GHD Services Inc.			Job #:
Address: 2055 Niagara Falls Blvd., Suite 3	Due Date Requested:		
City: Niagara Falls	TAT Requested (days):		
State, Zip: NY, 14304			
Phone:	PO #: 34025853		
Email: kathleen.willy@ghd.com	WO #: 256034		
Project Name: 058507, GM-Lockport Groundwater Sampling	Project #: 48004014		
Site: GM Lockport BCP	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	8260C - TCL VOCs	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A	N	N	N	S	D	A	A	CB	N	N	N	A		
BLDG-10-MW-1-2018	5/31/18	1430	4	Water	N	N	X	X		X	X	X	X	X	X	X	X				See M. Deyo for QA/QC & reporting batching requirements
MW-9-12	↓	1550	↓	Water	N	N		X		X	X	X	X	X	X	X	X	X	X		
Trip Blank	—	—	—	Water	—	—															
				Water																	
				Water																	
				Water																	
				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 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:	
Relinquished by: Thomas Bohlen	Date/Time: 5/31/18 1630	Company: GHD	Received by: Marlow Likoly	Date/Time: 05/31/18 1630	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: △ Yes △ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: 4.5 #1

Ver: 08/04/2016

TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: T. Bohler	Lab PM: Deyo, Melissa L	Carrier Tracking No(s):	COC No: 480-112812-26179.8
Client Contact: Kathleen Willy	Phone: 716-844-7050	E-Mail: melissa.deyo@testamericainc.com		Page: Page ~~8 of 8~~ 1 of 1
Company: GHD Services Inc.				Job #:
Address: 2055 Niagara Falls Blvd., Suite 3	Due Date Requested: 5D			
City: Niagara Falls	TAT Requested (days):			
State, Zip: NY, 14304				
Phone:	PO #: 34025853			
Email: kathleen.willy@ghd.com	WO #: 256034			
Project Name: 058507, GM-Lockport Groundwater Sampling	Project #: 48004014			
Site: GM Lockport BCP	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL
B - NaOH
C - Zn Ac
D - Nitric
E - NaHS
F - MeOH
G - Amch
H - Ascor
I - Ice
J - DI Wa
K - EDTA
L - EDA
M - Hexane
N - None
hydrate
480-136793 COC
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	8260C - TCL VOCs	Total Number of containers	Special Instructions/Note:
Preservation Code:							A	N	N	N	S	D	A	A	CB	N	N	N	A		
MW-7-A-1-2018	6/1/18	1000	G	Water	N	N	X	X		X	X	X	X	X	X	X	X				See M. Deyo for QA/QC & reporting & batching requirements
MW-8-1-2018	↓	1112	↓	Water	N	N	X	X		X	X	X	X	X	X	X	X				
Trip Blank	–	–	–	Water	–	–	X														
				Water																	
				Water																	
				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 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:

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
Thomas Bohler	6/1/18 1145	EA		6/1/18 1145	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 3.1°C

Ver: 08/04/2016

TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

Chain of Custody Record

TestAmerica THE LEADER IN ENVIRONMENTAL TESTING

480-135543 COC

Client Information
Client Contact: Kathleen Willy
Company: GHD Services Inc.
Address: 2055 Niagara Falls Blvd., Suite 3
City: Niagara Falls
State, Zip: NY, 14304
Phone:
Email: kathleen.willy@ghd.com
Project Name: 058507, GM-Lockport Groundwater Sampling
Site: Delphi Harrison

Sampler: T Bohler
Phone: 716 844 7050
Due Date Requested: Std.
TAT Requested (days):
PO #: 34025853
WO #: 256034
Project #: 48004014
SSOW#:

Lab PM: Deyo, Melissa L
E-Mail: melissa.deyo@testamericainc.com

Carrier Tracking No(s):

COC No: 480-112812-2
Page: Page 1 of 2
Job #:

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:

Analysis Requested

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	~~Total Number of containers~~ Dissolved Hg - Pace	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A	N	N	N	S	D	A	A	CB	N	N	N	A		
MW-4-2018	5/8/18	1530	G	Water	N	N	X	X	X	X	X	X	X	X	X	X	X		X		* Dis Hg - Ltr sample to Pace
Trip Blank				Water																	
				Water																	
				Water																	- See M. Deyo for project QA/QC batching & reporting
				Water																	
				Water																	
				Water																	
				Water																	
				Water																	
				Water																	
				Water																	

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Deliverable Requested: I, II, III, IV, Other (specify)

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☒ Disposal By Lab ☐ Archive For ____ Months

Special Instructions/QC Requirements:

Empty Kit Relinquished by: | Date: | Time: | Method of Shipment:

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
Thomas Bohler	5/8/18 1715	GZA	[signature]	5/8/18 1715	TAB

Custody Seals Intact: Δ Yes Δ No
Custody Seal No.:
Cooler Temperature(s) °C and Other Remarks: 1.4 #1

Ver: 08/04/2016

TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: T. Bohlen	Lab PM: Deyo, Melissa L	Carrier Tracking No(s):	COC No: 480-112812-28179.9
Client Contact: Kathleen Willy	Phone: 716-844-7050	E-Mail: melissa.deyo@testamericainc.com		Page: ~~Page 9 of 9~~ 1 of 1
Company: GHD Services Inc.				Job #:
Address: 2055 Niagara Falls Blvd., Suite 3	Due Date Requested: Std.			
City: Niagara Falls	TAT Requested (days):			
State, Zip: NY, 14304				
Phone:	PO #: 34025653			
Email: kathleen.willy@ghd.com	WO #: 256034			
Project Name: 058507, GM-Lockport Groundwater Sampling	Project #: 48004014			
Site: Delphi Harrison	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	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	~~8260C - [illegible]~~ 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	A		
MW-4-RE-2018	5/16/18	1528	G	Water	N	N													X		Re-sample of TA broken vial - see M. Deyo for QA/QC & report batching
				Water																	
				Water																	
				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 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:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Thomas Bohlen	5/16/18 / 1600		[signature]	5/16/18 1600	TA-B
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: 08/04/2016

TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

480-135622 COC

Client Information	Sampler: T. Bohlen	Lab PM: Deyo, Melissa L	Carrier:
Client Contact: Kathleen Willy	Phone: 716-844-7050	E-Mail: melissa.deyo@testamericainc.com	COC No: 480-112812-28179.2
Company: GHD Services Inc.			Page: Page 2 of 9 1 of 1
Address: 2055 Niagara Falls Blvd., Suite 3	Due Date Requested: Std.	Analysis Requested	Job #:
City: Niagara Falls	TAT Requested (days):		
State, Zip: NY, 14304			
Phone:	PO #: 34025853		
Email: kathleen.willy@ghd.com	WO #: 258034		
Project Name: 058507, GM-Lockport Groundwater Sampling	Project #: 48004014		
Site: Delphi Harrison	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	8260C_28D_VOC	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A	N	N	N	S	D	A	A	CB	N	N	N	A		
MW-10-2018	5/9/18	1130	G	Water	N	N	X	X	X	X	X	X	X	X	X	X	X		X		* Dissolved H2
MW-15-2018		1330	G	Water	N	N	X	X	X	X	X	X	X	X	X	X	X		X		air sample to
MW-12-2018		1530	G	Water	N	N	X	X	X	X	X	X	X	X	X	X	X		X		Pace
				Water																	
				Water																	- See M. Deyo
				Water																	for QA/QC
				Water																	batching &
				Water																	reporting
				Water																	batching
				Water																	
				Water																	

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:	
Relinquished by: Thomas Bohlen	Date/Time: 5/9/18 / 1700	Company: GZA	Received by:		Date/Time: 5/10/18 1700		Company: TAB
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.:		Cooler Temperature(s) °C and Other Remarks:		8.8 #1		

Ver: 08/04/2016

TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

480-135737 COC

Client Information	Sampler: T. Bohlen	Lab PM: Deyo, Melissa L	Carrier:
Client Contact: Kathleen Willy	Phone: 716 844 7050	E-Mail: melissa.deyo@testamericainc.com	COC No: 480-112812-26179.4
Company: GHD Services Inc.			Page: Page 4 of 9
Address: 2055 Niagara Falls Blvd., Suite 3	Due Date Requested: Std.		Job #:
City: Niagara Falls	TAT Requested (days):		
State, Zip: NY, 14304			
Phone:	PO #: 34025853		
Email: kathleen.willy@ghd.com	WO #: 256034		
Project Name: 058507, GM-Lockport Groundwater Sampling	Project #: 48004014		
Site: Delphi Harrison	SSOW#:		

Analysis Requested

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (Water, Solid, Organic/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_178_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	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A	N	N	N	S	D	A	A	CB	N	N	N	A		
MW-11-2018	5/10/18	1320	G	Water	N	N	X	X	X	X	X	X	X	X	X	X	X		X		* Dissolved H2
MW-13-2018		1445	G	Water	N	N	X	X	X	X	X	X	X	X	X	X	X		X		As Sample to
MW-7-2018		1550	G	Water	N	N	X	X	X	X	X	X	X	X	X	X	X				Pace
Trip Blank				Water			X														
				Water																	- see M. Deyo
				Water																	for QA/QC
				Water																	reporting
				Water																	batching
				Water																	requirements
				Water																	
				Water																	

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:

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:		
Relinquished by: Thomas Bohlen	Date/Time: 5/10/18 1650	Company: GZA	Received by:	Date/Time: 5/10/18 1650	Company: TA B.
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.:

Cooler Temperature(s) °C and Other Remarks: 4.4 #1

Ver: 08/04/2016

TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

Chain of Custody Record

TestAmerica — THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: T. Bohlen	Lab PM: Deyo, Melissa L	Carrier Tracking No(s): 480-135810 COC
Client Contact: Kathleen Willy	Phone: 716 844-7050	E-Mail: melissa.deyo@testamericainc.com	COC No: 480-112812-26179.6
Company: GHD Services Inc.			Page: Page 6 of 6 1 of 1
Address: 2055 Niagara Falls Blvd., Suite 3	Due Date Requested: Std		Job #:
City: Niagara Falls	TAT Requested (days):		
State, Zip: NY, 14304			
Phone:	PO #: 34025853		
Email: kathleen.willy@ghd.com	WO #: 256034		
Project Name: 058507, GM-Lockport Groundwater Sampling	Project #: 48004014		
Site: Delphi Harrison	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	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	~~8260C - VOCs~~ Dissolved Hg	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A	N	N	N	S	D	A	A	CB	N	N	N	A		
MW-14-2018	5/11/18	1015	G	Water	N	N	X	X	X	X	X	X	X	X	X	X	X		X		10 - Dissolved Hg sample to Pace
				Water																	
				Water																	
				Water																	- see M. Deyo for QA/QC and report batching requirements
				Water																	
				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 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:	
Relinquished by: Thomas Bohlen	Date/Time: 5/11/18 1515	Company: GHD	Received by: Mark Kow Cikolo	Date/Time: 05/11/18 1515	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: 4.0 #1 ICE			

Ver: 08/04/2016

TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

Chain of Custody Record

480-135543 Chain of Custody

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Deyo, Melissa L	2057.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: melissa.deyo@testamericainc.com	State of Origin: New York
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): NELAP - New York	Page: Page 1 of 1
Address: 30 Community Drive, Suite 11,	Due Date Requested: 5/18/2018		Job #: 480-135543-1
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:

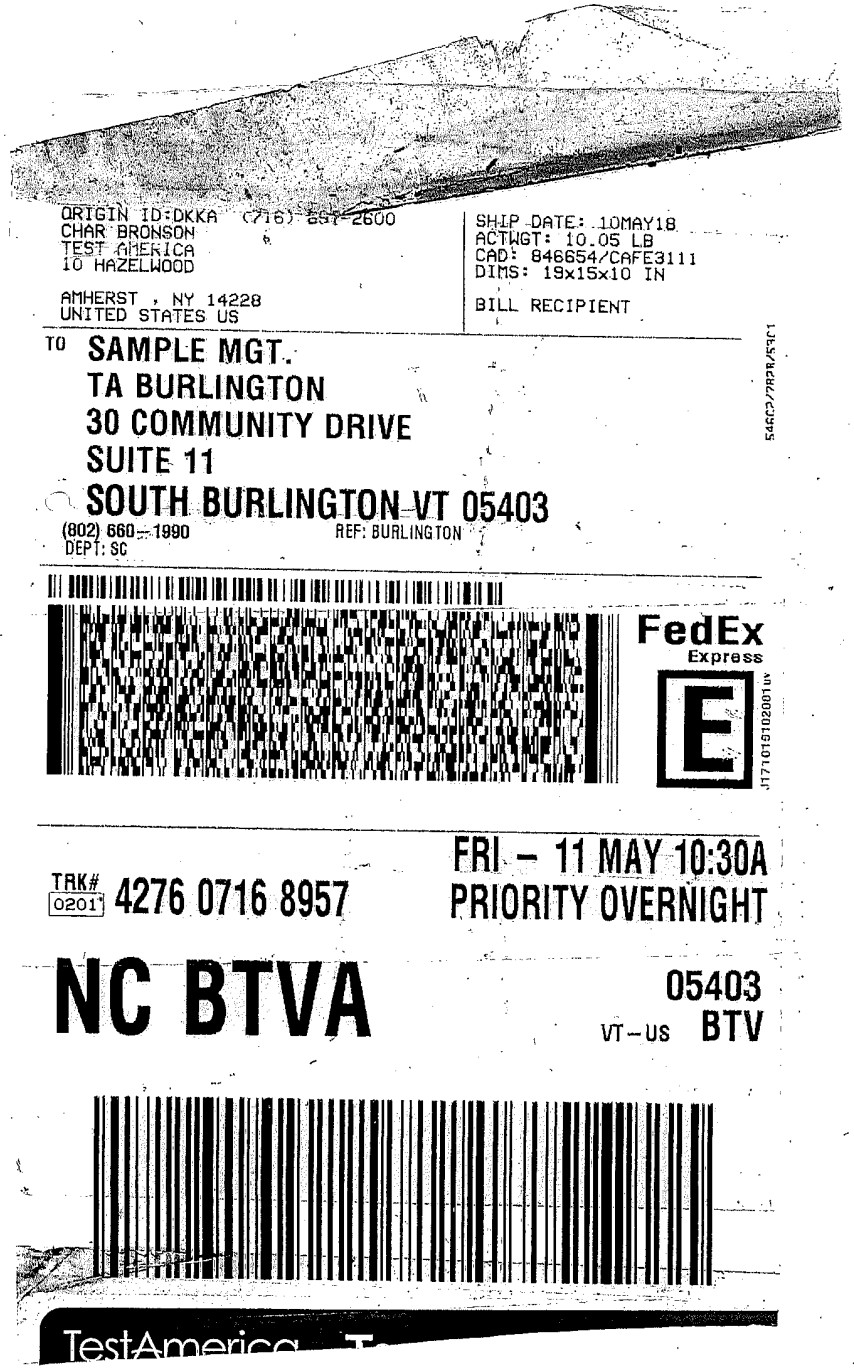
Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	RSK_175_CO2/ Carbon dioxide	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
MW-4-2018 (480-135543-1)	5/8/18	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: 5/10/18 1730	Company	Received by:	Date/Time:	Company	
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company	
Relinquished by:	Date/Time:	Company	Received by:	Date/Time: 5/11/18 1030	Company	
Custody Seals Intact: ☐ Yes ☐ No	Custody Seal No.: N/A		Cooler Temperature(s) °C and Other Remarks: 5.6			

Ver: 09/20/2016



ORIGIN ID:DKKA (716) 691-2600
CHAR BRONSON
TEST AMERICA
10 HAZELWOOD

AMHERST , NY 14228
UNITED STATES US

SHIP DATE: 10MAY18
ACTWGT: 10.05 LB
CAD: 846654/CAFE3111
DIMS: 19x15x10 IN

BILL RECIPIENT

TO SAMPLE MGT.
TA BURLINGTON
30 COMMUNITY DRIVE
SUITE 11
SOUTH BURLINGTON VT 05403
(802) 660-1990 REF: BURLINGTON
DEPT: SC

FedEx Express

TRK# 0201 4276 0716 8957

FRI - 11 MAY 10:30A
PRIORITY OVERNIGHT

NC BTVA

05403
VT-US BTV

TestAmerica

TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

Chain of Custody Record

480-135622 Chain of Custody

America
R IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Deyo, Melissa L	.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: melissa.deyo@testamericainc.com	New York — Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): NELAP - New York	Job #: 480-135622-1
Address: 30 Community Drive, Suite 11,	Due Date Requested: 5/21/2018		
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-10-2018 (480-135622-1)	5/9/18	11:30 Eastern		Water			X	3	
MW-15-2018 (480-135622-2)	5/9/18	13:30 Eastern		Water			X	3	
MW-12-2018 (480-135622-3)	5/9/18	15:30 Eastern		Water			X	3	

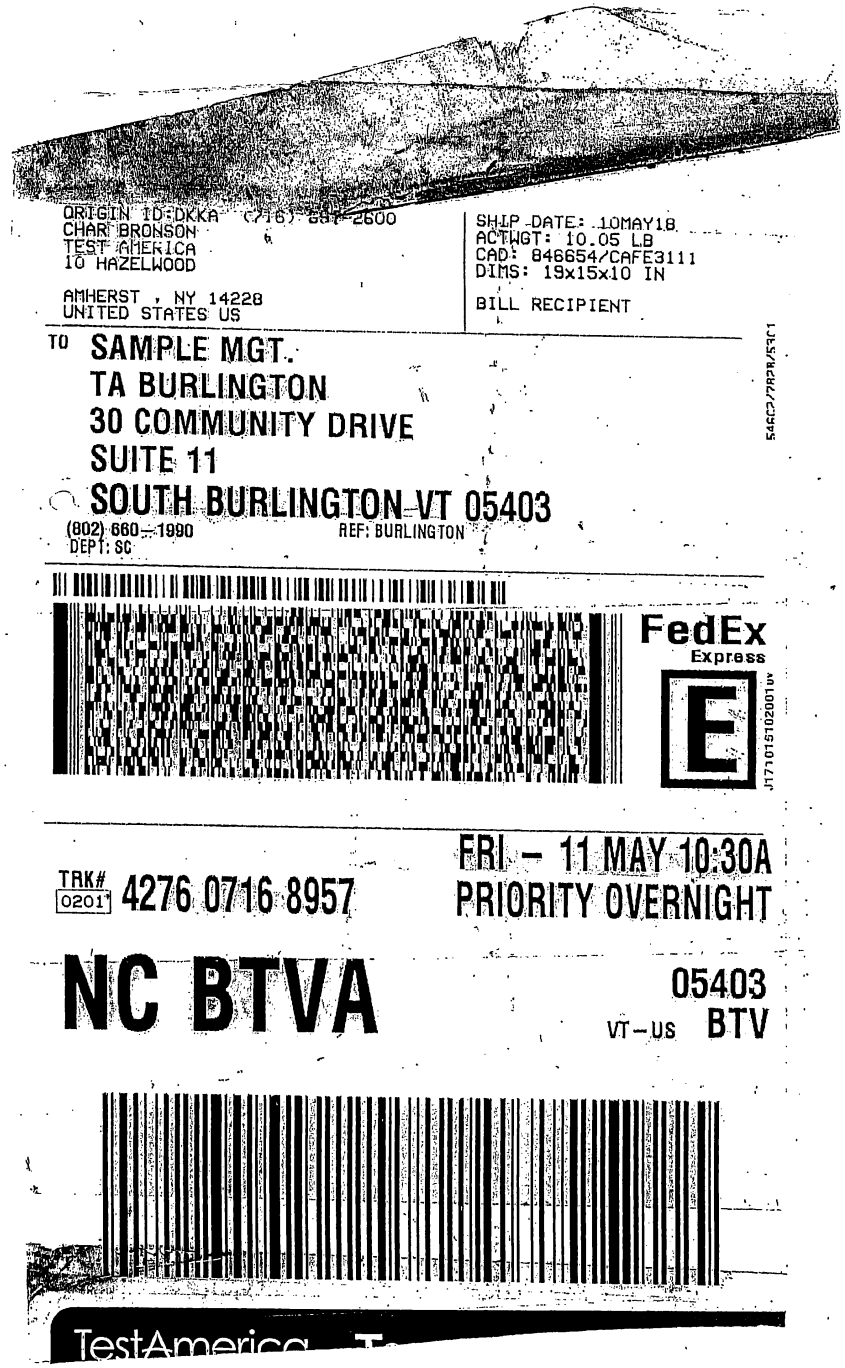
Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation 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: 5/10/18 1320	Company	Received by:	Date/Time:	Company	
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company	
Relinquished by:	Date/Time:	Company	Received by:	Date/Time: 5/11/18 1030	Company TAL	

Custody Seals Intact: Δ Yes N No N/A | Custody Seal No.: N/A | Cooler Temperature(s) °C and Other Remarks: 5.6

Ver: 09/20/2016



ORIGIN ID:DKKA (716) 691-2600
CHAR BRONSON
TEST AMERICA
10 HAZELWOOD

AMHERST , NY 14228
UNITED STATES US

SHIP DATE: 10MAY18
ACTWGT: 10.05 LB
CAD: 846654/CAFE3111
DIMS: 19x15x10 IN

BILL RECIPIENT

TO SAMPLE MGT.
TA BURLINGTON
30 COMMUNITY DRIVE
SUITE 11
SOUTH BURLINGTON VT 05403
(802) 660-1990 REF: BURLINGTON
DEPT: SC

FedEx Express

TRK# 0201 4276 0716 8957

FRI - 11 MAY 10:30A
PRIORITY OVERNIGHT

NC BTVA

05403
VT-US BTV

TestAmerica

TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

Chain of Custody Record

480-135737 Chain of Custody

TestAmerica
LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Deyo, Melissa L	177.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: melissa.deyo@testamerica...	1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): NELAP - New York	Job #: 480-135543-1
Address: 30 Community Drive, Suite 11,	Due Date Requested: 5/22/2018		
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-11-2018 (480-135737-1)	5/10/18	13:20 Eastern		Water			X	3	
MW-13-2018 (480-135737-2)	5/10/18	14:45 Eastern		Water			X	3	
MW-7-2018 (480-135737-3)	5/10/18	15:50 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:

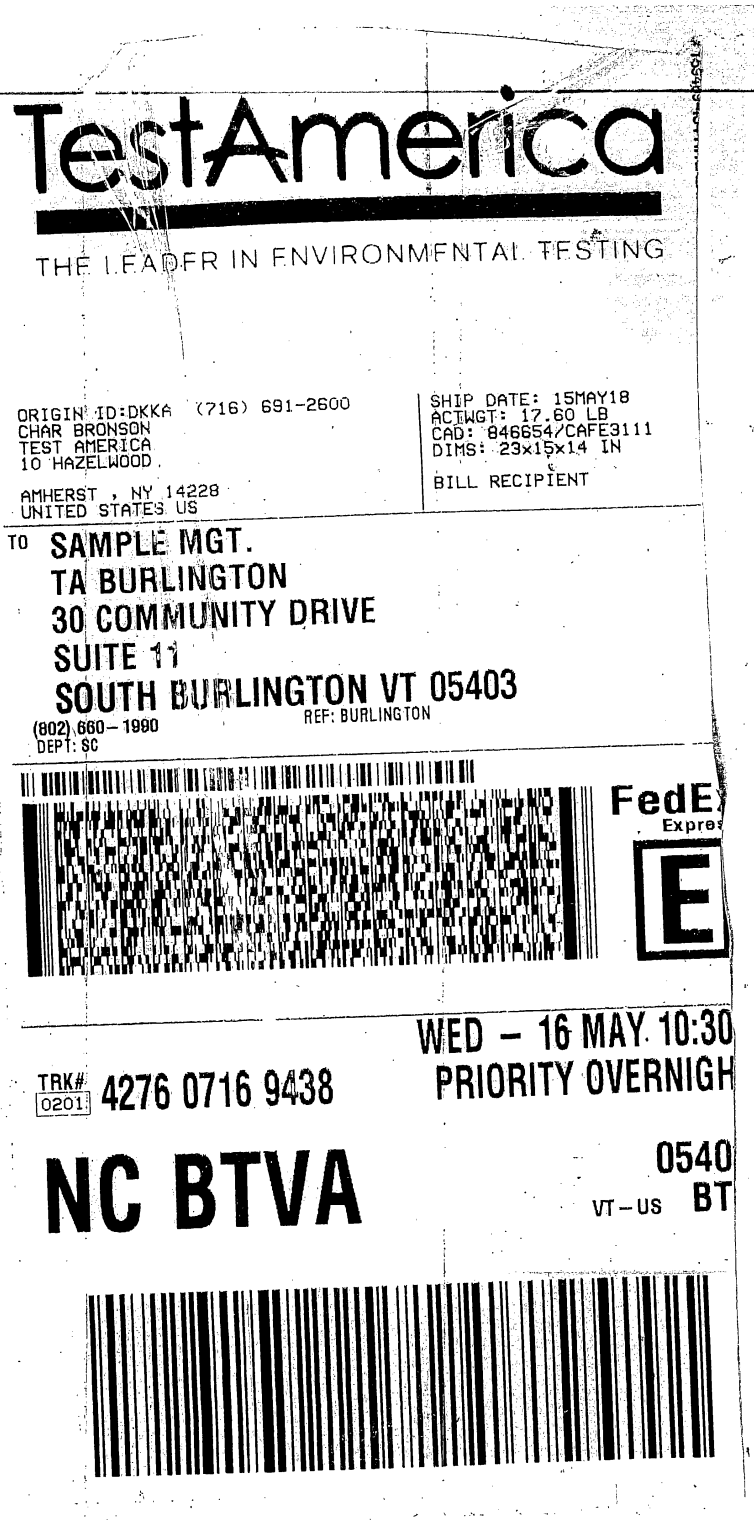
Empty Kit Relinquished by:		Date:	Time:	Method of Shipment:	
Relinquished by:	Date/Time: 5/15/18 1630	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time: 5/16/18 1030	Company TAB

Custody Seals Intact: Δ Yes ☑ No N/A | Custody Seal No.: N/A

Cooler Temperature(s) °C and Other Remarks: 3.1

Ver: 09/20/2016

6/27/2018 (Rev. 2)



TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ORIGIN ID:DKKA (716) 691-2600
CHAR BRONSON
TEST AMERICA
10 HAZELWOOD

AMHERST , NY 14228
UNITED STATES US

SHIP DATE: 15MAY18
ACTWGT: 17.60 LB
CAD: 846654/CAFE3111
DIMS: 23x15x14 IN

BILL RECIPIENT

TO SAMPLE MGT.
TA BURLINGTON
30 COMMUNITY DRIVE
SUITE 11
SOUTH BURLINGTON VT 05403
(802) 660-1990 REF: BURLINGTON
DEPT: SC

FedE
Expres

E

WED - 16 MAY 10:30
PRIORITY OVERNIGH

TRK# 0201 4276 0716 9438

NC BTVA

0540
VT-US BT

TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228-2298
Phone (716) 691-2600 Fax (716) 691-7991

Chain of Custody Record

480-135810 Chain of Custody

America IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Deyo, Melissa L	1
Client Contact: Shipping/Receiving	Phone:	E-Mail: melissa.deyo@testamericainc.co...	
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): NELAP - New York	Job #: 480-135543-1
Address: 30 Community Drive, Suite 11,	Due Date Requested: 5/23/2018		
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-14-2018 (480-135810-1)	5/11/18	10:15 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: 5/15/18 1630	Company	Received by:	Date/Time:	Company	
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company	
Relinquished by:	Date/Time:	Company	Received by:	Date/Time: 5/16/18 1030	Company TAL	
Custody Seals Intact: ☐ Yes ☐ No N/A	Custody Seal No.: N/A		Cooler Temperature(s) °C and Other Remarks: 3.1			

Ver: 09/20/2016


ORIGIN ID:BXCA (781) 466-6900
PAUL HOBART
TESTAMERICA
240 BEAR HILL ROAD
SUITE 104
WALTHAM, MA 02451
UNITED STATES US
SHIP DATE: 15MAY18
ACTWGT: 57.35 LB
CAD: 590687/CAFE3111
BILL RECIPIENT
TO SAMPLE RECEIVING
TESTAMERICA BURLINGTON
30 COMMUNITY DRIVE
SUITE 11
SOUTH BURLINGTON VT 05403
(802) 660-1990
INV:
PO:
REF
DEPT:
546C2/782B/53C1
FedEx Express
1 of 2
TRK# 0201 4258 8392047
MASTER
WED - 16 MAY 10:30A
PRIORITY OVERNIGHT
NC BTVA
05403
VT-US BTV
Temperature Controlled
ORIGIN ID:BXCA (781) 466-6900
PAUL HOBART
TESTAMERICA
240 BEAR HILL ROAD
SUITE 104
WALTHAM, MA 02451
UNITED STATES US
SHIP DATE: 15MAY18
ACTWGT: 55.30 LB
CAD: 590687/CAFE3111
BILL RECIPIENT
TO SAMPLE RECEIVING
TESTAMERICA BURLINGTON
30 COMMUNITY DRIVE
SUITE 11
SOUTH BURLINGTON VT 05403
(802) 660-1990
INV:
PO:
REF:
DEPT:
546C2/782B/53C1
FedEx Express
2 of 2
MPS# 0263 4258 8393 2058
Mstr# 4258 8393 2047
0201
WED - 16 MAY 10:30A
PRIORITY OVERNIGHT
NC BTVA
05403
VT-US BTV

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 480-135543-1
SDG Number: Delphi Harrison

Login Number: 135543
List Number: 1
Creator: Harper, Marcus D

List Source: 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: 480-135543-1
SDG Number: Delphi Harrison

Login Number: 135543
List Number: 2
Creator: Urbon, Sam A

List Source: TestAmerica Burlington
List Creation: 05/11/18 01:19 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.	False	Not present
Sample custody seals, if present, are intact.	N/A	Not Present
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	5.6ºC
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	No analysis requiring residual chlorine check assigned.

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 480-135543-1
SDG Number: Delphi Harrison

Login Number: 135622
List Number: 1
Creator: Williams, Christopher S

List Source: 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: 480-135543-1
SDG Number: Delphi Harrison

Login Number: 135622
List Number: 2
Creator: Urbon, Sam A

List Source: TestAmerica Burlington
List Creation: 05/11/18 01:30 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	False	Not present
Sample custody seals, if present, are intact.	N/A	Not Present
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	5.6ºC
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	No analysis requiring residual chlorine check assigned.

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 480-135543-1
SDG Number: Delphi Harrison

Login Number: 135737
List Number: 1
Creator: Williams, Christopher S

List Source: 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: 480-135543-1
SDG Number: Delphi Harrison

Login Number: 135737
List Number: 2
Creator: Urbon, Sam A

List Source: TestAmerica Burlington
List Creation: 05/16/18 02:00 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.	N/A	Not present
Sample custody seals, if present, are intact.	N/A	Not Present
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	3.1ºC
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	No analysis requiring residual chlorine check assigned.

Login Sample Receipt Checklist

Client: GHD Services Inc.

Job Number: 480-135543-1
SDG Number: Delphi Harrison

Login Number: 135810
List Number: 1
Creator: Williams, Christopher S

List Source: 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: 480-135543-1
SDG Number: Delphi Harrison

Login Number: 135810
List Number: 2
Creator: Urbon, Sam A

List Source: TestAmerica Burlington
List Creation: 05/16/18 02:40 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	
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	1.6ºC, 1.4ºC
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	No analysis requiring residual chlorine check assigned.

Memorandum

June 28, 2018

To:	Denis Conley [dconley@haleyaldrich.com]	Ref. No.:	058507-256034
From:	Kathy Willy/adh/252	Tel:	716-205-1942
CC:	Claire Mondello [cmondello@haleyaldrich.com] Tom Bohlen [thomas.bohlen@gza.com]		

Subject: **Analytical Results and Reduced Validation**
Annual Groundwater Monitoring
GM Components Holdings-Delphi Site
Lockport, New York
May-June 2018

1. Introduction

This document details a reduced validation of analytical results for groundwater samples collected in support of the Annual Groundwater Monitoring at the GM Components Holdings-Delphi Site during May and June 2018. Samples were submitted to TestAmerica Laboratories, Inc. located in Amherst, New York. A sample collection and analysis summary is presented in Table 1. The validated analytical results are summarized in Table 2. A summary of the analytical methodology is presented in Table 3.

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

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

i) "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review", United States Environmental Protection Agency (USEPA) 540-R-10-011, January 2010

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

These items will subsequently be referred to as the "Guidelines" in this Memorandum.

2. Sample Holding Time and Preservation

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

prepared and analyzed within the required holding times. Due to a laboratory oversight, five samples requiring total organic carbon (TOC) analysis were analyzed outside of the method required holding time, and the sample results have been qualified as estimated. A summary of qualified results is presented in Table 4.

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

3. Laboratory Method Blank Analyses

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

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

Most method blank results were non-detect, indicating that laboratory contamination was not a factor for this investigation. Target compounds were reported in some method blanks. All associated samples reported either non-detect concentrations or concentrations significantly greater than the associated laboratory blank concentrations for the analytes of interest, and no qualification of the data was required.

4. Surrogate Spike Recoveries - Organic Analyses

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

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

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

5. Laboratory Control Sample Analyses

LCS and laboratory control sample duplicates (LCSD) are prepared and analyzed as samples to assess the analytical efficiencies of the methods employed, independent of sample matrix effects. The relative percent difference (RPD) of the LCS/LCSD recoveries is used to evaluate analytical precision.

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

The LCS/LCSD contained all compounds of interest. All LCS recoveries (and RPDs where applicable) were within the laboratory control limits, demonstrating acceptable analytical accuracy and precision.

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

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

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

7. Duplicate Sample Analyses – Inorganic Analyses

Analytical precision is evaluated based on the analysis of laboratory duplicate samples. For this study, duplicate samples were prepared and analyzed by the laboratory for inorganic analyses as specified in the methods. The duplicate results were evaluated per the "Guidelines". All duplicate analyses performed were acceptable, demonstrating acceptable analytical precision.

8. Field QA/QC Samples

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

Trip Blank Sample Analysis

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

9. Analyte Reporting

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

10. Conclusion

Based on the assessment detailed in the foregoing, the data summarized in Table 2 are acceptable with the specific qualifications noted herein.

Table 1

Sample Collection and Analysis Summary
Annual Groundwater Monitoring
GM Components Holdings-Delphi Site
Lockport, New York
May-June 2018

					Analysis/Parameters										
Sample Identification	**Location**	**Matrix**	**Collection Date (mm/dd/yyyy)**	**Collection Time (hr:min)**	**Hydrogen**	**Chloride, Sulfate**	**Ammonia-N**	**Nitrate (N), Nitrite (N)**	**Dissolved Gases**	**Alkalinity**	**Sulfide**	**Select Metals**	**Select VOCs**	**TOC**	**Volatile Fatty Acids**
MW-4-2018	MW-4	Water	05/08/2018	15:30	x	x	x	x	x	x	x	x	x	x	x
MW-7-2018	MW-7	Water	05/10/2018	15:50		x	x	x	x	x	x	x	x	x	x
MW-10-2018	MW-10	Water	05/09/2018	11:30	x	x	x	x	x	x	x	x	x	x	x
MW-11-2018	MW-11	Water	05/10/2018	13:20	x	x	x	x	x	x	x	x	x	x	x
MW-12-2018	MW-12	Water	05/09/2018	15:30	x	x	x	x	x	x	x	x	x	x	x
MW-13-2018	MW-13	Water	05/10/2018	14:45	x	x	x	x	x	x	x	x	x	x	x
MW-14-2018	MW-14	Water	05/11/2018	10:15	x	x	x	x	x	x	x	x	x	x	x
MW-15-2018	MW-15	Water	05/09/2018	13:30	x	x	x	x	x	x	x	x	x	x	x
TRIP BLANK	-	Water	05/08/2018	-									x		
TRIP BLANK	-	Water	05/10/2018	-									x		

Notes:

VOCs - Volatile Organic Compounds
TOC - Total Organic Carbon
- - Not applicable

Table 2

Analytical Results Summary
Annual Groundwater Monitoring
GM Components Holdings-Delphi Site
Lockport, New York
May-June 2018

Location ID:		MW-4	MW-7	MW-10	MW-11	MW-12	MW-13	MW-14	MW-15
Sample Name:		MW-4-2018	MW-7-2018	MW-10-2018	MW-11-2018	MW-12-2018	MW-13-2018	MW-14-2018	MW-15-2018
Sample Date:		05/08/2018	05/10/2018	05/09/2018	05/10/2018	05/09/2018	05/10/2018	05/11/2018	05/09/2018
Parameters	**Unit**								
Volatile Organic Compounds									
cis-1,2-Dichloroethene	µg/L	20000	40000	160	1.0 U	33	1.0 U	1.0 U	2.0
Tetrachloroethene	µg/L	500 U	20000 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	9.0
trans-1,2-Dichloroethene	µg/L	500 U	20000 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichloroethene	µg/L	26000	690000	46	1.0 U	0.66 J	1.0 U	1.0 U	1.3
Vinyl chloride	µg/L	1400	20000 U	19	1.0 U	20	1.0 U	1.0 U	1.0 U
Dissolved Gases									
Hydrogen	nM	4.1	--	2.6	1.9	2.3	2.2	2.2	2.8
Carbon dioxide	µg/L	42000	21000	36000	14000	59000	34000	37000	65000
Ethane	µg/L	83 U	30 J	7.5 U	7.5 U	7.5 U	7.5 U	7.5 U	7.5 U
Ethene	µg/L	170	380	7.0 U	7.0 U	7.0 U	7.0 U	7.0 U	7.0 U
Methane	µg/L	760	69	37	4.0 U	140	4.0 U	31	4.0 U
Metals									
Iron	mg/L	0.83	0.050	0.046 J	0.075	4.0	0.73	0.066	0.050 U
Magnesium	mg/L	75.5	39.6	37.7	37.7	78.6	50.2	67.6	35.4
Manganese	mg/L	0.47	0.013	0.81	0.054	6.1	0.31	0.37	0.42
Potassium	mg/L	17.4	11.1	3.2	7.7	5.1	15.9	3.9	3.3
Sodium	mg/L	928	196	874	112	1910	825	1090	275
General Chemistry									
2-Hydroxypropanoic acid	mg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Acetic acid	mg/L	10.0 U	7.5 J	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Alkalinity, total (as CaCO3)	mg/L	246	243	286	248	253	322	364	391
Ammonia-N	mg/L	1.6	0.66	0.091	0.065	1.4	0.020 U	0.11	0.081
Butanoic acid	mg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Chloride	mg/L	1790	299	1500	190	3390	1740	2020	495
Formic acid	mg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Nitrate (as N)	mg/L	0.050 U	0.050 U	0.21	0.25	0.43	1.6	0.050 U	0.28
Nitrite (as N)	mg/L	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
Propionic acid	mg/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Pyruvic acid	mg/L	15.0 U	15.0 U	15.0 U	15.0 U	15.0 U	15.0 U	15.0 U	15.0 U
Sulfate	mg/L	292	180	259	140	102	148	117	71.8
Sulfide	mg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Total organic carbon (TOC)	mg/L	1.7 J	8.4	3.1 J	1.1	2.9 J	1.6	1.6 J	1.8 J

Notes:

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

Table 3

Analytical Methods
Annual Groundwater Monitoring
GM Components Holdings-Delphi Site
Lockport, New York
May-June 2018

Parameter	Method	Matrix	Holding Time	
			Collection to Extraction (Days)	Collection or Extraction to Analysis (Days)
Select Volatile Organic Compounds (VOCs)	SW-846 8260	Water	-	14
Total Organic Carbon (TOC)	SW 846 9060	Water	-	28
Sulfide	EPA 376.1	Water	-	7
Ammonia -N	EPA 350.1	Water	-	28
Chloride, Sulfate	EPA 300	Water	-	28
Nitrite, Nitrate	EPA 353.2	Water	-	48 hours
Alkalinity	SM 2320	Water	-	14
Methane, Ethane, Ethene, Carbon dioxide	RSK 175	Water	-	14
Hydrogen	AM20GAX	Water	-	14
Select Metals	SW-846 6010B	Water	-	180

Notes:

- - Not applicable

Method References:

SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, Third Edition, 1986, with subsequent revisions
SM - "Standard Methods for the Examination of Water and Wastewater", 18th Edition, 1992, with subsequent revisions
EPA - "Methods for Chemical Analysis of Water and Wastes", USEPA-600/4-79-020, March 1983 with subsequent revisions
AM20GAX - Microseeps Labs In-house Method for Dissolved Gases

Table 4

Qualified Sample Results Due to Holding Time Exceedance
Annual Groundwater Monitoring
GM Components Holdings-Delphi Site
Lockport, New York
May-June 2018

Parameter	Sample ID	Holding Time (days)	Holding Time Criteria (days)	Analyte	Qualified Sample Results	Units
General Chemistry	MW-4-2018	30	28	Total organic carbon (TOC)	1.7 J	mg/L
	MW-10-2018	29			3.1 J	mg/L
	MW-15-2018	29			1.8 J	mg/L
	MW-12-2018	29			2.9 J	mg/L
	MW-14-2018	33			1.6 J	mg/L

Notes:

J - Estimated concentration

GZA GeoEnvironmental, Inc.