

15 November 2019

TECHNICAL MEMORANDUM

TO: David Chiusano **LOCATION:** NYSDEC–Albany, New York

FROM: Christopher Schroer, Project Manager

SUBJECT: In Situ Biological Injection Work Plan
Clinton West Plaza
Ithaca, New York
Contract/WA No: D007624/25

EA Engineering, P.C. and its affiliate EA Science and Technology (EA) were tasked by the New York State Department of Environmental Conservation (NYSDEC) under Work Assignment (WA) Number (No.) D007624/25 to perform site management activities at the Clinton West Plaza Superfund Site (**Figure 1**). At the request of the NYSDEC, EA has prepared this technical memorandum to serve as a Work Plan for a pilot study for supplemental in situ biological injections at the site. This memorandum includes analytical results from the baseline sampling event completed in August 2019 to support the in situ biological injections.

EA will be conducting the supplemental groundwater injection to meet the remediation goals and objectives outlined in the NYSDEC Record of Decision (ROD).¹ The supplemental injection was recommended in the 2018 Periodic Review Report² based on observations during annual groundwater monitoring. The supplemental injection will be completed in compliance with the Pilot Study Conceptual Design Report³ with deviations as noted below.

1. BACKGROUND AND RATIONALE

1.1 SITE HISTORY

A detailed site description and history is provided in the 2010 ROD and briefly discussed here. The 2.49-acre site is commercially developed with an active 36,254 feet (ft) shopping plaza that was constructed in 1970 and is adjacent to residential neighborhoods and a retail property (**Figure 1**).² A laundromat, Clinton West Laundry, was located at 609 West Clinton Street within the Clinton West Plaza, but is no longer operational and the space is vacant. Residential structures are located immediately south and east of the property. The site includes large parking areas paved with asphalt.

¹ NYSDEC. 2010. *ROD, Clinton West Plaza, Site Number 755015, City of Ithaca, New York*. May.

² EA. 2018. *Periodic Review Report No. 5 October 2017 – September 2018*. November.

³ EA. 2011. *Pilot Study Conceptual Design Report, Clinton West Plaza (755015)*. September.

Impacts to groundwater from chlorinated volatile organic compounds (CVOC) were identified in 2006 after an Environmental Site Assessment Report in December 2005 (LCS 2006).⁴ Soil and groundwater contamination associated with dry cleaning chemicals, notably tetrachloroethene (PCE), were identified at the site. PCE is a solvent commonly used in the dry-cleaning process. Based on the findings of the Phase II investigation, the site was listed on the NYSDEC Registry of Inactive Hazardous Waste Disposal Sites in New York State as a Class 2 site in December 2007. A remedial investigation and feasibility study was completed in 2009.⁵ Based on the observations of the remedial investigation, the following actions were recommended in the feasibility study: installation of a sub-slab depressurization system, a pre-design investigation, source area chemical-oxidation, a primary and secondary injection of a carbon source substrate to stimulate natural attenuation, implementation of ICs, and long-term monitoring. NYSDEC issued a ROD for the Clinton West Plaza site in May 2010. The selected remedy detailed in the ROD included a Remedial Design program that would provide details necessary for the construction, and operation and maintenance of the overall remedial program.

EA completed a supplemental pre-design investigation in April 2011 to evaluate the potential for enhanced dechlorination. Samples were collected from subsurface soil and groundwater and analyzed for volatile organic compounds (VOCs), natural attenuation parameters, and microbial community structure. Further details on the historical and pre-design investigation results are provided in the Pilot Study Conceptual Design Report (EA 2011).³

The primary injection was completed in November 2011 in accordance with the NYSDEC-approved Pilot Study Conceptual Design Report and the Pilot Study Program Letter Work Plan (EA 2010).⁶

The following is a summary of the relevant remedial actions performed at the site:

- Pre-Remedial activities were completed at the site in February and October 2011.
- Injection of 3,600 pounds (lb) of HRC[®], a carbon source substrate, at 36 injection points at a loading rate of 5 lb/ft using direct-push technology to a depth of 25 ft below ground surface (bgs).
- Baseline and post-injection groundwater monitoring was performed from October 2011 through December 2018.
- No contaminated materials were removed from the site.

⁴ LCS. 2006. *Subsurface Soil and Groundwater Investigation and Supplemental Subsurface Soil and Groundwater Investigation*. May.

⁵ Fagan Engineers. 2009. *Remedial Investigation Feasibility Study Report, Clinton West Plaza, 609-625 West Clinton Street, Ithaca, New York, Site No. 755015*. July.

⁶ EA. 2010. *Pre-Design Investigation and Pilot Study Program Letter Work Plan*. December.

A detailed summary of the remedial implementation is provided in the Final Engineering Report.⁷ A Site Management Plan (SMP) (EA 2014)⁸ was prepared to manage remaining groundwater contamination at the site until the site meets remedial goals discussed in the SMP. Following the pilot study injection, groundwater has been monitored annually.

2. REMAINING CONTAMINATION

Results from post-injection groundwater sampling indicated that concentrations of PCE and trichloroethene (TCE) were significantly (92 to 100 percent reductions) reduced within the treatment zone. PCE and TCE were not detected at other monitoring locations within the treatment zone, suggesting that the substrate injection process did not displace impacted groundwater to areas inside or outside of the target treatment zone. It was anticipated that future groundwater monitoring would identify the potential and significance of residual soil contamination. If groundwater monitoring results indicated a potential for a continuing soil source, additional injection events could be implemented under the SMP (EA 2014).⁸ During the post-remedial action performance groundwater monitoring completed at the site from October/November 2013 through December 2018, concentrations of degradation daughter products (e.g., vinyl chloride [VC] and cis-1,2-Dichloroethene [DCE]) were consistently reported in treatment zone monitoring locations.

Historically, performance monitoring data identified a decreasing trend for cis-1,2-DCE and VC through June 2013. However, beginning with the March 2015 sampling event, concentrations increased by an order of magnitude at three monitoring locations (TPMW-3, TPMW-4, and MMW-01). This increase was also observed in December 2015. Concentrations decreased in December 2016 at monitoring wells TPMW-3 and TPMW-4, but concentrations of cis-1,2-DCE and VC remained greater than 1,000 micrograms per liter (µg/L) at monitoring well MMW-01, which is located on an adjacent residential property. By December 2018, total CVOC concentrations of cis-1,2-DCE and VC had decreased to less than 500 µg/L at monitoring wells TPMW-3 and TPMW-4. However, total CVOC concentrations at monitoring well MMW-01 exceeded 9,300 µg/L.

The continued detections of these daughter compounds combined with low or no detections of PCE and TCE indicate that some dechlorination processes are still likely occurring in site groundwater. However, concentrations of cis-1,2-DCE and VC are increasing and the continued degradation of the contaminant mass to benign daughter compounds (e.g., ethene) appears to be stagnating or stalling. This stall combined with the low or limited flow of groundwater through the site is leading to an accumulation of cis-1,2-DCE and VC, which is not being reduced through other physical natural attenuation processes (e.g., dispersion, dilution, etc.). These analytical results indicate that reductive dechlorination was effective for PCE and TCE in soil and groundwater, but the process was incomplete or stalled for daughter compounds, which were observed to accumulate in groundwater at MMW-01.

⁷ EA. 2013. *Final Engineering Report – NYSDEC Site Number 755015*. September.

⁸ EA. 2014. *Site Management Plan – Revision 1 NYSDEC Site Number: 755015*. June.

3. PRE-INJECTION BASELINE SAMPLING

Groundwater sampling was completed in July 2019 to provide groundwater quality parameters, evaluate existing conditions, including natural attenuation processes. These data were used to generate an accurate substrate loading volume to address residual contamination. Additionally, the microbiological community was re-evaluated for anaerobic dechlorination of CVOCs including molecular analysis for specific microbial species. Anaerobic reductive dechlorination is limited to few metabolic classifications of bacteria. These groups include methanogens, sulfate-reducing bacteria, and dechlorinating bacteria. The microbiological community data will establish if a supplemental inoculation is required to provide complete reductive dechlorination. Sample collection was completed in accordance with the SMP and the Conceptual Pilot Study Design Report. During groundwater sampling, groundwater quality parameters were recorded on purging forms. Daily field reports were completed for each day onsite field activities were conducted and are included with groundwater sample collection forms as **Attachment 1**.

3.1 GROUNDWATER ANALYTICAL RESULTS

A summary of the CVOCs detected in groundwater samples collected in August 2019 is provided on **Table 1**. CVOCs have consistently been reported in monitoring well locations TPMW-3, TPMW-4, and MMW-01. Analytical results observed during this sampling event remain consistent for PCE, which was not detected, and TCE, which was not detected at concentrations greater than the Ambient Water Quality Standard. Like previous sampling events, cis-1,2-DCE and VC were detected at concentrations greater than their respective Ambient Water Quality Standard at groundwater monitoring wells TPMW-3, TPMW-4, and MMW-01. The greatest concentrations were detected at MMW-01 where total CVOCs were detected at a concentration of 17,200 µg/L. This represents the greatest concentration observed during the 2011–2019 monitoring period.

The complete laboratory analytical report is provided as **Attachment 2**.

3.2 REDUCTIVE DECHLORINATION PARAMETERS

During the August 2019 groundwater sampling event, samples were analyzed for total organic carbon (TOC), nitrate, nitrite, sulfate, and dissolved gases (methane/ethane/ethane) to further assess conditions for reductive dechlorination. Results for these analyses are presented in **Table 2**.

TOC was detected at concentrations less than 20 milligrams per liter (mg/L) at groundwater monitoring wells TPMW-3 (7.5 mg/L), TPMW-4 (9 mg/L), and MMW-01 (14 mg/L). Nitrate/nitrite concentrations were non-detect or less than 1 mg/L in all samples. Additionally, sulfate was detected at a range of 0.38 to 1.5 mg/L. The greatest concentrations were at TPMW-03 and TPMW-04. The lowest concentration was detected at MMW-01. The greatest concentrations of ethane and ethene were detected in groundwater at TPMW-3, TPMW-4, and MMW-01.

The complete laboratory analytical report is provided as **Attachment 2**

3.3 MICROBIAL POPULATION ANALYSIS

During the pre-design investigation, groundwater samples from six monitoring well locations were collected and analyzed for microbial populations. Samples were analyzed by Microbial Insights of Knoxville, Tennessee, using a laboratory method known as QuantArray®-Chlor. This analytical method provides an estimate of microbial population in groundwater for a variety of halorespiring bacteria (Dehalococcoides, Dehalobacter, Dehalogenimonas, etc.) to assess the potential for reductive dechlorination of chloroethenes, chloroethanes, chlorobenzenes, chlorophenols, and chloroform. Additionally, the results provide quantification of functional genes involved in aerobic (co)metabolic pathways for biodegradation of chlorinated solvents and even competing biological processes.

The analytical results are provided as **Table 3**. Additionally, the population estimates were compared to Microbial Insights database and further quantified as a percentile. The percentile graphs are provided as **Figure 2**.

3.4 DATA VALIDATION

Independent third-party data validation was completed for VOC analytical results by Environmental Data Services, Inc. The Data Usability Summary Reports are included as **Attachment 4**.

4. SCOPE OF WORK

4.1 PREPARATION/COORDINATION

EA will coordinate with the NYSDEC for the submittal of the Underground Injection Control permit to U.S. Environmental Protection Agency. The Underground Injection Control notification will include proprietary information for the site-specific chemicals proposed to be injected during the pilot study supplemental injection.

Prior to commencing field work, EA will attend a meeting between NYSDEC and the property owner to discuss in detail the site work and answer any questions they may have. EA will take every precaution during this field work to minimize the effects on local residents.

4.2 SUBSTRATE INJECTION

EA's NYSDEC standby drilling contractor, North Star Drilling, will deliver the carbon source substrate to the subsurface through 30 temporary injection points using direct-push technology. The injection will be completed as described in the 2013 FER. Prior to well installation, the contractor will call New York State Dig Safe to mark out site utilities. The substrate injection will be overseen and documented by an EA field geologist. The proposed injection locations are detailed on **Figure 3**.

Field activities described in this section will be documented by EA in a dedicated field logbook that will be maintained for all site activities. Photographs will also be taken to document field

activities, as appropriate. Additionally, work will be completed under the Health and Safety Addendum to the SMP.

4.3 IN SITU BIOLOGICAL INJECTION DESIGN

EA will inject a combination of EOS Pro with supplemental Vitamin B12, EOS QR, and a microbial inoculation of BAC-9 into the targeted subsurface treatment zone as described below. The product overview and Safety Data Sheet for substrate components is included as **Attachment D**. The injection substrate is manufactured by EOS Remediation, LLC.

- EA has identified an area within the parking lot located south of the Clinton West Plaza for continued implementation of the enhanced anaerobic bioremediation.
- The target treatment zone is 3,200 square feet and from 5 to 25 ft bgs. These dimensions result in a 64,000 cubic feet treatment area.
- Thirty (30) substrate injection points, on 10 ft centers, will be located southeast of the former dry-cleaning facility perpendicular to groundwater flow (west to east). The injection points will be installed via direct-push technologies as temporary injection points.
- The substrate mixture will be diluted onsite at a ratio of 10 parts water to 1-part substrate mixture resulting in approximately 40 gallons of mixture for each temporary borehole. Additionally, ascorbic acid will be added to the dilution to scavenge free oxygen resulting in an anaerobic dilution.
- The substrate mixture will be injected using direct push technology combined with a pressurized grout pump from the bottom up.

Following injection, the substrate will be allowed approximately 60 minutes for settling and the boreholes will be backfilled with bentonite as needed to surface.

4.4 PERFORMANCE MONITORING

EA will collect performance samples quarterly from the existing groundwater monitoring well network for 1 year to provide post-injection monitoring data from within the targeted treatment zone. Samples will be analyzed for VOCs and monitored natural attenuation parameters (ammonia-nitrogen, nitrate-nitrogen, sulfate-sulfur, methane/ethane/ethane, TOC and dissolved iron/manganese). Additional monitoring will be completed as required by the SMP.

If you have any questions or require additional information, please do not hesitate to contact Christopher Schroer at 315-565-6565.

cc: R. Casey (EA)
D. Conan (EA)

Figures

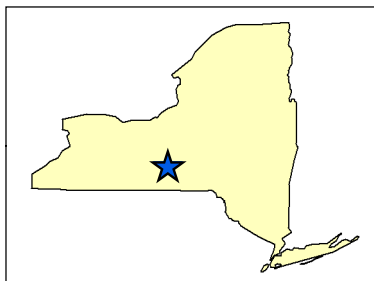
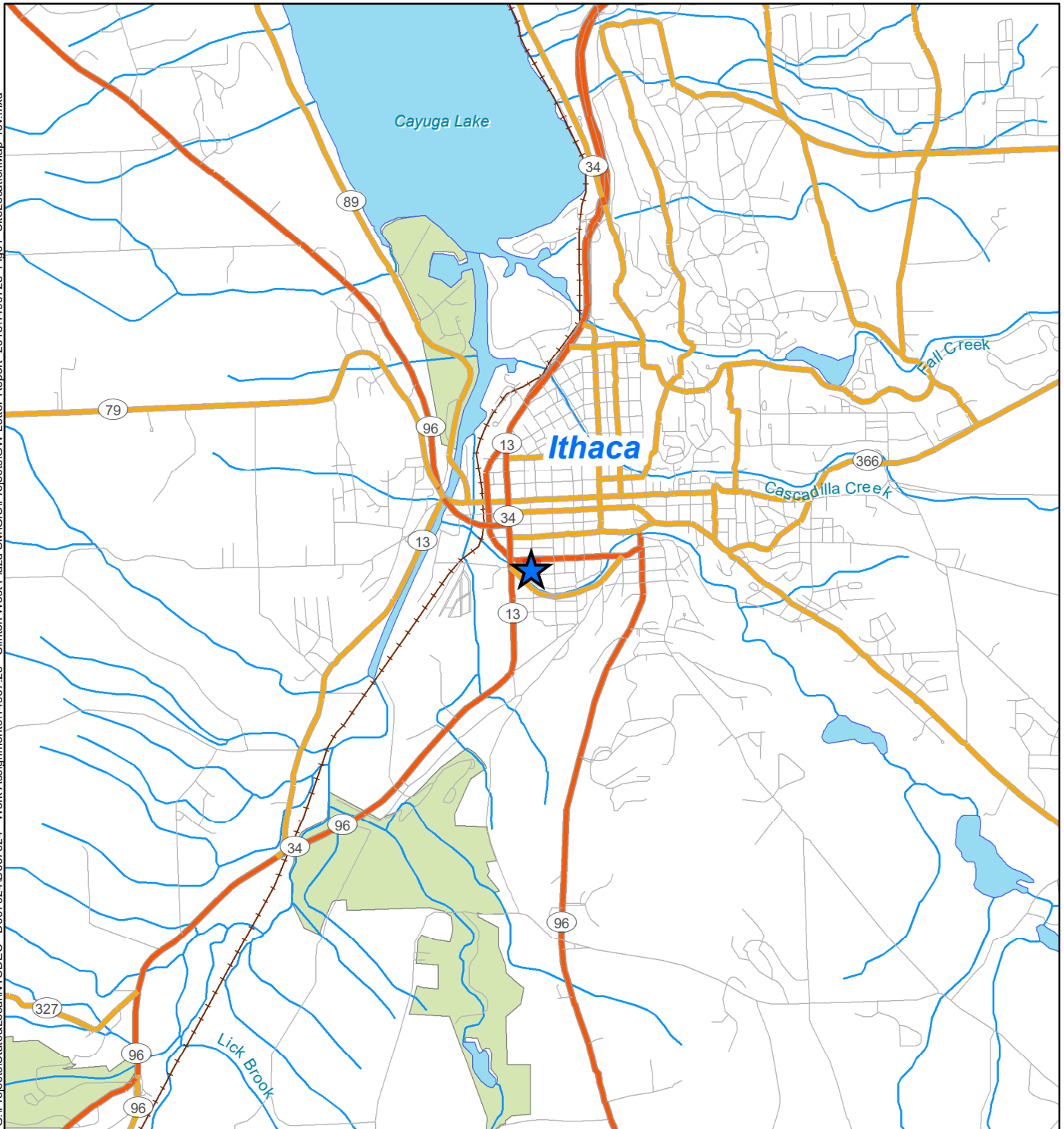
- 1 Site Location Map
- 2 Microbial Community Structure
- 3 Proposed Injection Points

Tables

- 1 Summary of Detected Volatile Organic Compounds in Groundwater (August 2019)
- 2 Summary of Reductive Dechlorination Assessment Parameters in Groundwater Samples (August 2019)
- 3 QuantArray[®]-Chlor Results

Attachments

- 1 Daily Field Reports and Groundwater Sampling Purge Forms
- 2 Laboratory Analytical Report
- 3 Microbial Laboratory Analytical Report
- 4 Data Validation Report
- 5 Carbon Source Substrate Material Safety Data Sheet



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Miles



Legend

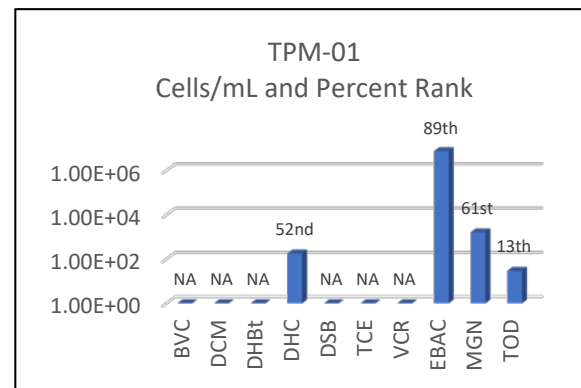
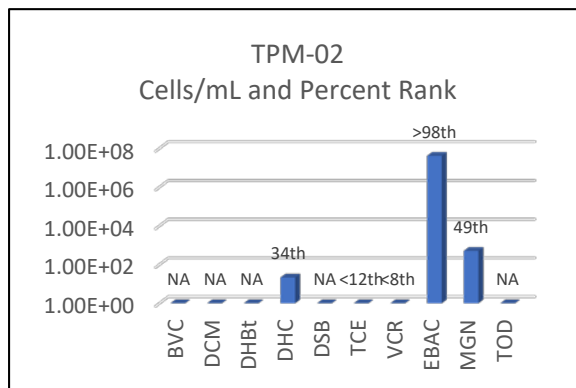
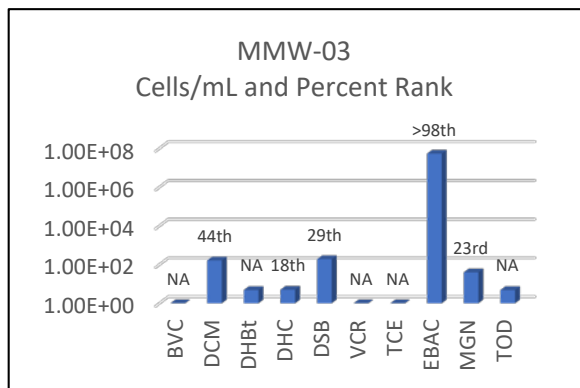
- Highway
- Major Road
- Local Road
- Park
- Rivers & Streams
- Surface Water Body

Figure 1
Site Location Map
Clinton West Plaza (755015)
Ithaca, New York

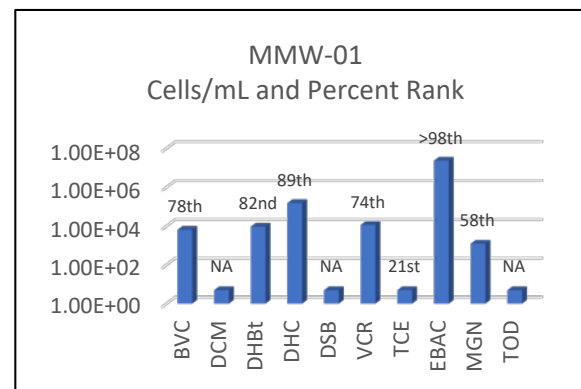
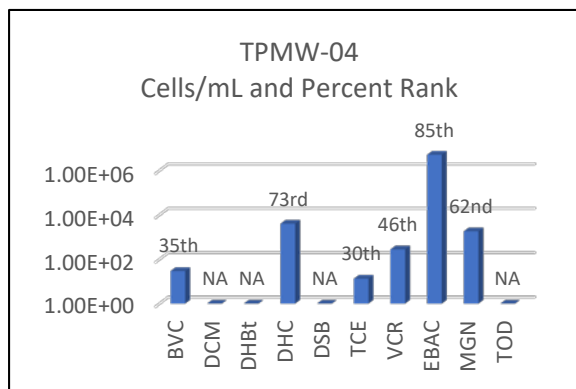
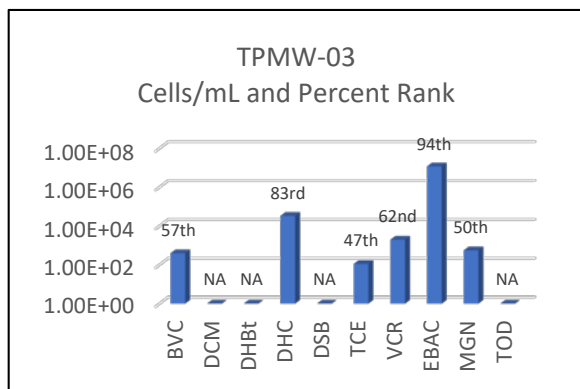
Map Date: 9/12/2019

Figure 2 Microbial Community Structure

Lateral and Upgradient



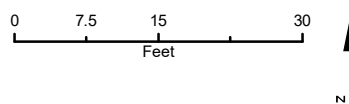
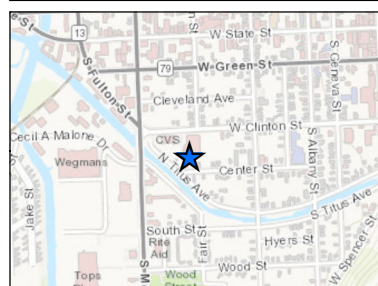
Source Area and Downgradient



Note:

BVC = BAV1 Vinyl Chloride Reductase TCE = tceA Reductase
 DCM = Dehalobacter DCM VCR = Vinyl Chloride Reductase
 DHBt = Dehalobacter spp. EBAC = Total Eubacteria
 DHC = Dehalococcoides MGN = Methanogens
 DSB = Desulfitobacterium spp. TOD = Toluene Dioxygenase

1.00E+04 cells/mL for DHC recommended by Lu et al. (2006) for generally effective rates of reductive dechlorination.



Legend

-  Property Boundary
-  Clinton West Plaza Site Boundary
-  Monitoring Well
-  Temporary Monitoring Point
-  Decommissioned Well
-  Injection Point
-  Injection Radius of Influence

Figure 3
Proposed Injection Points
Clinton West Plaza (755015)
Ithaca, New York

Map Date: 9/12/2019

Table 1 Summary of Detected Volatile Organic Compounds in Groundwater Samples (August 2019)

Parameters List EPA Method 8260C	Monitoring Well ID	TPMW-3		TPMW-4		TPM-01		TPM-02		TPM-03		NYSDEC Ambient Water Quality Standards
	Laboratory ID	19H1028-04		19H1028-05		19H1134-01		19H1028-07		19H1134-02		
	Screened Interval	6 - 16 ft bgs		6 - 16 ft bgs		18 - 28 ft bgs		18.22 - 28.22 ft bgs		14.54 - 24.54 ft bgs		
	Sample Type	Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		
	Sample Date	8/19/2019		8/19/2019		8/20/2019		8/19/2019		8/20/2019		
Acetone	(µg/L)	25	JD	(<3.8)	U	110		32	J	16	J	50 (g)
1,1-Dichloroethene	(µg/L)	1.4	JD	(<0.32)	U	<0.32	U	(<0.32)	U	(<0.32)	U	5 (s)
1,2,4-Trimethylbenzene	(µg/L)	(<0.72)	U	(<0.18)	U	0.21	J	(<0.18)	U	(<0.18)	U	5 (s)
cis-1,2-Dichloroethene	(µg/L)	390	D	13		(<0.13)	U	(<0.13)	U	(<0.13)	U	5 (s)
trans-1,2-Dichloroethene	(µg/L)	1.8	JD	(<0.31)	U	(<0.31)	U	(<0.31)	U	(<0.31)	U	5 (s)
Ethylbenzene	(µg/L)	(<0.52)	U	(<0.13)	U	0.2	J	(<0.13)	U	(<0.13)	U	5 (s)
Tert-Butyl Alcohol	(µg/L)	(<17)	U	(<4.2)	U	21		(<4.2)	U	(<4.2)	U	---
Trichloroethene	(µg/L)	1.1	JD	(<0.24)	U	(<0.24)	U	(<0.24)	U	(<0.24)	U	5 (s)
Toluene	(µg/L)	(<0.56)	U	0.14	J	1.6		0.63	J	0.26	J	5 (s)
o-Xylene	(µg/L)	(<0.68)	U	(<0.17)	U	0.37	J	(<0.17)	U	(<0.17)	U	5 (s)
m,p-Xylene	(µg/L)	(<1.2)	U	(<0.30)	U	0.79	J	0.37	J	(<0.30)	U	5 (s)
Vinyl chloride	(µg/L)	260	D	52		(<0.45)	U	(<0.45)	U	(<0.45)	U	2 (s)
		654.3	0	65	0	0	0	0	0	0		
Parameters List EPA Method 8260C	Monitoring Well ID	MMW-01		MMW-02		MMW-03		MMW-04		DUPLICATE		NYSDEC Ambient Water Quality Standards
	Laboratory ID	19H1134-03		19H1028-01		19H1028-02		19H1028-03		19H1028-06		
	Screened Interval	10 - 20 ft bgs		10 - 20 ft bgs		10 - 20 ft bgs		10 - 20 ft bgs		6 - 16 ft bgs		
	Sample Type	Groundwater		Groundwater		Groundwater		Groundwater		QA/QC - Duplicate		
	Sample Date	8/20/2019		8/19/2019		8/19/2019		8/19/2019		8/19/2019		
Acetone	(µg/L)	(<760)	U	(<3.8)	U	8.7	J	11	J	21	JD	50 (g)
1,1-Dichloroethene	(µg/L)	(<64)	U	(<0.32)	U	(<0.32)	U	(<0.32)	U	1.5	JD	5 (s)
1,2,4-Trimethylbenzene	(µg/L)	(<36)	U	(<0.18)	U	(<0.18)	U	(<0.18)	U	(<0.72)	U	5 (s)
cis-1,2-Dichloroethene	(µg/L)	4,200	D	(<0.13)	U	(<0.13)	U	(<0.13)	U	430	D	5 (s)
trans-1,2-Dichloroethene	(µg/L)	(<62)	U	(<0.31)	U	(<0.31)	U	(<0.31)	U	2	JD	5 (s)
Ethylbenzene	(µg/L)	(<26)	U	(<0.13)	U	(<0.13)	U	(<0.13)	U	(<0.52)	U	5 (s)
Tert-Butyl Alcohol	(µg/L)	(<830)	U	(<4.2)	U	(<4.2)	U	(<4.2)	U	(<17)	U	---
Trichloroethene	(µg/L)	(<48)	U	(<0.24)	U	(<0.24)	U	(<0.24)	U	1.4	JD	5 (s)
Toluene	(µg/L)	(<28)	U	(<0.14)	U	(<0.14)	U	(<0.14)	U	(<0.56)	U	5 (s)
o-Xylene	(µg/L)	(<34)	U	(<0.17)	U	(<0.17)	U	(<0.17)	U	(<0.68)	U	5 (s)
m,p-Xylene	(µg/L)	(<60)	U	(<0.30)	U	(<0.30)	U	(<0.30)	U	(<1.2)	U	5 (s)
Vinyl chloride	(µg/L)	13,000	D	(<0.45)	U	(<0.45)	U	(<0.45)	U	290	D	2 (s)
		17200	0	0	0	0	0	0	0	724.9		
NOTES: NYSDEC = New York State Department of Environmental Conservation AWQS = Ambient Water Quality Standard bgs = Below ground surface EPA = United States Environmental Protection Agency ft = Foot (feet) ID = Identification µg/L = Microgram(s) per liter U = Analyte was analyzed for, but not detected below the laboratory reporting limit. D = Indicates the compound concentration is the result of a dilution. (s) = NYSDEC Ambient Water Quality Standards standard value Analytical data results provided by Con-Test Analytical. Analytical data was validated by Environmental Data Services. Bold values indicate that the analyte was detected greater than the NYSDEC Ambient Water Quality Standards. DUPLICATE sample was collected at TPMW-3.												

Table 2 Summary of Reductive Dechlorination Assessment Parameters in Groundwater Samples (August 2019)

Parameters List	Monitoring Well ID	TPMW-3	TPMW-4	TPM-01	TPM-02	TPM-03
	Laboratory ID	19H1028-04	19H1028-05	19H1134-01	19H1028-07	19H1134-02
	Screened Interval	6 - 16 ft bgs	6 - 16 ft bgs	18 - 28 ft bgs	18.22 - 28.22 ft bgs	14.54 - 24.54 ft bgs
	Sample Type	Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
	Sample Date	8/19/2019	8/19/2019	8/20/2019	8/19/2019	8/20/2019
Ethane, Ethene, and Methane by EPA Method RSK175						
Ethane	(mg/L)	0.31	0.49	(<0.0078)	(<0.0078)	(<0.0078)
Ethene	(mg/L)	0.3	0.17	(<0.0092)	(<0.0092)	(<0.0092)
Methane	(mg/L)	5.3	8.3	D	9.7	D
Nitrate EPA Method SM4500F/Sulfate EPA Method E300.0						
Nitrate	(mg/L)	0.051	J	0.071	J	(<0.028)
Nitrite	(mg/L)	(<0.0240)	0.0263	J	(<0.0240)	(<0.0240)
Sulfate	(mg/L)	1.5	1.1	0.69	J	0.8
Total Organic Carbon by EPA Method SM5310B						
Total Organic Carbon	(mg/L)	7.5	9	24	23	22
Parameters List	Monitoring Well ID	MMW-01	MMW-02	MMW-03	MMW-04	DUPLICATE
	Laboratory ID	19H1134-03	19H1028-01	19H1028-02	19H1028-03	19H1028-06
	Screened Interval	10 - 20 ft bgs	10 - 20 ft bgs	10 - 20 ft bgs	10 - 20 ft bgs	6 - 16 ft bgs
	Sample Type	Groundwater	Groundwater	Groundwater	Groundwater	QA/QC - Duplicate
	Sample Date	8/20/2019	8/19/2019	8/19/2019	8/19/2019	8/19/2019
Ethane, Ethene, and Methane by EPA Method RSK175						
Ethane	(mg/L)	0.68	0.033	0.017	(<0.0078)	0.27
Ethene	(mg/L)	5.8	(<0.0092)	(<0.0092)	(<0.0092)	0.27
Methane	(mg/L)	18	D	18	D	4.4
Nitrate EPA Method SM4500F/Sulfate EPA Method E300.0						
Nitrate	(mg/L)	(<0.028)	0.084	J	0.62	0.085
Nitrite	(mg/L)	0.656	(<0.0240)	0.079	J	0.0249
Sulfate	(mg/L)	0.38	J	0.45	J	0.67
Total Organic Carbon by EPA Method SM5310B						
Total Organic Carbon	(mg/L)	14	34	22	20	7.6
NOTES: NYSDEC = New York State Department of Environmental Conservation AWQS = Ambient Water Quality Standard bgs = Below ground surface EPA = U.S. Environmental Protection Agency ft = Foot (feet) ID = Identification µg/L = Microgram(s) per liter mg/L = Milligram(s) per liter U = Analyte was analyzed for, but not detected below the laboratory reporting limit D = Indicates the compound concentration is the result of a dilution. Analytical data results provided by ConTest Analytical Laboratory. Analytical data was validated by Environmental Data Services. DUPLICATE sample was collected at TPMW-3.						

Table 3 QuantArray®-Chlor Results

Analyte	Unit	MMW-01		MMW-03		TPM-1		TPM-2		TPMW-3		TPMW-4	
		065QH-5		065QH-3		065QH-6		065QH-4		065QH-1		065QH-2	
		8/20/2019		8/19/2019		8/20/2019		8/19/2019		8/19/2019		8/19/2019	
		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater	
Sulfate Reducing Bacteria (APS)	cells/mL	8.36E+04		2.20E+05		6.36E+04		4.52E+05		4.66E+04		9.61E+04	
BAV1 Vinyl Chloride Reductase (BVC)	cells/mL	6.35E+03		5.00E-01	<	5.00E-01	<	5.00E-01	<	3.90E+02		2.92E+01	
Dehalogenimonas cerA Reductase (CER)	cells/mL	5.20E+00		4.80E+00	<	4.70E+00	<	4.70E+00	<	4.80E+00	<	4.60E+00	<
Chloroform Reductase (CFR)	cells/mL	4.90E+00	<	4.80E+00	<	4.70E+00	<	4.70E+00	<	4.80E+00	<	4.60E+00	<
1,1 DCA Reductase (DCA)	cells/mL	4.90E+00	<	4.80E+00	<	4.70E+00	<	4.70E+00	<	4.80E+00	<	4.60E+00	<
1,2 DCA Reductase (DCAR)	cells/mL	4.90E+00	<	4.80E+00	<	4.70E+00	<	4.70E+00	<	4.80E+00	<	4.60E+00	<
Dehalobacter DCM (DCM)	cells/mL	4.90E+00	<	1.64E+02		4.70E+00	<	4.70E+00	<	4.80E+00	<	4.60E+00	<
Dichloromethane Dehalogenase (DCMA)	cells/mL	4.90E+00	<	4.80E+00	<	4.70E+00	<	4.70E+00	<	4.80E+00	<	4.60E+00	<
Dehalobium chlorocoercia (DECO)	cells/mL	4.18E+03		1.00E+04		2.92E+03		2.09E+04		8.25E+03		1.14E+04	
Dehalobacter spp. (DHBt)	cells/mL	9.22E+03		4.80E+00	<	4.70E+00	<	4.70E+00	<	4.80E+00	<	4.60E+00	<
Dehalococcoides (DHC)	cells/mL	1.51E+05		5.00E+00		1.80E+02		2.13E+01		3.30E+04		4.00E+03	
Dehalogenimonas spp. (DHG)	cells/mL	2.94E+05		4.80E+00	<	4.70E+00	<	4.70E+00	<	1.66E+04		5.34E+03	
Desulfitobacterium spp. (DSB)	cells/mL	4.90E+00	<	1.90E+02		4.70E+00	<	4.70E+00	<	4.80E+00	<	4.60E+00	<
Desulfurmonas spp. (DSM)	cells/mL	1.37E+02		5.07E+01		3.53E+01		1.05E+03		1.17E+02		4.60E+00	<
Total Eubacteria (EBAC)	cells/mL	2.34E+07		5.33E+07		7.50E+06		4.08E+07		1.17E+07		5.13E+06	
Ethene Monooxygenase (EtnC)	cells/mL	8.06E+03		6.62E+01		4.70E+00	<	4.51E+01		5.85E+02		6.83E+01	
Epoxyalkane Transferase (EtnE)	cells/mL	2.64E+04		8.53E+01		4.70E+00	<	4.70E+00	<	8.20E+02		6.74E+02	
Methanogens (MGN)	cells/mL	1.21E+03		3.93E+01		1.61E+03		5.05E+02		5.54E+02		1.81E+03	
PCE Reductase (PCE-1)	cells/mL	3.86E+01		4.80E+00	<	4.70E+00	<	4.70E+00	<	4.80E+00	<	4.60E+00	<
PCE Reductase (PCE-2)	cells/mL	4.90E+00	<	4.80E+00	<	4.70E+00	<	4.70E+00	<	2.27E+01		4.60E+00	<
Phenol Hydroxylase (PHE)	cells/mL	3.09E+03		3.03E+03		4.20E+03		4.52E+03		9.25E+03		3.99E+02	
Toluene Monooxygenase 2 (RDEG)	cells/mL	1.69E+03		2.69E+03		1.03E+02		6.24E+02		8.57E+02		3.06E+02	
Toluene Monooxygenase (RMO)	cells/mL	2.91E+02		1.94E+03		3.74E+04		4.70E+00	<	2.86E+01		4.60E+00	<
Soluble Methane Monooxygenase (SMMO)	cells/mL	1.20E+04		1.48E+04		1.05E+03		3.14E+03		6.36E+02		1.86E+03	
Trichlorobenzene Dioxygenase (TCBO)	cells/mL	4.90E+00	<	1.30E+01		4.70E+00	<	4.70E+00	<	4.80E+00	<	4.60E+00	<
tceA Reductase (TCE)	cells/mL	4.90E+00	<	5.00E-01	<	3.00E-01	J	1.00E-01	J	1.11E+02		1.32E+01	
Dehalogenimonas trans-1,2-DCE Reductase (TDR)	cells/mL	4.90E+00	<	4.80E+00	<	4.70E+00	<	4.70E+00	<	4.80E+00	<	4.60E+00	<
Toluene Dioxygenase (TOD)	cells/mL	4.90E+00	<	4.80E+00	<	2.95E+01		4.70E+00	<	4.80E+00	<	4.60E+00	<
Vinyl Chloride Reductase (VCR)	cells/mL	1.13E+04		5.00E-01	<	2.00E-01	J	5.00E-01	J	1.96E+03		2.78E+02	
NOTES:													
mL = Milliliter(s)													
J = Estimated gene copies less than PQL but greater than LQL													
< '=' Result not detected													
Bold values indicate a detection.													

DAILY OBSERVATION REPORT

NYSDEC

Day: Monday Date: 08.19.19

Temperature: (F) 75°F (am) 80°F (pm)

Wind Direction: (am) (pm)

Weather: (am) some sun, warm, humid
(pm) sun, humid**Project Name: Clinton West Plaza****NYSDEC Site # 755015****Contract #****Ithaca, New York**

Arrive at site 0830 (am)

Leave site: 0400 (pm)

HEALTH & SAFETY:Are there any changes to the Health & Safety Plan?
(If yes, list the deviation under items for concern)

Yes () No (x)

Are monitoring results at acceptable levels?

Soil

Yes () n/a (x) * No ()

Waters

Yes () n/a (x) * No ()

Air

Yes () n/a (x) * No ()

- If No, provide comments

OTHER ITEMS:

Site Sketch Attached: Yes () No (x)

Photos Taken: Yes (x) No ()

DESCRIPTION OF DAILY WORK PERFORMED:

Lindsay Mairs (LM) and Sarah Nelson (SN) onsite at 0830. Static water level readings were collected prior to purging wells. Monitoring wells TPM-01, TPM-02 and TPM-03 were purged dry. Samples were collected from MMW-02, MMW-03, MMW-04, TPM-2, TPMW-3 and TPMW-4 for Volatile organic compounds (VOCs), Total Organic Carbon (TOC), methane/ethane/ethene, Sulfate, Nitrates (NO₃) and Nitrites (NO₂). Groundwater samples were shipped via FED EX overnight to Contest laboratories in Massachusetts. 1 extra liter of water was collected from TPMW-3, TPMW-4, MMW-03 and TPM-2 for analysis of Quantarray Chlor (DNA) and shipped to Microbial Insights located in Knoxville, TN.

SAMPLING (Soil/Water/Air)**Sample ID:****Date / Time:****Description:**

755015-TPM2	8.19.19 / 1435	VOCs, TOC, methane/ethane/ethane, NO ₂ , NO ₃ , and Sulfate, DNA
755015-MMW-02 (ms/msd)	8.19.19 / 1047	VOCs, TOC, methane/ethane/ethane, NO ₂ , NO ₃ , and Sulfate
755015-MMW-03	8.19.19 / 1234	VOCs, TOC, methane/ethane/ethane, NO ₂ , NO ₃ , and Sulfate, DNA
755015-MMW-04	8.19.19 / 1217	VOCs, TOC, methane/ethane/ethane, NO ₂ , NO ₃ , and Sulfate
755015-TPMW-3 (duplicate)	8.19.19 / 1359	VOCs, TOC, methane/ethane/ethane, NO ₂ , NO ₃ , and Sulfate, DNA
755015-TPMW-4	8.19.19 / 1405	VOCs, TOC, methane/ethane/ethane, NO ₂ , NO ₃ , and Sulfate, DNA

CONTRACTOR/SUBCONTRACTOR EQUIPMENT AND PERSONNEL ON SITE:

(Name of contractor) personnel: Sarah Nelson, Lindsay Mairs

(Name of contractor) equipment: Two water level indicators, two horibas, two peristaltic pumps, tubing, flex tubing, glassware, air canisters and regulators.

VISITORS TO SITE:

none

SITE REPRESENTATIVE:

Name: *Sarah Nelson*

cc:

DAILY OBSERVATION REPORT

NYSDEC

Day: Tuesday Date: 08.20.19

Temperature: (F) 70°F (am) 80°F (pm)

Wind Direction: (am) (pm)

Weather: (am) sun, humid

(pm) sun, humid

Project Name: Clinton West Plaza**NYSDEC Site # 755015****Contract #**

Arrive at site 0900 (am)

Ithaca, New York

Leave site: 0330 (pm)

HEALTH & SAFETY:Are there any changes to the Health & Safety Plan?
(If yes, list the deviation under items for concern)

Yes () No (x)

Are monitoring results at acceptable levels?

Soil

Yes () n/a (x) * No ()

Waters

Yes () n/a (x) * No ()

Air

Yes () n/a (x) * No ()

- If No, provide comments

OTHER ITEMS:

Site Sketch Attached: Yes () No (x)

Photos Taken: Yes (x) No ()

DESCRIPTION OF DAILY WORK PERFORMED:

Lindsay Mairs (LM) and Sarah Nelson (SN) onsite at 0900. Samples were collected from TPM-01, TPM-03 and MMW-01 for Volatile organic compounds (VOCs), Total Organic Carbon (TOC), methane/ethane/ethene, Sulfate, Nitrates (NO₃) and Nitrites (NO₂). Groundwater samples were shipped via FED EX overnight to Contest laboratories in Massachusetts. 1 extra liter of water was collected from MMW-01 and TPM-01 for analysis of Quantarray Chlor (DNA) and shipped to Microbial Insights located in Knoxville, TN.

SAMPLING (Soil/Water/Air)**Sample ID:****Date / Time:****Description:**

755015-TPM-1

8.19.19 / 1110

VOCs, TOC, methane/ethane/ethane, NO₂, NO₃, and Sulfate, DNA

755015-TPM-03

8.19.19 / 1225

VOCs, TOC, methane/ethane/ethane, NO₂, NO₃, and Sulfate

755015-MMW-01

8.19.19 / 1115

VOCs, TOC, methane/ethane/ethane, NO₂, NO₃, and Sulfate, DNA

CONTRACTOR/SUBCONTRACTOR EQUIPMENT AND PERSONNEL ON SITE:

(Name of contractor) personnel: Sarah Nelson, Lindsay Mairs

(Name of contractor) equipment: Two water level indicators, two horibas, two peristaltic pumps, tubing, flex tubing, glassware, air canisters and regulators.

VISITORS TO SITE:

none

SITE REPRESENTATIVE:

Name: *Sarah Nelson*

cc:



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GROUNDWATER SAMPLING PURGE FORM

Well I.D.: TPM-01	EA Personnel: S. Nelson / L. Mairs	Client: NYSDEC
Location: Clinton West Plaza	Measurement Reference: Top of casing	Weather: humid, overcast, ~85 F
Sounding Method: Heron Skinny dipper WLI	Gauge Date/Time: 8.19.19 / 1058	Well Diameter (in): 1 inch
Stick Up/Down (ft): down 0.4 ft	Well Condition: J-Plug: yes Bolts: yes Lock: none Comments:	
Purge Date: 8.19.19		Purge Time: 1102 - 1134
Purge Method: low flow		Field Technician: SN

Well Volume

A. Well Depth (ft): 24.5	D. Well Volume (ft): 0.41	Depth/Height of Top of PVC: down 0.4 ft
B. Depth to Water (ft): 3.74	E. Well Volume (gal) C*D: 8.51	Pump Type: peristaltic pump
C. Liquid Depth (ft) (A-B): 20.76	F. Three Well Volumes (gal) (E3): 25.53	Pump Intake Depth: 2 inches off the bottom

Water Quality Parameters

Time (hrs)	DTW (ft btoc)	Rate (Lpm)	Volume (liters)	Temperature (oC)	pH (pH units)	ORP (mV)	Conductivity (mS/cm)	Turbidity (ntu)	DO (mg/L)
1102	6.25	0.25	0	22.86	6.95	-115	0.831	449	0.16
1106	9.95	0.25	1	20.29	6.84	-120	0.872	348	0
1110	11.52	0.25	2	20.81	6.78	-120	0.844	288	0
1114	13.22	0.25	3	20.28	6.79	-123	0.841	225	0
1118	14.80	0.25	4	20.55	6.79	-127	0.833	163	0
1122	15.85	0.25	5	20.89	6.8	-128	0.808	162	0
1126	16.50	0.25	6	20.33	6.82	-128	0.814	188	0
1130	18.02	0.25	7	20.36	6.87	-128	0.815	192	0
1134	19.40	0.25	8	19.48	6.84	-129	0.828	265	0
			purged dry at 1136						

Total Quantity of Water Removed (liters): 8	Sampling Time: 1110
Samplers: SN	Split Sample With: NA
Sampling Date: 8.20.19	Sample Type: grab gw

COMMENTS AND OBSERVATIONS: Iron - 8.0 8.20.19 - dtw 4.33
extra 1 liter was collected for Microbial Insights

Water Quality:

Sheen observed? none
Odor Observed? none
Color and turbidity: clear
Tubing left down well? none

GROUNDWATER SAMPLING PURGE FORM

Well I.D.: TPM-02	EA Personnel: S. Nelson / L. Mairs	Client: NYSDEC
Location: Clinton West Plaza	Measurement Reference: Top of casing	Weather: sunny, 71 F, SSW 4 mph
Sounding Method: Heron Skinny dipper WLI	Gauge Date/Time: 8.19.19 / 930	Well Diameter (in): 1 inch
Stick Up/Down (ft): up 2.5'	Well Condition: J-Plug: yes Bolts: none Lock: none Comments: ok	
Purge Date: 8.19.19		Purge Time: 0930 - 0950
Purge Method: low flow		Field Technician: LM

Well Volume

A. Well Depth (ft): 28.2	D. Well Volume (ft): 0.41	Depth/Height of Top of PVC: up 2.5'
B. Depth to Water (ft): 6.08	E. Well Volume (gal) C*D): 9.07	Pump Type: peristaltic pump
C. Liquid Depth (ft) (A-B): 22.12	F. Three Well Volumes (gal) (E3): 27.21	Pump Intake Depth: 2 inches off the bottom

Water Quality Parameters

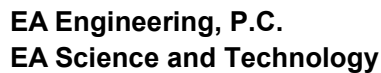
[illegible]

Total Quantity of Water Removed (liters):	5.25	Sampling Time:	1435
Samplers:	LM	Split Sample With:	NA
Sampling Date:	8.19.19	Sample Type:	grab gw

COMMENTS AND OBSERVATIONS:	WLI would not fit in well
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Water Quality:

Sheen observed?	none
Odor Observed?	none
Color and turbidity:	clear
Tubing left down well?	none



Well I.D.: TPM-03	EA Personnel: S. Nelson / L. Mairs	Client: NYSDEC
Location: Clinton West Plaza	Measurement Reference: Top of casing	Weather: overcast, humid, ~75 F
Sounding Method: Heron Skinny dipper WLI	Gauge Date/Time: 8.19.19 / 930	Well Diameter (in): 1 inch
Stick Up/Down (ft): down 0.5'	Well Condition: J-Plug: yes Bolts: none Lock: none Comments: not flush with pavement, has been hit by a plow, no bolts	
Purge Date: 9.19.19		Purge Time: 938 - 958
Purge Method: low flow		Field Technician:

A. Well Depth (ft): 21.35	D. Well Volume (ft): 0.41	Depth/Height of Top of PVC: down 0.5'
B. Depth to Water (ft): 4.15	E. Well Volume (gal) C*D): 7.05	Pump Type: peristaltic pump
C. Liquid Depth (ft) (A-B): 17.2	F. Three Well Volumes (gal) (E3): 21.16	Pump Intake Depth: 2 inches off the bottom

[illegible]

Total Quantity of Water Removed (liters):	5	Sampling Time:	1225
Samplers:	SN	Split Sample With:	NA
Sampling Date:	8.20.19	Sample Type:	grab gw

Water Quality:

Sheen observed?	none
Odor Observed?	none
Color and turbidity:	clear
Tubing left down well?	none



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GROUNDWATER SAMPLING PURGE FORM

Well I.D.: MMW-01	EA Personnel: S. Nelson / L. Mairs	Client: NYSDEC
Location: Clinton West Plaza	Measurement Reference: Top of casing	Weather: sunny, ~85 F
Sounding Method: Heron Skinny dipper WLI	Gauge Date/Time: 8.20.19 / 1045	Well Diameter (in): 1.5 inch
Stick Up/Down (ft): down 0.4'	Well Condition: J-Plug: yes Bolts: yes Lock: none Comments: ok condition	
Purge Date: 8.20.19		Purge Time: 1048 - 1115
Purge Method: low flow		Field Technician: LM

Well Volume

A. Well Depth (ft): 19.15	D. Well Volume (ft): 0.092	Depth/Height of Top of PVC: down 0.4'
B. Depth to Water (ft): 3.82	E. Well Volume (gal) C*D): 1.41	Pump Type: peristaltic pump
C. Liquid Depth (ft) (A-B): 15.33	F. Three Well Volumes (gal) (E3): 4.23	Pump Intake Depth: 2 inches off the bottom

Water Quality Parameters

Time (hrs)	DTW (ft btoc)	Rate (Lpm)	Volume (liters)	Temperature (oC)	pH (pH units)	ORP (mV)	Conductivity (mS/cm)	Turbidity (ntu)	DO (mg/L)
1051	4.01	0.25	0.75	19.65	6.92	-112	0.867	900	0
1054	3.98	0.25	1.5	19.30	6.87	-115	0.843	592	0
1057	3.96	0.25	2.25	18.90	6.90	-115	0.874	390	0
1100	3.96	0.25	3.0	18.89	6.89	-106	0.767	78.8	0
1103	3.97	0.25	3.75	19.33	6.88	-104	0.747	46.0	0
1106	3.96	0.25	4.5	19.58	6.86	-99	0.743	28.7	0
1109	3.96	0.25	5.25	18.89	6.85	-96	0.741	8.1	0
1112	3.97	0.25	6.0	18.68	6.84	-94	0.741	7.8	0
1115	3.98	0.25	6.75	18.71	6.84	-92	0.743	8.7	0

Total Quantity of Water Removed (liters):	6.75	Sampling Time:	1115
Samplers:	LM	Split Sample With:	NA
Sampling Date:	8.20.19	Sample Type:	grab gw

COMMENTS AND OBSERVATIONS: Irong 3.1
extra 1 liter was collected for Microbial Insights

Water Quality:

Sheen observed? none
Odor Observed? none
Color and turbidity: clear
Tubing left down well? none



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GROUNDWATER SAMPLING PURGE FORM

Well I.D.: MMW-02	EA Personnel: S. Nelson / L. Mairs	Client: NYSDEC
Location: Clinton West Plaza	Measurement Reference: Top of casing	Weather: sunny, ~85 F
Sounding Method: Heron Skinny dipper WLI	Gauge Date/Time: 8.19.19 / 1000	Well Diameter (in): 1.5 inch
Stick Up/Down (ft): down 0.3'	Well Condition: J-Plug: yes Bolts: none Lock: none Comments: lid missing	
Purge Date: 8.19.19		Purge Time: 1014 - 1047
Purge Method: low flow		Field Technician:

Well Volume

A. Well Depth (ft): 19.3	D. Well Volume (ft): 0.092	Depth/Height of Top of PVC: down 0.3'
B. Depth to Water (ft): 4.29	E. Well Volume (gal) C*D: 1.38	Pump Type: peristaltic pump
C. Liquid Depth (ft) (A-B): 15.01	F. Three Well Volumes (gal) (E3): 4.14	Pump Intake Depth: 2 inches off the bottom

Water Quality Parameters

Time (hrs)	DTW (ft btoc)	Rate (Lpm)	Volume (liters)	Temperature (oC)	pH (pH units)	ORP (mV)	Conductivity (mS/cm)	Turbidity (ntu)	DO (mg/L)
1017	5.02	0.25	0.75	16.65	6.63	-84	0.912	800	0.75
1020	5.08	0.25	1.5	16.77	6.40	-90	0.936	541	0
1023	5.20	0.25	2.25	16.85	6.27	-89	0.871	123	0
1026	5.35	0.25	3.0	16.58	6.20	-88	0.866	22.1	0
1029	5.53	0.25	3.75	16.40	6.14	-87	0.863	8.0	0
1032	5.68	0.25	4.5	16.56	6.11	-87	0.857	3.0	0
1035	5.75	0.25	5.3	16.79	6.09	-87	0.858	2.9	0
1038	5.81	0.25	6.0	17.14	6.08	-88	0.853	0	0
1041	5.90	0.25	6.75	18.01	6.08	-90	0.834	0	0
1044	5.98	0.25	7.5	18.06	6.09	-92	0.830	0	0
1047	6.00	0.25	8.25	18.00	6.09	-93	0.828	0	0

Total Quantity of Water Removed (liters):	8.25	Sampling Time:	1047
Samplers:	LM	Split Sample With:	ms/msd
Sampling Date:	8.19.19	Sample Type:	grab gw

COMMENTS AND OBSERVATIONS: Iron 2.8

Water Quality:

Sheen observed? none
Odor Observed? none
Color and turbidity: clear
Tubing left down well? none

GROUNDWATER SAMPLING PURGE FORM

Well I.D.: MMW-03	EA Personnel: S. Nelson / L. Mairs	Client: NYSDEC
Location: Clinton West Plaza	Measurement Reference: Top of casing	Weather: sunny, ~85 F
Sounding Method: Heron Skinny dipper WLI	Gauge Date/Time: 8.19.19 / 1145	Well Diameter (in): 1.5 inch
Stick Up/Down (ft): down 0.4'	Well Condition: J-Plug: yes Bolts: none Lock: none Comments: Lid does not close with the J-Plug in it	
Purge Date: 8.19.19		Purge Time: 1206 - 1234
Purge Method: low flow		Field Technician: SN

Well Volume

A. Well Depth (ft): 19.32	D. Well Volume (ft): 0.092	Depth/Height of Top of PVC: down 0.4'
B. Depth to Water (ft): 4.05	E. Well Volume (gal) C*D): 1.40	Pump Type: peristaltic pump
C. Liquid Depth (ft) (A-B): 15.27	F. Three Well Volumes (gal) (E3): 4.21	Pump Intake Depth: 2 inches off the bottom

Water Quality Parameters

[illegible]

Total Quantity of Water Removed (liters):	<u>7</u>	Sampling Time:	<u>1234</u>
Samplers:	<u>SN</u>	Split Sample With:	<u>NA</u>
Sampling Date:	<u>8.19.19</u>	Sample Type:	<u>grab gw</u>

COMMENTS AND OBSERVATIONS:

COMMENTS AND OBSERVATIONS: extra 1 liter was collected for Microbial Insights	<u>Iron 7.6</u>
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Water Quality:

Sheen observed?	none
Odor Observed?	none
Color and turbidity:	clear
Tubing left down well?	none

GROUNDWATER SAMPLING PURGE FORM

Well I.D.: MMW-04	EA Personnel: S. Nelson / L. Mairs	Client: NYSDEC
Location: Clinton West Plaza	Measurement Reference: Top of casing	Weather: sunny, ~70 F
Sounding Method: Heron Skinny dipper WLI	Gauge Date/Time: 8.19.19 / 1145	Well Diameter (in): 1.5 inch
Stick Up/Down (ft): down 0.3'	Well Condition: J-Plug: yes Bolts: yes Lock: none Comments:	
Purge Date: 8.19.19		Purge Time: 1156 - 1217
Purge Method: low flow		Field Technician: LM

Well Volume

A. Well Depth (ft): 29.55	D. Well Volume (ft): 0.092	Depth/Height of Top of PVC: down 0.3'
B. Depth to Water (ft): 4.50	E. Well Volume (gal) C*D): 2.30	Pump Type: peristaltic pump
C. Liquid Depth (ft) (A-B): 25.05	F. Three Well Volumes (gal) (E3): 6.91	Pump Intake Depth: 2 inches off the bottom

Water Quality Parameters

[illegible]

Total Quantity of Water Removed (liters):	5	Sampling Time:	1217
Samplers:	LM	Split Sample With:	NA
Sampling Date:	8.19.19	Sample Type:	Grab GW

COMMENTS AND OBSERVATIONS:

Iron 8.0

Water Quality:

Sheen observed?	none
Odor Observed?	none
Color and turbidity:	clear
Tubing left down well?	none



EA Engineering, P.C.
EA Science and Technology



Department of
Environmental
Conservation

GROUNDWATER SAMPLING PURGE FORM

Well I.D.: TPMW-3	EA Personnel: S. Nelson / L. Mairs	Client: NYSDEC
Location: Clinton West Plaza	Measurement Reference: Top of casing	Weather:
Sounding Method: Heron Skinny dipper WLI	Gauge Date/Time:	Well Diameter (in): 1 inch
Stick Up/Down (ft): down 0.3'	Well Condition: J-Plug: yes Bolts: none Lock: none Comments:	
Purge Date: 8.19.19		Purge Time: 1317 - 1359
Purge Method: low flow		Field Technician: LM

Well Volume

A. Well Depth (ft): 13.45	D. Well Volume (ft): 0.041	Depth/Height of Top of PVC: down 0.3'
B. Depth to Water (ft): 4.01	E. Well Volume (gal) C*D: 0.39	Pump Type: peristaltic pump
C. Liquid Depth (ft) (A-B): 9.44	F. Three Well Volumes (gal) (E3): 1.16	Pump Intake Depth: 2 inches off the bottom

Water Quality Parameters

Time (hrs)	DTW (ft btoc)	Rate (Lpm)	Volume (liters)	Temperature (oC)	pH (pH units)	ORP (mV)	Conductivity (mS/cm)	Turbidity (ntu)	DO (mg/L)
1320	4.65	0.25	0.75	27.10	7.51	-101	0.791	445	1.10
1323	4.58	0.25	1.5	23.88	7.22	-107	0.667	322	0
1326	4.55	0.25	2.25	22.75	7.10	-104	0.505	199	0
1329	4.50	0.25	3.00	22.42	7.00	-106	0.424	158	0
1332	4.52	0.25	3.75	22.17	6.94	-111	0.405	104	0
1335	4.54	0.25	4.50	21.97	6.89	-112	0.403	87.6	0
1338	4.56	0.25	5.25	21.82	6.87	-119	0.403	65.9	0
1341	4.56	0.25	6.00	21.75	6.83	-124	0.404	66.7	0
1344	4.55	0.25	6.75	21.60	6.77	-126	0.407	48.5	0
1347	4.52	0.25	7.50	21.48	6.75	-128	0.409	49	0
1350	4.53	0.25	8.25	21.18	6.88	-133	0.398	40.9	0
1353	4.52	0.25	9.00	21.1	6.87	-135	0.401	37.4	0
1356	4.54	0.25	9.75	21.15	6.89	-138	0.403	36.1	0
1359	4.54	0.25	10.50	21.01	6.89	-142	0.404	38.1	0

Total Quantity of Water Removed (liters): 10.5	Sampling Time: 1359
Samplers: LM	Split Sample With: duplicate
Sampling Date: 8.19.19	Sample Type: grab gw

COMMENTS AND OBSERVATIONS:

iron 6.8
extra 1 liter was collected for Microbial Insights

Water Quality:

Sheen observed? none
Odor Observed? none
Color and turbidity: clear
Tubing left down well? none



EA Engineering, P.C.
EA Science and Technology



Department of
Environmental
Conservation

GROUNDWATER SAMPLING PURGE FORM

Well I.D.: TPMW-4	EA Personnel: S. Nelson / L. Mairs	Client: NYSDEC
Location: Clinton West Plaza	Measurement Reference: Top of casing	Weather: light wind, Sunny, ~85 F
Sounding Method: Heron Skinny dipper WLI	Gauge Date/Time: 8.19.19 - 1035	Well Diameter (in): 1.5 inch
Stick Up/Down (ft): down 0.3'	Well Condition: J-Plug: yes Bolts: none Lock: none Comments:	
Purge Date: 8.19.19		Purge Time: 1327 - 1405
Purge Method: low flow		Field Technician: SN

Well Volume

A. Well Depth (ft): 14.55	D. Well Volume (ft): 0.092	Depth/Height of Top of PVC: down 0.3'
B. Depth to Water (ft): 4.29	E. Well Volume (gal) C*D: 0.94	Pump Type: peristaltic pump
C. Liquid Depth (ft) (A-B): 10.26	F. Three Well Volumes (gal) (E3): 2.83	Pump Intake Depth: 2 inches off the bottom

Water Quality Parameters

Time (hrs)	DTW (ft btoc)	Rate (Lpm)	Volume (liters)	Temperature (oC)	pH (pH units)	ORP (mV)	Conductivity (mS/cm)	Turbidity (ntu)	DO (mg/L)
1327	4.48	0.25	0	23.17	7.05	-124	0.716	125	0
1331	4.50	0.25	1	20.86	7.21	-141	0.474	219	0
1335	4.54	0.25	2	20.07	7.19	-147	0.446	104	0
1339	4.54	0.25	3	19.55	7.15	-147	0.446	105	0
1344	4.54	0.25	4	19.26	7.13	-147	0.446	57	0
1349	4.56	0.25	5	19.00	7.10	-146	0.447	27.9	0
1353	4.58	0.25	6	18.61	7.07	-145	0.448	20.6	0
1357	4.58	0.25	7	18.48	7.06	-144	0.448	8.8	0
1404	4.58	0.25	8	18.35	7.05	-144	0.448	6.8	0
1405	4.58	0.25	9	18.38	7.01	-144	0.446	5.2	0

Total Quantity of Water Removed (liters): 9	Sampling Time: 1405
Samplers: SN	Split Sample With: NA
Sampling Date: 8.19.19	Sample Type: grab gw

COMMENTS AND OBSERVATIONS:

extra 1 liter was collected for Microbial Insights

Water Quality:

Sheen observed?
Odor Observed?
Color and turbidity:
Tubing left down well? No

August 29, 2019

Christopher Schroer
EA Engineering, Science & Tech. - NY
269 W. Jefferson Street
Syracuse, NY 13202

Project Location: Ithaca, NY
Client Job Number:
Project Number: 14907.25
Laboratory Work Order Number: 19H1028

Enclosed are results of analyses for samples received by the laboratory on August 20, 2019. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, reading "Jessica Hoffman", is displayed on a light blue rectangular background.

Jessica L. Hoffman
Project Manager

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

EA Engineering, Science & Tech. - NY
269 W. Jefferson Street
Syracuse, NY 13202
ATTN: Christopher Schroer

REPORT DATE: 8/29/2019

PURCHASE ORDER NUMBER: 1490725

PROJECT NUMBER: 14907.25

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 19H1028

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: Ithaca, NY

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
MMW-02 (MS/MSD)	19H1028-01	Ground Water		EPA 300.0	
				RSK175	
				SM 5310B	
				SW-846 8260C	
MMW-03	19H1028-02	Ground Water		EPA 300.0	
				RSK175	
				SM 5310B	
				SW-846 8260C	
MMW-04	19H1028-03	Ground Water		EPA 300.0	
				RSK175	
				SM 5310B	
				SW-846 8260C	
TPW-3	19H1028-04	Ground Water		EPA 300.0	
				RSK175	
				SM 5310B	
				SW-846 8260C	
TPW-4	19H1028-05	Ground Water		EPA 300.0	
				RSK175	
				SM 5310B	
				SW-846 8260C	
DUP-01	19H1028-06	Ground Water		EPA 300.0	
				RSK175	
				SM 5310B	
				SW-846 8260C	
TPM-2	19H1028-07	Ground Water		EPA 300.0	
				RSK175	
				SM 5310B	
				SW-846 8260C	

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CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

RSK175**Qualifications:**

MS-19

Sample to spike ratio is greater than or equal to 4:1. Spiked amount is not representative of the native amount in the sample. Appropriate or meaningful recoveries cannot be calculated.

Analyte & Samples(s) Qualified:**Methane**

B239135-MS1, B239135-MSD1

SM 5310B**Qualifications:**

W-18

Test replicates show more than 10% difference between values.

Analyte & Samples(s) Qualified:**Total Organic Carbon**

19H1028-02[MMW-03], 19H1028-03[MMW-04], 19H1028-04[TPW-3], 19H1028-05[TPW-4], 19H1028-06[DUP-01], 19H1028-07[TPM-2], B238691-DUP1, B238691-MS1

SW-846 8260C**Qualifications:**

MS-10

Matrix spike recovery is outside of control limits. Compound is classified as a "difficult analyte" and reduced accuracy is anticipated for spike recoveries. Wider limits are used for laboratory fortified blank control samples.

Analyte & Samples(s) Qualified:**Dichlorodifluoromethane (Freon 12)**

19H1028-01[MMW-02 (MS/MSD)], B238530-MS1, B238530-MSD1

RL-11

Elevated reporting limit due to high concentration of target compounds.

Analyte & Samples(s) Qualified:

19H1028-04[TPW-3], 19H1028-06[DUP-01]

V-20

Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.

Analyte & Samples(s) Qualified:**Bromomethane**

B238530-BS1, B238530-BSD1, B238530-MS1, B238530-MSD1, S039444-CCV1

Chloromethane

B238530-BS1, B238530-BSD1, B238530-MS1, B238530-MSD1, S039444-CCV1

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.

I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

A handwritten signature in black ink, appearing to read "Lisa Worthington", is written over a light pink rectangular background.

Lisa A. Worthington
Technical Representative

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1028

Date Received: 8/20/2019

Field Sample #: MMW-02 (MS/MSD)

Sampled: 8/19/2019 10:47

Sample ID: 19H1028-01

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	50	3.8	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Acrylonitrile	ND	5.0	0.52	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
tert-Amyl Methyl Ether (TAME)	ND	0.50	0.14	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Benzene	ND	1.0	0.18	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Bromobenzene	ND	1.0	0.15	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Bromochloromethane	ND	1.0	0.32	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Bromodichloromethane	ND	0.50	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Bromoform	ND	1.0	0.46	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Bromomethane	ND	2.0	0.78	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
2-Butanone (MEK)	ND	20	1.9	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
tert-Butyl Alcohol (TBA)	ND	20	4.2	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
n-Butylbenzene	ND	1.0	0.21	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
sec-Butylbenzene	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
tert-Butylbenzene	ND	1.0	0.17	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
tert-Butyl Ethyl Ether (TBEE)	ND	0.50	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Carbon Disulfide	ND	5.0	4.4	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Carbon Tetrachloride	ND	5.0	0.11	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Chlorobenzene	ND	1.0	0.15	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Chlorodibromomethane	ND	0.50	0.21	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Chloroethane	ND	2.0	0.35	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Chloroform	ND	2.0	0.17	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Chloromethane	ND	2.0	0.45	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
2-Chlorotoluene	ND	1.0	0.12	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
4-Chlorotoluene	ND	1.0	0.14	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	0.53	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
1,2-Dibromoethane (EDB)	ND	0.50	0.19	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Dibromomethane	ND	1.0	0.37	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
1,2-Dichlorobenzene	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
1,3-Dichlorobenzene	ND	1.0	0.12	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
1,4-Dichlorobenzene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
trans-1,4-Dichloro-2-butene	ND	2.0	0.31	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Dichlorodifluoromethane (Freon 12)	ND	2.0	0.26	µg/L	1	MS-10	SW-846 8260C	8/21/19	8/21/19 16:03	EEH
1,1-Dichloroethane	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
1,2-Dichloroethane	ND	1.0	0.41	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
1,1-Dichloroethylene	ND	1.0	0.32	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
cis-1,2-Dichloroethylene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
trans-1,2-Dichloroethylene	ND	1.0	0.31	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
1,2-Dichloropropane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
1,3-Dichloropropane	ND	0.50	0.11	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
2,2-Dichloropropane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
1,1-Dichloropropene	ND	2.0	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
cis-1,3-Dichloropropene	ND	0.50	0.13	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
trans-1,3-Dichloropropene	ND	0.50	0.23	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Diethyl Ether	ND	2.0	0.34	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1028

Date Received: 8/20/2019

Field Sample #: MMW-02 (MS/MSD)

Sampled: 8/19/2019 10:47

Sample ID: 19H1028-01

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Diisopropyl Ether (DIPE)	ND	0.50	0.17	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
1,4-Dioxane	ND	50	22	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Ethylbenzene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Hexachlorobutadiene	ND	0.60	0.47	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
2-Hexanone (MBK)	ND	10	1.5	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Isopropylbenzene (Cumene)	ND	1.0	0.17	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
p-Isopropyltoluene (p-Cymene)	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Methyl Acetate	ND	1.0	0.42	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Methyl tert-Butyl Ether (MTBE)	ND	1.0	0.25	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Methyl Cyclohexane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Methylene Chloride	ND	5.0	0.34	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
4-Methyl-2-pentanone (MIBK)	ND	10	1.7	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Naphthalene	ND	2.0	0.31	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
n-Propylbenzene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Styrene	ND	1.0	0.11	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
1,1,1,2-Tetrachloroethane	ND	1.0	0.27	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
1,1,2,2-Tetrachloroethane	ND	0.50	0.22	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Tetrachloroethylene	ND	1.0	0.18	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Tetrahydrofuran	ND	10	0.51	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Toluene	ND	1.0	0.14	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
1,2,3-Trichlorobenzene	ND	5.0	0.57	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
1,2,4-Trichlorobenzene	ND	1.0	0.40	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
1,3,5-Trichlorobenzene	ND	1.0	0.30	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
1,1,1-Trichloroethane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
1,1,2-Trichloroethane	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Trichloroethylene	ND	1.0	0.24	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Trichlorofluoromethane (Freon 11)	ND	2.0	0.33	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
1,2,3-Trichloropropane	ND	2.0	0.25	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	1.0	0.32	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
1,2,4-Trimethylbenzene	ND	1.0	0.18	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
1,3,5-Trimethylbenzene	ND	1.0	0.14	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Vinyl Chloride	ND	2.0	0.45	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
m+p Xylene	ND	2.0	0.30	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
o-Xylene	ND	1.0	0.17	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
1,2-Dichloroethane-d4	100		70-130				8/21/19 16:03			
Toluene-d8	97.2		70-130				8/21/19 16:03			
4-Bromofluorobenzene	96.6		70-130				8/21/19 16:03			

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Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1028

Date Received: 8/20/2019

Field Sample #: MMW-02 (MS/MSD)

Sampled: 8/19/2019 10:47

Sample ID: 19H1028-01

Sample Matrix: Ground Water

Miscellaneous Organic Analyses

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Ethane	0.033	0.014	0.0078	mg/L	1		RSK175	8/27/19	8/27/19 11:07	TPH
Ethene	ND	0.017	0.0092	mg/L	1		RSK175	8/27/19	8/27/19 11:07	TPH
Methane	18	0.070	0.022	mg/L	10		RSK175	8/27/19	8/27/19 11:17	TPH

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Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1028

Date Received: 8/20/2019

Field Sample #: MMW-02 (MS/MSD)

Sampled: 8/19/2019 10:47

Sample ID: 19H1028-01

Sample Matrix: Ground Water

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Nitrate as N	0.084	0.10	0.028	mg/L	1	J	EPA 300.0	8/21/19	8/21/19 1:56	IS
Nitrite as N	ND	0.100	0.0240	mg/L	1		EPA 300.0	8/21/19	8/21/19 1:56	IS
Sulfate	0.45	1.0	0.12	mg/L	1	J	EPA 300.0	8/21/19	8/21/19 1:56	IS
Total Organic Carbon	34	1.0	0.73	mg/L	1		SM 5310B	8/21/19	8/21/19 22:43	DJM

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Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1028

Date Received: 8/20/2019

Field Sample #: MMW-03

Sampled: 8/19/2019 12:34

Sample ID: 19H1028-02

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	8.7	50	3.8	µg/L	1	J	SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Acrylonitrile	ND	5.0	0.52	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
tert-Amyl Methyl Ether (TAME)	ND	0.50	0.14	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Benzene	ND	1.0	0.18	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Bromobenzene	ND	1.0	0.15	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Bromochloromethane	ND	1.0	0.32	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Bromodichloromethane	ND	0.50	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Bromoform	ND	1.0	0.46	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Bromomethane	ND	2.0	0.78	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
2-Butanone (MEK)	ND	20	1.9	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
tert-Butyl Alcohol (TBA)	ND	20	4.2	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
n-Butylbenzene	ND	1.0	0.21	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
sec-Butylbenzene	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
tert-Butylbenzene	ND	1.0	0.17	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
tert-Butyl Ethyl Ether (TBEE)	ND	0.50	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Carbon Disulfide	ND	5.0	4.4	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Carbon Tetrachloride	ND	5.0	0.11	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Chlorobenzene	ND	1.0	0.15	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Chlorodibromomethane	ND	0.50	0.21	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Chloroethane	ND	2.0	0.35	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Chloroform	ND	2.0	0.17	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Chloromethane	ND	2.0	0.45	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
2-Chlorotoluene	ND	1.0	0.12	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
4-Chlorotoluene	ND	1.0	0.14	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	0.53	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
1,2-Dibromoethane (EDB)	ND	0.50	0.19	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Dibromomethane	ND	1.0	0.37	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
1,2-Dichlorobenzene	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
1,3-Dichlorobenzene	ND	1.0	0.12	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
1,4-Dichlorobenzene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
trans-1,4-Dichloro-2-butene	ND	2.0	0.31	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Dichlorodifluoromethane (Freon 12)	ND	2.0	0.26	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
1,1-Dichloroethane	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
1,2-Dichloroethane	ND	1.0	0.41	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
1,1-Dichloroethylene	ND	1.0	0.32	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
cis-1,2-Dichloroethylene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
trans-1,2-Dichloroethylene	ND	1.0	0.31	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
1,2-Dichloropropane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
1,3-Dichloropropane	ND	0.50	0.11	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
2,2-Dichloropropane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
1,1-Dichloropropene	ND	2.0	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
cis-1,3-Dichloropropene	ND	0.50	0.13	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
trans-1,3-Dichloropropene	ND	0.50	0.23	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Diethyl Ether	ND	2.0	0.34	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH

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Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1028

Date Received: 8/20/2019

Field Sample #: MMW-03

Sampled: 8/19/2019 12:34

Sample ID: 19H1028-02

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Diisopropyl Ether (DIPE)	ND	0.50	0.17	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
1,4-Dioxane	ND	50	22	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Ethylbenzene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Hexachlorobutadiene	ND	0.60	0.47	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
2-Hexanone (MBK)	ND	10	1.5	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Isopropylbenzene (Cumene)	ND	1.0	0.17	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
p-Isopropyltoluene (p-Cymene)	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Methyl Acetate	ND	1.0	0.42	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Methyl tert-Butyl Ether (MTBE)	ND	1.0	0.25	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Methyl Cyclohexane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Methylene Chloride	ND	5.0	0.34	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
4-Methyl-2-pentanone (MIBK)	ND	10	1.7	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Naphthalene	ND	2.0	0.31	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
n-Propylbenzene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Styrene	ND	1.0	0.11	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
1,1,1,2-Tetrachloroethane	ND	1.0	0.27	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
1,1,2,2-Tetrachloroethane	ND	0.50	0.22	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Tetrachloroethylene	ND	1.0	0.18	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Tetrahydrofuran	ND	10	0.51	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Toluene	0.77	1.0	0.14	µg/L	1	J	SW-846 8260C	8/21/19	8/21/19 16:29	EEH
1,2,3-Trichlorobenzene	ND	5.0	0.57	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
1,2,4-Trichlorobenzene	ND	1.0	0.40	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
1,3,5-Trichlorobenzene	ND	1.0	0.30	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
1,1,1-Trichloroethane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
1,1,2-Trichloroethane	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Trichloroethylene	ND	1.0	0.24	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Trichlorofluoromethane (Freon 11)	ND	2.0	0.33	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
1,2,3-Trichloropropane	ND	2.0	0.25	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	1.0	0.32	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
1,2,4-Trimethylbenzene	ND	1.0	0.18	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
1,3,5-Trimethylbenzene	ND	1.0	0.14	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Vinyl Chloride	ND	2.0	0.45	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
m+p Xylene	ND	2.0	0.30	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
o-Xylene	ND	1.0	0.17	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
1,2-Dichloroethane-d4	101		70-130				8/21/19 16:29			
Toluene-d8	99.7		70-130				8/21/19 16:29			
4-Bromofluorobenzene	98.2		70-130				8/21/19 16:29			

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Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1028

Date Received: 8/20/2019

Field Sample #: MMW-03

Sampled: 8/19/2019 12:34

Sample ID: 19H1028-02

Sample Matrix: Ground Water

Miscellaneous Organic Analyses

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Ethane	0.017	0.014	0.0078	mg/L	1		RSK175	8/27/19	8/27/19 11:53	TPH
Ethene	ND	0.017	0.0092	mg/L	1		RSK175	8/27/19	8/27/19 11:53	TPH
Methane	9.1	0.035	0.011	mg/L	5		RSK175	8/27/19	8/27/19 12:18	TPH

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Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1028

Date Received: 8/20/2019

Field Sample #: MMW-03

Sampled: 8/19/2019 12:34

Sample ID: 19H1028-02

Sample Matrix: Ground Water

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Nitrate as N	0.62	0.10	0.028	mg/L	1		EPA 300.0	8/21/19	8/21/19 4:46	IS
Nitrite as N	0.0790	0.100	0.0240	mg/L	1	J	EPA 300.0	8/21/19	8/21/19 4:46	IS
Sulfate	0.50	1.0	0.12	mg/L	1	J	EPA 300.0	8/21/19	8/21/19 4:46	IS
Total Organic Carbon	22	1.0	0.73	mg/L	1	W-18	SM 5310B	8/21/19	8/21/19 23:35	DJM

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Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1028

Date Received: 8/20/2019

Field Sample #: MMW-04

Sampled: 8/19/2019 10:17

Sample ID: 19H1028-03

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	11	50	3.8	µg/L	1	J	SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Acrylonitrile	ND	5.0	0.52	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
tert-Amyl Methyl Ether (TAME)	ND	0.50	0.14	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Benzene	ND	1.0	0.18	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Bromobenzene	ND	1.0	0.15	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Bromochloromethane	ND	1.0	0.32	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Bromodichloromethane	ND	0.50	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Bromoform	ND	1.0	0.46	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Bromomethane	ND	2.0	0.78	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
2-Butanone (MEK)	ND	20	1.9	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
tert-Butyl Alcohol (TBA)	ND	20	4.2	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
n-Butylbenzene	ND	1.0	0.21	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
sec-Butylbenzene	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
tert-Butylbenzene	ND	1.0	0.17	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
tert-Butyl Ethyl Ether (TBEE)	ND	0.50	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Carbon Disulfide	ND	5.0	4.4	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Carbon Tetrachloride	ND	5.0	0.11	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Chlorobenzene	ND	1.0	0.15	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Chlorodibromomethane	ND	0.50	0.21	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Chloroethane	ND	2.0	0.35	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Chloroform	ND	2.0	0.17	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Chloromethane	ND	2.0	0.45	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
2-Chlorotoluene	ND	1.0	0.12	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
4-Chlorotoluene	ND	1.0	0.14	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	0.53	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
1,2-Dibromoethane (EDB)	ND	0.50	0.19	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Dibromomethane	ND	1.0	0.37	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
1,2-Dichlorobenzene	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
1,3-Dichlorobenzene	ND	1.0	0.12	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
1,4-Dichlorobenzene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
trans-1,4-Dichloro-2-butene	ND	2.0	0.31	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Dichlorodifluoromethane (Freon 12)	ND	2.0	0.26	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
1,1-Dichloroethane	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
1,2-Dichloroethane	ND	1.0	0.41	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
1,1-Dichloroethylene	ND	1.0	0.32	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
cis-1,2-Dichloroethylene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
trans-1,2-Dichloroethylene	ND	1.0	0.31	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
1,2-Dichloropropane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
1,3-Dichloropropane	ND	0.50	0.11	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
2,2-Dichloropropane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
1,1-Dichloropropene	ND	2.0	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
cis-1,3-Dichloropropene	ND	0.50	0.13	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
trans-1,3-Dichloropropene	ND	0.50	0.23	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Diethyl Ether	ND	2.0	0.34	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1028

Date Received: 8/20/2019

Field Sample #: MMW-04

Sampled: 8/19/2019 10:17

Sample ID: 19H1028-03

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Diisopropyl Ether (DIPE)	ND	0.50	0.17	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
1,4-Dioxane	ND	50	22	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Ethylbenzene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Hexachlorobutadiene	ND	0.60	0.47	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
2-Hexanone (MBK)	ND	10	1.5	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Isopropylbenzene (Cumene)	ND	1.0	0.17	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
p-Isopropyltoluene (p-Cymene)	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Methyl Acetate	ND	1.0	0.42	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Methyl tert-Butyl Ether (MTBE)	ND	1.0	0.25	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Methyl Cyclohexane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Methylene Chloride	ND	5.0	0.34	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
4-Methyl-2-pentanone (MIBK)	ND	10	1.7	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Naphthalene	ND	2.0	0.31	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
n-Propylbenzene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Styrene	ND	1.0	0.11	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
1,1,1,2-Tetrachloroethane	ND	1.0	0.27	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
1,1,2,2-Tetrachloroethane	ND	0.50	0.22	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Tetrachloroethylene	ND	1.0	0.18	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Tetrahydrofuran	ND	10	0.51	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Toluene	ND	1.0	0.14	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
1,2,3-Trichlorobenzene	ND	5.0	0.57	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
1,2,4-Trichlorobenzene	ND	1.0	0.40	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
1,3,5-Trichlorobenzene	ND	1.0	0.30	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
1,1,1-Trichloroethane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
1,1,2-Trichloroethane	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Trichloroethylene	ND	1.0	0.24	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Trichlorofluoromethane (Freon 11)	ND	2.0	0.33	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
1,2,3-Trichloropropane	ND	2.0	0.25	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	1.0	0.32	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
1,2,4-Trimethylbenzene	ND	1.0	0.18	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
1,3,5-Trimethylbenzene	ND	1.0	0.14	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Vinyl Chloride	ND	2.0	0.45	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
m+p Xylene	ND	2.0	0.30	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
o-Xylene	ND	1.0	0.17	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Surrogates	% Recovery	Recovery Limits		Flag/Qual						
1,2-Dichloroethane-d4	101	70-130								
Toluene-d8	96.7	70-130								
4-Bromofluorobenzene	95.8	70-130								

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1028

Date Received: 8/20/2019

Field Sample #: MMW-04

Sampled: 8/19/2019 10:17

Sample ID: 19H1028-03

Sample Matrix: Ground Water

Miscellaneous Organic Analyses

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Ethane	ND	0.014	0.0078	mg/L	1		RSK175	8/27/19	8/27/19 12:28	TPH
Ethene	ND	0.017	0.0092	mg/L	1		RSK175	8/27/19	8/27/19 12:28	TPH
Methane	14	0.070	0.022	mg/L	10		RSK175	8/27/19	8/27/19 12:41	TPH

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Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1028

Date Received: 8/20/2019

Field Sample #: MMW-04

Sampled: 8/19/2019 10:17

Sample ID: 19H1028-03

Sample Matrix: Ground Water

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Nitrate as N	0.085	0.10	0.028	mg/L	1	J	EPA 300.0	8/21/19	8/21/19 1:32	IS
Nitrite as N	0.0249	0.100	0.0240	mg/L	1	J	EPA 300.0	8/21/19	8/21/19 1:32	IS
Sulfate	0.67	1.0	0.12	mg/L	1	J	EPA 300.0	8/21/19	8/21/19 1:32	IS
Total Organic Carbon	20	1.0	0.73	mg/L	1	W-18	SM 5310B	8/21/19	8/21/19 23:53	DJM

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Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1028

Date Received: 8/20/2019

Field Sample #: TPW-3

Sampled: 8/19/2019 13:59

Sample ID: 19H1028-04

Sample Matrix: Ground Water

Sample Flags: RL-11

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	25	200	15	µg/L	4	J	SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Acrylonitrile	ND	20	2.1	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
tert-Amyl Methyl Ether (TAME)	ND	2.0	0.56	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Benzene	ND	4.0	0.72	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Bromobenzene	ND	4.0	0.60	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Bromochloromethane	ND	4.0	1.3	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Bromodichloromethane	ND	2.0	0.64	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Bromoform	ND	4.0	1.8	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Bromomethane	ND	8.0	3.1	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
2-Butanone (MEK)	ND	80	7.8	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
tert-Butyl Alcohol (TBA)	ND	80	17	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
n-Butylbenzene	ND	4.0	0.84	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
sec-Butylbenzene	ND	4.0	0.64	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
tert-Butylbenzene	ND	4.0	0.68	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
tert-Butyl Ethyl Ether (TBEE)	ND	2.0	0.64	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Carbon Disulfide	ND	20	18	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Carbon Tetrachloride	ND	20	0.44	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Chlorobenzene	ND	4.0	0.60	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Chlorodibromomethane	ND	2.0	0.84	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Chloroethane	ND	8.0	1.4	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Chloroform	ND	8.0	0.68	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Chloromethane	ND	8.0	1.8	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
2-Chlorotoluene	ND	4.0	0.48	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
4-Chlorotoluene	ND	4.0	0.56	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
1,2-Dibromo-3-chloropropane (DBCP)	ND	20	2.1	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
1,2-Dibromoethane (EDB)	ND	2.0	0.76	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Dibromomethane	ND	4.0	1.5	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
1,2-Dichlorobenzene	ND	4.0	0.64	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
1,3-Dichlorobenzene	ND	4.0	0.48	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
1,4-Dichlorobenzene	ND	4.0	0.52	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
trans-1,4-Dichloro-2-butene	ND	8.0	1.2	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Dichlorodifluoromethane (Freon 12)	ND	8.0	1.0	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
1,1-Dichloroethane	ND	4.0	0.64	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
1,2-Dichloroethane	ND	4.0	1.6	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
1,1-Dichloroethylene	1.4	4.0	1.3	µg/L	4	J	SW-846 8260C	8/21/19	8/21/19 22:13	EEH
cis-1,2-Dichloroethylene	390	4.0	0.52	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
trans-1,2-Dichloroethylene	1.8	4.0	1.2	µg/L	4	J	SW-846 8260C	8/21/19	8/21/19 22:13	EEH
1,2-Dichloropropane	ND	4.0	0.80	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
1,3-Dichloropropane	ND	2.0	0.44	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
2,2-Dichloropropane	ND	4.0	0.80	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
1,1-Dichloropropene	ND	8.0	0.64	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
cis-1,3-Dichloropropene	ND	2.0	0.52	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
trans-1,3-Dichloropropene	ND	2.0	0.92	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Diethyl Ether	ND	8.0	1.4	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1028

Date Received: 8/20/2019

Field Sample #: TPW-3

Sampled: 8/19/2019 13:59

Sample ID: 19H1028-04

Sample Matrix: Ground Water

Sample Flags: RL-11

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Diisopropyl Ether (DIPE)	ND	2.0	0.68	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
1,4-Dioxane	ND	200	90	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Ethylbenzene	ND	4.0	0.52	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Hexachlorobutadiene	ND	2.4	1.9	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
2-Hexanone (MBK)	ND	40	6.1	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Isopropylbenzene (Cumene)	ND	4.0	0.68	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
p-Isopropyltoluene (p-Cymene)	ND	4.0	0.80	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Methyl Acetate	ND	4.0	1.7	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Methyl tert-Butyl Ether (MTBE)	ND	4.0	1.0	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Methyl Cyclohexane	ND	4.0	0.80	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Methylene Chloride	ND	20	1.4	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
4-Methyl-2-pentanone (MIBK)	ND	40	6.7	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Naphthalene	ND	8.0	1.2	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
n-Propylbenzene	ND	4.0	0.52	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Styrene	ND	4.0	0.44	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
1,1,1,2-Tetrachloroethane	ND	4.0	1.1	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
1,1,2,2-Tetrachloroethane	ND	2.0	0.88	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Tetrachloroethylene	ND	4.0	0.72	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Tetrahydrofuran	ND	40	2.0	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Toluene	ND	4.0	0.56	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
1,2,3-Trichlorobenzene	ND	20	2.3	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
1,2,4-Trichlorobenzene	ND	4.0	1.6	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
1,3,5-Trichlorobenzene	ND	4.0	1.2	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
1,1,1-Trichloroethane	ND	4.0	0.80	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
1,1,2-Trichloroethane	ND	4.0	0.64	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Trichloroethylene	1.1	4.0	0.96	µg/L	4	J	SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Trichlorofluoromethane (Freon 11)	ND	8.0	1.3	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
1,2,3-Trichloropropane	ND	8.0	1.0	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	4.0	1.3	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
1,2,4-Trimethylbenzene	ND	4.0	0.72	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
1,3,5-Trimethylbenzene	ND	4.0	0.56	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Vinyl Chloride	260	8.0	1.8	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
m+p Xylene	ND	8.0	1.2	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
o-Xylene	ND	4.0	0.68	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
1,2-Dichloroethane-d4	105		70-130				8/21/19 22:13			
Toluene-d8	98.3		70-130				8/21/19 22:13			
4-Bromofluorobenzene	94.7		70-130				8/21/19 22:13			

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Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1028

Date Received: 8/20/2019

Field Sample #: TPW-3

Sampled: 8/19/2019 13:59

Sample ID: 19H1028-04

Sample Matrix: Ground Water

Miscellaneous Organic Analyses

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Ethane	0.31	0.014	0.0078	mg/L	1		RSK175	8/27/19	8/27/19 12:53	TPH
Ethene	0.30	0.017	0.0092	mg/L	1		RSK175	8/27/19	8/27/19 12:53	TPH
Methane	5.3	0.0070	0.0022	mg/L	1		RSK175	8/27/19	8/27/19 12:53	TPH

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1028

Date Received: 8/20/2019

Field Sample #: TPW-3

Sampled: 8/19/2019 13:59

Sample ID: 19H1028-04

Sample Matrix: Ground Water

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Nitrate as N	0.051	0.10	0.028	mg/L	1	J	EPA 300.0	8/21/19	8/21/19 6:48	IS
Nitrite as N	ND	0.100	0.0240	mg/L	1		EPA 300.0	8/21/19	8/21/19 6:48	IS
Sulfate	1.5	1.0	0.12	mg/L	1		EPA 300.0	8/21/19	8/21/19 6:48	IS
Total Organic Carbon	7.5	1.0	0.73	mg/L	1	W-18	SM 5310B	8/23/19	8/23/19 14:11	KMV

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Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1028

Date Received: 8/20/2019

Field Sample #: TPW-4

Sampled: 8/19/2019 14:05

Sample ID: 19H1028-05

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	50	3.8	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Acrylonitrile	ND	5.0	0.52	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
tert-Amyl Methyl Ether (TAME)	ND	0.50	0.14	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Benzene	ND	1.0	0.18	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Bromobenzene	ND	1.0	0.15	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Bromochloromethane	ND	1.0	0.32	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Bromodichloromethane	ND	0.50	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Bromoform	ND	1.0	0.46	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Bromomethane	ND	2.0	0.78	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
2-Butanone (MEK)	ND	20	1.9	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
tert-Butyl Alcohol (TBA)	ND	20	4.2	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
n-Butylbenzene	ND	1.0	0.21	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
sec-Butylbenzene	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
tert-Butylbenzene	ND	1.0	0.17	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
tert-Butyl Ethyl Ether (TBEE)	ND	0.50	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Carbon Disulfide	ND	5.0	4.4	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Carbon Tetrachloride	ND	5.0	0.11	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Chlorobenzene	ND	1.0	0.15	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Chlorodibromomethane	ND	0.50	0.21	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Chloroethane	ND	2.0	0.35	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Chloroform	ND	2.0	0.17	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Chloromethane	ND	2.0	0.45	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
2-Chlorotoluene	ND	1.0	0.12	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
4-Chlorotoluene	ND	1.0	0.14	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	0.53	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
1,2-Dibromoethane (EDB)	ND	0.50	0.19	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Dibromomethane	ND	1.0	0.37	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
1,2-Dichlorobenzene	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
1,3-Dichlorobenzene	ND	1.0	0.12	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
1,4-Dichlorobenzene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
trans-1,4-Dichloro-2-butene	ND	2.0	0.31	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Dichlorodifluoromethane (Freon 12)	ND	2.0	0.26	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
1,1-Dichloroethane	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
1,2-Dichloroethane	ND	1.0	0.41	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
1,1-Dichloroethylene	ND	1.0	0.32	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
cis-1,2-Dichloroethylene	13	1.0	0.13	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
trans-1,2-Dichloroethylene	ND	1.0	0.31	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
1,2-Dichloropropane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
1,3-Dichloropropane	ND	0.50	0.11	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
2,2-Dichloropropane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
1,1-Dichloropropene	ND	2.0	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
cis-1,3-Dichloropropene	ND	0.50	0.13	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
trans-1,3-Dichloropropene	ND	0.50	0.23	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Diethyl Ether	ND	2.0	0.34	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1028

Date Received: 8/20/2019

Field Sample #: TPW-4

Sampled: 8/19/2019 14:05

Sample ID: 19H1028-05

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Diisopropyl Ether (DIPE)	ND	0.50	0.17	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
1,4-Dioxane	ND	50	22	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Ethylbenzene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Hexachlorobutadiene	ND	0.60	0.47	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
2-Hexanone (MBK)	ND	10	1.5	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Isopropylbenzene (Cumene)	ND	1.0	0.17	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
p-Isopropyltoluene (p-Cymene)	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Methyl Acetate	ND	1.0	0.42	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Methyl tert-Butyl Ether (MTBE)	ND	1.0	0.25	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Methyl Cyclohexane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Methylene Chloride	ND	5.0	0.34	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
4-Methyl-2-pentanone (MIBK)	ND	10	1.7	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Naphthalene	ND	2.0	0.31	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
n-Propylbenzene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Styrene	ND	1.0	0.11	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
1,1,1,2-Tetrachloroethane	ND	1.0	0.27	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
1,1,2,2-Tetrachloroethane	ND	0.50	0.22	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Tetrachloroethylene	ND	1.0	0.18	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Tetrahydrofuran	ND	10	0.51	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Toluene	0.14	1.0	0.14	µg/L	1	J	SW-846 8260C	8/21/19	8/21/19 17:22	EEH
1,2,3-Trichlorobenzene	ND	5.0	0.57	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
1,2,4-Trichlorobenzene	ND	1.0	0.40	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
1,3,5-Trichlorobenzene	ND	1.0	0.30	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
1,1,1-Trichloroethane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
1,1,2-Trichloroethane	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Trichloroethylene	ND	1.0	0.24	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Trichlorofluoromethane (Freon 11)	ND	2.0	0.33	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
1,2,3-Trichloropropane	ND	2.0	0.25	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	1.0	0.32	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
1,2,4-Trimethylbenzene	ND	1.0	0.18	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
1,3,5-Trimethylbenzene	ND	1.0	0.14	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Vinyl Chloride	52	2.0	0.45	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
m+p Xylene	ND	2.0	0.30	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
o-Xylene	ND	1.0	0.17	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
1,2-Dichloroethane-d4	102		70-130				8/21/19 17:22			
Toluene-d8	99.9		70-130				8/21/19 17:22			
4-Bromofluorobenzene	94.6		70-130				8/21/19 17:22			

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1028

Date Received: 8/20/2019

Field Sample #: TPW-4

Sampled: 8/19/2019 14:05

Sample ID: 19H1028-05

Sample Matrix: Ground Water

Miscellaneous Organic Analyses

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Ethane	0.49	0.014	0.0078	mg/L	1		RSK175	8/27/19	8/27/19 13:24	TPH
Ethene	0.17	0.017	0.0092	mg/L	1		RSK175	8/27/19	8/27/19 13:24	TPH
Methane	8.3	0.035	0.011	mg/L	5		RSK175	8/27/19	8/27/19 13:35	TPH

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Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1028

Date Received: 8/20/2019

Field Sample #: TPW-4

Sampled: 8/19/2019 14:05

Sample ID: 19H1028-05

Sample Matrix: Ground Water

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Nitrate as N	0.071	0.10	0.028	mg/L	1	J	EPA 300.0	8/21/19	8/21/19 9:11	IS
Nitrite as N	0.0263	0.100	0.0240	mg/L	1	J	EPA 300.0	8/21/19	8/21/19 9:11	IS
Sulfate	1.1	1.0	0.12	mg/L	1		EPA 300.0	8/21/19	8/21/19 9:11	IS
Total Organic Carbon	9.0	1.0	0.73	mg/L	1	W-18	SM 5310B	8/23/19	8/23/19 14:28	KMV

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Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1028

Date Received: 8/20/2019

Field Sample #: DUP-01

Sampled: 8/19/2019 00:00

Sample ID: 19H1028-06

Sample Matrix: Ground Water

Sample Flags: RL-11

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	21	200	15	µg/L	4	J	SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Acrylonitrile	ND	20	2.1	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
tert-Amyl Methyl Ether (TAME)	ND	2.0	0.56	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Benzene	ND	4.0	0.72	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Bromobenzene	ND	4.0	0.60	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Bromochloromethane	ND	4.0	1.3	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Bromodichloromethane	ND	2.0	0.64	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Bromoform	ND	4.0	1.8	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Bromomethane	ND	8.0	3.1	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
2-Butanone (MEK)	ND	80	7.8	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
tert-Butyl Alcohol (TBA)	ND	80	17	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
n-Butylbenzene	ND	4.0	0.84	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
sec-Butylbenzene	ND	4.0	0.64	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
tert-Butylbenzene	ND	4.0	0.68	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
tert-Butyl Ethyl Ether (TBEE)	ND	2.0	0.64	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Carbon Disulfide	ND	20	18	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Carbon Tetrachloride	ND	20	0.44	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Chlorobenzene	ND	4.0	0.60	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Chlorodibromomethane	ND	2.0	0.84	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Chloroethane	ND	8.0	1.4	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Chloroform	ND	8.0	0.68	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Chloromethane	ND	8.0	1.8	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
2-Chlorotoluene	ND	4.0	0.48	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
4-Chlorotoluene	ND	4.0	0.56	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
1,2-Dibromo-3-chloropropane (DBCP)	ND	20	2.1	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
1,2-Dibromoethane (EDB)	ND	2.0	0.76	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Dibromomethane	ND	4.0	1.5	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
1,2-Dichlorobenzene	ND	4.0	0.64	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
1,3-Dichlorobenzene	ND	4.0	0.48	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
1,4-Dichlorobenzene	ND	4.0	0.52	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
trans-1,4-Dichloro-2-butene	ND	8.0	1.2	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Dichlorodifluoromethane (Freon 12)	ND	8.0	1.0	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
1,1-Dichloroethane	ND	4.0	0.64	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
1,2-Dichloroethane	ND	4.0	1.6	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
1,1-Dichloroethylene	1.5	4.0	1.3	µg/L	4	J	SW-846 8260C	8/21/19	8/21/19 22:39	EEH
cis-1,2-Dichloroethylene	430	4.0	0.52	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
trans-1,2-Dichloroethylene	2.0	4.0	1.2	µg/L	4	J	SW-846 8260C	8/21/19	8/21/19 22:39	EEH
1,2-Dichloropropane	ND	4.0	0.80	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
1,3-Dichloropropane	ND	2.0	0.44	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
2,2-Dichloropropane	ND	4.0	0.80	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
1,1-Dichloropropene	ND	8.0	0.64	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
cis-1,3-Dichloropropene	ND	2.0	0.52	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
trans-1,3-Dichloropropene	ND	2.0	0.92	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Diethyl Ether	ND	8.0	1.4	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1028

Date Received: 8/20/2019

Field Sample #: DUP-01

Sampled: 8/19/2019 00:00

Sample ID: 19H1028-06

Sample Matrix: Ground Water

Sample Flags: RL-11

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Diisopropyl Ether (DIPE)	ND	2.0	0.68	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
1,4-Dioxane	ND	200	90	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Ethylbenzene	ND	4.0	0.52	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Hexachlorobutadiene	ND	2.4	1.9	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
2-Hexanone (MBK)	ND	40	6.1	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Isopropylbenzene (Cumene)	ND	4.0	0.68	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
p-Isopropyltoluene (p-Cymene)	ND	4.0	0.80	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Methyl Acetate	ND	4.0	1.7	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Methyl tert-Butyl Ether (MTBE)	ND	4.0	1.0	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Methyl Cyclohexane	ND	4.0	0.80	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Methylene Chloride	ND	20	1.4	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
4-Methyl-2-pentanone (MIBK)	ND	40	6.7	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Naphthalene	ND	8.0	1.2	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
n-Propylbenzene	ND	4.0	0.52	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Styrene	ND	4.0	0.44	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
1,1,1,2-Tetrachloroethane	ND	4.0	1.1	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
1,1,2,2-Tetrachloroethane	ND	2.0	0.88	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Tetrachloroethylene	ND	4.0	0.72	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Tetrahydrofuran	ND	40	2.0	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Toluene	ND	4.0	0.56	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
1,2,3-Trichlorobenzene	ND	20	2.3	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
1,2,4-Trichlorobenzene	ND	4.0	1.6	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
1,3,5-Trichlorobenzene	ND	4.0	1.2	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
1,1,1-Trichloroethane	ND	4.0	0.80	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
1,1,2-Trichloroethane	ND	4.0	0.64	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Trichloroethylene	1.4	4.0	0.96	µg/L	4	J	SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Trichlorofluoromethane (Freon 11)	ND	8.0	1.3	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
1,2,3-Trichloropropane	ND	8.0	1.0	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	4.0	1.3	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
1,2,4-Trimethylbenzene	ND	4.0	0.72	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
1,3,5-Trimethylbenzene	ND	4.0	0.56	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Vinyl Chloride	290	8.0	1.8	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
m+p Xylene	ND	8.0	1.2	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
o-Xylene	ND	4.0	0.68	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
1,2-Dichloroethane-d4	104		70-130				8/21/19 22:39			
Toluene-d8	100		70-130				8/21/19 22:39			
4-Bromofluorobenzene	94.6		70-130				8/21/19 22:39			

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1028

Date Received: 8/20/2019

Field Sample #: DUP-01

Sampled: 8/19/2019 00:00

Sample ID: 19H1028-06

Sample Matrix: Ground Water

Miscellaneous Organic Analyses

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Ethane	0.27	0.014	0.0078	mg/L	1		RSK175	8/27/19	8/27/19 13:45	TPH
Ethene	0.27	0.017	0.0092	mg/L	1		RSK175	8/27/19	8/27/19 13:45	TPH
Methane	4.4	0.0070	0.0022	mg/L	1		RSK175	8/27/19	8/27/19 13:45	TPH

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Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1028

Date Received: 8/20/2019

Field Sample #: DUP-01

Sampled: 8/19/2019 00:00

Sample ID: 19H1028-06

Sample Matrix: Ground Water

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Nitrate as N	ND	0.10	0.028	mg/L	1		EPA 300.0	8/20/19	8/20/19 22:41	IS
Nitrite as N	ND	0.100	0.0240	mg/L	1		EPA 300.0	8/20/19	8/20/19 22:41	IS
Sulfate	1.5	1.0	0.12	mg/L	1		EPA 300.0	8/20/19	8/20/19 22:41	IS
Total Organic Carbon	7.6	1.0	0.73	mg/L	1	W-18	SM 5310B	8/23/19	8/23/19 14:46	KMV

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Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1028

Date Received: 8/20/2019

Field Sample #: TPM-2

Sampled: 8/19/2019 14:35

Sample ID: 19H1028-07

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	32	50	3.8	µg/L	1	J	SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Acrylonitrile	ND	5.0	0.52	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
tert-Amyl Methyl Ether (TAME)	ND	0.50	0.14	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Benzene	ND	1.0	0.18	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Bromobenzene	ND	1.0	0.15	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Bromochloromethane	ND	1.0	0.32	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Bromodichloromethane	ND	0.50	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Bromoform	ND	1.0	0.46	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Bromomethane	ND	2.0	0.78	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
2-Butanone (MEK)	ND	20	1.9	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
tert-Butyl Alcohol (TBA)	ND	20	4.2	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
n-Butylbenzene	ND	1.0	0.21	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
sec-Butylbenzene	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
tert-Butylbenzene	ND	1.0	0.17	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
tert-Butyl Ethyl Ether (TBEE)	ND	0.50	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Carbon Disulfide	ND	5.0	4.4	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Carbon Tetrachloride	ND	5.0	0.11	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Chlorobenzene	ND	1.0	0.15	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Chlorodibromomethane	ND	0.50	0.21	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Chloroethane	ND	2.0	0.35	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Chloroform	ND	2.0	0.17	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Chloromethane	ND	2.0	0.45	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
2-Chlorotoluene	ND	1.0	0.12	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
4-Chlorotoluene	ND	1.0	0.14	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	0.53	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
1,2-Dibromoethane (EDB)	ND	0.50	0.19	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Dibromomethane	ND	1.0	0.37	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
1,2-Dichlorobenzene	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
1,3-Dichlorobenzene	ND	1.0	0.12	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
1,4-Dichlorobenzene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
trans-1,4-Dichloro-2-butene	ND	2.0	0.31	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Dichlorodifluoromethane (Freon 12)	ND	2.0	0.26	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
1,1-Dichloroethane	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
1,2-Dichloroethane	ND	1.0	0.41	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
1,1-Dichloroethylene	ND	1.0	0.32	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
cis-1,2-Dichloroethylene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
trans-1,2-Dichloroethylene	ND	1.0	0.31	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
1,2-Dichloropropane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
1,3-Dichloropropane	ND	0.50	0.11	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
2,2-Dichloropropane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
1,1-Dichloropropene	ND	2.0	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
cis-1,3-Dichloropropene	ND	0.50	0.13	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
trans-1,3-Dichloropropene	ND	0.50	0.23	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Diethyl Ether	ND	2.0	0.34	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH

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Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1028

Date Received: 8/20/2019

Field Sample #: TPM-2

Sampled: 8/19/2019 14:35

Sample ID: 19H1028-07

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Diisopropyl Ether (DIPE)	ND	0.50	0.17	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
1,4-Dioxane	ND	50	22	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Ethylbenzene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Hexachlorobutadiene	ND	0.60	0.47	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
2-Hexanone (MBK)	ND	10	1.5	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Isopropylbenzene (Cumene)	ND	1.0	0.17	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
p-Isopropyltoluene (p-Cymene)	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Methyl Acetate	ND	1.0	0.42	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Methyl tert-Butyl Ether (MTBE)	ND	1.0	0.25	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Methyl Cyclohexane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Methylene Chloride	ND	5.0	0.34	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
4-Methyl-2-pentanone (MIBK)	ND	10	1.7	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Naphthalene	ND	2.0	0.31	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
n-Propylbenzene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Styrene	ND	1.0	0.11	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
1,1,1,2-Tetrachloroethane	ND	1.0	0.27	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
1,1,2,2-Tetrachloroethane	ND	0.50	0.22	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Tetrachloroethylene	ND	1.0	0.18	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Tetrahydrofuran	ND	10	0.51	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Toluene	0.63	1.0	0.14	µg/L	1	J	SW-846 8260C	8/21/19	8/21/19 17:49	EEH
1,2,3-Trichlorobenzene	ND	5.0	0.57	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
1,2,4-Trichlorobenzene	ND	1.0	0.40	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
1,3,5-Trichlorobenzene	ND	1.0	0.30	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
1,1,1-Trichloroethane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
1,1,2-Trichloroethane	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Trichloroethylene	ND	1.0	0.24	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Trichlorofluoromethane (Freon 11)	ND	2.0	0.33	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
1,2,3-Trichloropropane	ND	2.0	0.25	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	1.0	0.32	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
1,2,4-Trimethylbenzene	ND	1.0	0.18	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
1,3,5-Trimethylbenzene	ND	1.0	0.14	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Vinyl Chloride	ND	2.0	0.45	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
m+p Xylene	0.37	2.0	0.30	µg/L	1	J	SW-846 8260C	8/21/19	8/21/19 17:49	EEH
o-Xylene	ND	1.0	0.17	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
1,2-Dichloroethane-d4	105		70-130				8/21/19 17:49			
Toluene-d8	98.7		70-130				8/21/19 17:49			
4-Bromofluorobenzene	96.2		70-130				8/21/19 17:49			

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Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1028

Date Received: 8/20/2019

Field Sample #: TPM-2

Sampled: 8/19/2019 14:35

Sample ID: 19H1028-07

Sample Matrix: Ground Water

Miscellaneous Organic Analyses

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Ethane	ND	0.014	0.0078	mg/L	1		RSK175	8/27/19	8/27/19 13:55	TPH
Ethene	ND	0.017	0.0092	mg/L	1		RSK175	8/27/19	8/27/19 13:55	TPH
Methane	9.7	0.035	0.011	mg/L	5		RSK175	8/27/19	8/27/19 14:05	TPH

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1028

Date Received: 8/20/2019

Field Sample #: TPM-2

Sampled: 8/19/2019 14:35

Sample ID: 19H1028-07

Sample Matrix: Ground Water

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Nitrate as N	0.088	0.10	0.028	mg/L	1	J	EPA 300.0	8/21/19	8/21/19 9:35	IS
Nitrite as N	ND	0.100	0.0240	mg/L	1		EPA 300.0	8/21/19	8/21/19 9:35	IS
Sulfate	0.83	1.0	0.12	mg/L	1	J	EPA 300.0	8/21/19	8/21/19 9:35	IS
Total Organic Carbon	23	1.0	0.73	mg/L	1	W-18	SM 5310B	8/23/19	8/23/19 15:04	KMV

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Sample Extraction Data**Prep Method: EPA 300.0-EPA 300.0**

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19H1028-01 [MMW-02 (MS/MSD)]	B238496	10.0	10.0	08/21/19
19H1028-02 [MMW-03]	B238496	10.0	10.0	08/21/19
19H1028-03 [MMW-04]	B238496	10.0	10.0	08/21/19
19H1028-04 [TPW-3]	B238496	10.0	10.0	08/21/19
19H1028-06 [DUP-01]	B238496	10.0	10.0	08/20/19

Prep Method: EPA 300.0-EPA 300.0

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19H1028-05 [TPW-4]	B238497	10.0	10.0	08/21/19
19H1028-07 [TPM-2]	B238497	10.0	10.0	08/21/19

Prep Method: EPA 300.0-EPA 300.0

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19H1028-01 [MMW-02 (MS/MSD)]	B238882	10.0	10.0	08/21/19
19H1028-02 [MMW-03]	B238882	10.0	10.0	08/21/19
19H1028-03 [MMW-04]	B238882	10.0	10.0	08/21/19
19H1028-04 [TPW-3]	B238882	10.0	10.0	08/21/19
19H1028-06 [DUP-01]	B238882	10.0	10.0	08/20/19

Prep Method: EPA 300.0-EPA 300.0

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19H1028-05 [TPW-4]	B238883	10.0	10.0	08/21/19
19H1028-07 [TPM-2]	B238883	10.0	10.0	08/21/19

RSK175

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19H1028-01 [MMW-02 (MS/MSD)]	B239135	1.00	1.00	08/27/19
19H1028-01RE1 [MMW-02 (MS/MSD)]	B239135	1.00	1.00	08/27/19
19H1028-02 [MMW-03]	B239135	1.00	1.00	08/27/19
19H1028-02RE1 [MMW-03]	B239135	1.00	1.00	08/27/19
19H1028-03 [MMW-04]	B239135	1.00	1.00	08/27/19
19H1028-03RE1 [MMW-04]	B239135	1.00	1.00	08/27/19
19H1028-04 [TPW-3]	B239135	1.00	1.00	08/27/19
19H1028-05 [TPW-4]	B239135	1.00	1.00	08/27/19
19H1028-05RE1 [TPW-4]	B239135	1.00	1.00	08/27/19
19H1028-06 [DUP-01]	B239135	1.00	1.00	08/27/19
19H1028-07 [TPM-2]	B239135	1.00	1.00	08/27/19
19H1028-07RE1 [TPM-2]	B239135	1.00	1.00	08/27/19

SM 5310B

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19H1028-01 [MMW-02 (MS/MSD)]	B238691	50.0	50.0	08/21/19
19H1028-02 [MMW-03]	B238691	50.0	50.0	08/21/19
19H1028-03 [MMW-04]	B238691	50.0	50.0	08/21/19

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332**Sample Extraction Data**

SM 5310B

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19H1028-04 [TPW-3]	B238799	50.0	50.0	08/23/19
19H1028-05 [TPW-4]	B238799	50.0	50.0	08/23/19
19H1028-06 [DUP-01]	B238799	50.0	50.0	08/23/19
19H1028-07 [TPM-2]	B238799	50.0	50.0	08/23/19

Prep Method: SW-846 5030B-SW-846 8260C

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19H1028-01 [MMW-02 (MS/MSD)]	B238530	5	5.00	08/21/19
19H1028-02 [MMW-03]	B238530	5	5.00	08/21/19
19H1028-03 [MMW-04]	B238530	5	5.00	08/21/19
19H1028-04 [TPW-3]	B238530	1.25	5.00	08/21/19
19H1028-05 [TPW-4]	B238530	5	5.00	08/21/19
19H1028-06 [DUP-01]	B238530	1.25	5.00	08/21/19
19H1028-07 [TPM-2]	B238530	5	5.00	08/21/19

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QUALITY CONTROL
Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B238530 - SW-846 5030B
Blank (B238530-BLK1)

Prepared & Analyzed: 08/21/19

Acetone	ND	50	µg/L
Acrylonitrile	ND	5.0	µg/L
tert-Amyl Methyl Ether (TAME)	ND	0.50	µg/L
Benzene	ND	1.0	µg/L
Bromobenzene	ND	1.0	µg/L
Bromochloromethane	ND	1.0	µg/L
Bromodichloromethane	ND	0.50	µg/L
Bromoform	ND	1.0	µg/L
Bromomethane	ND	2.0	µg/L
2-Butanone (MEK)	ND	20	µg/L
tert-Butyl Alcohol (TBA)	ND	20	µg/L
n-Butylbenzene	ND	1.0	µg/L
sec-Butylbenzene	ND	1.0	µg/L
tert-Butylbenzene	ND	1.0	µg/L
tert-Butyl Ethyl Ether (TBEE)	ND	0.50	µg/L
Carbon Disulfide	ND	5.0	µg/L
Carbon Tetrachloride	ND	5.0	µg/L
Chlorobenzene	ND	1.0	µg/L
Chlorodibromomethane	ND	0.50	µg/L
Chloroethane	ND	2.0	µg/L
Chloroform	ND	2.0	µg/L
Chloromethane	ND	2.0	µg/L
2-Chlorotoluene	ND	1.0	µg/L
4-Chlorotoluene	ND	1.0	µg/L
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	µg/L
1,2-Dibromoethane (EDB)	ND	0.50	µg/L
Dibromomethane	ND	1.0	µg/L
1,2-Dichlorobenzene	ND	1.0	µg/L
1,3-Dichlorobenzene	ND	1.0	µg/L
1,4-Dichlorobenzene	ND	1.0	µg/L
trans-1,4-Dichloro-2-butene	ND	2.0	µg/L
Dichlorodifluoromethane (Freon 12)	ND	2.0	µg/L
1,1-Dichloroethane	ND	1.0	µg/L
1,2-Dichloroethane	ND	1.0	µg/L
1,1-Dichloroethylene	ND	1.0	µg/L
cis-1,2-Dichloroethylene	ND	1.0	µg/L
trans-1,2-Dichloroethylene	ND	1.0	µg/L
1,2-Dichloropropane	ND	1.0	µg/L
1,3-Dichloropropane	ND	0.50	µg/L
2,2-Dichloropropane	ND	1.0	µg/L
1,1-Dichloropropene	ND	2.0	µg/L
cis-1,3-Dichloropropene	ND	0.50	µg/L
trans-1,3-Dichloropropene	ND	0.50	µg/L
Diethyl Ether	ND	2.0	µg/L
Diisopropyl Ether (DIPE)	ND	0.50	µg/L
1,4-Dioxane	ND	50	µg/L
Ethylbenzene	ND	1.0	µg/L
Hexachlorobutadiene	ND	0.60	µg/L
2-Hexanone (MBK)	ND	10	µg/L
Isopropylbenzene (Cumene)	ND	1.0	µg/L
p-Isopropyltoluene (p-Cymene)	ND	1.0	µg/L
Methyl Acetate	ND	1.0	µg/L

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B238530 - SW-846 5030B

Blank (B238530-BLK1)

Prepared & Analyzed: 08/21/19

Methyl tert-Butyl Ether (MTBE)	ND	1.0	µg/L							
Methyl Cyclohexane	ND	1.0	µg/L							
Methylene Chloride	ND	5.0	µg/L							
4-Methyl-2-pentanone (MIBK)	ND	10	µg/L							
Naphthalene	ND	2.0	µg/L							
n-Propylbenzene	ND	1.0	µg/L							
Styrene	ND	1.0	µg/L							
1,1,1,2-Tetrachloroethane	ND	1.0	µg/L							
1,1,2,2-Tetrachloroethane	ND	0.50	µg/L							
Tetrachloroethylene	ND	1.0	µg/L							
Tetrahydrofuran	ND	10	µg/L							
Toluene	ND	1.0	µg/L							
1,2,3-Trichlorobenzene	ND	5.0	µg/L							
1,2,4-Trichlorobenzene	ND	1.0	µg/L							
1,3,5-Trichlorobenzene	ND	1.0	µg/L							
1,1,1-Trichloroethane	ND	1.0	µg/L							
1,1,2-Trichloroethane	ND	1.0	µg/L							
Trichloroethylene	ND	1.0	µg/L							
Trichlorofluoromethane (Freon 11)	ND	2.0	µg/L							
1,2,3-Trichloropropane	ND	2.0	µg/L							
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	1.0	µg/L							
1,2,4-Trimethylbenzene	ND	1.0	µg/L							
1,3,5-Trimethylbenzene	ND	1.0	µg/L							
Vinyl Chloride	ND	2.0	µg/L							
m+p Xylene	ND	2.0	µg/L							
o-Xylene	ND	1.0	µg/L							
Surrogate: 1,2-Dichloroethane-d4	25.6		µg/L	25.0		102	70-130			
Surrogate: Toluene-d8	24.5		µg/L	25.0		98.0	70-130			
Surrogate: 4-Bromofluorobenzene	24.1		µg/L	25.0		96.4	70-130			

LCS (B238530-BS1)

Prepared & Analyzed: 08/21/19

Acetone	217	50	µg/L	200		108	70-160			†
Acrylonitrile	20.9	5.0	µg/L	20.0		105	70-130			
tert-Amyl Methyl Ether (TAME)	21.0	0.50	µg/L	20.0		105	70-130			
Benzene	22.3	1.0	µg/L	20.0		111	70-130			
Bromobenzene	21.3	1.0	µg/L	20.0		107	70-130			
Bromochloromethane	23.0	1.0	µg/L	20.0		115	70-130			
Bromodichloromethane	22.3	0.50	µg/L	20.0		112	70-130			
Bromoform	21.7	1.0	µg/L	20.0		108	70-130			
Bromomethane	14.5	2.0	µg/L	20.0		72.6	40-160	V-20		†
2-Butanone (MEK)	219	20	µg/L	200		110	40-160			†
tert-Butyl Alcohol (TBA)	205	20	µg/L	200		102	40-160			†
n-Butylbenzene	22.7	1.0	µg/L	20.0		113	70-130			
sec-Butylbenzene	22.5	1.0	µg/L	20.0		113	70-130			
tert-Butylbenzene	21.4	1.0	µg/L	20.0		107	70-130			
tert-Butyl Ethyl Ether (TBEE)	20.2	0.50	µg/L	20.0		101	70-130			
Carbon Disulfide	21.1	5.0	µg/L	20.0		106	70-130			
Carbon Tetrachloride	20.8	5.0	µg/L	20.0		104	70-130			
Chlorobenzene	22.0	1.0	µg/L	20.0		110	70-130			
Chlorodibromomethane	22.0	0.50	µg/L	20.0		110	70-130			
Chloroethane	21.1	2.0	µg/L	20.0		105	70-130			
Chloroform	22.2	2.0	µg/L	20.0		111	70-130			

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B238530 - SW-846 5030B										
LCS (B238530-BS1)				Prepared & Analyzed: 08/21/19						
Chloromethane	16.6	2.0	µg/L	20.0		83.2	40-160			V-20 †
2-Chlorotoluene	21.9	1.0	µg/L	20.0		109	70-130			
4-Chlorotoluene	22.0	1.0	µg/L	20.0		110	70-130			
1,2-Dibromo-3-chloropropane (DBCP)	24.2	5.0	µg/L	20.0		121	70-130			
1,2-Dibromoethane (EDB)	23.1	0.50	µg/L	20.0		116	70-130			
Dibromomethane	21.8	1.0	µg/L	20.0		109	70-130			
1,2-Dichlorobenzene	22.3	1.0	µg/L	20.0		112	70-130			
1,3-Dichlorobenzene	22.7	1.0	µg/L	20.0		114	70-130			
1,4-Dichlorobenzene	22.4	1.0	µg/L	20.0		112	70-130			
trans-1,4-Dichloro-2-butene	22.8	2.0	µg/L	20.0		114	70-130			
Dichlorodifluoromethane (Freon 12)	12.4	2.0	µg/L	20.0		61.9	40-160			†
1,1-Dichloroethane	22.1	1.0	µg/L	20.0		111	70-130			
1,2-Dichloroethane	21.8	1.0	µg/L	20.0		109	70-130			
1,1-Dichloroethylene	22.4	1.0	µg/L	20.0		112	70-130			
cis-1,2-Dichloroethylene	22.3	1.0	µg/L	20.0		112	70-130			
trans-1,2-Dichloroethylene	21.2	1.0	µg/L	20.0		106	70-130			
1,2-Dichloropropane	21.8	1.0	µg/L	20.0		109	70-130			
1,3-Dichloropropane	21.6	0.50	µg/L	20.0		108	70-130			
2,2-Dichloropropane	20.4	1.0	µg/L	20.0		102	40-130			†
1,1-Dichloropropene	21.8	2.0	µg/L	20.0		109	70-130			
cis-1,3-Dichloropropene	21.6	0.50	µg/L	20.0		108	70-130			
trans-1,3-Dichloropropene	21.8	0.50	µg/L	20.0		109	70-130			
Diethyl Ether	22.5	2.0	µg/L	20.0		113	70-130			
Diisopropyl Ether (DIPE)	22.2	0.50	µg/L	20.0		111	70-130			
1,4-Dioxane	234	50	µg/L	200		117	40-130			†
Ethylbenzene	21.7	1.0	µg/L	20.0		109	70-130			
Hexachlorobutadiene	22.9	0.60	µg/L	20.0		114	70-130			
2-Hexanone (MBK)	226	10	µg/L	200		113	70-160			†
Isopropylbenzene (Cumene)	22.0	1.0	µg/L	20.0		110	70-130			
p-Isopropyltoluene (p-Cymene)	21.4	1.0	µg/L	20.0		107	70-130			
Methyl Acetate	20.8	1.0	µg/L	20.0		104	70-130			
Methyl tert-Butyl Ether (MTBE)	21.7	1.0	µg/L	20.0		109	70-130			
Methyl Cyclohexane	22.0	1.0	µg/L	20.0		110	70-130			
Methylene Chloride	21.9	5.0	µg/L	20.0		110	70-130			
4-Methyl-2-pentanone (MIBK)	225	10	µg/L	200		113	70-160			†
Naphthalene	24.4	2.0	µg/L	20.0		122	40-130			†
n-Propylbenzene	22.1	1.0	µg/L	20.0		110	70-130			
Styrene	22.3	1.0	µg/L	20.0		112	70-130			
1,1,1,2-Tetrachloroethane	22.4	1.0	µg/L	20.0		112	70-130			
1,1,2,2-Tetrachloroethane	23.9	0.50	µg/L	20.0		119	70-130			
Tetrachloroethylene	22.6	1.0	µg/L	20.0		113	70-130			
Tetrahydrofuran	22.2	10	µg/L	20.0		111	70-130			
Toluene	22.2	1.0	µg/L	20.0		111	70-130			
1,2,3-Trichlorobenzene	22.2	5.0	µg/L	20.0		111	70-130			
1,2,4-Trichlorobenzene	22.4	1.0	µg/L	20.0		112	70-130			
1,3,5-Trichlorobenzene	20.8	1.0	µg/L	20.0		104	70-130			
1,1,1-Trichloroethane	21.8	1.0	µg/L	20.0		109	70-130			
1,1,2-Trichloroethane	23.3	1.0	µg/L	20.0		116	70-130			
Trichloroethylene	22.6	1.0	µg/L	20.0		113	70-130			
Trichlorofluoromethane (Freon 11)	19.1	2.0	µg/L	20.0		95.4	70-130			
1,2,3-Trichloropropane	21.0	2.0	µg/L	20.0		105	70-130			

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B238530 - SW-846 5030B										
LCS (B238530-BS1)				Prepared & Analyzed: 08/21/19						
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	22.8	1.0	µg/L	20.0		114	70-130			
1,2,4-Trimethylbenzene	21.4	1.0	µg/L	20.0		107	70-130			
1,3,5-Trimethylbenzene	21.2	1.0	µg/L	20.0		106	70-130			
Vinyl Chloride	18.0	2.0	µg/L	20.0		89.8	40-160			†
m+p Xylene	43.4	2.0	µg/L	40.0		108	70-130			
o-Xylene	22.4	1.0	µg/L	20.0		112	70-130			
Surrogate: 1,2-Dichloroethane-d4	25.0		µg/L	25.0		100	70-130			
Surrogate: Toluene-d8	24.6		µg/L	25.0		98.5	70-130			
Surrogate: 4-Bromofluorobenzene	23.9		µg/L	25.0		95.7	70-130			
LCS Dup (B238530-BSD1)				Prepared & Analyzed: 08/21/19						
Acetone	226	50	µg/L	200		113	70-160	4.17	25	†
Acrylonitrile	21.5	5.0	µg/L	20.0		107	70-130	2.55	25	
tert-Amyl Methyl Ether (TAME)	20.9	0.50	µg/L	20.0		105	70-130	0.286	25	
Benzene	22.2	1.0	µg/L	20.0		111	70-130	0.180	25	
Bromobenzene	21.1	1.0	µg/L	20.0		106	70-130	0.943	25	
Bromochloromethane	23.4	1.0	µg/L	20.0		117	70-130	1.60	25	
Bromodichloromethane	22.3	0.50	µg/L	20.0		112	70-130	0.0448	25	
Bromoform	21.6	1.0	µg/L	20.0		108	70-130	0.231	25	
Bromomethane	16.7	2.0	µg/L	20.0		83.4	40-160	13.9	25	V-20 †
2-Butanone (MEK)	230	20	µg/L	200		115	40-160	4.92	25	†
tert-Butyl Alcohol (TBA)	214	20	µg/L	200		107	40-160	4.73	25	†
n-Butylbenzene	22.3	1.0	µg/L	20.0		112	70-130	1.55	25	
sec-Butylbenzene	22.2	1.0	µg/L	20.0		111	70-130	1.48	25	
tert-Butylbenzene	21.1	1.0	µg/L	20.0		106	70-130	1.46	25	
tert-Butyl Ethyl Ether (TBEE)	20.0	0.50	µg/L	20.0		100	70-130	0.697	25	
Carbon Disulfide	20.2	5.0	µg/L	20.0		101	70-130	4.70	25	
Carbon Tetrachloride	20.6	5.0	µg/L	20.0		103	70-130	1.11	25	
Chlorobenzene	21.8	1.0	µg/L	20.0		109	70-130	0.867	25	
Chlorodibromomethane	22.0	0.50	µg/L	20.0		110	70-130	0.364	25	
Chloroethane	21.4	2.0	µg/L	20.0		107	70-130	1.32	25	
Chloroform	22.1	2.0	µg/L	20.0		110	70-130	0.361	25	
Chloromethane	16.9	2.0	µg/L	20.0		84.7	40-160	1.79	25	V-20 †
2-Chlorotoluene	21.4	1.0	µg/L	20.0		107	70-130	2.36	25	
4-Chlorotoluene	22.3	1.0	µg/L	20.0		112	70-130	1.54	25	
1,2-Dibromo-3-chloropropane (DBCP)	26.0	5.0	µg/L	20.0		130	70-130	7.02	25	
1,2-Dibromoethane (EDB)	23.3	0.50	µg/L	20.0		116	70-130	0.517	25	
Dibromomethane	21.9	1.0	µg/L	20.0		110	70-130	0.366	25	
1,2-Dichlorobenzene	22.6	1.0	µg/L	20.0		113	70-130	1.16	25	
1,3-Dichlorobenzene	22.7	1.0	µg/L	20.0		113	70-130	0.132	25	
1,4-Dichlorobenzene	22.6	1.0	µg/L	20.0		113	70-130	0.801	25	
trans-1,4-Dichloro-2-butene	22.8	2.0	µg/L	20.0		114	70-130	0.176	25	
Dichlorodifluoromethane (Freon 12)	12.5	2.0	µg/L	20.0		62.6	40-160	1.04	25	†
1,1-Dichloroethane	22.3	1.0	µg/L	20.0		112	70-130	0.855	25	
1,2-Dichloroethane	21.7	1.0	µg/L	20.0		108	70-130	0.322	25	
1,1-Dichloroethylene	22.0	1.0	µg/L	20.0		110	70-130	1.67	25	
cis-1,2-Dichloroethylene	22.4	1.0	µg/L	20.0		112	70-130	0.536	25	
trans-1,2-Dichloroethylene	21.4	1.0	µg/L	20.0		107	70-130	0.894	25	
1,2-Dichloropropane	21.9	1.0	µg/L	20.0		110	70-130	0.320	25	
1,3-Dichloropropane	21.5	0.50	µg/L	20.0		108	70-130	0.509	25	
2,2-Dichloropropane	19.9	1.0	µg/L	20.0		99.6	40-130	2.53	25	†
1,1-Dichloropropene	21.6	2.0	µg/L	20.0		108	70-130	0.784	25	

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B238530 - SW-846 5030B

LCS Dup (B238530-BSD1)

Prepared & Analyzed: 08/21/19

cis-1,3-Dichloropropene	21.3	0.50	µg/L	20.0		106	70-130	1.58	25	
trans-1,3-Dichloropropene	21.7	0.50	µg/L	20.0		108	70-130	0.507	25	
Diethyl Ether	22.3	2.0	µg/L	20.0		112	70-130	0.937	25	
Diisopropyl Ether (DIPE)	22.1	0.50	µg/L	20.0		110	70-130	0.316	25	
1,4-Dioxane	257	50	µg/L	200		128	40-130	9.12	50	† ‡
Ethylbenzene	21.6	1.0	µg/L	20.0		108	70-130	0.462	25	
Hexachlorobutadiene	22.1	0.60	µg/L	20.0		111	70-130	3.42	25	
2-Hexanone (MBK)	231	10	µg/L	200		115	70-160	2.09	25	†
Isopropylbenzene (Cumene)	21.4	1.0	µg/L	20.0		107	70-130	2.67	25	
p-Isopropyltoluene (p-Cymene)	21.5	1.0	µg/L	20.0		107	70-130	0.0466	25	
Methyl Acetate	21.6	1.0	µg/L	20.0		108	70-130	3.49	25	
Methyl tert-Butyl Ether (MTBE)	21.8	1.0	µg/L	20.0		109	70-130	0.551	25	
Methyl Cyclohexane	21.1	1.0	µg/L	20.0		106	70-130	4.18	25	
Methylene Chloride	21.8	5.0	µg/L	20.0		109	70-130	0.412	25	
4-Methyl-2-pentanone (MIBK)	230	10	µg/L	200		115	70-160	2.16	25	†
Naphthalene	24.2	2.0	µg/L	20.0		121	40-130	0.824	25	†
n-Propylbenzene	21.6	1.0	µg/L	20.0		108	70-130	2.24	25	
Styrene	21.7	1.0	µg/L	20.0		108	70-130	2.77	25	
1,1,1,2-Tetrachloroethane	22.0	1.0	µg/L	20.0		110	70-130	1.94	25	
1,1,2,2-Tetrachloroethane	24.0	0.50	µg/L	20.0		120	70-130	0.626	25	
Tetrachloroethylene	23.1	1.0	µg/L	20.0		115	70-130	2.24	25	
Tetrahydrofuran	23.5	10	µg/L	20.0		118	70-130	5.68	25	
Toluene	22.0	1.0	µg/L	20.0		110	70-130	0.905	25	
1,2,3-Trichlorobenzene	21.9	5.0	µg/L	20.0		110	70-130	0.953	25	
1,2,4-Trichlorobenzene	22.0	1.0	µg/L	20.0		110	70-130	1.85	25	
1,3,5-Trichlorobenzene	21.3	1.0	µg/L	20.0		107	70-130	2.47	25	
1,1,1-Trichloroethane	21.8	1.0	µg/L	20.0		109	70-130	0.138	25	
1,1,2-Trichloroethane	23.0	1.0	µg/L	20.0		115	70-130	1.21	25	
Trichloroethylene	22.3	1.0	µg/L	20.0		112	70-130	1.33	25	
Trichlorofluoromethane (Freon 11)	18.9	2.0	µg/L	20.0		94.4	70-130	1.16	25	
1,2,3-Trichloropropane	21.0	2.0	µg/L	20.0		105	70-130	0.0954	25	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	22.8	1.0	µg/L	20.0		114	70-130	0.175	25	
1,2,4-Trimethylbenzene	21.1	1.0	µg/L	20.0		105	70-130	1.46	25	
1,3,5-Trimethylbenzene	21.3	1.0	µg/L	20.0		107	70-130	0.847	25	
Vinyl Chloride	17.9	2.0	µg/L	20.0		89.6	40-160	0.111	25	†
m+p Xylene	43.5	2.0	µg/L	40.0		109	70-130	0.230	25	
o-Xylene	21.8	1.0	µg/L	20.0		109	70-130	2.85	25	
Surrogate: 1,2-Dichloroethane-d4	25.2		µg/L	25.0		101	70-130			
Surrogate: Toluene-d8	24.7		µg/L	25.0		98.9	70-130			
Surrogate: 4-Bromofluorobenzene	23.8		µg/L	25.0		95.2	70-130			

Matrix Spike (B238530-MS1)

Source: 19H1028-01

Prepared & Analyzed: 08/21/19

Acetone	112	50	µg/L	100	ND	112	70-130			
Acrylonitrile	10.3	5.0	µg/L	10.0	ND	103	70-130			
tert-Amyl Methyl Ether (TAME)	10.2	0.50	µg/L	10.0	ND	102	70-130			
Benzene	11.9	1.0	µg/L	10.0	ND	119	70-130			
Bromobenzene	10.9	1.0	µg/L	10.0	ND	109	70-130			
Bromochloromethane	12.5	1.0	µg/L	10.0	ND	125	70-130			
Bromodichloromethane	11.4	0.50	µg/L	10.0	ND	114	70-130			
Bromoform	10.1	1.0	µg/L	10.0	ND	101	70-130			
Bromomethane	10.7	2.0	µg/L	10.0	ND	107	70-130			
2-Butanone (MEK)	108	20	µg/L	100	ND	108	70-130			

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B238530 - SW-846 5030B										
Matrix Spike (B238530-MS1)	Source: 19H1028-01			Prepared & Analyzed: 08/21/19						
tert-Butyl Alcohol (TBA)	104	20	µg/L	100	ND	104	70-130			
n-Butylbenzene	10.7	1.0	µg/L	10.0	ND	107	70-130			
sec-Butylbenzene	11.3	1.0	µg/L	10.0	ND	113	70-130			
tert-Butylbenzene	10.9	1.0	µg/L	10.0	ND	109	70-130			
tert-Butyl Ethyl Ether (TBEE)	9.94	0.50	µg/L	10.0	ND	99.4	70-130			
Carbon Disulfide	10.3	5.0	µg/L	10.0	ND	103	70-130			
Carbon Tetrachloride	11.2	5.0	µg/L	10.0	ND	112	70-130			
Chlorobenzene	11.1	1.0	µg/L	10.0	ND	111	70-130			
Chlorodibromomethane	10.6	0.50	µg/L	10.0	ND	106	70-130			
Chloroethane	11.8	2.0	µg/L	10.0	ND	118	70-130			
Chloroform	11.7	2.0	µg/L	10.0	ND	117	70-130			
Chloromethane	9.56	2.0	µg/L	10.0	ND	95.6	70-130			V-20
2-Chlorotoluene	11.2	1.0	µg/L	10.0	ND	112	70-130			
4-Chlorotoluene	11.3	1.0	µg/L	10.0	ND	113	70-130			
1,2-Dibromo-3-chloropropane (DBCP)	11.5	5.0	µg/L	10.0	ND	115	70-130			
1,2-Dibromoethane (EDB)	11.2	0.50	µg/L	10.0	ND	112	70-130			
Dibromomethane	11.2	1.0	µg/L	10.0	ND	112	70-130			
1,2-Dichlorobenzene	10.8	1.0	µg/L	10.0	ND	108	70-130			
1,3-Dichlorobenzene	11.5	1.0	µg/L	10.0	ND	115	70-130			
1,4-Dichlorobenzene	11.2	1.0	µg/L	10.0	ND	112	70-130			
trans-1,4-Dichloro-2-butene	9.97	2.0	µg/L	10.0	ND	99.7	70-130			
Dichlorodifluoromethane (Freon 12)	6.70	2.0	µg/L	10.0	ND	67.0 *	70-130			MS-10
1,1-Dichloroethane	11.9	1.0	µg/L	10.0	ND	119	70-130			
1,2-Dichloroethane	11.6	1.0	µg/L	10.0	ND	116	70-130			
1,1-Dichloroethylene	12.0	1.0	µg/L	10.0	ND	120	70-130			
cis-1,2-Dichloroethylene	12.0	1.0	µg/L	10.0	ND	120	70-130			
trans-1,2-Dichloroethylene	11.5	1.0	µg/L	10.0	ND	115	70-130			
1,2-Dichloropropane	11.5	1.0	µg/L	10.0	ND	115	70-130			
1,3-Dichloropropane	11.0	0.50	µg/L	10.0	ND	110	70-130			
2,2-Dichloropropane	9.03	1.0	µg/L	10.0	ND	90.3	70-130			
1,1-Dichloropropene	11.5	2.0	µg/L	10.0	ND	115	70-130			
cis-1,3-Dichloropropene	10.6	0.50	µg/L	10.0	ND	106	70-130			
trans-1,3-Dichloropropene	10.5	0.50	µg/L	10.0	ND	105	70-130			
Diethyl Ether	11.3	2.0	µg/L	10.0	ND	113	70-130			
Diisopropyl Ether (DIPE)	11.5	0.50	µg/L	10.0	ND	115	70-130			
1,4-Dioxane	113	50	µg/L	100	ND	113	70-130			
Ethylbenzene	11.2	1.0	µg/L	10.0	ND	112	70-130			
Hexachlorobutadiene	10.7	0.60	µg/L	10.0	ND	107	70-130			
2-Hexanone (MBK)	111	10	µg/L	100	ND	111	70-130			
Isopropylbenzene (Cumene)	11.2	1.0	µg/L	10.0	ND	112	70-130			
p-Isopropyltoluene (p-Cymene)	10.5	1.0	µg/L	10.0	ND	105	70-130			
Methyl Acetate	10.2	1.0	µg/L	10.0	ND	102	70-130			
Methyl tert-Butyl Ether (MTBE)	11.1	1.0	µg/L	10.0	ND	111	70-130			
Methyl Cyclohexane	10.9	1.0	µg/L	10.0	ND	109	70-130			
Methylene Chloride	12.4	5.0	µg/L	10.0	ND	124	70-130			
4-Methyl-2-pentanone (MIBK)	112	10	µg/L	100	ND	112	70-130			
Naphthalene	10.7	2.0	µg/L	10.0	ND	107	70-130			
n-Propylbenzene	11.2	1.0	µg/L	10.0	ND	112	70-130			
Styrene	11.0	1.0	µg/L	10.0	ND	110	70-130			
1,1,1,2-Tetrachloroethane	11.4	1.0	µg/L	10.0	ND	114	70-130			
1,1,2,2-Tetrachloroethane	12.1	0.50	µg/L	10.0	ND	121	70-130			
Tetrachloroethylene	11.8	1.0	µg/L	10.0	ND	118	70-130			

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B238530 - SW-846 5030B

Matrix Spike (B238530-MS1)	Source: 19H1028-01			Prepared & Analyzed: 08/21/19						
Tetrahydrofuran	11.5	10	µg/L	10.0	ND	115	70-130			
Toluene	11.6	1.0	µg/L	10.0	ND	116	70-130			
1,2,3-Trichlorobenzene	10.6	5.0	µg/L	10.0	ND	106	70-130			
1,2,4-Trichlorobenzene	10.4	1.0	µg/L	10.0	ND	104	70-130			
1,3,5-Trichlorobenzene	9.83	1.0	µg/L	10.0	ND	98.3	70-130			
1,1,1-Trichloroethane	11.6	1.0	µg/L	10.0	ND	116	70-130			
1,1,2-Trichloroethane	11.3	1.0	µg/L	10.0	ND	113	70-130			
Trichloroethylene	11.7	1.0	µg/L	10.0	ND	117	70-130			
Trichlorofluoromethane (Freon 11)	10.2	2.0	µg/L	10.0	ND	102	70-130			
1,2,3-Trichloropropane	10.9	2.0	µg/L	10.0	ND	109	70-130			
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	11.2	1.0	µg/L	10.0	ND	112	70-130			
1,2,4-Trimethylbenzene	10.6	1.0	µg/L	10.0	ND	106	70-130			
1,3,5-Trimethylbenzene	10.5	1.0	µg/L	10.0	ND	105	70-130			
Vinyl Chloride	10.4	2.0	µg/L	10.0	ND	104	70-130			
m+p Xylene	22.4	2.0	µg/L	20.0	ND	112	70-130			
o-Xylene	11.3	1.0	µg/L	10.0	ND	113	70-130			
Surrogate: 1,2-Dichloroethane-d4	26.0		µg/L	25.0		104	70-130			
Surrogate: Toluene-d8	24.9		µg/L	25.0		99.6	70-130			
Surrogate: 4-Bromofluorobenzene	24.0		µg/L	25.0		96.2	70-130			

Matrix Spike Dup (B238530-MSD1)	Source: 19H1028-01			Prepared & Analyzed: 08/21/19						
Acetone	110	50	µg/L	100	ND	110	70-130	1.52	30	
Acrylonitrile	10.0	5.0	µg/L	10.0	ND	100	70-130	2.85	30	
tert-Amyl Methyl Ether (TAME)	9.88	0.50	µg/L	10.0	ND	98.8	70-130	2.89	30	
Benzene	11.6	1.0	µg/L	10.0	ND	116	70-130	3.15	30	
Bromobenzene	11.1	1.0	µg/L	10.0	ND	111	70-130	1.09	30	
Bromochloromethane	12.4	1.0	µg/L	10.0	ND	124	70-130	0.481	30	
Bromodichloromethane	10.9	0.50	µg/L	10.0	ND	109	70-130	4.93	30	
Bromoform	10.4	1.0	µg/L	10.0	ND	104	70-130	2.54	30	
Bromomethane	10.4	2.0	µg/L	10.0	ND	104	70-130	2.85	30	V-20
2-Butanone (MEK)	108	20	µg/L	100	ND	108	70-130	0.222	30	
tert-Butyl Alcohol (TBA)	102	20	µg/L	100	ND	102	70-130	1.94	30	
n-Butylbenzene	10.3	1.0	µg/L	10.0	ND	103	70-130	4.28	30	
sec-Butylbenzene	11.1	1.0	µg/L	10.0	ND	111	70-130	1.70	30	
tert-Butylbenzene	10.9	1.0	µg/L	10.0	ND	109	70-130	0.0916	30	
tert-Butyl Ethyl Ether (TBEE)	9.60	0.50	µg/L	10.0	ND	96.0	70-130	3.48	30	
Carbon Disulfide	9.85	5.0	µg/L	10.0	ND	98.5	70-130	4.66	30	
Carbon Tetrachloride	10.7	5.0	µg/L	10.0	ND	107	70-130	4.30	30	
Chlorobenzene	11.1	1.0	µg/L	10.0	ND	111	70-130	0.360	30	
Chlorodibromomethane	10.2	0.50	µg/L	10.0	ND	102	70-130	3.37	30	
Chloroethane	11.2	2.0	µg/L	10.0	ND	112	70-130	5.47	30	
Chloroform	11.4	2.0	µg/L	10.0	ND	114	70-130	2.69	30	
Chloromethane	9.16	2.0	µg/L	10.0	ND	91.6	70-130	4.27	30	V-20
2-Chlorotoluene	11.0	1.0	µg/L	10.0	ND	110	70-130	1.17	30	
4-Chlorotoluene	11.0	1.0	µg/L	10.0	ND	110	70-130	2.70	30	
1,2-Dibromo-3-chloropropane (DBCP)	11.7	5.0	µg/L	10.0	ND	117	70-130	1.38	30	
1,2-Dibromoethane (EDB)	10.8	0.50	µg/L	10.0	ND	108	70-130	3.36	30	
Dibromomethane	10.8	1.0	µg/L	10.0	ND	108	70-130	3.54	30	
1,2-Dichlorobenzene	11.0	1.0	µg/L	10.0	ND	110	70-130	1.19	30	
1,3-Dichlorobenzene	11.6	1.0	µg/L	10.0	ND	116	70-130	0.868	30	
1,4-Dichlorobenzene	11.1	1.0	µg/L	10.0	ND	111	70-130	0.269	30	
trans-1,4-Dichloro-2-butene	10.1	2.0	µg/L	10.0	ND	101	70-130	1.69	30	

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B238530 - SW-846 5030B										
Matrix Spike Dup (B238530-MSD1)		Source: 19H1028-01			Prepared & Analyzed: 08/21/19					
Dichlorodifluoromethane (Freon 12)	6.08	2.0	µg/L	10.0	ND	60.8 *	70-130	9.70	30	MS-10
1,1-Dichloroethane	11.3	1.0	µg/L	10.0	ND	113	70-130	5.00	30	
1,2-Dichloroethane	10.9	1.0	µg/L	10.0	ND	109	70-130	6.05	30	
1,1-Dichloroethylene	11.3	1.0	µg/L	10.0	ND	113	70-130	5.82	30	
cis-1,2-Dichloroethylene	11.3	1.0	µg/L	10.0	ND	113	70-130	5.76	30	
trans-1,2-Dichloroethylene	10.9	1.0	µg/L	10.0	ND	109	70-130	5.81	30	
1,2-Dichloropropane	11.0	1.0	µg/L	10.0	ND	110	70-130	4.35	30	
1,3-Dichloropropane	10.5	0.50	µg/L	10.0	ND	105	70-130	4.73	30	
2,2-Dichloropropane	8.48	1.0	µg/L	10.0	ND	84.8	70-130	6.28	30	
1,1-Dichloropropene	11.4	2.0	µg/L	10.0	ND	114	70-130	1.22	30	
cis-1,3-Dichloropropene	10.2	0.50	µg/L	10.0	ND	102	70-130	4.14	30	
trans-1,3-Dichloropropene	9.76	0.50	µg/L	10.0	ND	97.6	70-130	7.59	30	
Diethyl Ether	11.2	2.0	µg/L	10.0	ND	112	70-130	0.798	30	
Diisopropyl Ether (DIPE)	11.3	0.50	µg/L	10.0	ND	113	70-130	1.67	30	
1,4-Dioxane	113	50	µg/L	100	ND	113	70-130	0.0265	30	
Ethylbenzene	11.1	1.0	µg/L	10.0	ND	111	70-130	0.358	30	
Hexachlorobutadiene	10.1	0.60	µg/L	10.0	ND	101	70-130	6.35	30	
2-Hexanone (MBK)	112	10	µg/L	100	ND	112	70-130	1.31	30	
Isopropylbenzene (Cumene)	11.0	1.0	µg/L	10.0	ND	110	70-130	2.07	30	
p-Isopropyltoluene (p-Cymene)	10.4	1.0	µg/L	10.0	ND	104	70-130	0.958	30	
Methyl Acetate	10.1	1.0	µg/L	10.0	ND	101	70-130	0.394	30	
Methyl tert-Butyl Ether (MTBE)	10.5	1.0	µg/L	10.0	ND	105	70-130	5.38	30	
Methyl Cyclohexane	10.4	1.0	µg/L	10.0	ND	104	70-130	4.87	30	
Methylene Chloride	11.3	5.0	µg/L	10.0	ND	113	70-130	9.23	30	
4-Methyl-2-pentanone (MIBK)	111	10	µg/L	100	ND	111	70-130	0.867	30	
Naphthalene	10.9	2.0	µg/L	10.0	ND	109	70-130	1.95	30	
n-Propylbenzene	11.1	1.0	µg/L	10.0	ND	111	70-130	0.717	30	
Styrene	10.7	1.0	µg/L	10.0	ND	107	70-130	2.31	30	
1,1,1,2-Tetrachloroethane	11.0	1.0	µg/L	10.0	ND	110	70-130	4.20	30	
1,1,2,2-Tetrachloroethane	12.0	0.50	µg/L	10.0	ND	120	70-130	1.33	30	
Tetrachloroethylene	11.2	1.0	µg/L	10.0	ND	112	70-130	5.73	30	
Tetrahydrofuran	11.9	10	µg/L	10.0	ND	119	70-130	3.33	30	
Toluene	11.1	1.0	µg/L	10.0	ND	111	70-130	4.48	30	
1,2,3-Trichlorobenzene	10.4	5.0	µg/L	10.0	ND	104	70-130	1.90	30	
1,2,4-Trichlorobenzene	10.1	1.0	µg/L	10.0	ND	101	70-130	3.52	30	
1,3,5-Trichlorobenzene	9.82	1.0	µg/L	10.0	ND	98.2	70-130	0.102	30	
1,1,1-Trichloroethane	11.5	1.0	µg/L	10.0	ND	115	70-130	0.520	30	
1,1,2-Trichloroethane	11.0	1.0	µg/L	10.0	ND	110	70-130	2.96	30	
Trichloroethylene	11.7	1.0	µg/L	10.0	ND	117	70-130	0.00	30	
Trichlorofluoromethane (Freon 11)	9.62	2.0	µg/L	10.0	ND	96.2	70-130	5.75	30	
1,2,3-Trichloropropane	11.6	2.0	µg/L	10.0	ND	116	70-130	5.87	30	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	10.9	1.0	µg/L	10.0	ND	109	70-130	2.53	30	
1,2,4-Trimethylbenzene	10.5	1.0	µg/L	10.0	ND	105	70-130	0.474	30	
1,3,5-Trimethylbenzene	10.4	1.0	µg/L	10.0	ND	104	70-130	1.05	30	
Vinyl Chloride	9.80	2.0	µg/L	10.0	ND	98.0	70-130	5.75	30	
m+p Xylene	22.4	2.0	µg/L	20.0	ND	112	70-130	0.134	20	
o-Xylene	11.2	1.0	µg/L	10.0	ND	112	70-130	1.07	30	
Surrogate: 1,2-Dichloroethane-d4	25.2		µg/L	25.0		101	70-130			
Surrogate: Toluene-d8	24.4		µg/L	25.0		97.4	70-130			
Surrogate: 4-Bromofluorobenzene	24.2		µg/L	25.0		96.8	70-130			

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QUALITY CONTROL

Miscellaneous Organic Analyses - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B239135 - RSK175										
Blank (B239135-BLK1)				Prepared & Analyzed: 08/27/19						
Ethane	ND	0.014	mg/L							
Ethene	ND	0.017	mg/L							
Methane	ND	0.0070	mg/L							
LCS (B239135-BS1)				Prepared & Analyzed: 08/27/19						
Ethane	0.29		mg/L	0.327		88.5	74.2-130			
Ethene	0.27		mg/L	0.306		89.5	75-118			
Methane	0.16		mg/L	0.174		89.2	79.5-125			
Duplicate (B239135-DUP1)				Source: 19H1028-04		Prepared & Analyzed: 08/27/19				
Ethane	0.307	0.014	mg/L		0.308			0.303	20	
Ethene	0.303	0.017	mg/L		0.303			0.297	20	
Methane	5.29	0.0070	mg/L		5.29			0.0552	20	
Matrix Spike (B239135-MS1)				Source: 19H1028-01RE1		Prepared & Analyzed: 08/27/19				
Ethane	0.286		mg/L	0.329	0.0453	73.0	0-200			
Ethene	0.225		mg/L	0.308	0.00	73.2	0-200			
Methane	16.9		mg/L	0.175	17.9	-539	* 0-200			MS-19
Matrix Spike Dup (B239135-MSD1)				Source: 19H1028-01RE1		Prepared & Analyzed: 08/27/19				
Ethane	0.293		mg/L	0.329	0.0453	75.1	0-200	2.39		
Ethene	0.231		mg/L	0.308	0.00	75.2	0-200	2.67		
Methane	17.4		mg/L	0.175	17.9	-276	* 0-200	2.68		MS-19

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QUALITY CONTROL
Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B238496 - EPA 300.0										
Blank (B238496-BLK1)				Prepared & Analyzed: 08/20/19						
Nitrate as N	ND	0.10	mg/L							
Nitrite as N	ND	0.100	mg/L							
LCS (B238496-BS1)				Prepared & Analyzed: 08/20/19						
Nitrate as N	0.99	0.10	mg/L	1.00		99.4	90-110			
Nitrite as N	0.981	0.100	mg/L	1.00		98.1	90-110			
LCS Dup (B238496-BSD1)				Prepared & Analyzed: 08/20/19						
Nitrate as N	1.0	0.10	mg/L	1.00		99.8	90-110	0.371	20	
Nitrite as N	0.980	0.100	mg/L	1.00		98.0	90-110	0.0510	20	
Matrix Spike (B238496-MS1)				Source: 19H1028-01		Prepared & Analyzed: 08/21/19				
Nitrate as N	2.0	0.10	mg/L	2.00	0.084	98.2	80-120			
Nitrite as N	2.03	0.100	mg/L	2.00	ND	101	80-120			
Matrix Spike Dup (B238496-MSD1)				Source: 19H1028-01		Prepared & Analyzed: 08/21/19				
Nitrate as N	2.1	0.10	mg/L	2.00	0.084	98.5	80-120	0.298	20	
Nitrite as N	2.03	0.100	mg/L	2.00	ND	101	80-120	0.0148	20	
Batch B238497 - EPA 300.0										
Blank (B238497-BLK1)				Prepared & Analyzed: 08/21/19						
Nitrate as N	ND	0.10	mg/L							
Nitrite as N	ND	0.100	mg/L							
LCS (B238497-BS1)				Prepared & Analyzed: 08/21/19						
Nitrate as N	0.98	0.10	mg/L	1.00		98.0	90-110			
Nitrite as N	0.960	0.100	mg/L	1.00		96.0	90-110			
LCS Dup (B238497-BSD1)				Prepared & Analyzed: 08/21/19						
Nitrate as N	0.98	0.10	mg/L	1.00		98.3	90-110	0.224	20	
Nitrite as N	0.962	0.100	mg/L	1.00		96.2	90-110	0.146	20	
Batch B238691 - SM 5310B										
Blank (B238691-BLK1)				Prepared & Analyzed: 08/21/19						
Total Organic Carbon	ND	1.0	mg/L							
LCS (B238691-BS1)				Prepared & Analyzed: 08/21/19						
Total Organic Carbon	10.2	1.0	mg/L	10.0		102	83.4-116			

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QUALITY CONTROL
Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B238691 - SM 5310B										
LCS Dup (B238691-BSD1)				Prepared & Analyzed: 08/21/19						
Total Organic Carbon	10.4	1.0	mg/L	10.0		104	83.4-116	1.92	9.95	
Duplicate (B238691-DUP1)				Source: 19H1028-01 Prepared & Analyzed: 08/21/19						
Total Organic Carbon	34.8	1.0	mg/L		33.9			2.75	28	W-18
Matrix Spike (B238691-MS1)				Source: 19H1028-01 Prepared & Analyzed: 08/21/19						
Total Organic Carbon	38.0	1.0	mg/L	5.00	33.9	82.1	36.5-165			W-18
Batch B238799 - SM 5310B										
Blank (B238799-BLK1)				Prepared & Analyzed: 08/23/19						
Total Organic Carbon	ND	1.0	mg/L							
LCS (B238799-BS1)				Prepared & Analyzed: 08/23/19						
Total Organic Carbon	10.7	1.0	mg/L	10.0		107	83.4-116			
LCS Dup (B238799-BSD1)				Prepared & Analyzed: 08/23/19						
Total Organic Carbon	10.8	1.0	mg/L	10.0		108	83.4-116	0.790	9.95	
Batch B238882 - EPA 300.0										
Blank (B238882-BLK1)				Prepared & Analyzed: 08/20/19						
Sulfate	ND	1.0	mg/L							
LCS (B238882-BS1)				Prepared & Analyzed: 08/20/19						
Sulfate	4.8	1.0	mg/L	5.00		95.6	90-110			
LCS Dup (B238882-BSD1)				Prepared & Analyzed: 08/20/19						
Sulfate	4.8	1.0	mg/L	5.00		95.5	90-110	0.165	20	
Matrix Spike (B238882-MS1)				Source: 19H1028-01 Prepared & Analyzed: 08/21/19						
Sulfate	10	1.0	mg/L	10.0	0.45	95.7	80-120			
Matrix Spike Dup (B238882-MSD1)				Source: 19H1028-01 Prepared & Analyzed: 08/21/19						
Sulfate	10	1.0	mg/L	10.0	0.45	95.6	80-120	0.115	20	
Batch B238883 - EPA 300.0										
Blank (B238883-BLK1)				Prepared & Analyzed: 08/21/19						
Sulfate	ND	1.0	mg/L							

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QUALITY CONTROL
Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B238883 - EPA 300.0
LCS (B238883-BS1)

Prepared & Analyzed: 08/21/19

Sulfate	4.6	1.0	mg/L	5.00		92.9	90-110			
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LCS Dup (B238883-BSD1)

Prepared & Analyzed: 08/21/19

Sulfate	4.6	1.0	mg/L	5.00		92.9	90-110	0.0323	20	
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FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit is at the level of quantitation (LOQ)
DL	Detection Limit is the lower limit of detection determined by the MDL study
MCL	Maximum Contaminant Level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.
J	Detected but below the Reporting Limit (lowest calibration standard); therefore, result is an estimated concentration (CLP J-Flag).
MS-10	Matrix spike recovery is outside of control limits. Compound is classified as a "difficult analyte" and reduced accuracy is anticipated for spike recoveries. Wider limits are used for laboratory fortified blank control samples.
MS-19	Sample to spike ratio is greater than or equal to 4:1. Spiked amount is not representative of the native amount in the sample. Appropriate or meaningful recoveries cannot be calculated.
RL-11	Elevated reporting limit due to high concentration of target compounds.
V-20	Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.
W-18	Test replicates show more than 10% difference between values.

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
<i>EPA 300.0 in Water</i>	
Nitrate as N	NC,NY,MA,VA,ME,NH,CT,RI
Nitrite as N	NY,NC,NH,VA,ME,CT,RI
Sulfate	NC,NY,MA,VA,ME,NH,CT,RI
<i>RSK175 in Water</i>	
Ethane	VA,NY,ME
Ethene	VA,NY,ME
Methane	VA,NY,ME
<i>SM 5310B in Water</i>	
Total Organic Carbon	CT,NH,NY,RI,NC,MA,VA
<i>SW-846 8260C in Water</i>	
Acetone	CT,ME,NH,VA,NY
Acrylonitrile	CT,ME,NH,VA,NY
tert-Amyl Methyl Ether (TAME)	ME,NH,VA,NY
Benzene	CT,ME,NH,VA,NY
Bromobenzene	NY
Bromochloromethane	ME,NH,VA,NY
Bromodichloromethane	CT,ME,NH,VA,NY
Bromoform	CT,ME,NH,VA,NY
Bromomethane	CT,ME,NH,VA,NY
2-Butanone (MEK)	CT,ME,NH,VA,NY
tert-Butyl Alcohol (TBA)	ME,NH,VA,NY
n-Butylbenzene	ME,VA,NY
sec-Butylbenzene	ME,VA,NY
tert-Butylbenzene	ME,VA,NY
tert-Butyl Ethyl Ether (TBEE)	ME,NH,VA,NY
Carbon Disulfide	CT,ME,NH,VA,NY
Carbon Tetrachloride	CT,ME,NH,VA,NY
Chlorobenzene	CT,ME,NH,VA,NY
Chlorodibromomethane	CT,ME,NH,VA,NY
Chloroethane	CT,ME,NH,VA,NY
Chloroform	CT,ME,NH,VA,NY
Chloromethane	CT,ME,NH,VA,NY
2-Chlorotoluene	ME,NH,VA,NY
4-Chlorotoluene	ME,NH,VA,NY
1,2-Dibromo-3-chloropropane (DBCP)	NY
1,2-Dibromoethane (EDB)	NY
Dibromomethane	ME,NH,VA,NY
1,2-Dichlorobenzene	CT,ME,NH,VA,NY
1,3-Dichlorobenzene	CT,ME,NH,VA,NY
1,4-Dichlorobenzene	CT,ME,NH,VA,NY
trans-1,4-Dichloro-2-butene	ME,NH,VA,NY
Dichlorodifluoromethane (Freon 12)	ME,NH,VA,NY
1,1-Dichloroethane	CT,ME,NH,VA,NY
1,2-Dichloroethane	CT,ME,NH,VA,NY
1,1-Dichloroethylene	CT,ME,NH,VA,NY
cis-1,2-Dichloroethylene	ME,NY

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
<i>SW-846 8260C in Water</i>	
trans-1,2-Dichloroethylene	CT,ME,NH,VA,NY
1,2-Dichloropropane	CT,ME,NH,VA,NY
1,3-Dichloropropane	ME,VA,NY
2,2-Dichloropropane	ME,NH,VA,NY
1,1-Dichloropropene	ME,NH,VA,NY
cis-1,3-Dichloropropene	CT,ME,NH,VA,NY
trans-1,3-Dichloropropene	CT,ME,NH,VA,NY
Diethyl Ether	NY
Diisopropyl Ether (DIPE)	ME,NH,VA,NY
1,4-Dioxane	NY
Ethylbenzene	CT,ME,NH,VA,NY
Hexachlorobutadiene	CT,ME,NH,VA,NY
2-Hexanone (MBK)	CT,ME,NH,VA,NY
Isopropylbenzene (Cumene)	ME,VA,NY
p-Isopropyltoluene (p-Cymene)	CT,ME,NH,VA,NY
Methyl Acetate	NY
Methyl tert-Butyl Ether (MTBE)	CT,ME,NH,VA,NY
Methyl Cyclohexane	NY
Methylene Chloride	CT,ME,NH,VA,NY
4-Methyl-2-pentanone (MIBK)	CT,ME,NH,VA,NY
Naphthalene	ME,NH,VA,NY
n-Propylbenzene	CT,ME,NH,VA,NY
Styrene	CT,ME,NH,VA,NY
1,1,1,2-Tetrachloroethane	CT,ME,NH,VA,NY
1,1,2,2-Tetrachloroethane	CT,ME,NH,VA,NY
Tetrachloroethylene	CT,ME,NH,VA,NY
Toluene	CT,ME,NH,VA,NY
1,2,3-Trichlorobenzene	ME,NH,VA,NY
1,2,4-Trichlorobenzene	CT,ME,NH,VA,NY
1,3,5-Trichlorobenzene	ME
1,1,1-Trichloroethane	CT,ME,NH,VA,NY
1,1,2-Trichloroethane	CT,ME,NH,VA,NY
Trichloroethylene	CT,ME,NH,VA,NY
Trichlorofluoromethane (Freon 11)	CT,ME,NH,VA,NY
1,2,3-Trichloropropane	ME,NH,VA,NY
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	VA,NY
1,2,4-Trimethylbenzene	ME,VA,NY
1,3,5-Trimethylbenzene	ME,VA,NY
Vinyl Chloride	CT,ME,NH,VA,NY
m+p Xylene	CT,ME,NH,VA,NY
o-Xylene	CT,ME,NH,VA,NY

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The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2005	100033	03/1/2020
MA	Massachusetts DEP	M-MA100	06/30/2020
CT	Connecticut Department of Public Health	PH-0567	09/30/2019
NY	New York State Department of Health	10899 NELAP	04/1/2020
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2020
RI	Rhode Island Department of Health	LAO00112	12/30/2019
NC	North Carolina Div. of Water Quality	652	12/31/2019
NJ	New Jersey DEP	MA007 NELAP	06/30/2020
FL	Florida Department of Health	E871027 NELAP	06/30/2020
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2020
ME	State of Maine	2011028	06/9/2021
VA	Commonwealth of Virginia	460217	12/14/2019
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2019
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2020
NC-DW	North Carolina Department of Health	25703	07/31/2020
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2020

789233709523 

Delivered
Tuesday 8/20/2019 at 8:56 am

**DELIVERED**

Signed for by: R.FAURST

GET STATUS UPDATES**OBTAIN PROOF OF DELIVERY****FROM**

Syracuse, NY US

TO

E Longmeadow, MA US

Multiple-piece Shipment

2 Piece shipment

TRACKING NUMBER	SHIPPER CITY, STATE	SHIP DATE	STATUS	DELIVERY DATE	DESTINATION/RECIPIENT CITY, STATE
806832458243 (master)	ITHACA, NY	8/19/2019		8/20/2019	E Longmeadow, MA
789233709523	ITHACA, NY	8/19/2019		8/20/2019	E Longmeadow, MA

Shipment Facts**TRACKING NUMBER**
789233709523**SERVICE**
FedEx Priority Overnight**MASTER TRACKING NUMBER**
806832458243**WEIGHT**
44 lbs / 19.96 kgs**DIMENSIONS**
26x14x14 in.**DELIVERED TO**
Shipping/Receiving**TOTAL PIECES**
2**TOTAL SHIPMENT WEIGHT**
44 lbs / 19.96 kgs**TERMS**
Third Party**PACKAGING**
Your Packaging**SPECIAL HANDLING SECTION**
Deliver Weekday, Additional Handling
Surcharge**STANDARD TRANSIT**

8/20/2019 by 10:30 am**SHIP DATE**
**ACTUAL DELIVERY**
Tue 8/20/2019 8:56 am

I Have Not Confirmed Sample Container
Numbers With Lab Staff Before Relinquishing
Over Samples _____



con-test®
ANALYTICAL LABORATORY

Doc# 277 Rev 5 2017

**Login Sample Receipt Checklist - (Rejection Criteria Listing - Using Acceptance Policy) Any False
Statement will be brought to the attention of the Client - State True or False**

Client EA Engineering
Received By RAP Date 8/20/19 Time 856

How were the samples received? In Cooler T No Cooler _____ On Ice T No Ice _____
Direct from Sampling _____ Ambient _____ Melted Ice _____

Were samples within Temperature? 2-6°C T By Gun # 4 Actual Temp - 2.3/2.4
By Blank # _____ Actual Temp - _____

Was Custody Seal Intact? NA Were Samples Tampered with? NA
Was COC Relinquished? T Does Chain Agree With Samples? T

Are there broken/leaking/loose caps on any samples? F

Is COC in ink/ Legible? T Were samples received within holding time? T
Did COC include all Client T Analysis T Sampler Name T
pertinent Information? Project T ID's T Collection Dates/Times T

Are Sample labels filled out and legible? T

Are there Lab to Filters? F Who was notified? _____

Are there Rushes? F Who was notified? _____

Are there Short Holds? T Who was notified? David

Is there enough Volume? T

Is there Headspace where applicable? F MS/MSD? T

Proper Media/Containers Used? T Is splitting samples required? F

Were trip blanks received? T On COC? T

Do all samples have the proper pH? N/A Acid _____ Base _____

Vials	#	Containers:	#	#	#	#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.
HCL-	<u>54</u>	500 mL Amb.		500 mL Plastic	<u>9</u>	8oz Amb/Clear
Meoh-		250 mL Amb.	<u>9</u>	250 mL Plastic		4oz Amb/Clear
Bisulfate-		Flashpoint		Col./Bacteria		2oz Amb/Clear
DI-		Other Glass		Other Plastic		Encore
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:
Sulfuric-		Perchlorate		Ziplock		

Unused Media

Vials	#	Containers:	#	#	#	#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear
Meoh-		250 mL Amb.		250 mL Plastic		4oz Amb/Clear
Bisulfate-		Col./Bacteria		Flashpoint		2oz Amb/Clear
DI-		Other Plastic		Other Glass		Encore
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:
Sulfuric-		Perchlorate		Ziplock		

Comments:

Sample MMW-03 has a 500mL unpreserved plastic that has a sulfuric label - it is NOT preserved. The nitric container sticker + the TDC container sticker were switched.

August 28, 2019

Christopher Schroer
EA Engineering, Science & Tech. - NY
269 W. Jefferson Street
Syracuse, NY 13202

Project Location: Ithaca, NY
Client Job Number:
Project Number: 14907.25
Laboratory Work Order Number: 19H1134

Enclosed are results of analyses for samples received by the laboratory on August 21, 2019. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, reading "Jessica Hoffman", is displayed on a light blue rectangular background.

Jessica L. Hoffman
Project Manager

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332EA Engineering, Science & Tech. - NY
269 W. Jefferson Street
Syracuse, NY 13202
ATTN: Christopher Schroer

REPORT DATE: 8/28/2019

PURCHASE ORDER NUMBER: 1490725

PROJECT NUMBER: 14907.25

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 19H1134

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: Ithaca, NY

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
TPM-01	19H1134-01	Ground Water		EPA 300.0 RSK175 SM 5310B SW-846 8260C	
TPM-03	19H1134-02	Ground Water		EPA 300.0 RSK175 SM 5310B SW-846 8260C	
MMW-01	19H1134-03	Ground Water		EPA 300.0 RSK175 SM 5310B SW-846 8260C	
Trip Blank	19H1134-04	Trip Blank Water		SW-846 8260C	

CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

EPA 300.0**Qualifications:****H-01**

Recommended sample holding time was exceeded, but analysis was performed before 2X the allowable holding time.

Analyte & Samples(s) Qualified:**Nitrate as N**

19H1134-01[TPM-01], 19H1134-02[TPM-03]

Nitrite as N

19H1134-01[TPM-01], 19H1134-02[TPM-03]

SM 5310B**Qualifications:****W-18**

Test replicates show more than 10% difference between values.

Analyte & Samples(s) Qualified:**Total Organic Carbon**

19H1134-01[TPM-01], 19H1134-02[TPM-03], 19H1134-03[MMW-01], B238799-DUP1, B238799-MS1

SW-846 8260C**Qualifications:****RL-11**

Elevated reporting limit due to high concentration of target compounds.

Analyte & Samples(s) Qualified:

19H1134-03[MMW-01]

V-06

Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side for this compound.

Analyte & Samples(s) Qualified:**tert-Butyl Alcohol (TBA)**

19H1134-01[TPM-01], B238670-BS1, B238670-BSD1, S039502-CCV1

V-20

Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.

Analyte & Samples(s) Qualified:**Bromomethane**

B238670-BS1, B238670-BSD1, S039502-CCV1

Chloromethane

B238670-BS1, B238670-BSD1, S039502-CCV1

The results of analyses reported only relate to samples submitted to the Con-Test Analytical Laboratory for testing.

I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

A handwritten signature in black ink, appearing to read "Lisa Worthington", is written over a light pink rectangular background.

Lisa A. Worthington
Technical Representative

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1134

Date Received: 8/21/2019

Field Sample #: TPM-01

Sampled: 8/20/2019 11:10

Sample ID: 19H1134-01

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	110	50	3.8	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Acrylonitrile	ND	5.0	0.52	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
tert-Amyl Methyl Ether (TAME)	ND	0.50	0.14	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Benzene	ND	1.0	0.18	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Bromobenzene	ND	1.0	0.15	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Bromochloromethane	ND	1.0	0.32	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Bromodichloromethane	ND	0.50	0.16	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Bromoform	ND	1.0	0.46	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Bromomethane	ND	2.0	0.78	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
2-Butanone (MEK)	ND	20	1.9	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
tert-Butyl Alcohol (TBA)	21	20	4.2	µg/L	1	V-06	SW-846 8260C	8/22/19	8/22/19 18:30	MFF
n-Butylbenzene	ND	1.0	0.21	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
sec-Butylbenzene	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
tert-Butylbenzene	ND	1.0	0.17	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
tert-Butyl Ethyl Ether (TBEE)	ND	0.50	0.16	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Carbon Disulfide	ND	5.0	4.4	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Carbon Tetrachloride	ND	5.0	0.11	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Chlorobenzene	ND	1.0	0.15	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Chlorodibromomethane	ND	0.50	0.21	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Chloroethane	ND	2.0	0.35	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Chloroform	ND	2.0	0.17	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Chloromethane	ND	2.0	0.45	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
2-Chlorotoluene	ND	1.0	0.12	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
4-Chlorotoluene	ND	1.0	0.14	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	0.53	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
1,2-Dibromoethane (EDB)	ND	0.50	0.19	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Dibromomethane	ND	1.0	0.37	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
1,2-Dichlorobenzene	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
1,3-Dichlorobenzene	ND	1.0	0.12	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
1,4-Dichlorobenzene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
trans-1,4-Dichloro-2-butene	ND	2.0	0.31	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Dichlorodifluoromethane (Freon 12)	ND	2.0	0.26	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
1,1-Dichloroethane	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
1,2-Dichloroethane	ND	1.0	0.41	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
1,1-Dichloroethylene	ND	1.0	0.32	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
cis-1,2-Dichloroethylene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
trans-1,2-Dichloroethylene	ND	1.0	0.31	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
1,2-Dichloropropane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
1,3-Dichloropropane	ND	0.50	0.11	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
2,2-Dichloropropane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
1,1-Dichloropropene	ND	2.0	0.16	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
cis-1,3-Dichloropropene	ND	0.50	0.13	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
trans-1,3-Dichloropropene	ND	0.50	0.23	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Diethyl Ether	ND	2.0	0.34	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1134

Date Received: 8/21/2019

Field Sample #: TPM-01

Sampled: 8/20/2019 11:10

Sample ID: 19H1134-01

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Diisopropyl Ether (DIPE)	ND	0.50	0.17	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
1,4-Dioxane	ND	50	22	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Ethylbenzene	0.20	1.0	0.13	µg/L	1	J	SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Hexachlorobutadiene	ND	0.60	0.47	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
2-Hexanone (MBK)	ND	10	1.5	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Isopropylbenzene (Cumene)	ND	1.0	0.17	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
p-Isopropyltoluene (p-Cymene)	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Methyl Acetate	ND	1.0	0.42	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Methyl tert-Butyl Ether (MTBE)	ND	1.0	0.25	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Methyl Cyclohexane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Methylene Chloride	ND	5.0	0.34	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
4-Methyl-2-pentanone (MIBK)	ND	10	1.7	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Naphthalene	ND	2.0	0.31	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
n-Propylbenzene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Styrene	ND	1.0	0.11	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
1,1,1,2-Tetrachloroethane	ND	1.0	0.27	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
1,1,2,2-Tetrachloroethane	ND	0.50	0.22	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Tetrachloroethylene	ND	1.0	0.18	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Tetrahydrofuran	ND	10	0.51	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Toluene	1.6	1.0	0.14	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
1,2,3-Trichlorobenzene	ND	5.0	0.57	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
1,2,4-Trichlorobenzene	ND	1.0	0.40	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
1,3,5-Trichlorobenzene	ND	1.0	0.30	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
1,1,1-Trichloroethane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
1,1,2-Trichloroethane	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Trichloroethylene	ND	1.0	0.24	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Trichlorofluoromethane (Freon 11)	ND	2.0	0.33	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
1,2,3-Trichloropropane	ND	2.0	0.25	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	1.0	0.32	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
1,2,4-Trimethylbenzene	0.21	1.0	0.18	µg/L	1	J	SW-846 8260C	8/22/19	8/22/19 18:30	MFF
1,3,5-Trimethylbenzene	ND	1.0	0.14	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Vinyl Chloride	ND	2.0	0.45	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
m+p Xylene	0.79	2.0	0.30	µg/L	1	J	SW-846 8260C	8/22/19	8/22/19 18:30	MFF
o-Xylene	0.37	1.0	0.17	µg/L	1	J	SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
1,2-Dichloroethane-d4	105		70-130				8/22/19 18:30			
Toluene-d8	99.0		70-130				8/22/19 18:30			
4-Bromofluorobenzene	96.1		70-130				8/22/19 18:30			

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1134

Date Received: 8/21/2019

Field Sample #: TPM-01

Sampled: 8/20/2019 11:10

Sample ID: 19H1134-01

Sample Matrix: Ground Water

Miscellaneous Organic Analyses

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Ethane	ND	0.014	0.0078	mg/L	1		RSK175	8/27/19	8/27/19 14:14	TPH
Ethene	ND	0.017	0.0092	mg/L	1		RSK175	8/27/19	8/27/19 14:14	TPH
Methane	1.8	0.0070	0.0022	mg/L	1		RSK175	8/27/19	8/27/19 14:27	TPH

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Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1134

Date Received: 8/21/2019

Field Sample #: TPM-01

Sampled: 8/20/2019 11:10

Sample ID: 19H1134-01

Sample Matrix: Ground Water

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Nitrate as N	ND	0.10	0.028	mg/L	1	H-01	EPA 300.0	8/23/19	8/23/19 16:48	IS
Nitrite as N	ND	0.100	0.0240	mg/L	1	H-01	EPA 300.0	8/23/19	8/23/19 16:48	IS
Sulfate	0.69	1.0	0.12	mg/L	1	J	EPA 300.0	8/23/19	8/23/19 16:48	IS
Total Organic Carbon	24	1.0	0.73	mg/L	1	W-18	SM 5310B	8/23/19	8/23/19 17:56	KMV

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Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1134

Date Received: 8/21/2019

Field Sample #: TPM-03

Sampled: 8/20/2019 12:25

Sample ID: 19H1134-02

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	16	50	3.8	µg/L	1	J	SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Acrylonitrile	ND	5.0	0.52	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
tert-Amyl Methyl Ether (TAME)	ND	0.50	0.14	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Benzene	ND	1.0	0.18	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Bromobenzene	ND	1.0	0.15	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Bromochloromethane	ND	1.0	0.32	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Bromodichloromethane	ND	0.50	0.16	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Bromoform	ND	1.0	0.46	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Bromomethane	ND	2.0	0.78	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
2-Butanone (MEK)	ND	20	1.9	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
tert-Butyl Alcohol (TBA)	ND	20	4.2	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
n-Butylbenzene	ND	1.0	0.21	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
sec-Butylbenzene	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
tert-Butylbenzene	ND	1.0	0.17	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
tert-Butyl Ethyl Ether (TBEE)	ND	0.50	0.16	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Carbon Disulfide	ND	5.0	4.4	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Carbon Tetrachloride	ND	5.0	0.11	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Chlorobenzene	ND	1.0	0.15	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Chlorodibromomethane	ND	0.50	0.21	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Chloroethane	ND	2.0	0.35	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Chloroform	ND	2.0	0.17	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Chloromethane	ND	2.0	0.45	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
2-Chlorotoluene	ND	1.0	0.12	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
4-Chlorotoluene	ND	1.0	0.14	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	0.53	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
1,2-Dibromoethane (EDB)	ND	0.50	0.19	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Dibromomethane	ND	1.0	0.37	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
1,2-Dichlorobenzene	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
1,3-Dichlorobenzene	ND	1.0	0.12	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
1,4-Dichlorobenzene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
trans-1,4-Dichloro-2-butene	ND	2.0	0.31	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Dichlorodifluoromethane (Freon 12)	ND	2.0	0.26	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
1,1-Dichloroethane	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
1,2-Dichloroethane	ND	1.0	0.41	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
1,1-Dichloroethylene	ND	1.0	0.32	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
cis-1,2-Dichloroethylene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
trans-1,2-Dichloroethylene	ND	1.0	0.31	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
1,2-Dichloropropane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
1,3-Dichloropropane	ND	0.50	0.11	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
2,2-Dichloropropane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
1,1-Dichloropropene	ND	2.0	0.16	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
cis-1,3-Dichloropropene	ND	0.50	0.13	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
trans-1,3-Dichloropropene	ND	0.50	0.23	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Diethyl Ether	ND	2.0	0.34	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1134

Date Received: 8/21/2019

Field Sample #: TPM-03

Sampled: 8/20/2019 12:25

Sample ID: 19H1134-02

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Diisopropyl Ether (DIPE)	ND	0.50	0.17	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
1,4-Dioxane	ND	50	22	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Ethylbenzene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Hexachlorobutadiene	ND	0.60	0.47	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
2-Hexanone (MBK)	ND	10	1.5	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Isopropylbenzene (Cumene)	ND	1.0	0.17	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
p-Isopropyltoluene (p-Cymene)	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Methyl Acetate	ND	1.0	0.42	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Methyl tert-Butyl Ether (MTBE)	ND	1.0	0.25	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Methyl Cyclohexane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Methylene Chloride	ND	5.0	0.34	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
4-Methyl-2-pentanone (MIBK)	ND	10	1.7	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Naphthalene	ND	2.0	0.31	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
n-Propylbenzene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Styrene	ND	1.0	0.11	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
1,1,1,2-Tetrachloroethane	ND	1.0	0.27	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
1,1,2,2-Tetrachloroethane	ND	0.50	0.22	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Tetrachloroethylene	ND	1.0	0.18	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Tetrahydrofuran	ND	10	0.51	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Toluene	0.26	1.0	0.14	µg/L	1	J	SW-846 8260C	8/22/19	8/22/19 18:57	MFF
1,2,3-Trichlorobenzene	ND	5.0	0.57	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
1,2,4-Trichlorobenzene	ND	1.0	0.40	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
1,3,5-Trichlorobenzene	ND	1.0	0.30	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
1,1,1-Trichloroethane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
1,1,2-Trichloroethane	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Trichloroethylene	ND	1.0	0.24	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Trichlorofluoromethane (Freon 11)	ND	2.0	0.33	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
1,2,3-Trichloropropane	ND	2.0	0.25	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	1.0	0.32	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
1,2,4-Trimethylbenzene	ND	1.0	0.18	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
1,3,5-Trimethylbenzene	ND	1.0	0.14	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Vinyl Chloride	ND	2.0	0.45	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
m+p Xylene	ND	2.0	0.30	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
o-Xylene	ND	1.0	0.17	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
1,2-Dichloroethane-d4	105		70-130				8/22/19 18:57			
Toluene-d8	99.3		70-130				8/22/19 18:57			
4-Bromofluorobenzene	92.6		70-130				8/22/19 18:57			

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1134

Date Received: 8/21/2019

Field Sample #: TPM-03

Sampled: 8/20/2019 12:25

Sample ID: 19H1134-02

Sample Matrix: Ground Water

Miscellaneous Organic Analyses

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Ethane	ND	0.014	0.0078	mg/L	1		RSK175	8/27/19	8/27/19 14:41	TPH
Ethene	ND	0.017	0.0092	mg/L	1		RSK175	8/27/19	8/27/19 14:41	TPH
Methane	17	0.070	0.022	mg/L	10		RSK175	8/27/19	8/27/19 14:50	TPH

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Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1134

Date Received: 8/21/2019

Field Sample #: TPM-03

Sampled: 8/20/2019 12:25

Sample ID: 19H1134-02

Sample Matrix: Ground Water

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Nitrate as N	ND	0.10	0.028	mg/L	1	H-01	EPA 300.0	8/23/19	8/23/19 17:00	IS
Nitrite as N	ND	0.100	0.0240	mg/L	1	H-01	EPA 300.0	8/23/19	8/23/19 17:00	IS
Sulfate	0.80	1.0	0.12	mg/L	1	J	EPA 300.0	8/23/19	8/23/19 17:00	IS
Total Organic Carbon	22	1.0	0.73	mg/L	1	W-18	SM 5310B	8/23/19	8/23/19 18:15	KMV

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Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1134

Date Received: 8/21/2019

Field Sample #: MMW-01

Sampled: 8/20/2019 11:15

Sample ID: 19H1134-03

Sample Matrix: Ground Water

Sample Flags: RL-11

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	10000	760	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Acrylonitrile	ND	1000	100	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
tert-Amyl Methyl Ether (TAME)	ND	100	28	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Benzene	ND	200	36	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Bromobenzene	ND	200	30	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Bromochloromethane	ND	200	64	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Bromodichloromethane	ND	100	32	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Bromoform	ND	200	92	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Bromomethane	ND	400	160	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
2-Butanone (MEK)	ND	4000	390	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
tert-Butyl Alcohol (TBA)	ND	4000	830	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
n-Butylbenzene	ND	200	42	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
sec-Butylbenzene	ND	200	32	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
tert-Butylbenzene	ND	200	34	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
tert-Butyl Ethyl Ether (TBEE)	ND	100	32	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Carbon Disulfide	ND	1000	890	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Carbon Tetrachloride	ND	1000	22	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Chlorobenzene	ND	200	30	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Chlorodibromomethane	ND	100	42	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Chloroethane	ND	400	70	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Chloroform	ND	400	34	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Chloromethane	ND	400	90	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
2-Chlorotoluene	ND	200	24	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
4-Chlorotoluene	ND	200	28	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
1,2-Dibromo-3-chloropropane (DBCP)	ND	1000	110	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
1,2-Dibromoethane (EDB)	ND	100	38	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Dibromomethane	ND	200	74	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
1,2-Dichlorobenzene	ND	200	32	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
1,3-Dichlorobenzene	ND	200	24	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
1,4-Dichlorobenzene	ND	200	26	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
trans-1,4-Dichloro-2-butene	ND	400	62	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Dichlorodifluoromethane (Freon 12)	ND	400	52	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
1,1-Dichloroethane	ND	200	32	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
1,2-Dichloroethane	ND	200	82	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
1,1-Dichloroethylene	ND	200	64	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
cis-1,2-Dichloroethylene	4200	200	26	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
trans-1,2-Dichloroethylene	ND	200	62	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
1,2-Dichloropropane	ND	200	40	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
1,3-Dichloropropane	ND	100	22	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
2,2-Dichloropropane	ND	200	40	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
1,1-Dichloropropene	ND	400	32	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
cis-1,3-Dichloropropene	ND	100	26	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
trans-1,3-Dichloropropene	ND	100	46	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Diethyl Ether	ND	400	68	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF

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Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1134

Date Received: 8/21/2019

Field Sample #: MMW-01

Sampled: 8/20/2019 11:15

Sample ID: 19H1134-03

Sample Matrix: Ground Water

Sample Flags: RL-11

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Diisopropyl Ether (DIPE)	ND	100	34	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
1,4-Dioxane	ND	10000	4500	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Ethylbenzene	ND	200	26	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Hexachlorobutadiene	ND	120	94	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
2-Hexanone (MBK)	ND	2000	300	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Isopropylbenzene (Cumene)	ND	200	34	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
p-Isopropyltoluene (p-Cymene)	ND	200	40	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Methyl Acetate	ND	200	84	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Methyl tert-Butyl Ether (MTBE)	ND	200	50	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Methyl Cyclohexane	ND	200	40	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Methylene Chloride	ND	1000	68	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
4-Methyl-2-pentanone (MIBK)	ND	2000	330	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Naphthalene	ND	400	62	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
n-Propylbenzene	ND	200	26	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Styrene	ND	200	22	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
1,1,1,2-Tetrachloroethane	ND	200	54	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
1,1,2,2-Tetrachloroethane	ND	100	44	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Tetrachloroethylene	ND	200	36	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Tetrahydrofuran	ND	2000	100	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Toluene	ND	200	28	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
1,2,3-Trichlorobenzene	ND	1000	110	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
1,2,4-Trichlorobenzene	ND	200	80	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
1,3,5-Trichlorobenzene	ND	200	60	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
1,1,1-Trichloroethane	ND	200	40	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
1,1,2-Trichloroethane	ND	200	32	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Trichloroethylene	ND	200	48	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Trichlorofluoromethane (Freon 11)	ND	400	66	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
1,2,3-Trichloropropane	ND	400	50	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	200	64	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
1,2,4-Trimethylbenzene	ND	200	36	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
1,3,5-Trimethylbenzene	ND	200	28	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Vinyl Chloride	13000	400	90	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
m+p Xylene	ND	400	60	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
o-Xylene	ND	200	34	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Surrogates	% Recovery		Recovery Limits		Flag/Qual					
1,2-Dichloroethane-d4	104		70-130				8/22/19 19:23			
Toluene-d8	96.9		70-130				8/22/19 19:23			
4-Bromofluorobenzene	96.9		70-130				8/22/19 19:23			

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Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1134

Date Received: 8/21/2019

Field Sample #: MMW-01

Sampled: 8/20/2019 11:15

Sample ID: 19H1134-03

Sample Matrix: Ground Water

Miscellaneous Organic Analyses

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Ethane	0.68	0.014	0.0078	mg/L	1		RSK175	8/27/19	8/27/19 15:03	TPH
Ethene	5.8	0.017	0.0092	mg/L	1		RSK175	8/27/19	8/27/19 15:03	TPH
Methane	18	0.070	0.022	mg/L	10		RSK175	8/27/19	8/27/19 15:17	TPH

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1134

Date Received: 8/21/2019

Field Sample #: MMW-01

Sampled: 8/20/2019 11:15

Sample ID: 19H1134-03

Sample Matrix: Ground Water

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Nitrate as N	ND	0.10	0.028	mg/L	1		EPA 300.0	8/22/19	8/22/19 5:34	IS
Nitrite as N	0.656	0.100	0.0240	mg/L	1		EPA 300.0	8/22/19	8/22/19 5:34	IS
Sulfate	0.38	1.0	0.12	mg/L	1	J	EPA 300.0	8/22/19	8/22/19 5:34	IS
Total Organic Carbon	14	1.0	0.73	mg/L	1	W-18	SM 5310B	8/23/19	8/23/19 18:33	KMV

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Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1134

Date Received: 8/21/2019

Field Sample #: Trip Blank

Sampled: 8/20/2019 00:00

Sample ID: 19H1134-04

Sample Matrix: Trip Blank Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	50	3.8	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Acrylonitrile	ND	5.0	0.52	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
tert-Amyl Methyl Ether (TAME)	ND	0.50	0.14	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Benzene	ND	1.0	0.18	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Bromobenzene	ND	1.0	0.15	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Bromochloromethane	ND	1.0	0.32	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Bromodichloromethane	ND	0.50	0.16	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Bromoform	ND	1.0	0.46	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Bromomethane	ND	2.0	0.78	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
2-Butanone (MEK)	ND	20	1.9	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
tert-Butyl Alcohol (TBA)	ND	20	4.2	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
n-Butylbenzene	ND	1.0	0.21	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
sec-Butylbenzene	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
tert-Butylbenzene	ND	1.0	0.17	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
tert-Butyl Ethyl Ether (TBEE)	ND	0.50	0.16	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Carbon Disulfide	ND	5.0	4.4	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Carbon Tetrachloride	ND	5.0	0.11	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Chlorobenzene	ND	1.0	0.15	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Chlorodibromomethane	ND	0.50	0.21	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Chloroethane	ND	2.0	0.35	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Chloroform	ND	2.0	0.17	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Chloromethane	ND	2.0	0.45	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
2-Chlorotoluene	ND	1.0	0.12	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
4-Chlorotoluene	ND	1.0	0.14	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	0.53	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
1,2-Dibromoethane (EDB)	ND	0.50	0.19	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Dibromomethane	ND	1.0	0.37	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
1,2-Dichlorobenzene	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
1,3-Dichlorobenzene	ND	1.0	0.12	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
1,4-Dichlorobenzene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
trans-1,4-Dichloro-2-butene	ND	2.0	0.31	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Dichlorodifluoromethane (Freon 12)	ND	2.0	0.26	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
1,1-Dichloroethane	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
1,2-Dichloroethane	ND	1.0	0.41	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
1,1-Dichloroethylene	ND	1.0	0.32	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
cis-1,2-Dichloroethylene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
trans-1,2-Dichloroethylene	ND	1.0	0.31	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
1,2-Dichloropropane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
1,3-Dichloropropane	ND	0.50	0.11	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
2,2-Dichloropropane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
1,1-Dichloropropene	ND	2.0	0.16	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
cis-1,3-Dichloropropene	ND	0.50	0.13	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
trans-1,3-Dichloropropene	ND	0.50	0.23	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Diethyl Ether	ND	2.0	0.34	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF

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Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1134

Date Received: 8/21/2019

Field Sample #: Trip Blank

Sampled: 8/20/2019 00:00

Sample ID: 19H1134-04

Sample Matrix: Trip Blank Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Diisopropyl Ether (DIPE)	ND	0.50	0.17	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
1,4-Dioxane	ND	50	22	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Ethylbenzene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Hexachlorobutadiene	ND	0.60	0.47	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
2-Hexanone (MBK)	ND	10	1.5	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Isopropylbenzene (Cumene)	ND	1.0	0.17	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
p-Isopropyltoluene (p-Cymene)	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Methyl Acetate	ND	1.0	0.42	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Methyl tert-Butyl Ether (MTBE)	ND	1.0	0.25	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Methyl Cyclohexane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Methylene Chloride	ND	5.0	0.34	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
4-Methyl-2-pentanone (MIBK)	ND	10	1.7	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Naphthalene	ND	2.0	0.31	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
n-Propylbenzene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Styrene	ND	1.0	0.11	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
1,1,1,2-Tetrachloroethane	ND	1.0	0.27	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
1,1,2,2-Tetrachloroethane	ND	0.50	0.22	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Tetrachloroethylene	ND	1.0	0.18	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Tetrahydrofuran	ND	10	0.51	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Toluene	ND	1.0	0.14	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
1,2,3-Trichlorobenzene	ND	5.0	0.57	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
1,2,4-Trichlorobenzene	ND	1.0	0.40	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
1,3,5-Trichlorobenzene	ND	1.0	0.30	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
1,1,1-Trichloroethane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
1,1,2-Trichloroethane	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Trichloroethylene	ND	1.0	0.24	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Trichlorofluoromethane (Freon 11)	ND	2.0	0.33	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
1,2,3-Trichloropropane	ND	2.0	0.25	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	1.0	0.32	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
1,2,4-Trimethylbenzene	ND	1.0	0.18	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
1,3,5-Trimethylbenzene	ND	1.0	0.14	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Vinyl Chloride	ND	2.0	0.45	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
m+p Xylene	ND	2.0	0.30	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
o-Xylene	ND	1.0	0.17	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Surrogates	% Recovery	Recovery Limits		Flag/Qual						
1,2-Dichloroethane-d4	103	70-130		8/22/19 16:45						
Toluene-d8	98.8	70-130		8/22/19 16:45						
4-Bromofluorobenzene	94.9	70-130		8/22/19 16:45						

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Sample Extraction Data**Prep Method: EPA 300.0-EPA 300.0**

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19H1134-03 [MMW-01]	B238615	10.0	10.0	08/22/19

Prep Method: EPA 300.0-EPA 300.0

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19H1134-01 [TPM-01]	B238750	10.0	10.0	08/23/19
19H1134-02 [TPM-03]	B238750	10.0	10.0	08/23/19

Prep Method: EPA 300.0-EPA 300.0

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19H1134-01 [TPM-01]	B238891	10.0	10.0	08/23/19
19H1134-02 [TPM-03]	B238891	10.0	10.0	08/23/19

Prep Method: EPA 300.0-EPA 300.0

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19H1134-03 [MMW-01]	B238896	10.0	10.0	08/22/19

RSK175

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19H1134-01 [TPM-01]	B239135	1.00	1.00	08/27/19
19H1134-01RE1 [TPM-01]	B239135	1.00	1.00	08/27/19
19H1134-02 [TPM-03]	B239135	1.00	1.00	08/27/19
19H1134-02RE1 [TPM-03]	B239135	1.00	1.00	08/27/19
19H1134-03 [MMW-01]	B239135	1.00	1.00	08/27/19
19H1134-03RE1 [MMW-01]	B239135	1.00	1.00	08/27/19

SM 5310B

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19H1134-01 [TPM-01]	B238799	50.0	50.0	08/23/19
19H1134-02 [TPM-03]	B238799	50.0	50.0	08/23/19
19H1134-03 [MMW-01]	B238799	50.0	50.0	08/23/19

Prep Method: SW-846 5030B-SW-846 8260C

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
19H1134-01 [TPM-01]	B238670	5	5.00	08/22/19
19H1134-02 [TPM-03]	B238670	5	5.00	08/22/19
19H1134-03 [MMW-01]	B238670	0.025	5.00	08/22/19
19H1134-04 [Trip Blank]	B238670	5	5.00	08/22/19

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QUALITY CONTROL
Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B238670 - SW-846 5030B
Blank (B238670-BLK1)

Prepared & Analyzed: 08/22/19

Acetone	ND	50	µg/L
Acrylonitrile	ND	5.0	µg/L
tert-Amyl Methyl Ether (TAME)	ND	0.50	µg/L
Benzene	ND	1.0	µg/L
Bromobenzene	ND	1.0	µg/L
Bromochloromethane	ND	1.0	µg/L
Bromodichloromethane	ND	0.50	µg/L
Bromoform	ND	1.0	µg/L
Bromomethane	ND	2.0	µg/L
2-Butanone (MEK)	ND	20	µg/L
tert-Butyl Alcohol (TBA)	ND	20	µg/L
n-Butylbenzene	ND	1.0	µg/L
sec-Butylbenzene	ND	1.0	µg/L
tert-Butylbenzene	ND	1.0	µg/L
tert-Butyl Ethyl Ether (TBEE)	ND	0.50	µg/L
Carbon Disulfide	ND	5.0	µg/L
Carbon Tetrachloride	ND	5.0	µg/L
Chlorobenzene	ND	1.0	µg/L
Chlorodibromomethane	ND	0.50	µg/L
Chloroethane	ND	2.0	µg/L
Chloroform	ND	2.0	µg/L
Chloromethane	ND	2.0	µg/L
2-Chlorotoluene	ND	1.0	µg/L
4-Chlorotoluene	ND	1.0	µg/L
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	µg/L
1,2-Dibromoethane (EDB)	ND	0.50	µg/L
Dibromomethane	ND	1.0	µg/L
1,2-Dichlorobenzene	ND	1.0	µg/L
1,3-Dichlorobenzene	ND	1.0	µg/L
1,4-Dichlorobenzene	ND	1.0	µg/L
trans-1,4-Dichloro-2-butene	ND	2.0	µg/L
Dichlorodifluoromethane (Freon 12)	ND	2.0	µg/L
1,1-Dichloroethane	ND	1.0	µg/L
1,2-Dichloroethane	ND	1.0	µg/L
1,1-Dichloroethylene	ND	1.0	µg/L
cis-1,2-Dichloroethylene	ND	1.0	µg/L
trans-1,2-Dichloroethylene	ND	1.0	µg/L
1,2-Dichloropropane	ND	1.0	µg/L
1,3-Dichloropropane	ND	0.50	µg/L
2,2-Dichloropropane	ND	1.0	µg/L
1,1-Dichloropropene	ND	2.0	µg/L
cis-1,3-Dichloropropene	ND	0.50	µg/L
trans-1,3-Dichloropropene	ND	0.50	µg/L
Diethyl Ether	ND	2.0	µg/L
Diisopropyl Ether (DIPE)	ND	0.50	µg/L
1,4-Dioxane	ND	50	µg/L
Ethylbenzene	ND	1.0	µg/L
Hexachlorobutadiene	ND	0.60	µg/L
2-Hexanone (MBK)	ND	10	µg/L
Isopropylbenzene (Cumene)	ND	1.0	µg/L
p-Isopropyltoluene (p-Cymene)	ND	1.0	µg/L
Methyl Acetate	ND	1.0	µg/L

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B238670 - SW-846 5030B

Blank (B238670-BLK1)

Prepared & Analyzed: 08/22/19

Methyl tert-Butyl Ether (MTBE)	ND	1.0	µg/L							
Methyl Cyclohexane	ND	1.0	µg/L							
Methylene Chloride	ND	5.0	µg/L							
4-Methyl-2-pentanone (MIBK)	ND	10	µg/L							
Naphthalene	ND	2.0	µg/L							
n-Propylbenzene	ND	1.0	µg/L							
Styrene	ND	1.0	µg/L							
1,1,1,2-Tetrachloroethane	ND	1.0	µg/L							
1,1,2,2-Tetrachloroethane	ND	0.50	µg/L							
Tetrachloroethylene	ND	1.0	µg/L							
Tetrahydrofuran	ND	10	µg/L							
Toluene	ND	1.0	µg/L							
1,2,3-Trichlorobenzene	ND	5.0	µg/L							
1,2,4-Trichlorobenzene	ND	1.0	µg/L							
1,3,5-Trichlorobenzene	ND	1.0	µg/L							
1,1,1-Trichloroethane	ND	1.0	µg/L							
1,1,2-Trichloroethane	ND	1.0	µg/L							
Trichloroethylene	ND	1.0	µg/L							
Trichlorofluoromethane (Freon 11)	ND	2.0	µg/L							
1,2,3-Trichloropropane	ND	2.0	µg/L							
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	1.0	µg/L							
1,2,4-Trimethylbenzene	ND	1.0	µg/L							
1,3,5-Trimethylbenzene	ND	1.0	µg/L							
Vinyl Chloride	ND	2.0	µg/L							
m+p Xylene	ND	2.0	µg/L							
o-Xylene	ND	1.0	µg/L							
Surrogate: 1,2-Dichloroethane-d4	24.9		µg/L	25.0		99.7	70-130			
Surrogate: Toluene-d8	24.5		µg/L	25.0		98.1	70-130			
Surrogate: 4-Bromofluorobenzene	23.8		µg/L	25.0		95.2	70-130			

LCS (B238670-BS1)

Prepared & Analyzed: 08/22/19

Acetone	231	50	µg/L	200		115	70-160			†
Acrylonitrile	20.6	5.0	µg/L	20.0		103	70-130			
tert-Amyl Methyl Ether (TAME)	20.0	0.50	µg/L	20.0		100	70-130			
Benzene	23.2	1.0	µg/L	20.0		116	70-130			
Bromobenzene	21.7	1.0	µg/L	20.0		108	70-130			
Bromochloromethane	24.6	1.0	µg/L	20.0		123	70-130			
Bromodichloromethane	22.7	0.50	µg/L	20.0		113	70-130			
Bromoform	20.6	1.0	µg/L	20.0		103	70-130			
Bromomethane	15.4	2.0	µg/L	20.0		77.0	40-160		V-20	†
2-Butanone (MEK)	243	20	µg/L	200		121	40-160			†
tert-Butyl Alcohol (TBA)	220	20	µg/L	200		110	40-160		V-06	†
n-Butylbenzene	22.2	1.0	µg/L	20.0		111	70-130			
sec-Butylbenzene	23.0	1.0	µg/L	20.0		115	70-130			
tert-Butylbenzene	21.6	1.0	µg/L	20.0		108	70-130			
tert-Butyl Ethyl Ether (TBEE)	19.7	0.50	µg/L	20.0		98.4	70-130			
Carbon Disulfide	20.9	5.0	µg/L	20.0		104	70-130			
Carbon Tetrachloride	21.1	5.0	µg/L	20.0		105	70-130			
Chlorobenzene	22.4	1.0	µg/L	20.0		112	70-130			
Chlorodibromomethane	21.8	0.50	µg/L	20.0		109	70-130			
Chloroethane	22.2	2.0	µg/L	20.0		111	70-130			
Chloroform	23.0	2.0	µg/L	20.0		115	70-130			

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B238670 - SW-846 5030B										
LCS (B238670-BS1)				Prepared & Analyzed: 08/22/19						
Chloromethane	20.6	2.0	µg/L	20.0		103	40-160			V-20 †
2-Chlorotoluene	21.8	1.0	µg/L	20.0		109	70-130			
4-Chlorotoluene	21.9	1.0	µg/L	20.0		110	70-130			
1,2-Dibromo-3-chloropropane (DBCP)	24.8	5.0	µg/L	20.0		124	70-130			
1,2-Dibromoethane (EDB)	23.4	0.50	µg/L	20.0		117	70-130			
Dibromomethane	22.0	1.0	µg/L	20.0		110	70-130			
1,2-Dichlorobenzene	22.7	1.0	µg/L	20.0		114	70-130			
1,3-Dichlorobenzene	23.5	1.0	µg/L	20.0		117	70-130			
1,4-Dichlorobenzene	22.1	1.0	µg/L	20.0		110	70-130			
trans-1,4-Dichloro-2-butene	22.8	2.0	µg/L	20.0		114	70-130			
Dichlorodifluoromethane (Freon 12)	18.8	2.0	µg/L	20.0		93.9	40-160			†
1,1-Dichloroethane	23.3	1.0	µg/L	20.0		117	70-130			
1,2-Dichloroethane	22.2	1.0	µg/L	20.0		111	70-130			
1,1-Dichloroethylene	22.6	1.0	µg/L	20.0		113	70-130			
cis-1,2-Dichloroethylene	23.1	1.0	µg/L	20.0		115	70-130			
trans-1,2-Dichloroethylene	21.3	1.0	µg/L	20.0		106	70-130			
1,2-Dichloropropane	23.0	1.0	µg/L	20.0		115	70-130			
1,3-Dichloropropane	22.4	0.50	µg/L	20.0		112	70-130			
2,2-Dichloropropane	20.2	1.0	µg/L	20.0		101	40-130			†
1,1-Dichloropropene	23.0	2.0	µg/L	20.0		115	70-130			
cis-1,3-Dichloropropene	22.4	0.50	µg/L	20.0		112	70-130			
trans-1,3-Dichloropropene	21.8	0.50	µg/L	20.0		109	70-130			
Diethyl Ether	22.6	2.0	µg/L	20.0		113	70-130			
Diisopropyl Ether (DIPE)	23.4	0.50	µg/L	20.0		117	70-130			
1,4-Dioxane	242	50	µg/L	200		121	40-130			†
Ethylbenzene	21.9	1.0	µg/L	20.0		109	70-130			
Hexachlorobutadiene	21.6	0.60	µg/L	20.0		108	70-130			
2-Hexanone (MBK)	241	10	µg/L	200		120	70-160			†
Isopropylbenzene (Cumene)	21.8	1.0	µg/L	20.0		109	70-130			
p-Isopropyltoluene (p-Cymene)	21.4	1.0	µg/L	20.0		107	70-130			
Methyl Acetate	21.3	1.0	µg/L	20.0		106	70-130			
Methyl tert-Butyl Ether (MTBE)	21.6	1.0	µg/L	20.0		108	70-130			
Methyl Cyclohexane	22.6	1.0	µg/L	20.0		113	70-130			
Methylene Chloride	22.3	5.0	µg/L	20.0		112	70-130			
4-Methyl-2-pentanone (MIBK)	242	10	µg/L	200		121	70-160			†
Naphthalene	23.2	2.0	µg/L	20.0		116	40-130			†
n-Propylbenzene	22.0	1.0	µg/L	20.0		110	70-130			
Styrene	21.8	1.0	µg/L	20.0		109	70-130			
1,1,1,2-Tetrachloroethane	22.4	1.0	µg/L	20.0		112	70-130			
1,1,2,2-Tetrachloroethane	24.7	0.50	µg/L	20.0		123	70-130			
Tetrachloroethylene	22.9	1.0	µg/L	20.0		115	70-130			
Tetrahydrofuran	26.0	10	µg/L	20.0		130	70-130			
Toluene	22.4	1.0	µg/L	20.0		112	70-130			
1,2,3-Trichlorobenzene	21.2	5.0	µg/L	20.0		106	70-130			
1,2,4-Trichlorobenzene	21.0	1.0	µg/L	20.0		105	70-130			
1,3,5-Trichlorobenzene	20.4	1.0	µg/L	20.0		102	70-130			
1,1,1-Trichloroethane	22.9	1.0	µg/L	20.0		114	70-130			
1,1,2-Trichloroethane	23.5	1.0	µg/L	20.0		118	70-130			
Trichloroethylene	23.2	1.0	µg/L	20.0		116	70-130			
Trichlorofluoromethane (Freon 11)	19.9	2.0	µg/L	20.0		99.5	70-130			
1,2,3-Trichloropropane	21.3	2.0	µg/L	20.0		106	70-130			

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B238670 - SW-846 5030B										
LCS (B238670-BS1)				Prepared & Analyzed: 08/22/19						
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	23.0	1.0	µg/L	20.0		115	70-130			
1,2,4-Trimethylbenzene	21.4	1.0	µg/L	20.0		107	70-130			
1,3,5-Trimethylbenzene	21.1	1.0	µg/L	20.0		106	70-130			
Vinyl Chloride	19.8	2.0	µg/L	20.0		99.1	40-160			†
m+p Xylene	44.2	2.0	µg/L	40.0		110	70-130			
o-Xylene	22.1	1.0	µg/L	20.0		111	70-130			
Surrogate: 1,2-Dichloroethane-d4	25.5		µg/L	25.0		102	70-130			
Surrogate: Toluene-d8	24.9		µg/L	25.0		99.7	70-130			
Surrogate: 4-Bromofluorobenzene	24.1		µg/L	25.0		96.4	70-130			
LCS Dup (B238670-BSD1)				Prepared & Analyzed: 08/22/19						
Acetone	224	50	µg/L	200		112	70-160	3.06	25	†
Acrylonitrile	20.6	5.0	µg/L	20.0		103	70-130	0.0970	25	
tert-Amyl Methyl Ether (TAME)	19.6	0.50	µg/L	20.0		98.0	70-130	2.17	25	
Benzene	22.4	1.0	µg/L	20.0		112	70-130	3.37	25	
Bromobenzene	21.4	1.0	µg/L	20.0		107	70-130	1.44	25	
Bromochloromethane	23.9	1.0	µg/L	20.0		120	70-130	2.81	25	
Bromodichloromethane	22.1	0.50	µg/L	20.0		110	70-130	2.64	25	
Bromoform	20.9	1.0	µg/L	20.0		104	70-130	1.30	25	
Bromomethane	17.3	2.0	µg/L	20.0		86.6	40-160	11.9	25	V-20 †
2-Butanone (MEK)	237	20	µg/L	200		118	40-160	2.36	25	†
tert-Butyl Alcohol (TBA)	210	20	µg/L	200		105	40-160	4.80	25	V-06 †
n-Butylbenzene	21.5	1.0	µg/L	20.0		108	70-130	2.88	25	
sec-Butylbenzene	22.4	1.0	µg/L	20.0		112	70-130	2.56	25	
tert-Butylbenzene	21.4	1.0	µg/L	20.0		107	70-130	1.21	25	
tert-Butyl Ethyl Ether (TBEE)	19.2	0.50	µg/L	20.0		95.8	70-130	2.73	25	
Carbon Disulfide	19.5	5.0	µg/L	20.0		97.7	70-130	6.63	25	
Carbon Tetrachloride	19.9	5.0	µg/L	20.0		99.4	70-130	5.91	25	
Chlorobenzene	21.6	1.0	µg/L	20.0		108	70-130	3.64	25	
Chlorodibromomethane	21.2	0.50	µg/L	20.0		106	70-130	2.70	25	
Chloroethane	21.0	2.0	µg/L	20.0		105	70-130	5.23	25	
Chloroform	22.0	2.0	µg/L	20.0		110	70-130	4.31	25	
Chloromethane	19.4	2.0	µg/L	20.0		97.2	40-160	5.65	25	V-20 †
2-Chlorotoluene	21.6	1.0	µg/L	20.0		108	70-130	0.875	25	
4-Chlorotoluene	21.6	1.0	µg/L	20.0		108	70-130	1.65	25	
1,2-Dibromo-3-chloropropane (DBCP)	23.9	5.0	µg/L	20.0		120	70-130	3.86	25	
1,2-Dibromoethane (EDB)	22.4	0.50	µg/L	20.0		112	70-130	4.23	25	
Dibromomethane	21.7	1.0	µg/L	20.0		109	70-130	1.42	25	
1,2-Dichlorobenzene	22.2	1.0	µg/L	20.0		111	70-130	2.09	25	
1,3-Dichlorobenzene	22.7	1.0	µg/L	20.0		113	70-130	3.46	25	
1,4-Dichlorobenzene	22.0	1.0	µg/L	20.0		110	70-130	0.318	25	
trans-1,4-Dichloro-2-butene	21.9	2.0	µg/L	20.0		110	70-130	3.98	25	
Dichlorodifluoromethane (Freon 12)	17.5	2.0	µg/L	20.0		87.7	40-160	6.83	25	†
1,1-Dichloroethane	22.2	1.0	µg/L	20.0		111	70-130	5.01	25	
1,2-Dichloroethane	21.1	1.0	µg/L	20.0		106	70-130	4.76	25	
1,1-Dichloroethylene	21.8	1.0	µg/L	20.0		109	70-130	3.83	25	
cis-1,2-Dichloroethylene	22.3	1.0	µg/L	20.0		112	70-130	3.30	25	
trans-1,2-Dichloroethylene	20.6	1.0	µg/L	20.0		103	70-130	3.29	25	
1,2-Dichloropropane	21.7	1.0	µg/L	20.0		109	70-130	5.50	25	
1,3-Dichloropropane	21.6	0.50	µg/L	20.0		108	70-130	3.55	25	
2,2-Dichloropropane	19.5	1.0	µg/L	20.0		97.4	40-130	3.68	25	†
1,1-Dichloropropene	21.6	2.0	µg/L	20.0		108	70-130	6.32	25	

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B238670 - SW-846 5030B										
LCS Dup (B238670-BSD1)				Prepared & Analyzed: 08/22/19						
cis-1,3-Dichloropropene	21.5	0.50	µg/L	20.0		108	70-130	3.83	25	
trans-1,3-Dichloropropene	21.5	0.50	µg/L	20.0		107	70-130	1.62	25	
Diethyl Ether	21.9	2.0	µg/L	20.0		110	70-130	2.96	25	
Diisopropyl Ether (DIPE)	22.9	0.50	µg/L	20.0		115	70-130	2.03	25	
1,4-Dioxane	235	50	µg/L	200		117	40-130	3.05	50	† ‡
Ethylbenzene	21.6	1.0	µg/L	20.0		108	70-130	1.43	25	
Hexachlorobutadiene	22.1	0.60	µg/L	20.0		110	70-130	2.33	25	
2-Hexanone (MBK)	234	10	µg/L	200		117	70-160	3.09	25	†
Isopropylbenzene (Cumene)	21.6	1.0	µg/L	20.0		108	70-130	0.922	25	
p-Isopropyltoluene (p-Cymene)	21.0	1.0	µg/L	20.0		105	70-130	1.98	25	
Methyl Acetate	21.2	1.0	µg/L	20.0		106	70-130	0.471	25	
Methyl tert-Butyl Ether (MTBE)	20.7	1.0	µg/L	20.0		103	70-130	4.21	25	
Methyl Cyclohexane	21.7	1.0	µg/L	20.0		108	70-130	3.97	25	
Methylene Chloride	22.1	5.0	µg/L	20.0		111	70-130	0.765	25	
4-Methyl-2-pentanone (MIBK)	236	10	µg/L	200		118	70-160	2.33	25	†
Naphthalene	23.1	2.0	µg/L	20.0		115	40-130	0.346	25	†
n-Propylbenzene	21.6	1.0	µg/L	20.0		108	70-130	1.97	25	
Styrene	21.5	1.0	µg/L	20.0		107	70-130	1.66	25	
1,1,1,2-Tetrachloroethane	21.8	1.0	µg/L	20.0		109	70-130	2.76	25	
1,1,2,2-Tetrachloroethane	24.5	0.50	µg/L	20.0		123	70-130	0.529	25	
Tetrachloroethylene	22.1	1.0	µg/L	20.0		110	70-130	3.87	25	
Tetrahydrofuran	25.8	10	µg/L	20.0		129	70-130	0.849	25	
Toluene	22.0	1.0	µg/L	20.0		110	70-130	1.94	25	
1,2,3-Trichlorobenzene	21.3	5.0	µg/L	20.0		106	70-130	0.565	25	
1,2,4-Trichlorobenzene	21.8	1.0	µg/L	20.0		109	70-130	3.60	25	
1,3,5-Trichlorobenzene	20.1	1.0	µg/L	20.0		100	70-130	1.73	25	
1,1,1-Trichloroethane	22.0	1.0	µg/L	20.0		110	70-130	4.10	25	
1,1,2-Trichloroethane	23.5	1.0	µg/L	20.0		117	70-130	0.255	25	
Trichloroethylene	22.5	1.0	µg/L	20.0		112	70-130	3.15	25	
Trichlorofluoromethane (Freon 11)	18.9	2.0	µg/L	20.0		94.4	70-130	5.21	25	
1,2,3-Trichloropropane	22.2	2.0	µg/L	20.0		111	70-130	4.32	25	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	22.2	1.0	µg/L	20.0		111	70-130	3.80	25	
1,2,4-Trimethylbenzene	21.1	1.0	µg/L	20.0		105	70-130	1.65	25	
1,3,5-Trimethylbenzene	20.3	1.0	µg/L	20.0		102	70-130	3.86	25	
Vinyl Chloride	19.6	2.0	µg/L	20.0		98.2	40-160	0.861	25	†
m+p Xylene	42.8	2.0	µg/L	40.0		107	70-130	3.08	25	
o-Xylene	22.1	1.0	µg/L	20.0		111	70-130	0.0452	25	
Surrogate: 1,2-Dichloroethane-d4	24.8		µg/L	25.0		99.2	70-130			
Surrogate: Toluene-d8	24.4		µg/L	25.0		97.4	70-130			
Surrogate: 4-Bromofluorobenzene	23.6		µg/L	25.0		94.5	70-130			

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QUALITY CONTROL
Miscellaneous Organic Analyses - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B239135 - RSK175
Blank (B239135-BLK1)

Prepared & Analyzed: 08/27/19

Ethane	ND	0.014	mg/L							
Ethene	ND	0.017	mg/L							
Methane	ND	0.0070	mg/L							

LCS (B239135-BS1)

Prepared & Analyzed: 08/27/19

Ethane	0.29		mg/L	0.327		88.5	74.2-130			
Ethene	0.27		mg/L	0.306		89.5	75-118			
Methane	0.16		mg/L	0.174		89.2	79.5-125			

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QUALITY CONTROL
Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B238615 - EPA 300.0										
Blank (B238615-BLK1)				Prepared & Analyzed: 08/22/19						
Nitrate as N	ND	0.10	mg/L							
Nitrite as N	ND	0.100	mg/L							
LCS (B238615-BS1)				Prepared & Analyzed: 08/22/19						
Nitrate as N	0.92	0.10	mg/L	1.00		92.4	90-110			
Nitrite as N	0.915	0.100	mg/L	1.00		91.5	90-110			
LCS Dup (B238615-BSD1)				Prepared & Analyzed: 08/22/19						
Nitrate as N	0.93	0.10	mg/L	1.00		92.6	90-110	0.130	20	
Nitrite as N	0.912	0.100	mg/L	1.00		91.2	90-110	0.252	20	
Batch B238750 - EPA 300.0										
Blank (B238750-BLK1)				Prepared & Analyzed: 08/23/19						
Nitrate as N	ND	0.10	mg/L							
Nitrite as N	ND	0.100	mg/L							
LCS (B238750-BS1)				Prepared & Analyzed: 08/23/19						
Nitrate as N	0.94	0.10	mg/L	1.00		94.5	90-110			
Nitrite as N	0.917	0.100	mg/L	1.00		91.7	90-110			
LCS Dup (B238750-BSD1)				Prepared & Analyzed: 08/23/19						
Nitrate as N	0.95	0.10	mg/L	1.00		94.9	90-110	0.444	20	
Nitrite as N	0.918	0.100	mg/L	1.00		91.8	90-110	0.0763	20	
Duplicate (B238750-DUP1)				Source: 19H1134-02		Prepared & Analyzed: 08/23/19				
Nitrate as N	ND	0.10	mg/L		ND			NC	20	
Nitrite as N	ND	0.100	mg/L		ND			NC	20	
Matrix Spike (B238750-MS1)				Source: 19H1134-02		Prepared & Analyzed: 08/23/19				
Nitrate as N	2.0	0.10	mg/L	2.00	ND	98.3	80-120			
Nitrite as N	1.98	0.100	mg/L	2.00	ND	98.9	80-120			
Batch B238799 - SM 5310B										
Blank (B238799-BLK1)				Prepared & Analyzed: 08/23/19						
Total Organic Carbon	ND	1.0	mg/L							
LCS (B238799-BS1)				Prepared & Analyzed: 08/23/19						
Total Organic Carbon	10.7	1.0	mg/L	10.0		107	83.4-116			

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QUALITY CONTROL
Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B238799 - SM 5310B										
LCS Dup (B238799-BSD1)				Prepared & Analyzed: 08/23/19						
Total Organic Carbon	10.8	1.0	mg/L	10.0		108	83.4-116	0.790	9.95	
Duplicate (B238799-DUP1)				Source: 19H1134-03 Prepared & Analyzed: 08/23/19						
Total Organic Carbon	13.4	1.0	mg/L		13.6			1.62	28	W-18
Matrix Spike (B238799-MS1)				Source: 19H1134-03 Prepared & Analyzed: 08/23/19						
Total Organic Carbon	16.8	1.0	mg/L	5.00	13.6	64.2	36.5-165			W-18
Batch B238891 - EPA 300.0										
Blank (B238891-BLK1)				Prepared & Analyzed: 08/23/19						
Sulfate	ND	1.0	mg/L							
LCS (B238891-BS1)				Prepared & Analyzed: 08/23/19						
Sulfate	4.6	1.0	mg/L	5.00		92.2	90-110			
LCS Dup (B238891-BSD1)				Prepared & Analyzed: 08/23/19						
Sulfate	4.6	1.0	mg/L	5.00		91.8	90-110	0.452	20	
Batch B238896 - EPA 300.0										
Blank (B238896-BLK1)				Prepared & Analyzed: 08/22/19						
Sulfate	ND	1.0	mg/L							
LCS (B238896-BS1)				Prepared & Analyzed: 08/22/19						
Sulfate	4.6	1.0	mg/L	5.00		92.9	90-110			
LCS Dup (B238896-BSD1)				Prepared & Analyzed: 08/22/19						
Sulfate	4.6	1.0	mg/L	5.00		92.9	90-110	0.0904	20	

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332**FLAG/QUALIFIER SUMMARY**

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit is at the level of quantitation (LOQ)
DL	Detection Limit is the lower limit of detection determined by the MDL study
MCL	Maximum Contaminant Level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.
H-01	Recommended sample holding time was exceeded, but analysis was performed before 2X the allowable holding time.
J	Detected but below the Reporting Limit (lowest calibration standard); therefore, result is an estimated concentration (CLP J-Flag).
RL-11	Elevated reporting limit due to high concentration of target compounds.
V-06	Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side for this compound.
V-20	Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.
W-18	Test replicates show more than 10% difference between values.

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
<i>EPA 300.0 in Water</i>	
Nitrate as N	NC,NY,MA,VA,ME,NH,CT,RI
Nitrite as N	NY,NC,NH,VA,ME,CT,RI
Sulfate	NC,NY,MA,VA,ME,NH,CT,RI
<i>RSK175 in Water</i>	
Ethane	VA,NY,ME
Ethene	VA,NY,ME
Methane	VA,NY,ME
<i>SM 5310B in Water</i>	
Total Organic Carbon	CT,NH,NY,RI,NC,MA,VA
<i>SW-846 8260C in Water</i>	
Acetone	CT,ME,NH,VA,NY
Acrylonitrile	CT,ME,NH,VA,NY
tert-Amyl Methyl Ether (TAME)	ME,NH,VA,NY
Benzene	CT,ME,NH,VA,NY
Bromobenzene	NY
Bromochloromethane	ME,NH,VA,NY
Bromodichloromethane	CT,ME,NH,VA,NY
Bromoform	CT,ME,NH,VA,NY
Bromomethane	CT,ME,NH,VA,NY
2-Butanone (MEK)	CT,ME,NH,VA,NY
tert-Butyl Alcohol (TBA)	ME,NH,VA,NY
n-Butylbenzene	ME,VA,NY
sec-Butylbenzene	ME,VA,NY
tert-Butylbenzene	ME,VA,NY
tert-Butyl Ethyl Ether (TBEE)	ME,NH,VA,NY
Carbon Disulfide	CT,ME,NH,VA,NY
Carbon Tetrachloride	CT,ME,NH,VA,NY
Chlorobenzene	CT,ME,NH,VA,NY
Chlorodibromomethane	CT,ME,NH,VA,NY
Chloroethane	CT,ME,NH,VA,NY
Chloroform	CT,ME,NH,VA,NY
Chloromethane	CT,ME,NH,VA,NY
2-Chlorotoluene	ME,NH,VA,NY
4-Chlorotoluene	ME,NH,VA,NY
1,2-Dibromo-3-chloropropane (DBCP)	NY
1,2-Dibromoethane (EDB)	NY
Dibromomethane	ME,NH,VA,NY
1,2-Dichlorobenzene	CT,ME,NH,VA,NY
1,3-Dichlorobenzene	CT,ME,NH,VA,NY
1,4-Dichlorobenzene	CT,ME,NH,VA,NY
trans-1,4-Dichloro-2-butene	ME,NH,VA,NY
Dichlorodifluoromethane (Freon 12)	ME,NH,VA,NY
1,1-Dichloroethane	CT,ME,NH,VA,NY
1,2-Dichloroethane	CT,ME,NH,VA,NY
1,1-Dichloroethylene	CT,ME,NH,VA,NY
cis-1,2-Dichloroethylene	ME,NY

CERTIFICATIONS
Certified Analyses included in this Report

Analyte	Certifications
<i>SW-846 8260C in Water</i>	
trans-1,2-Dichloroethylene	CT,ME,NH,VA,NY
1,2-Dichloropropane	CT,ME,NH,VA,NY
1,3-Dichloropropane	ME,VA,NY
2,2-Dichloropropane	ME,NH,VA,NY
1,1-Dichloropropene	ME,NH,VA,NY
cis-1,3-Dichloropropene	CT,ME,NH,VA,NY
trans-1,3-Dichloropropene	CT,ME,NH,VA,NY
Diethyl Ether	NY
Diisopropyl Ether (DIPE)	ME,NH,VA,NY
1,4-Dioxane	NY
Ethylbenzene	CT,ME,NH,VA,NY
Hexachlorobutadiene	CT,ME,NH,VA,NY
2-Hexanone (MBK)	CT,ME,NH,VA,NY
Isopropylbenzene (Cumene)	ME,VA,NY
p-Isopropyltoluene (p-Cymene)	CT,ME,NH,VA,NY
Methyl Acetate	NY
Methyl tert-Butyl Ether (MTBE)	CT,ME,NH,VA,NY
Methyl Cyclohexane	NY
Methylene Chloride	CT,ME,NH,VA,NY
4-Methyl-2-pentanone (MIBK)	CT,ME,NH,VA,NY
Naphthalene	ME,NH,VA,NY
n-Propylbenzene	CT,ME,NH,VA,NY
Styrene	CT,ME,NH,VA,NY
1,1,1,2-Tetrachloroethane	CT,ME,NH,VA,NY
1,1,2,2-Tetrachloroethane	CT,ME,NH,VA,NY
Tetrachloroethylene	CT,ME,NH,VA,NY
Toluene	CT,ME,NH,VA,NY
1,2,3-Trichlorobenzene	ME,NH,VA,NY
1,2,4-Trichlorobenzene	CT,ME,NH,VA,NY
1,3,5-Trichlorobenzene	ME
1,1,1-Trichloroethane	CT,ME,NH,VA,NY
1,1,2-Trichloroethane	CT,ME,NH,VA,NY
Trichloroethylene	CT,ME,NH,VA,NY
Trichlorofluoromethane (Freon 11)	CT,ME,NH,VA,NY
1,2,3-Trichloropropane	ME,NH,VA,NY
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	VA,NY
1,2,4-Trimethylbenzene	ME,VA,NY
1,3,5-Trimethylbenzene	ME,VA,NY
Vinyl Chloride	CT,ME,NH,VA,NY
m+p Xylene	CT,ME,NH,VA,NY
o-Xylene	CT,ME,NH,VA,NY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2005	100033	03/1/2020
MA	Massachusetts DEP	M-MA100	06/30/2020
CT	Connecticut Department of Public Health	PH-0567	09/30/2019
NY	New York State Department of Health	10899 NELAP	04/1/2020
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2020
RI	Rhode Island Department of Health	LAO00112	12/30/2019
NC	North Carolina Div. of Water Quality	652	12/31/2019
NJ	New Jersey DEP	MA007 NELAP	06/30/2020
FL	Florida Department of Health	E871027 NELAP	06/30/2020
VT	Vermont Department of Health Lead Laboratory	LL015036	07/30/2020
ME	State of Maine	2011028	06/9/2021
VA	Commonwealth of Virginia	460217	12/14/2019
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2019
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2020
NC-DW	North Carolina Department of Health	25703	07/31/2020
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2020



Phone: 413-525-2332
Fax: 413-525-6405

Email: info@contestlabs.com

Company Name: **FA Engineering Science & Tech**

Address: **2069 West Jefferson St Syracuse NY 13207**

Phone: **315 431 4110**

Project Name: **75015 Clinton West Plaza**

Project Location: **Albany NY**

Project Number: **1490725**

Project Manager: **Chris Schaefer**

Con-Test Quote Name/Number:

Invoice Recipient: **Melanie Oina**

Sampled By: **Sarah Nelson**

Con-Test Work Order#	Client Sample ID / Description	Beginning Date / Time	Ending Date / Time	Composite	Grab	Matrix Code	Conc Code
1	TPM-01	8-20-19	1110		X	gw	
2	TPM-03	8-20-19	1225		X	gw	
3	MMW-01	8-20-19	1115		X	gw	
4	trip blank	8-20-19	-		X	w	

Comments:

Please use the following codes to indicate possible sample concentration within the Conc Code column above:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

Relinquished by (signature) <i>Sarah Nelson</i>	Date/Time: 8-20-19 1400
Received by (signature) <i>Chris Schaefer</i>	Date/Time: 8-21-19 0736
Relinquished by (signature)	Date/Time:
Received by (signature)	Date/Time:
Relinquished by (signature)	Date/Time:
Received by (signature)	Date/Time:

☐ AWQ STDS	☐ NY TOGS
☐ NYC Sewer Discharge	☐ NY CP-51
☐ Part 360 GW (Landfill)	
☐ NY Restricted Use	
☐ NY Unrestricted Use	
☐ NY Part 375	

☐ Enhanced Data Package	☐ Enhanced Data Package
☒ NYSDEC EQuIS EDD	☐ NYSDEC EQuIS EDD
☐ EQuIS (Standard) EDD	☐ EQuIS (Standard) EDD
☐ NY Regulatory EDD	☐ NY Regulatory EDD
☐ NY Regs Hits-Only EDD	☐ NY Regs Hits-Only EDD

Other	Other
NEIAC and AHA-LAP, LLC Accredited	Other

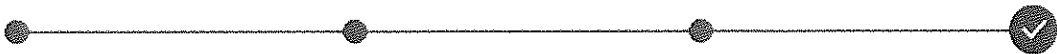
Project Entity	Other
☐ Government	☐ WRTA
☐ Federal	☐ MWR
☐ City	☐ School
	☐ MBTA
	☐ Municipality
	☐ 21 J
	☐ Brownfield
	☐ Chromatogram
	☐ AHA-LAP, LLC



806832458254 



Delivered
Wednesday 8/21/2019 at 9:36 am



DELIVERED

Signed for by: B.BECCA

GET STATUS UPDATES
OBTAIN PROOF OF DELIVERY

FROM
Syracuse, NY US

TO
EAST LONGMEADOW, MA US

Shipment Facts

TRACKING NUMBER
806832458254

SERVICE
FedEx Priority Overnight

WEIGHT
28 lbs / 12.7 kgs

DIMENSIONS
17x15x12 in.

DELIVERED TO
Shipping/Receiving

TOTAL PIECES
1

TOTAL SHIPMENT WEIGHT
28 lbs / 12.7 kgs

TERMS
Third Party

PACKAGING
Your Packaging

SPECIAL HANDLING SECTION
Deliver Weekday, Additional Handling
Surcharge

STANDARD TRANSIT
 8/21/2019 by 10:30 am

SHIP DATE
 Tue 8/20/2019

ACTUAL DELIVERY
Wed 8/21/2019 9:36 am

Travel History

Local Scan Time 

Wednesday, 8/21/2019		
9:36 am	EAST LONGMEADOW, MA	Delivered
6:54 am	WINDSOR LOCKS, CT	On FedEx vehicle for delivery
6:42 am	WINDSOR LOCKS, CT	At local FedEx facility

I Have Not Confirmed Sample Container
Numbers With Lab Staff Before Relinquishing
Over Samples _____



con-test®
ANALYTICAL LABORATORY

Doc# 277 Rev 5 2017

**Login Sample Receipt Checklist - (Rejection Criteria Listing - Using Acceptance Policy) Any False
Statement will be brought to the attention of the Client - State True or False**

Client EA
 Received By RAP Date 8/21/19 Time 936
 How were the samples received? In Cooler T No Cooler _____ On Ice T No Ice _____
 Direct from Sampling _____ Ambient _____ Melted Ice _____
 Were samples within Temperature? 2-6°C T By Gun # 1 Actual Temp - 4.2
 By Blank # _____ Actual Temp - _____
 Was Custody Seal Intact? NA Were Samples Tampered with? NA
 Was COC Relinquished? T Does Chain Agree With Samples? T
 Are there broken/leaking/loose caps on any samples? F
 Is COC in ink/ Legible? T Were samples received within holding time? T
 Did COC include all Client T Analysis T Sampler Name T
 pertinent Information? Project T ID's T Collection Dates/Times T
 Are Sample labels filled out and legible? T
 Are there Lab to Filters? F Who was notified? _____
 Are there Rushes? F Who was notified? _____
 Are there Short Holds? T Who was notified? Wey
 Is there enough Volume? T
 Is there Headspace where applicable? F MS/MSD? F
 Proper Media/Containers Used? T Is splitting samples required? F
 Were trip blanks received? T On COC? T
 Do all samples have the proper pH? NA Acid _____ Base _____

Vials	#	Containers:	#		#		#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.	
HCL-	<u>20</u>	500 mL Amb.		500 mL Plastic	<u>3</u>	8oz Amb/Clear	
Meoh-		250 mL Amb.	<u>3</u>	250 mL Plastic		4oz Amb/Clear	
Bisulfate-		Flashpoint		Col./Bacteria		2oz Amb/Clear	
DI-		Other Glass		Other Plastic		Encore	
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:	
Sulfuric-		Perchlorate		Ziplock			

Unused Media

Vials	#	Containers:	#		#		#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.	
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear	
Meoh-		250 mL Amb.		250 mL Plastic		4oz Amb/Clear	
Bisulfate-		Col./Bacteria		Flashpoint		2oz Amb/Clear	
DI-		Other Plastic		Other Glass		Encore	
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:	
Sulfuric-		Perchlorate		Ziplock			

Comments:

SITE LOGIC Report

QuantArray[®]-Chlor Study

Contact: Christopher J. Schroer

Phone: 315-431-4610

Address: EA Engineering
269 W. Jefferson Street
Syracuse, NY 13202

Email: cschroer@eaest.com

MI Identifier: 065QH

Report Date: 09/06/2019

Project: Clinton West Plaza 755015, 1490725
Comments:

NOTICE: This report is intended only for the addressee shown above and may contain confidential or privileged information. If the recipient of this material is not the intended recipient or if you have received this in error, please notify Microbial Insights, Inc. immediately. The data and other information in this report represent only the sample(s) analyzed and are rendered upon condition that it is not to be reproduced without approval from Microbial Insights, Inc. Thank you for your cooperation.

The QuantArray®-Chlor Approach

Quantification of *Dehalococcoides*, the only known bacterial group capable of complete reductive dechlorination of PCE and TCE to ethene, has become an indispensable component of assessment, remedy selection, and performance monitoring at sites impacted by chlorinated solvents. While undeniably a key group of halo-respiring bacteria, *Dehalococcoides* are not the only bacteria of interest in the subsurface because reductive dechlorination is not the only potential biodegradation pathway operative at contaminated sites, and chlorinated ethenes are not always the primary contaminants of concern. The QuantArray®-Chlor not only includes a variety of halo-respiring bacteria (*Dehalococcoides*, *Dehalobacter*, *Dehalogenimonas*, etc.) to assess the potential for reductive dechlorination of chloroethenes, chloroethanes, chlorobenzenes, chlorophenols, and chloroform, but also provides quantification of functional genes involved in aerobic (co)metabolic pathways for biodegradation of chlorinated solvents and even competing biological processes. Thus, the QuantArray®-Chlor will give site managers the ability to simultaneously yet economically evaluate the potential for biodegradation of a spectrum of common chlorinated contaminants through a multitude of anaerobic and aerobic (co) metabolic pathways to give a much more clear and comprehensive view of contaminant biodegradation.

The QuantArray®-Chlor is used to quantify specific microorganisms and functional genes to evaluate the following:

Anaerobic Reductive Dechlorination	Quantification of important halo-respiring bacteria (e.g. <i>Dehalococcoides</i> , <i>Dehalobacter</i> , <i>Dehalogenimonas</i> , <i>Desulfotobacterium</i> spp.) and key functional genes (e.g. vinyl chloride reductases, TCE reductase, chloroform reductase) responsible for reductive dechlorination of a broad spectrum of chlorinated solvents.
Aerobic Cometabolism	Several different types of bacteria including methanotrophs and some toluene/phenol utilizing bacteria can co-oxidize TCE, DCE, and vinyl chloride. The QuantArray®-Chlor quantifies functional genes like soluble methane monooxygenase encoding enzymes capable of co-oxidation of chlorinated ethenes.
Aerobic (Co)metabolism of Vinyl Chloride	Ethene oxidizing bacteria are capable of cometabolism of vinyl chloride. In some cases, ethenotrophs can also utilize vinyl chloride as a growth supporting substrate. The QuantArray®-Chlor targets key functional genes in ethene metabolism.

How do QuantArrays® work?

The QuantArray®-Chlor in many respects is a hybrid technology combining the highly parallel detection of microarrays with the accurate and precise quantification provided by qPCR into a single platform. The key to highly parallel qPCR reactions is the nanoliter fluidics platform for low volume, solution phase qPCR reactions.

How are QuantArray® results reported?

One of the primary advantages of the QuantArray®-Chlor is the simultaneous quantification of a broad spectrum of different microorganisms and key functional genes involved in a variety of pathways for chlorinated hydrocarbon biodegradation. However, highly parallel quantification combined with the various metabolic and cometabolic capabilities of different target organisms can complicate data presentation. Therefore, in addition to Summary Tables, QuantArray® results will be presented as Microbial Population Summary and Comparison Figures to aid in data interpretation and subsequent evaluation of site management activities.

Types of Tables and Figures:

Microbial Population Summary

Figure presenting the concentrations of QuantArray®-Chlor target populations (e.g. *Dehalococcoides*) and functional genes (e.g. vinyl chloride reductase) relative to typically observed values.

Summary Tables

Tables of target population concentrations grouped by biodegradation pathway and contaminant type.

Comparison Figures

Depending on the project, sample results can be presented to compare changes over time or examine differences in microbial populations along a transect of the dissolved plume.

Results

Table 1: Summary of the QuantArray®-Chlor results obtained for samples TPMW3, TPMW4, and MMW-03.

Sample Name Sample Date	TPMW3 08/19/2019	TPMW4 08/19/2019	MMW-03 08/19/2019
<i>Reductive Dechlorination</i>	cells/mL	cells/mL	cells/mL
<i>Dehalococcoides</i> (DHC)	3.30E+04	4.00E+03	5.00E+00
tceA Reductase (TCE)	1.11E+02	1.32E+01	<5.00E-01
BAV1 Vinyl Chloride Reductase (BVC)	3.90E+02	2.92E+01	<5.00E-01
Vinyl Chloride Reductase (VCR)	1.96E+03	2.78E+02	<5.00E-01
<i>Dehalobacter</i> spp. (DHBt)	<4.80E+00	<4.60E+00	<4.80E+00
<i>Dehalobacter</i> DCM (DCM)	<4.80E+00	<4.60E+00	1.64E+02
<i>Dehalogenimonas</i> spp. (DHG)	1.66E+04	5.34E+03	<4.80E+00
cerA Reductase (CER)	<4.80E+00	<4.60E+00	<4.80E+00
trans-1,2-DCE Reductase (TDR)	<4.80E+00	<4.60E+00	<4.80E+00
<i>Desulfitobacterium</i> spp. (DSB)	<4.80E+00	<4.60E+00	1.90E+02
<i>Dehalobium chlorocoercia</i> (DECO)	8.25E+03	1.14E+04	1.00E+04
<i>Desulfuromonas</i> spp. (DSM)	1.17E+02	<4.60E+00	5.07E+01
PCE Reductase (PCE-1)	<4.80E+00	<4.60E+00	<4.80E+00
PCE Reductase (PCE-2)	2.27E+01	<4.60E+00	<4.80E+00
Chloroform Reductase (CFR)	<4.80E+00	<4.60E+00	<4.80E+00
1,1 DCA Reductase (DCA)	<4.80E+00	<4.60E+00	<4.80E+00
1,2 DCA Reductase (DCAR)	<4.80E+00	<4.60E+00	<4.80E+00
<i>Aerobic (Co)Metabolic</i>			
Soluble Methane Monooxygenase (SMMO)	6.36E+02	1.86E+03	1.48E+04
Toluene Dioxygenase (TOD)	<4.80E+00	<4.60E+00	<4.80E+00
Phenol Hydroxylase (PHE)	9.25E+03	3.99E+02	3.03E+03
Trichlorobenzene Dioxygenase (TCBO)	<4.80E+00	<4.60E+00	1.30E+01
Toluene Monooxygenase 2 (RDEG)	8.57E+02	3.06E+02	2.69E+03
Toluene Monooxygenase (RMO)	2.86E+01	<4.60E+00	1.94E+03
Ethene Monooxygenase (EtnC)	5.85E+02	6.83E+01	6.62E+01
Epoxyalkane Transferase (EtnE)	8.20E+02	6.74E+02	8.53E+01
Dichloromethane Dehalogenase (DCMA)	<4.80E+00	<4.60E+00	<4.80E+00
<i>Other</i>			
Total Eubacteria (EBAC)	1.17E+07	5.13E+06	5.33E+07
Sulfate Reducing Bacteria (APS)	4.66E+04	9.61E+04	2.20E+05
Methanogens (MGN)	5.54E+02	1.81E+03	3.93E+01

Legend:

NA = Not Analyzed
I = Inhibited

NS = Not Sampled
< = Result Not Detected

J = Estimated Gene Copies Below PQL but Above LQL

Table 2: Summary of the QuantArray®-Chlor results obtained for samples TPM-2, MMW-01, and TPM-01.

Sample Name	TPM-2	MMW-01	TPM-01
Sample Date	08/19/2019	08/20/2019	08/20/2019
<i>Reductive Dechlorination</i>	cells/mL	cells/mL	cells/mL
<i>Dehalococcoides</i> (DHC)	2.13E+01	1.51E+05	1.80E+02
tceA Reductase (TCE)	1.00E-01 (J)	4.90E+00	3.00E-01 (J)
BAV1 Vinyl Chloride Reductase (BVC)	<5.00E-01	6.35E+03	<5.00E-01
Vinyl Chloride Reductase (VCR)	5.00E-01 (J)	1.13E+04	2.00E-01 (J)
<i>Dehalobacter</i> spp. (DHBt)	<4.70E+00	9.22E+03	<4.70E+00
<i>Dehalobacter</i> DCM (DCM)	<4.70E+00	<4.90E+00	<4.70E+00
<i>Dehalogenimonas</i> spp. (DHG)	<4.70E+00	2.94E+05	<4.70E+00
cerA Reductase (CER)	<4.70E+00	5.20E+00	<4.70E+00
trans-1,2-DCE Reductase (TDR)	<4.70E+00	<4.90E+00	<4.70E+00
<i>Desulfitobacterium</i> spp. (DSB)	<4.70E+00	<4.90E+00	<4.70E+00
<i>Dehalobium chlorocoercia</i> (DECO)	2.09E+04	4.18E+03	2.92E+03
<i>Desulfuromonas</i> spp. (DSM)	1.05E+03	1.37E+02	3.53E+01
PCE Reductase (PCE-1)	<4.70E+00	3.86E+01	<4.70E+00
PCE Reductase (PCE-2)	<4.70E+00	<4.90E+00	<4.70E+00
Chloroform Reductase (CFR)	<4.70E+00	<4.90E+00	<4.70E+00
1,1 DCA Reductase (DCA)	<4.70E+00	<4.90E+00	<4.70E+00
1,2 DCA Reductase (DCAR)	<4.70E+00	<4.90E+00	<4.70E+00
<i>Aerobic (Co)Metabolic</i>			
Soluble Methane Monooxygenase (SMMO)	3.14E+03	1.20E+04	1.05E+03
Toluene Dioxygenase (TOD)	<4.70E+00	<4.90E+00	2.95E+01
Phenol Hydroxylase (PHE)	4.52E+03	3.09E+03	4.20E+03
Trichlorobenzene Dioxygenase (TCBO)	<4.70E+00	<4.90E+00	<4.70E+00
Toluene Monooxygenase 2 (RDEG)	6.24E+02	1.69E+03	1.03E+02
Toluene Monooxygenase (RMO)	<4.70E+00	2.91E+02	3.74E+04
Ethene Monooxygenase (EtnC)	4.51E+01	8.06E+03	<4.70E+00
Epoxyalkane Transferase (EtnE)	<4.70E+00	2.64E+04	<4.70E+00
Dichloromethane Dehalogenase (DCMA)	<4.70E+00	<4.90E+00	<4.70E+00
<i>Other</i>			
Total Eubacteria (EBAC)	4.08E+07	2.34E+07	7.50E+06
Sulfate Reducing Bacteria (APS)	4.52E+05	8.36E+04	6.36E+04
Methanogens (MGN)	5.05E+02	1.21E+03	1.61E+03

Legend:

NA = Not Analyzed
I = Inhibited

NS = Not Sampled
< = Result Not Detected

J = Estimated Gene Copies Below PQL but Above LQL

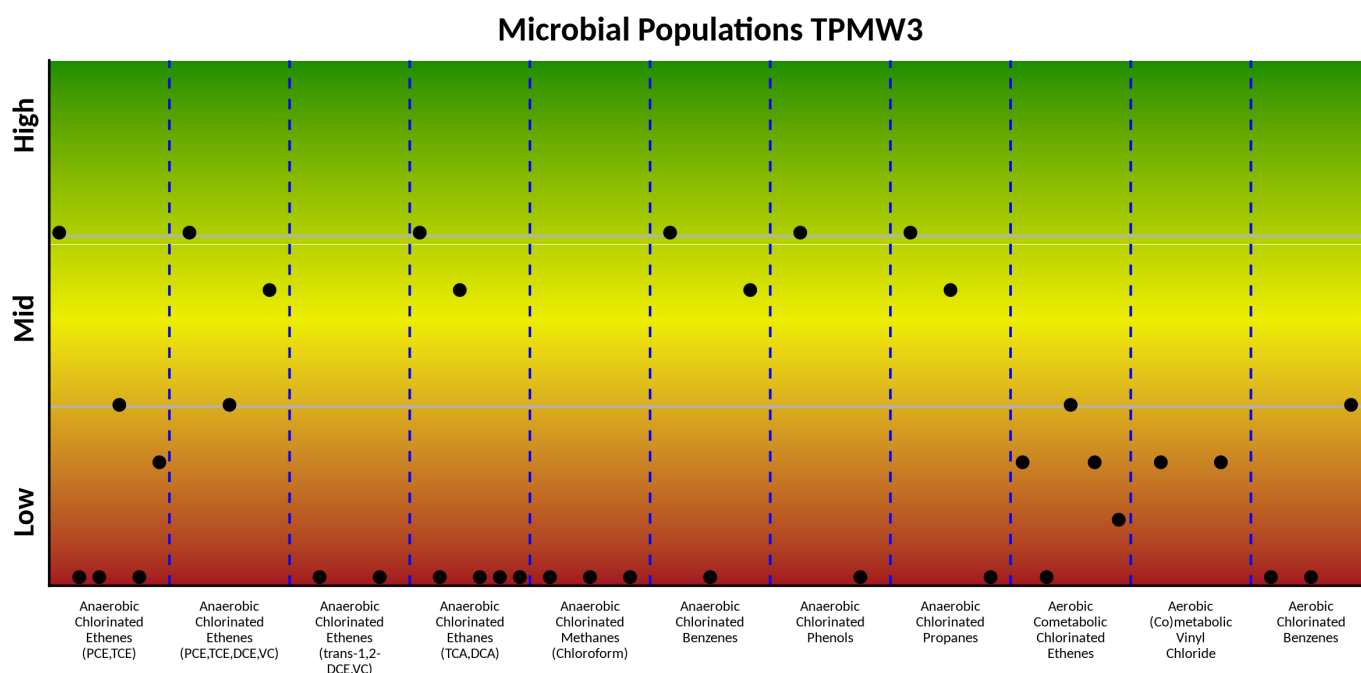


Figure 1: Microbial population summary to aid in evaluating potential pathways and biodegradation of specific contaminants.

Anaerobic - Reductive Dechlorination or Dichloroelimination		Aerobic - (Co)metabolism	
Chlorinated Ethenes (PCE, TCE)	DHC, DHBt, DSB, DSM, PCE-1, PCE-2	Chlorinated Ethenes (TCE,DCE,VC)	sMMO, TOD, PHE, RDEG, RMO
Chlorinated Ethenes (PCE, TCE, DCE, VC)	DHC, BVC, VCR	(Co)metabolic Vinyl Chloride	etnC, etnE
Chlorinated Ethenes (trans-1,2-DCE, VC)	TDR, CER	Chlorinated Benzenes	TOD, TCBO, PHE
Chlorinated Ethanes (TCA and 1,2-DCA)	DHC, DHBt, DHG, DSB ¹ , DCA, DCAR		
Chlorinated Methanes (Chloroform)	DHBt, DCM, CFR		
Chlorinated Benzenes	DHC, DHBt ² , DECO		
Chlorinated Phenols	DHC, DSB		
Chlorinated Propanes	DHC, DHG, DSB ¹		

¹ *Desulfitobacterium dichloroelimans* DCA1. ² Implicated in reductive dechlorination of dichlorobenzene and potentially chlorobenzene.

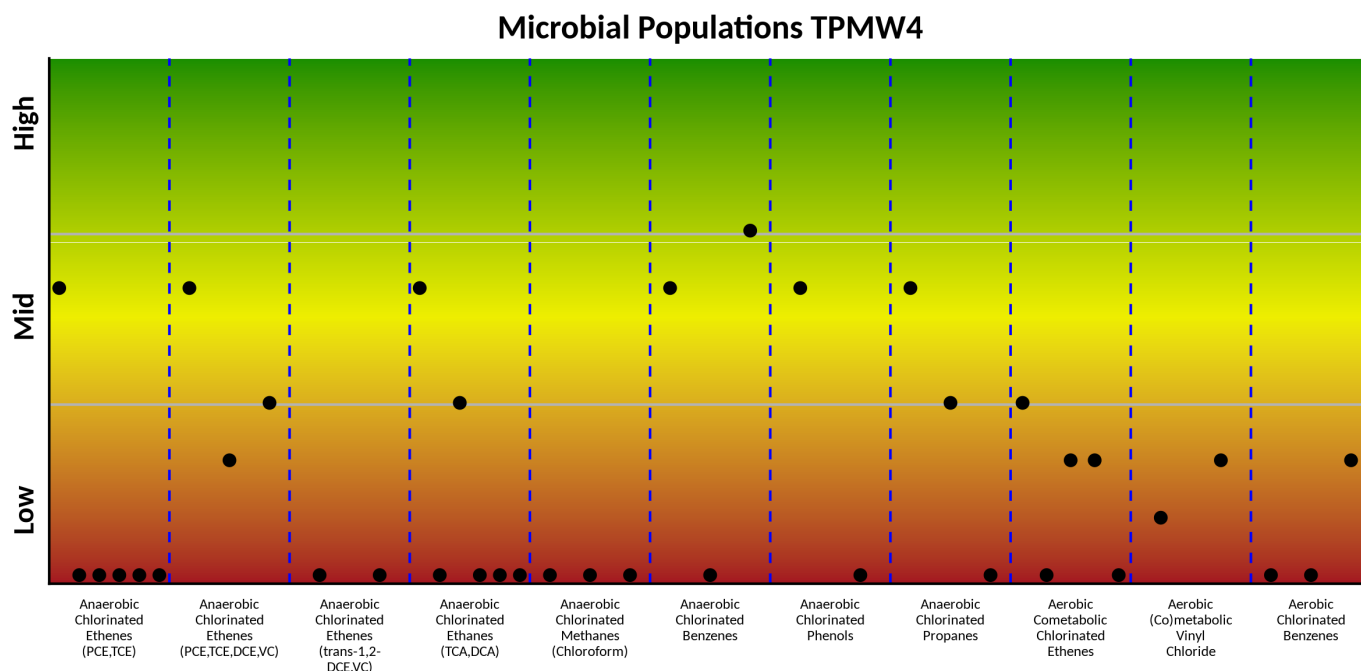


Figure 2: Microbial population summary to aid in evaluating potential pathways and biodegradation of specific contaminants.

Anaerobic - Reductive Dechlorination or Dichloroelimination		Aerobic - (Co)metabolism	
Chlorinated Ethenes (PCE, TCE)	DHC, DHBt, DSB, DSM, PCE-1, PCE-2	Chlorinated Ethenes (TCE,DCE,VC)	sMMO, TOD, PHE, RDEG, RMO
Chlorinated Ethenes (PCE, TCE, DCE, VC)	DHC, BVC, VCR	(Co)metabolic Vinyl Chloride	etnC, etnE
Chlorinated Ethenes (trans-1,2-DCE, VC)	TDR, CER	Chlorinated Benzenes	TOD, TCBO, PHE
Chlorinated Ethanes (TCA and 1,2-DCA)	DHC, DHBt, DHG, DSB ¹ , DCA, DCAR		
Chlorinated Methanes (Chloroform)	DHBt, DCM, CFR		
Chlorinated Benzenes	DHC, DHBt ² , DECO		
Chlorinated Phenols	DHC, DSB		
Chlorinated Propanes	DHC, DHG, DSB ¹		

¹Desulfotobacterium dichloroelimans DCA1. ²Implicated in reductive dechlorination of dichlorobenzene and potentially chlorobenzene.

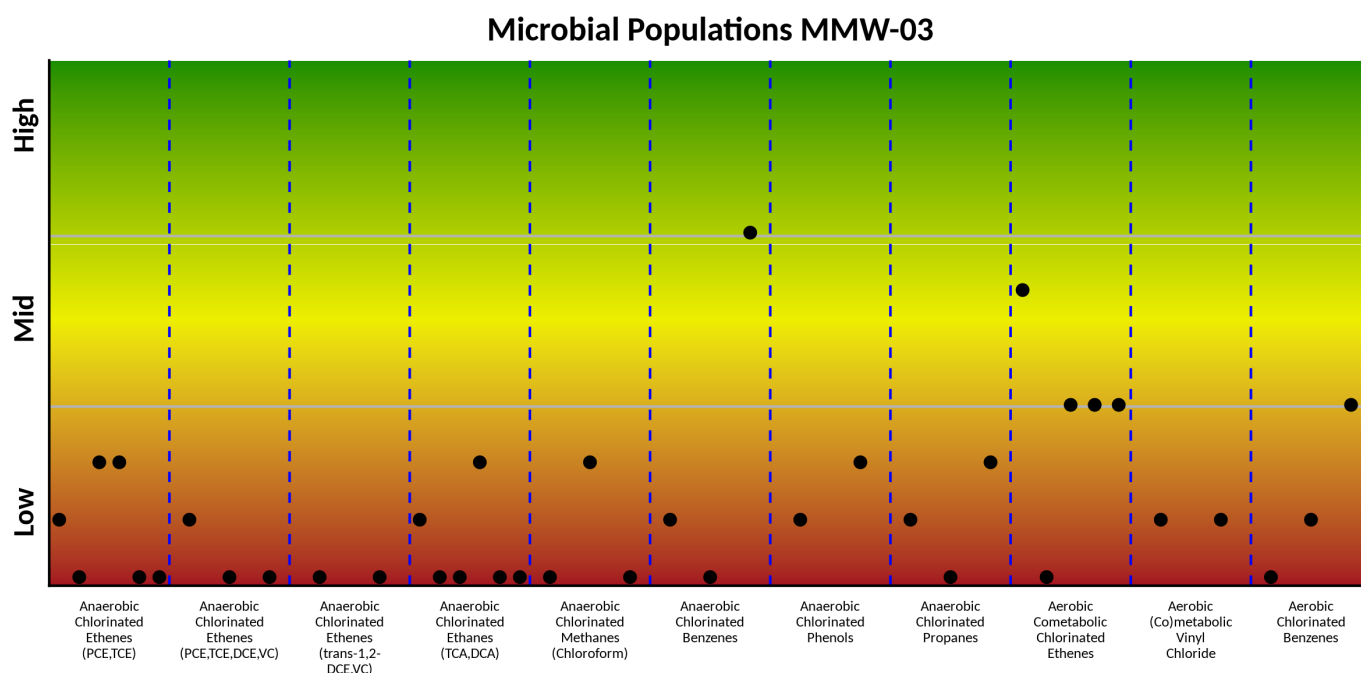


Figure 3: Microbial population summary to aid in evaluating potential pathways and biodegradation of specific contaminants.

<u>Anaerobic - Reductive Dechlorination or Dichloroelimination</u>		<u>Aerobic - (Co)metabolism</u>	
Chlorinated Ethenes (PCE, TCE)	DHC, DHBt, DSB, DSM, PCE-1, PCE-2	Chlorinated Ethenes (TCE,DCE,VC)	sMMO, TOD, PHE, RDEG, RMO
Chlorinated Ethenes (PCE, TCE, DCE, VC)	DHC, BVC, VCR	(Co)metabolic Vinyl Chloride	etnC, etnE
Chlorinated Ethenes (trans-1,2-DCE, VC)	TDR, CER	Chlorinated Benzenes	TOD, TCBO, PHE
Chlorinated Ethanes (TCA and 1,2-DCA)	DHC, DHBt, DHG, DSB ¹ , DCA, DCAR		
Chlorinated Methanes (Chloroform)	DHBt, DCM, CFR		
Chlorinated Benzenes	DHC, DHBt ² , DECO		
Chlorinated Phenols	DHC, DSB		
Chlorinated Propanes	DHC, DHG, DSB ¹		

¹*Desulfitobacterium dichloroelimans* DCA1. ²Implicated in reductive dechlorination of dichlorobenzene and potentially chlorobenzene.

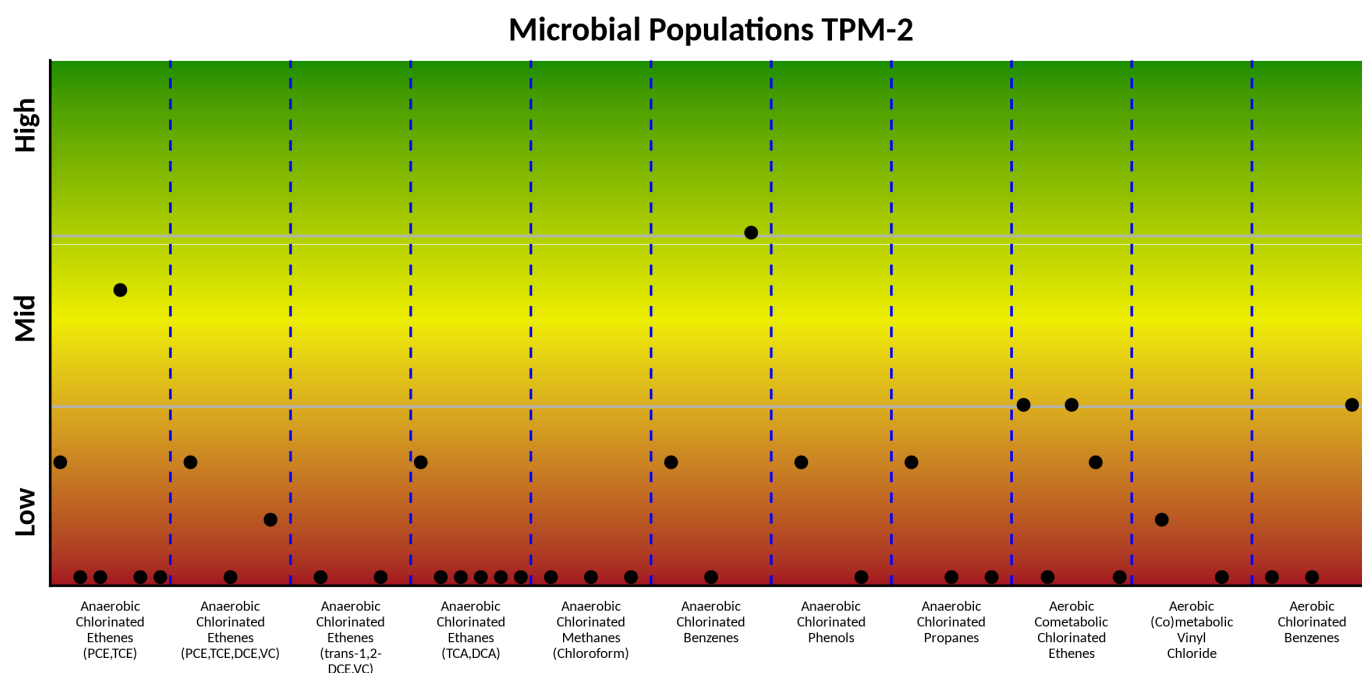


Figure 4: Microbial population summary to aid in evaluating potential pathways and biodegradation of specific contaminants.

Anaerobic - Reductive Dechlorination or Dichloroelimination		Aerobic - (Co)metabolism	
Chlorinated Ethenes (PCE, TCE)	DHC, DHBt, DSB, DSM, PCE-1, PCE-2	Chlorinated Ethenes (TCE,DCE,VC)	sMMO, TOD, PHE, RDEG, RMO
Chlorinated Ethenes (PCE, TCE, DCE, VC)	DHC, BVC, VCR	(Co)metabolic Vinyl Chloride	etnC, etnE
Chlorinated Ethenes (trans-1,2-DCE, VC)	TDR, CER	Chlorinated Benzenes	TOD, TCBO, PHE
Chlorinated Ethanes (TCA and 1,2-DCA)	DHC, DHBt, DHG, DSB ¹ , DCA, DCAR		
Chlorinated Methanes (Chloroform)	DHBt, DCM, CFR		
Chlorinated Benzenes	DHC, DHBt ² , DECO		
Chlorinated Phenols	DHC, DSB		
Chlorinated Propanes	DHC, DHG, DSB ¹		

¹*Desulfitobacterium dichloroelimans* DCA1. ²Implicated in reductive dechlorination of dichlorobenzene and potentially chlorobenzene.

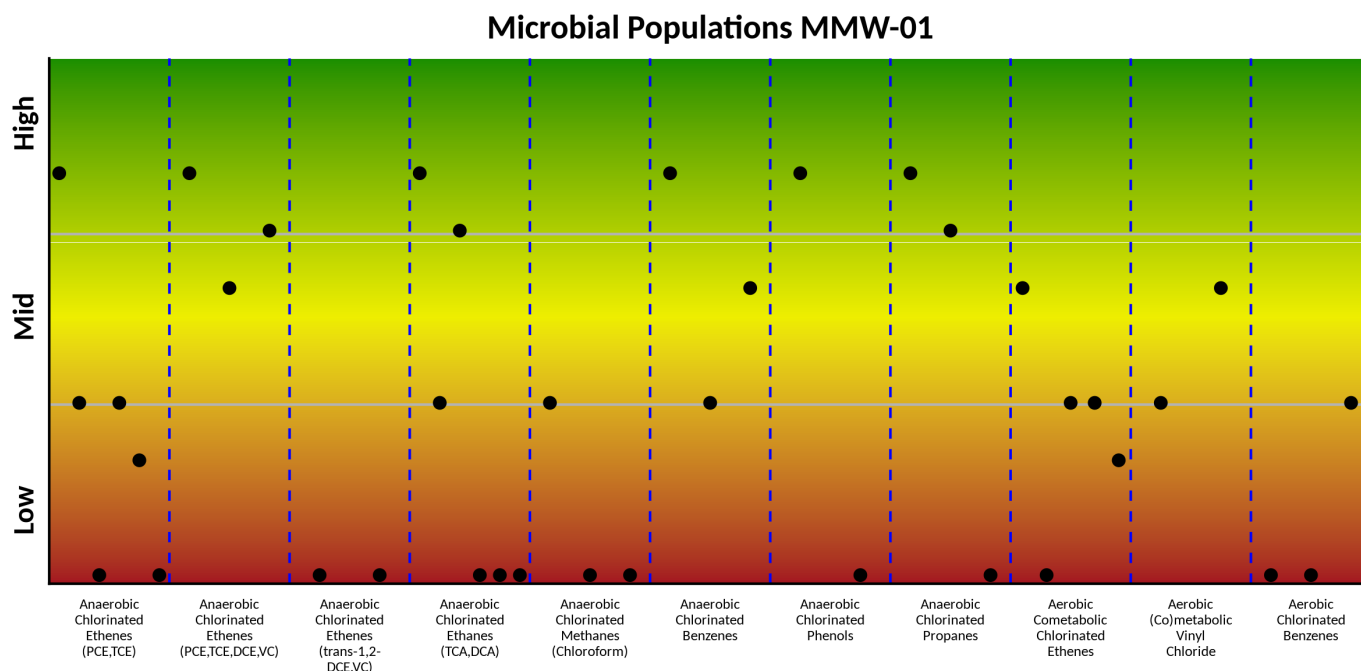


Figure 5: Microbial population summary to aid in evaluating potential pathways and biodegradation of specific contaminants.

Anaerobic - Reductive Dechlorination or Dichloroelimination		Aerobic - (Co)metabolism	
Chlorinated Ethenes (PCE, TCE)	DHC, DHBt, DSB, DSM, PCE-1, PCE-2	Chlorinated Ethenes (TCE,DCE,VC)	sMMO, TOD, PHE, RDEG, RMO
Chlorinated Ethenes (PCE, TCE, DCE, VC)	DHC, BVC, VCR	(Co)metabolic Vinyl Chloride	etnC, etnE
Chlorinated Ethenes (trans-1,2-DCE, VC)	TDR, CER	Chlorinated Benzenes	TOD, TCBO, PHE
Chlorinated Ethanes (TCA and 1,2-DCA)	DHC, DHBt, DHG, DSB ¹ , DCA, DCAR		
Chlorinated Methanes (Chloroform)	DHBt, DCM, CFR		
Chlorinated Benzenes	DHC, DHBt ² , DECO		
Chlorinated Phenols	DHC, DSB		
Chlorinated Propanes	DHC, DHG, DSB ¹		

¹*Desulfitobacterium dichloroelimans* DCA1. ²Implicated in reductive dechlorination of dichlorobenzene and potentially chlorobenzene.

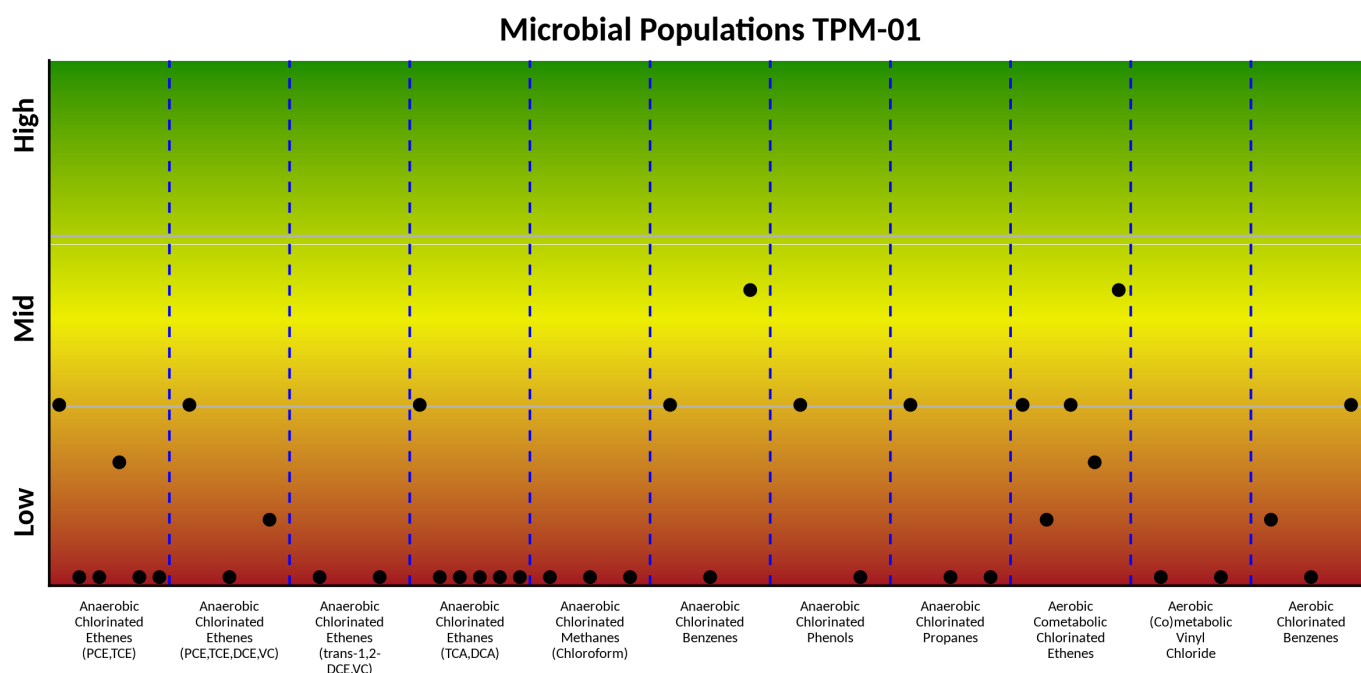


Figure 6: Microbial population summary to aid in evaluating potential pathways and biodegradation of specific contaminants.

Anaerobic - Reductive Dechlorination or Dichloroelimination		Aerobic - (Co)metabolism	
Chlorinated Ethenes (PCE, TCE)	DHC, DHBt, DSB, DSM, PCE-1, PCE-2	Chlorinated Ethenes (TCE,DCE,VC)	sMMO, TOD, PHE, RDEG, RMO
Chlorinated Ethenes (PCE, TCE, DCE, VC)	DHC, BVC, VCR	(Co)metabolic Vinyl Chloride	etnC, etnE
Chlorinated Ethenes (trans-1,2-DCE, VC)	TDR, CER	Chlorinated Benzenes	TOD, TCBO, PHE
Chlorinated Ethanes (TCA and 1,2-DCA)	DHC, DHBt, DHG, DSB ¹ , DCA, DCAR		
Chlorinated Methanes (Chloroform)	DHBt, DCM, CFR		
Chlorinated Benzenes	DHC, DHBt ² , DECO		
Chlorinated Phenols	DHC, DSB		
Chlorinated Propanes	DHC, DHG, DSB ¹		

¹*Desulfitobacterium dichloroelimans* DCA1. ²Implicated in reductive dechlorination of dichlorobenzene and potentially chlorobenzene.

Table 3: Summary of the QuantArray®-Chlor results for microorganisms responsible for reductive dechlorination for samples TPMW3, TPMW4, and MMW-03.

Sample Name	TPMW3	TPMW4	MMW-03
Sample Date	08/19/2019	08/19/2019	08/19/2019
Reductive Dechlorination	cells/mL	cells/mL	cells/mL
<i>Dehalococcoides</i> (DHC)	3.30E+04	4.00E+03	5.00E+00
tceA Reductase (TCE)	1.11E+02	1.32E+01	<5.00E-01
BAV1 Vinyl Chloride Reductase (BVC)	3.90E+02	2.92E+01	<5.00E-01
Vinyl Chloride Reductase (VCR)	1.96E+03	2.78E+02	<5.00E-01
<i>Dehalobacter</i> spp. (DHBt)	<4.80E+00	<4.60E+00	<4.80E+00
<i>Dehalobacter</i> DCM (DCM)	<4.80E+00	<4.60E+00	1.64E+02
<i>Dehalogenimonas</i> spp. (DHG)	1.66E+04	5.34E+03	<4.80E+00
<i>Desulfotobacterium</i> spp. (DSB)	<4.80E+00	<4.60E+00	1.90E+02
<i>Dehalobium chlorocoercia</i> (DECO)	8.25E+03	1.14E+04	1.00E+04
<i>Desulfuromonas</i> spp. (DSM)	1.17E+02	<4.60E+00	5.07E+01

Microbial Populations - Reductive Dechlorination

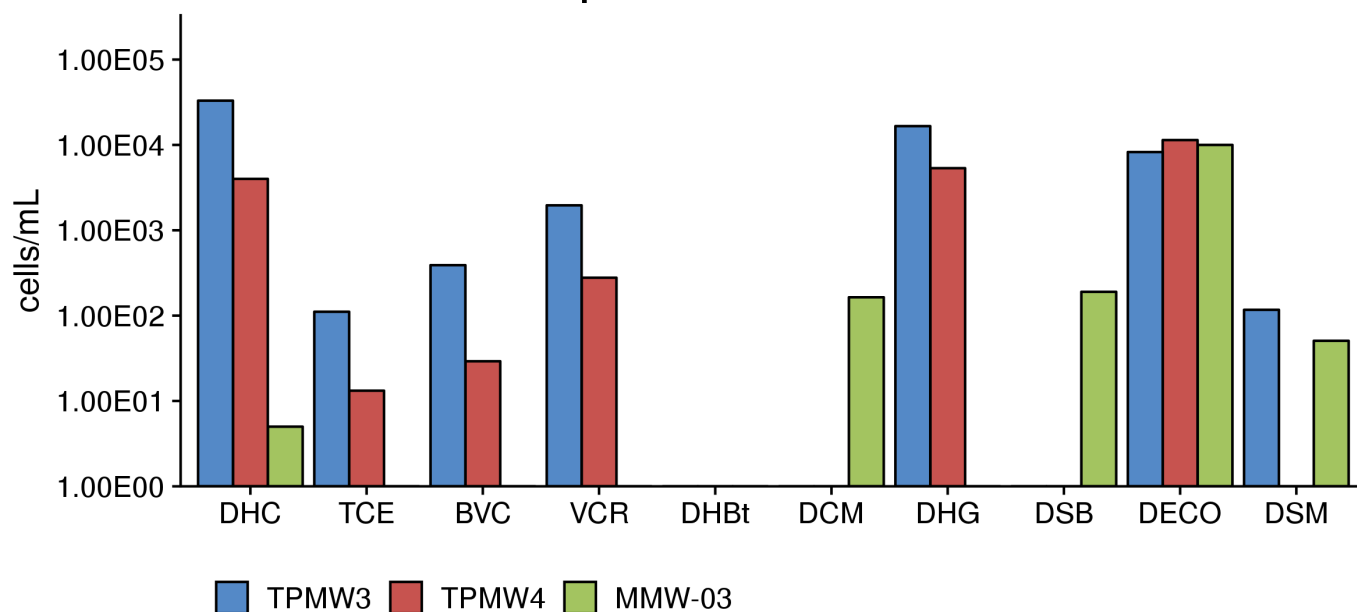


Figure 7: Comparison - microbial populations involved in reductive dechlorination.

Table 4: Summary of the QuantArray®-Chlor results for microorganisms responsible for reductive dechlorination for samples TPMW3, TPMW4, and MMW-03.

Sample Name	TPMW3	TPMW4	MMW-03
Sample Date	08/19/2019	08/19/2019	08/19/2019
<i>Reductive Dechlorination</i>	cells/mL	cells/mL	cells/mL
Chloroform Reductase (CFR)	<4.80E+00	<4.60E+00	<4.80E+00
1,1 DCA Reductase (DCA)	<4.80E+00	<4.60E+00	<4.80E+00
1,2 DCA Reductase (DCAR)	<4.80E+00	<4.60E+00	<4.80E+00
PCE Reductase (PCE-1)	<4.80E+00	<4.60E+00	<4.80E+00
PCE Reductase (PCE-2)	2.27E+01	<4.60E+00	<4.80E+00
<i>Dehalogenimonas trans</i> -1,2-DCE Reductase (TDR)	<4.80E+00	<4.60E+00	<4.80E+00
<i>Dehalogenimonas cerA</i> Reductase (CER)	<4.80E+00	<4.60E+00	<4.80E+00

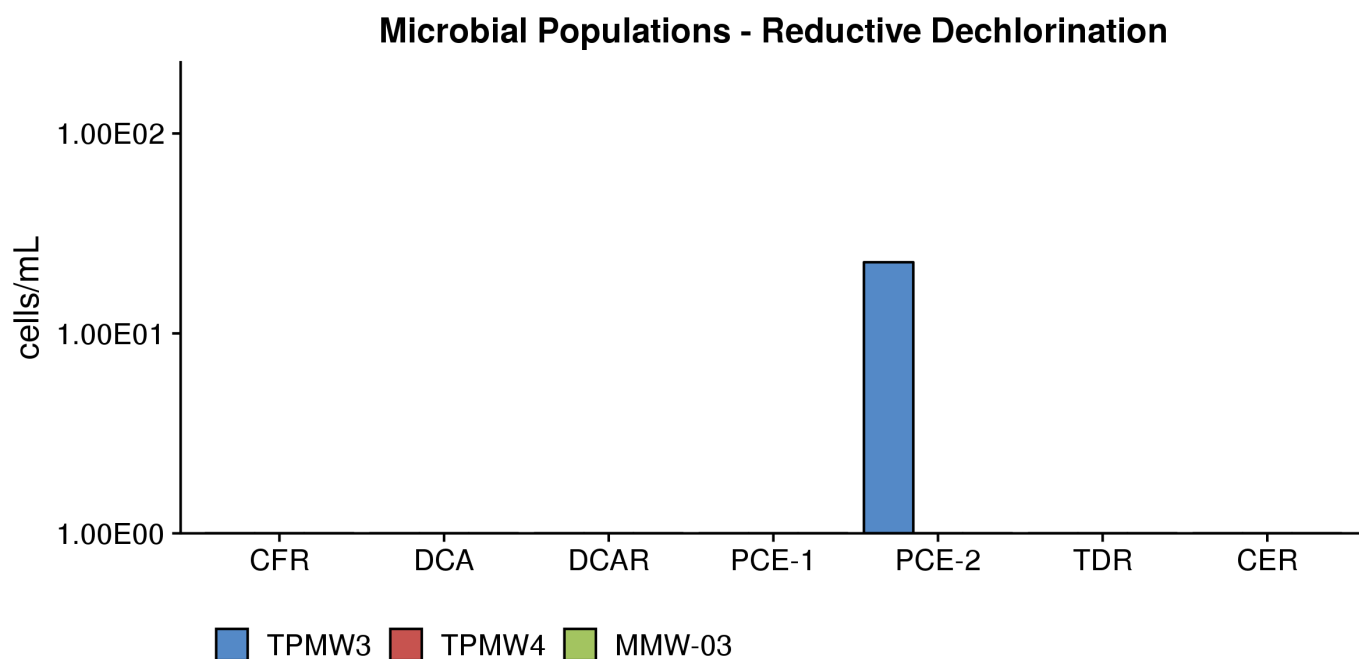


Figure 8: Comparison - microbial populations involved in reductive dechlorination.

Table 5: Summary of the QuantArray®-Chlor results for microorganisms responsible for reductive dechlorination for samples TPM-2, MMW-01, and TPM-01.

Sample Name	TPM-2	MMW-01	TPM-01
Sample Date	08/19/2019	08/20/2019	08/20/2019
<i>Reductive Dechlorination</i>	cells/mL	cells/mL	cells/mL
<i>Dehalococcoides</i> (DHC)	2.13E+01	1.51E+05	1.80E+02
tceA Reductase (TCE)	1.00E-01 (J)	4.90E+00	3.00E-01 (J)
BAV1 Vinyl Chloride Reductase (BVC)	<5.00E-01	6.35E+03	<5.00E-01
Vinyl Chloride Reductase (VCR)	5.00E-01 (J)	1.13E+04	2.00E-01 (J)
<i>Dehalobacter</i> spp. (DHBt)	<4.70E+00	9.22E+03	<4.70E+00
<i>Dehalobacter</i> DCM (DCM)	<4.70E+00	<4.90E+00	<4.70E+00
<i>Dehalogenimonas</i> spp. (DHG)	<4.70E+00	2.94E+05	<4.70E+00
<i>Desulfitobacterium</i> spp. (DSB)	<4.70E+00	<4.90E+00	<4.70E+00
<i>Dehalobium chlorocoercia</i> (DECO)	2.09E+04	4.18E+03	2.92E+03
<i>Desulfuromonas</i> spp. (DSM)	1.05E+03	1.37E+02	3.53E+01

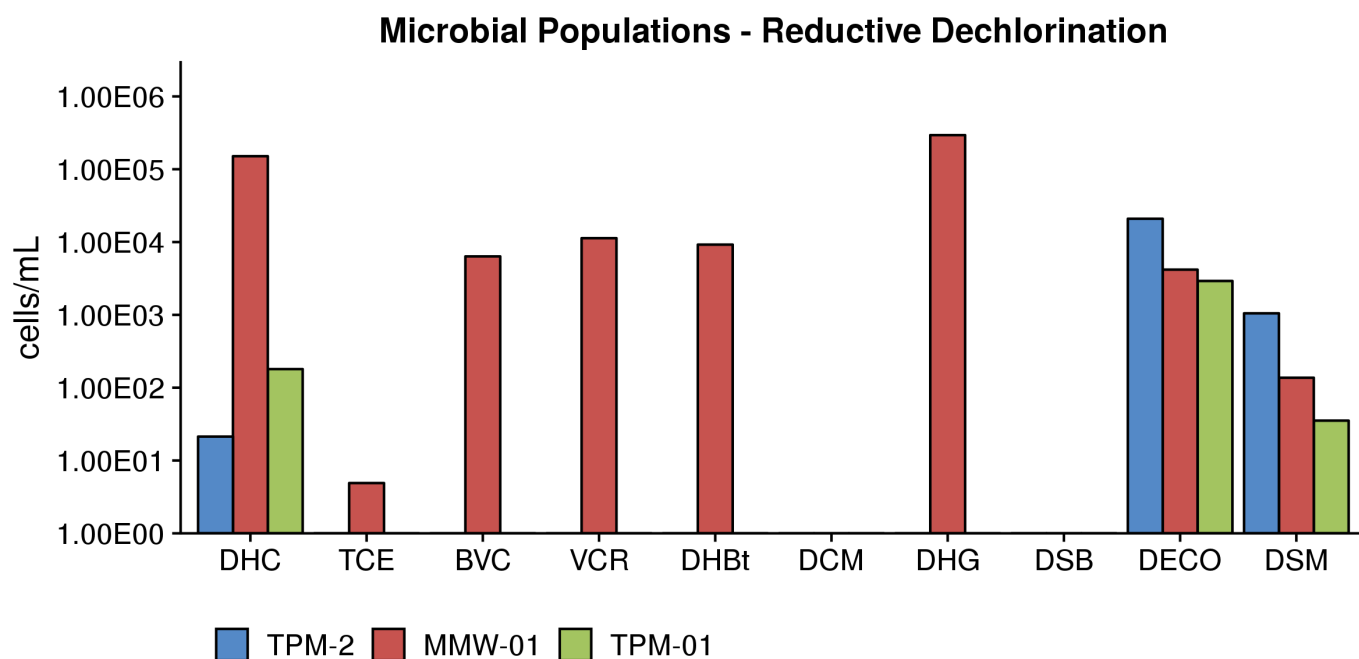


Figure 9: Comparison - microbial populations involved in reductive dechlorination.

Table 6: Summary of the QuantArray®-Chlor results for microorganisms responsible for reductive dechlorination for samples TPM-2, MMW-01, and TPM-01.

Sample Name	TPM-2	MMW-01	TPM-01
Sample Date	08/19/2019	08/20/2019	08/20/2019
<i>Reductive Dechlorination</i>	cells/mL	cells/mL	cells/mL
Chloroform Reductase (CFR)	<4.70E+00	<4.90E+00	<4.70E+00
1,1 DCA Reductase (DCA)	<4.70E+00	<4.90E+00	<4.70E+00
1,2 DCA Reductase (DCAR)	<4.70E+00	<4.90E+00	<4.70E+00
PCE Reductase (PCE-1)	<4.70E+00	3.86E+01	<4.70E+00
PCE Reductase (PCE-2)	<4.70E+00	<4.90E+00	<4.70E+00
<i>Dehalogenimonas trans</i> -1,2-DCE Reductase (TDR)	<4.70E+00	<4.90E+00	<4.70E+00
<i>Dehalogenimonas cerA</i> Reductase (CER)	<4.70E+00	5.20E+00	<4.70E+00

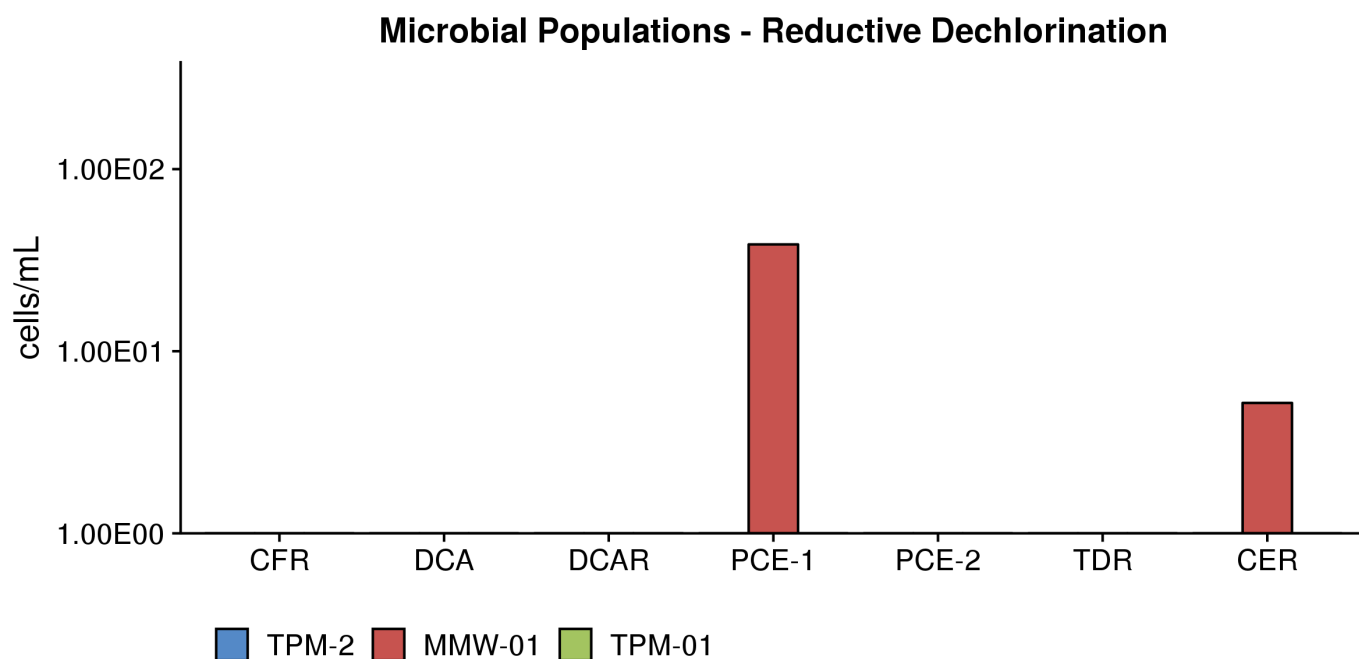


Figure 10: Comparison - microbial populations involved in reductive dechlorination.

Table 7: Summary of the QuantArray®-Chlor results for microorganisms responsible for aerobic (co)metabolism for samples TPMW3, TPMW4, and MMW-03.

Sample Name	TPMW3	TPMW4	MMW-03
Sample Date	08/19/2019	08/19/2019	08/19/2019
<i>Aerobic (Co)Metabolic</i>	cells/mL	cells/mL	cells/mL
Soluble Methane Monooxygenase (SMMO)	6.36E+02	1.86E+03	1.48E+04
Toluene Dioxygenase (TOD)	<4.80E+00	<4.60E+00	<4.80E+00
Phenol Hydroxylase (PHE)	9.25E+03	3.99E+02	3.03E+03
Trichlorobenzene Dioxygenase (TCBO)	<4.80E+00	<4.60E+00	1.30E+01
Toluene Monooxygenase 2 (RDEG)	8.57E+02	3.06E+02	2.69E+03
Toluene Monooxygenase (RMO)	2.86E+01	<4.60E+00	1.94E+03
Ethene Monooxygenase (EtnC)	5.85E+02	6.83E+01	6.62E+01
Epoxyalkane Transferase (EtnE)	8.20E+02	6.74E+02	8.53E+01
Dichloromethane Dehalogenase (DCMA)	<4.80E+00	<4.60E+00	<4.80E+00

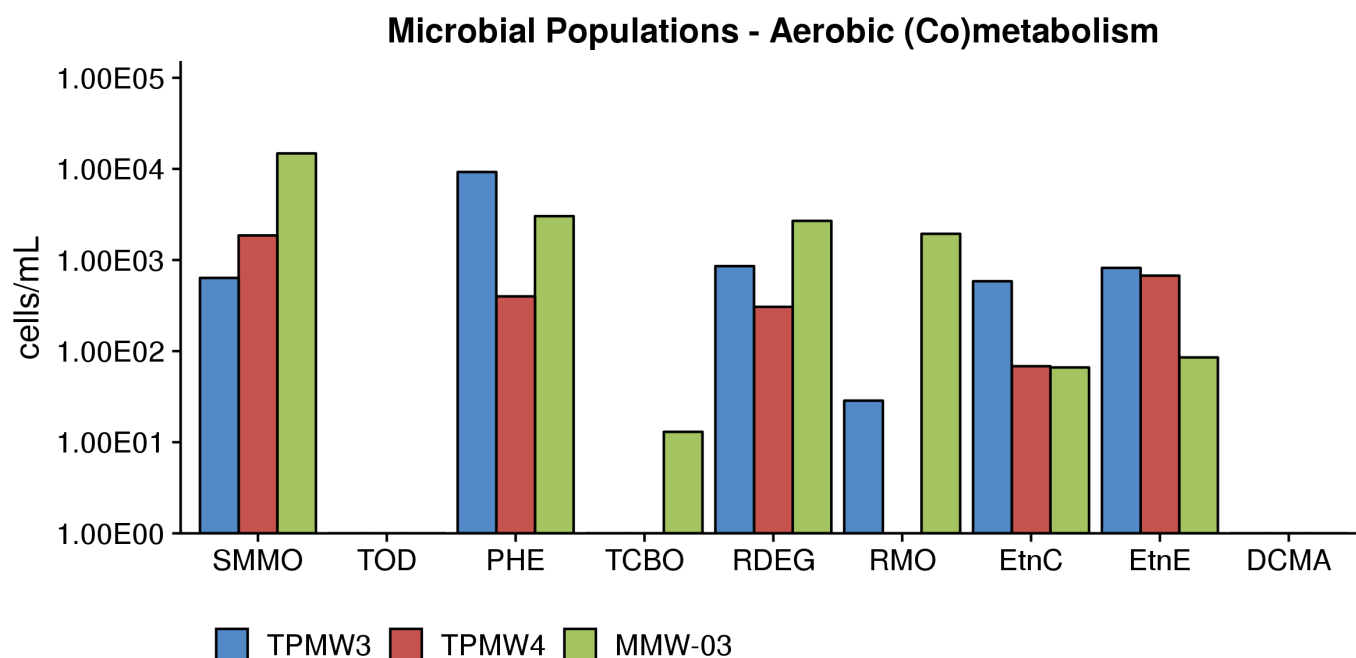


Figure 11: Comparison - microbial populations involved in aerobic (co)metabolism.

Table 8: Summary of the QuantArray®-Chlor results for microorganisms responsible for aerobic (co)metabolism for samples TPM-2, MMW-01, and TPM-01.

Sample Name	TPM-2	MMW-01	TPM-01
Sample Date	08/19/2019	08/20/2019	08/20/2019
<i>Aerobic (Co)Metabolic</i>	cells/mL	cells/mL	cells/mL
Soluble Methane Monooxygenase (SMMO)	3.14E+03	1.20E+04	1.05E+03
Toluene Dioxygenase (TOD)	<4.70E+00	<4.90E+00	2.95E+01
Phenol Hydroxylase (PHE)	4.52E+03	3.09E+03	4.20E+03
Trichlorobenzene Dioxygenase (TCBO)	<4.70E+00	<4.90E+00	<4.70E+00
Toluene Monooxygenase 2 (RDEG)	6.24E+02	1.69E+03	1.03E+02
Toluene Monooxygenase (RMO)	<4.70E+00	2.91E+02	3.74E+04
Ethene Monooxygenase (EtnC)	4.51E+01	8.06E+03	<4.70E+00
Epoxyalkane Transferase (EtnE)	<4.70E+00	2.64E+04	<4.70E+00
Dichloromethane Dehalogenase (DCMA)	<4.70E+00	<4.90E+00	<4.70E+00

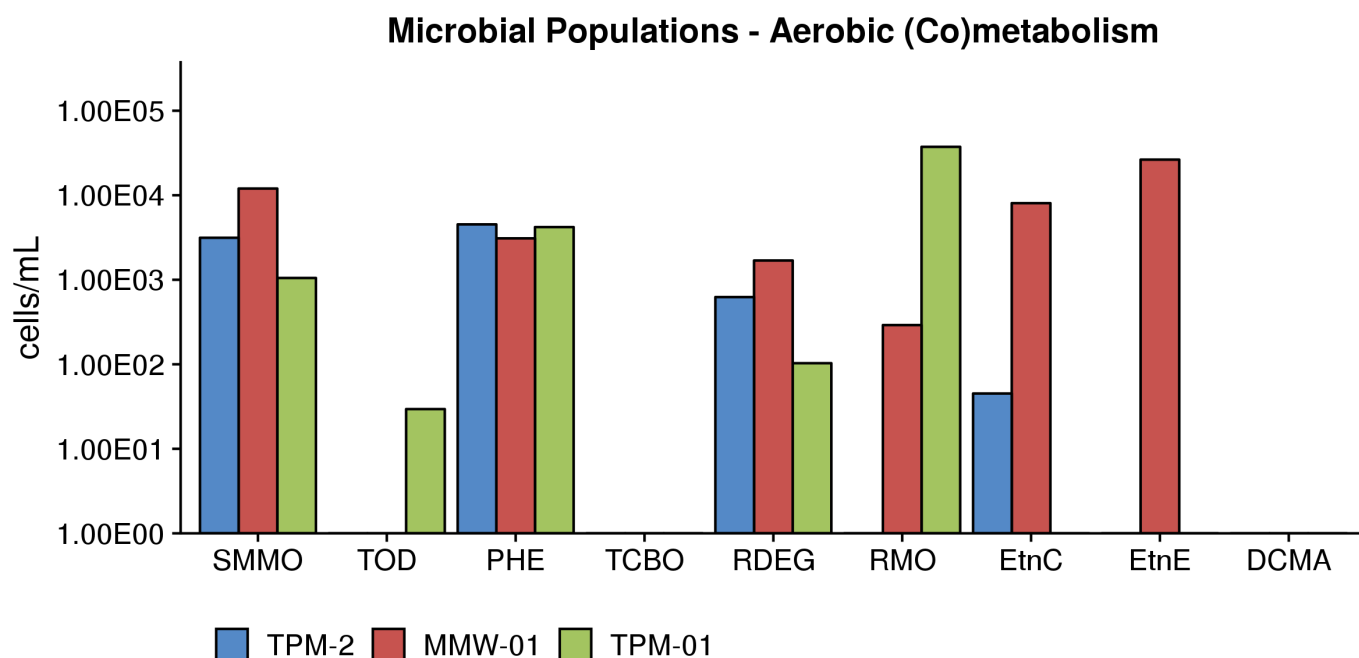


Figure 12: Comparison - microbial populations involved in aerobic (co)metabolism.

Table 9: Summary of the QuantArray® results for total bacteria and other populations for samples TPMW3, TPMW4, and MMW-03.

Sample Name	TPMW3	TPMW4	MMW-03
Sample Date	08/19/2019	08/19/2019	08/19/2019
Other	cells/mL	cells/mL	cells/mL
Total Eubacteria (EBAC)	1.17E+07	5.13E+06	5.33E+07
Sulfate Reducing Bacteria (APS)	4.66E+04	9.61E+04	2.20E+05
Methanogens (MGN)	5.54E+02	1.81E+03	3.93E+01

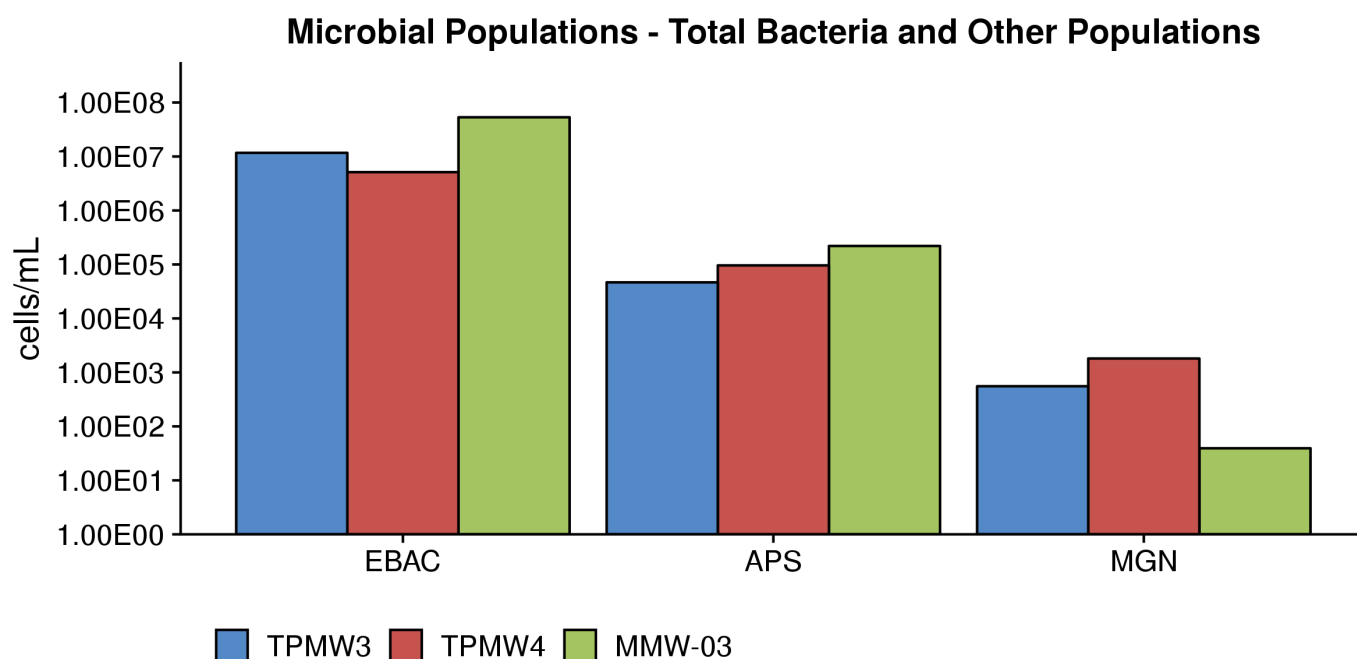


Figure 13: Comparison - microbial populations.

Table 10: Summary of the QuantArray® results for total bacteria and other populations for samples TPM-2, MMW-01, and TPM-01.

Sample Name	TPM-2	MMW-01	TPM-01
Sample Date	08/19/2019	08/20/2019	08/20/2019
Other	cells/mL	cells/mL	cells/mL
Total Eubacteria (EBAC)	4.08E+07	2.34E+07	7.50E+06
Sulfate Reducing Bacteria (APS)	4.52E+05	8.36E+04	6.36E+04
Methanogens (MGN)	5.05E+02	1.21E+03	1.61E+03

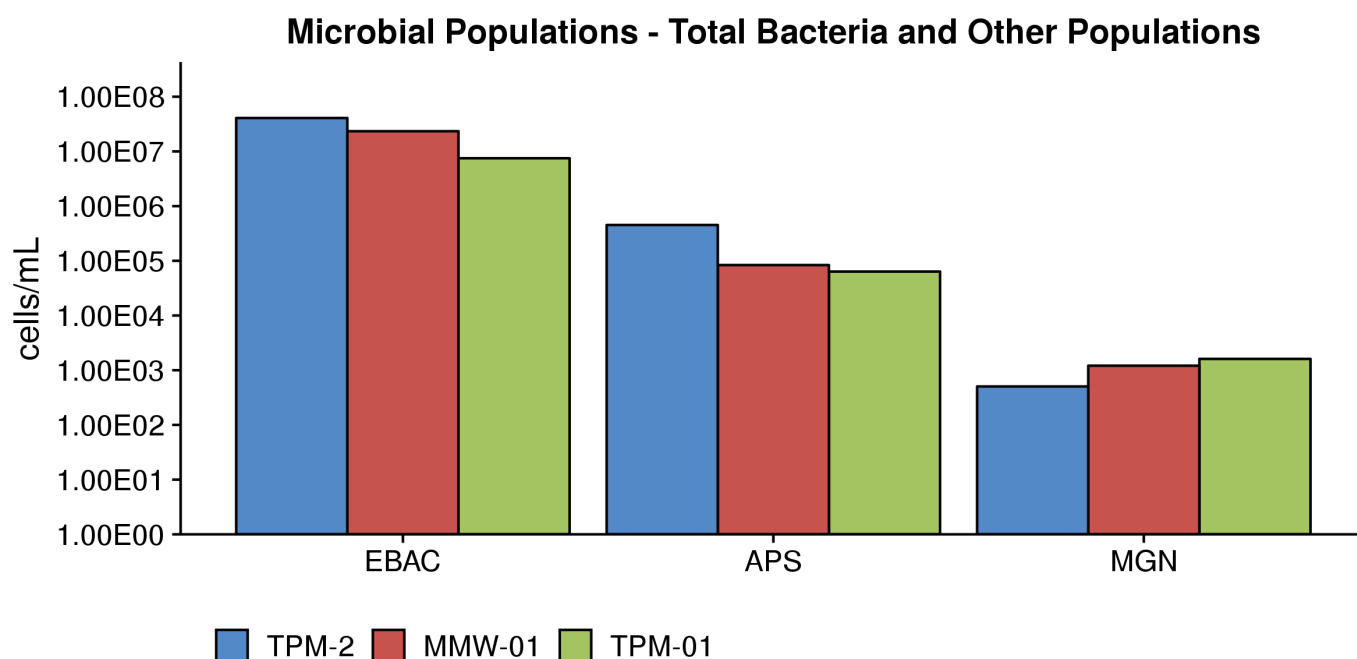


Figure 14: Comparison - microbial populations.

Interpretation

The overall purpose of the QuantArray®-Chlor is to give site managers the ability to simultaneously yet economically evaluate the potential for biodegradation of a spectrum of common chlorinated contaminants through a multitude of anaerobic and aerobic (co)metabolic pathways in order to provide a clearer and more comprehensive view of contaminant biodegradation. The following discussion describes the interpretation of results in general terms and is meant to serve as a guide.

Reductive Dechlorination - Chlorinated Ethenes: While a number of bacterial cultures including *Dehalococcoides*, *Dehalobacter*, *Desulfotobacterium*, and *Desulfuromonas* spp. capable of utilizing PCE and TCE as growth-supporting electron acceptors have been isolated [1–5], *Dehalococcoides* may be the most important because they are the only bacterial group that has been isolated to date which is capable of complete reductive dechlorination of PCE to ethene [6]. In fact, the presence of *Dehalococcoides* has been associated with complete reductive dechlorination to ethene at sites across North America and Europe [7], and Lu et al. [8] have proposed using a *Dehalococcoides* concentration of 1×10^4 cells/mL as a screening criterion to identify sites where biological reductive dechlorination is predicted to proceed at “generally useful” rates.

At chlorinated ethene sites, any “stall” leading to the accumulation of daughter products, especially vinyl chloride, would be a substantial concern. While *Dehalococcoides* concentrations greater than 1×10^4 cells/mL correspond to ethene production and useful rates of dechlorination, the range of chlorinated ethenes degraded varies by strain within the *Dehalococcoides* genus [6, 9], and the presence of co-contaminants and competitors can have complex impacts on the halo-respiring microbial community [10–15]. Therefore, QuantArray®-Chlor also provides quantification of a suite of reductive dehalogenase genes (PCE, TCE, BVC, VCR, CER, and TDR) to more definitively confirm the potential for reductive dechlorination of all chlorinated ethene compounds including vinyl chloride.

Perhaps most importantly, QuantArray®-Chlor quantifies TCE reductase (TCE) and both known vinyl chloride reductase genes (BVC, VCR) from *Dehalococcoides* to conclusively evaluate the potential for complete reductive dechlorination of chlorinated ethenes to non-toxic ethene [16–18]. In addition, the analysis also includes quantification of reductive dehalogenase genes from *Dehalogenimonas* spp. capable of reductive dechlorination of chlorinated ethenes. More specifically, these are the trans-1,2-DCE dehalogenase gene (TDR) from strain WBC-2 [19] and the vinyl chloride reductase gene (CER) from GP, the only known organisms other than *Dehalococcoides* capable of vinyl chloride reduction [20]. Finally, PCE reductase genes responsible for sequential reductive dechlorination of PCE to cis-DCE by *Sulfurospirillum* and *Geobacter* spp. are also quantified. In mixed cultures, evidence increasingly suggests that partial dechlorinators like *Sulfurospirillum* and *Geobacter* may be responsible for the majority of reductive dechlorination of PCE to TCE and cis-DCE while *Dehalococcoides* functions more as cis-DCE and vinyl chloride reducing specialists [10, 21].

Reductive Dechlorination - Chlorinated Ethanes: Under anaerobic conditions, chlorinated ethanes are susceptible to reductive dechlorination by several groups of halo-respiring bacteria including *Dehalobacter*, *Dehalogenimonas*, and *Dehalococcoides*. While the reported range of chlorinated ethanes utilized varies by genus, species, and sometimes at the strain level, several general observations can be made regarding biodegradation pathways and daughter product formation. *Dehalobacter* spp. have been isolated that are capable of sequential reductive dechlorination of 1,1,1-TCA through 1,1-DCA to chloroethane [13]. Biodegradation of 1,1,2-TCA by several halo-respiring bacteria including *Dehalobacter* and *Dehalogenimonas* spp. proceeds via dichloroelimination producing vinyl chloride [22–24]. Similarly, 1,2-DCA biodegradation by *Dehalobacter*, *Dehalogenimonas*, and *Dehalococcoides* occurs via dichloroelimination producing ethene. While not utilized by many *Desulfotobacterium* isolates, at least one strain, *Desulfotobacterium dichloroeliminans* strain DCA1, is also capable of dichloroelimination of 1,2-DCA [25]. The 1,2-dichloroethane reductive dehalogenase gene (DCAR) from members of *Desulfotobacterium* and *Dehalobacter* is known to dechlorinate 1,2-DCA to ethene, while the 1,1-dichloroethane reductive dehalogenase (DCA) targets the gene responsible for 1,1-DCA dechlorination in some strains of *Dehalobacter*. In addition to chloroform, chloroform reductase (CFR) has also been shown to be responsible for reductive dechlorination of 1,1,1-TCA [26].

Reductive Dechlorination - Chlorinated Methanes: Chloroform is a common co-contaminant at chlorinated solvent sites and can inhibit reductive dechlorination of chlorinated ethenes. Grostern et al. demonstrated that a *Dehalobacter* population was capable of reductive dechlorination of chloroform to produce dichloromethane [27]. The *cfrA* gene encodes the reductase which catalyzes this initial step in chloroform biodegradation [26]. Justicia-Leon et al. have since shown that dichloromethane can support growth of a distinct group of *Dehalobacter* strains via fermentation [28]. The *Dehalobacter* DCM assay targets the 16S rRNA gene of these strains.

Reductive Dechlorination - Chlorinated Benzenes: Chlorinated benzenes are an important class of industrial solvents and chemical intermediates in the production of drugs, dyes, herbicides, and insecticides. The physical-chemical properties of chlorinated benzenes as well as susceptibility to biodegradation are functions of their degree of chlorination and the positions of chlorine substituents. Under anaerobic conditions, reductive dechlorination of higher chlorinated benzenes including hexachlorobenzene (HCB),

pentachlorobenzene (PeCB), tetrachlorobenzene (TeCB) isomers, and trichlorobenzene (TCB) isomers has been well documented [29], although biodegradation of individual compounds and isomers varies between isolates. For example, *Dehalococcoides* strain CBDB1 reductively dechlorinates HCB, PeCB, all three TeCB isomers, 1,2,3-TCB, and 1,2,4-TCB [9, 30]. *Dehalobium chlorocoercia* DF-1 has been shown to be capable of reductive dechlorination of HCB, PeCB, and 1,2,3,5-TeCB [31]. The dichlorobenzene (DCB) isomers and chlorobenzene (CB) were considered relatively recalcitrant under anaerobic conditions. However, new evidence has demonstrated reductive dechlorination of DCBs to CB and CB to benzene [32] with corresponding increases in concentrations of *Dehalobacter* spp. [33].

Reductive Dechlorination - Chlorinated Phenols: Pentachlorophenol (PCP) was one of the most widely used biocides in the U.S. and despite residential use restrictions, is still extensively used industrially as a wood preservative. Along with PCP, the tetrachlorophenol and trichlorophenol isomers were also used as fungicides in wood preserving formulations. 2,4-Dichlorophenol and 2,4,5-TCP were used as chemical intermediates in herbicide production (e.g. 2,4-D) and chlorophenols are known byproducts of chlorine bleaching in the pulp and paper industry. While the range of compounds utilized varies by strain, some *Dehalococcoides* isolates are capable of reductive dechlorination of PCP and other chlorinated phenols. For example, *Dehalococcoides* strain CBDB1 is capable of utilizing PCP, all three tetrachlorophenol (TeCP) congeners, all six trichlorophenol (TCP) congeners, and 2,3-dichlorophenol (2,3-DCP). PCP dechlorination by strain CBDB1 produces a mixture of 3,5-DCP, 3,4-DCP, 2,4-DCP, 3-CP, and 4-CP [34]. In the same study, however, *Dehalococcoides* strain 195 dechlorinated a more narrow spectrum of chlorophenols which included 2,3-DCP, 2,3,4-TCP, and 2,3,6-TCP, but no other TCPs or PCP. Similar to *Dehalococcoides*, some species and strains of *Desulfitobacterium* are capable of utilizing PCP and other chlorinated phenols. *Desulfitobacterium hafniense* PCP-1 is capable of reductive dechlorination of PCP to 3-CP [35]. However, the ability to biodegrade PCP is not universal among *Desulfitobacterium* isolates. *Desulfitobacterium* sp. strain PCE1 and *D. chlororespirans* strain Co23, for example, can utilize some TCP and DCP isomers, but not PCP for growth [2, 36].

Reductive Dechlorination - Chlorinated Propanes: *Dehalogenimonas* is a recently described bacterial genus of the phylum Chloroflexi which also includes the well-known chloroethene-respiring *Dehalococcoides* [23]. The *Dehalogenimonas* isolates characterized to date are also halo-respiring bacteria, but utilize a rather unique range of chlorinated compounds as electron acceptors including chlorinated propanes (1,2,3-TCP and 1,2-DCP) and a variety of other vicinally chlorinated alkanes including 1,1,2,2-tetrachloroethane, 1,1,2-trichloroethane, and 1,2-dichloroethane [23].

Aerobic - Chlorinated Ethene Cometabolism: Under aerobic conditions, several different types of bacteria including methane-oxidizing bacteria (methanotrophs), and many benzene, toluene, ethylbenzene, xylene, and (BTEX)-utilizing bacteria can cometabolize or co-oxidize TCE, DCE, and vinyl chloride [37]. In general, cometabolism of chlorinated ethenes is mediated by monooxygenase enzymes with “relaxed” specificity that oxidize a primary (growth supporting) substrate (e.g. methane) and co-oxidize the chlorinated compound (e.g. TCE). QuantArray[®]-Chlor provides quantification of a suite of genes encoding oxygenase enzymes capable of co-oxidation of chlorinated ethenes including soluble methane monooxygenase (sMMO). Soluble methane monooxygenases co-oxidize a broad range of chlorinated compounds [38–41] including TCE, *cis*-DCE, and vinyl chloride. Furthermore, soluble methane monooxygenases are generally believed to support greater rates of aerobic cometabolism [40]. QuantArray[®]-Chlor also quantifies aromatic oxygenase genes encoding ring hydroxylating toluene monooxygenase genes (RMO, RDEG), toluene dioxygenase (TOD) and phenol hydroxylases (PHE) capable of TCE co-oxidation [42–46]. TCE or a degradation product has been shown to induce expression of toluene monooxygenases in some laboratory studies [43, 47] raising the possibility of TCE cometabolism with an alternative (non-aromatic) growth substrate. Moreover, while a number of additional factors must be considered, recent research under ESTCP Project 201584 has shown positive correlations between concentrations of monooxygenase genes (soluble methane monooxygenase, ring hydroxylating monooxygenases, and phenol hydroxylase) and the rate of TCE degradation [48].

Aerobic - Chlorinated Ethane Cometabolism: While less widely studied than cometabolism of chlorinated ethenes, some chlorinated ethanes are also susceptible to co-oxidation. As mentioned previously, soluble methane monooxygenases (sMMO) exhibit very relaxed specificity. In laboratory studies, sMMO has been shown to co-oxidize a number of chlorinated ethanes including 1,1,1-TCA and 1,2-DCA [38, 40].

Aerobic - Vinyl Chloride Cometabolism: Beginning in the early 1990s, numerous microcosm studies demonstrated aerobic oxidation of vinyl chloride under MNA conditions without the addition of exogenous primary substrates. Since then, strains of

Mycobacterium, *Nocardioides*, *Pseudomonas*, *Ochrobactrum*, and *Ralstonia* species have been isolated which are capable of aerobic growth on both ethene and vinyl chloride (see Mattes et al. [49] for a review). The initial steps in the pathway are the monooxygenase (*etnABCD*) catalyzed conversion of ethene and vinyl chloride to their respective epoxyalkanes (epoxyethane and chlorooxirane), followed by epoxyalkane:CoM transferase (*etnE*) mediated conjugation and breaking of the epoxide [50].

Aerobic - Chlorinated Benzenes: In general, chlorobenzenes with four or less chlorine groups are susceptible to aerobic biodegradation and can serve as growth-supporting substrates. Toluene dioxygenase (TOD) has a relatively relaxed substrate specificity and mediates the incorporation of both atoms of oxygen into the aromatic ring of benzene and substituted benzenes (toluene and chlorobenzene). Comparison of TOD levels in background and source zone samples from a CB-impacted site suggested that CBs promoted growth of TOD-containing bacteria [51]. In addition, aerobic biodegradation of some trichlorobenzene and even tetrachlorobenzene isomers is initiated by a group of related trichlorobenzene dioxygenase genes (TCBO). Finally, phenol hydroxylases catalyze the continued oxidation and in some cases, the initial oxidation of a variety of monoaromatic compounds. In an independent study, significant increases in numbers of bacteria containing PHE genes corresponded to increases in biodegradation of DCB isomers [51].

Aerobic - Chlorinated Methanes: Many aerobic methylotrophic bacteria, belonging to diverse genera (*Hyphomicrobium*, *Methylobacterium*, *Methylophilus*, *Pseudomonas*, *Paracoccus*, and *Alibacter*) have been isolated which are capable of utilizing dichloromethane (DCM) as a growth substrate. The DCM metabolic pathway in methylotrophic bacteria is initiated by a dichloromethane dehalogenase (DCMA) gene. DCMA is responsible for aerobic biodegradation of dichloromethane by methylotrophs by first producing formaldehyde which is then further oxidized [52]. As discussed in previous sections, soluble methane monooxygenase (sMMO) exhibits relaxed specificity and co-oxidizes a broad spectrum of chlorinated hydrocarbons. In addition to chlorinated ethenes, sMMO has been shown to co-oxidize chloroform in laboratory studies [38, 41].

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**DATA USABILITY SUMMARY REPORT
CLINTON WEST PLAZA, ITHACA, NEW YORK**

Client: EA Engineering, Science & Technology, Inc., Syracuse, New York
SDG: 19H1028
Laboratory: Con-Test Analytical Laboratory, East Longmeadow, Massachusetts
Site: Clinton West Plaza, Ithaca, New York
Date: September 25, 2019

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	MMW-02	19H1028-01	Water
1MS	MMW-02MS	19H1028-01MS	Water
1MSD	MMW-02MSD	19H1028-01MSD	Water
2	MMW-03	19H1028-02	Water
3	MMW-04	19H1028-03	Water
4	TPW-3	19H1028-04	Water
5	TPW-4	19H1028-05	Water
6	DUP-01	19H1028-06	Water
7	TPM-2	19H1028-07	Water

A Data Usability Summary Review was performed on the analytical data for seven water samples collected by EA Engineering on August 19, 2019 at the Clinton West Plaza site in Ithaca, New York. The samples were analyzed under Environmental Protection Agency (USEPA) "Test Methods for the Evaluation of Solid Waste, USEPA SW-846, Third Edition, September 1986, with revisions".

Specific method references are as follows:

Analysis
VOCs

Method References
USEPA SW-846 Method 8260C

The data have been validated according to the protocols and quality control (QC) requirements of the analytical methods and the USEPA Region II Data Review Standard Operating Procedures (SOPs) as follows:

- SOP Number HW-24, Revision 4, September 2014: Validating Volatile Organic Compounds by SW-846 Method 8260B & 8260C;
- and the reviewer's professional judgment.

The following items/criteria were reviewed for this report:

Organics

- Data Completeness
- Holding times and sample preservation
- Surrogate Spike recoveries
- Matrix Spike/Matrix Spike Duplicate (MS/MSD) recoveries
- Laboratory Control Sample (LCS) recoveries
- Method blank and field blank contamination
- Gas Chromatography (GC)/Mass Spectroscopy (MS) tuning
- Initial and continuing calibration summaries
- Compound Quantitation
- Internal standard area and retention time summary forms
- Tentatively Identified Compounds (TICs)
- Field Duplicate sample precision

Data Usability Assessment

There were no rejections of data.

Overall the data is acceptable for the intended purposes as qualified for the data quality indicator criteria as detailed in this report.

Please note that any results qualified (U) due to blank contamination may be then qualified (J) due to another action. Therefore, the results may be qualified (UJ) due to the culmination of the blank contaminations and actions from other exceedances of QC criteria.

Data Completeness

- The data is a complete Category B data package as defined under the requirements for the NYS Department of Environmental Conservation Analytical Services Protocol.

Volatile Organic Compounds (VOCs)

Holding Times

- All samples were analyzed within 14 days for preserved water samples.

Surrogate Spike Recoveries

- All samples exhibited acceptable surrogate %R values.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries

- The following table presents MS/MSD samples that exhibited percent recoveries (%R) outside the QC limits and/or relative percent differences (RPD) above QC limits. A low %R may indicate a potential low bias while a high %R may indicate a potential high bias. For a low %R, positive results are considered estimated and qualified (J) while non-detects are estimated and qualified (UJ). For a high %R, positive results are considered estimated and qualified (J). Results are valid and usable, however possibly biased.

MS/MSD Sample ID	Compound	MS %R/MSD %R/ RPD	Qualifier
1	Dichlorodifluoromethane	67.0%/60.8%/OK	UJ

Laboratory Control Samples

- The LCS samples exhibited acceptable percent recoveries (%R).

Method Blank

- The method blanks were free of contamination.

Field Blank

- Field QC samples were not collected.

GC/MS Tuning

- All criteria were met.

Initial Calibration

- The initial calibrations exhibited acceptable %RSD and/or correlation coefficients and mean RRF values.

Continuing Calibration

- The following table presents compounds that exceeded percent differences (%D) and/or RRF values <0.05 in the continuing calibration (CCAL). A low RRF indicates poor instrument sensitivity for these compounds. Positive results for these compounds in the affected samples are considered estimated and qualified (J). Non-detect results for these compounds in the affected samples are rejected (R) and are unusable for project objectives. A high %D may indicate a potential high or low bias. All results for these compounds in affected samples are considered estimated and qualified (J/UJ).

CCAL Date	Compound	%D/RRF	Qualifier	Affected Samples
08/21/19	Bromomethane	32.8%	UJ	All Samples

Compound Quantitation

- Several samples were analyzed at various dilutions due to high concentrations of target compounds. The reporting limits were adjusted accordingly. No action was required.

Internal Standard (IS) Area Performance

- All internal standards met response and retention time (RT) criteria.

Tentatively Identified Compounds (TICs)

- TICs were not reported.

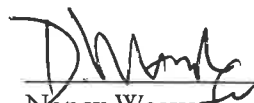
Field Duplicate Sample Precision

- Field duplicate results are summarized below. The precision was acceptable.

VOC				
Compound	TPW-3 ug/L	DUP-01 ug/L	RPD	Qualifier
Acetone	25	21	17%	None
1,1-Dichloroethylene	1.4	1.5	7%	
cis-1,2-Dichloroethylene	390	430	10%	
trans-1,2-Dichloroethylene	1.8	2.0	11%	
Trichloroethylene	1.1	1.4	24%	
Vinyl Chloride	260	290	11%	

Please contact the undersigned at (757) 564-0090 if you have any questions or need further information.

Signed:


Nancy Weaver
Senior Chemist

Dated:

9/26/19

Data Qualifiers

- J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ = The analyte was not detected above the sample reporting limit; and the reporting limit is approximate.
- U = The analyte was analyzed for, but was not detected above the sample reporting limit.
- R = The sample results is rejected due to serious deficiencies. The presence or absence of the analyte cannot be verified.

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1028

Date Received: 8/20/2019

Field Sample #: MMW-02 (MS/MSD)

Sampled: 8/19/2019 10:47

Sample ID: 19H1028-01

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	50	3.8	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Acrylonitrile	ND	5.0	0.52	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
tert-Amyl Methyl Ether (TAME)	ND	0.50	0.14	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Benzene	ND	1.0	0.18	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Bromobenzene	ND	1.0	0.15	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Bromochloromethane	ND	1.0	0.32	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Bromodichloromethane	ND	0.50	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Bromoform	ND	1.0	0.46	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Bromomethane	ND US	2.0	0.78	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH CCV
2-Butanone (MEK)	ND	20	1.9	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
tert-Butyl Alcohol (TBA)	ND	20	4.2	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
n-Butylbenzene	ND	1.0	0.21	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
sec-Butylbenzene	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
tert-Butylbenzene	ND	1.0	0.17	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
tert-Butyl Ethyl Ether (TBEE)	ND	0.50	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Carbon Disulfide	ND	5.0	4.4	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Carbon Tetrachloride	ND	5.0	0.11	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Chlorobenzene	ND	1.0	0.15	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Chlorodibromomethane	ND	0.50	0.21	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Chloroethane	ND	2.0	0.35	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Chloroform	ND	2.0	0.17	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Chloromethane	ND	2.0	0.45	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
2-Chlorotoluene	ND	1.0	0.12	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
4-Chlorotoluene	ND	1.0	0.14	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	0.53	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
1,2-Dibromoethane (EDB)	ND	0.50	0.19	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Dibromomethane	ND	1.0	0.37	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
1,2-Dichlorobenzene	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
1,3-Dichlorobenzene	ND	1.0	0.12	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
1,4-Dichlorobenzene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
trans-1,4-Dichloro-2-butene	ND	2.0	0.31	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Dichlorodifluoromethane (Freon 12)	ND US	2.0	0.26	µg/L	1	MS-10	SW-846 8260C	8/21/19	8/21/19 16:03	EEH MS/MSD
1,1-Dichloroethane	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
1,2-Dichloroethane	ND	1.0	0.41	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
1,1-Dichloroethylene	ND	1.0	0.32	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
cis-1,2-Dichloroethylene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
trans-1,2-Dichloroethylene	ND	1.0	0.31	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
1,2-Dichloropropane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
1,3-Dichloropropane	ND	0.50	0.11	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
2,2-Dichloropropane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
1,1-Dichloropropene	ND	2.0	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
cis-1,3-Dichloropropene	ND	0.50	0.13	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
trans-1,3-Dichloropropene	ND	0.50	0.23	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Diethyl Ether	ND	2.0	0.34	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH

MT 8/19/19

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1028

Date Received: 8/20/2019

Field Sample #: MMW-02 (MS/MSD)

Sampled: 8/19/2019 10:47

Sample ID: 19H1028-01

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Diisopropyl Ether (DIPE)	ND	0.50	0.17	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
1,4-Dioxane	ND	50	22	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Ethylbenzene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Hexachlorobutadiene	ND	0.60	0.47	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
2-Hexanone (MBK)	ND	10	1.5	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Isopropylbenzene (Cumene)	ND	1.0	0.17	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
p-Isopropyltoluene (p-Cymene)	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Methyl Acetate	ND	1.0	0.42	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Methyl tert-Butyl Ether (MTBE)	ND	1.0	0.25	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Methyl Cyclohexane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Methylene Chloride	ND	5.0	0.34	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
4-Methyl-2-pentanone (MIBK)	ND	10	1.7	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Naphthalene	ND	2.0	0.31	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
n-Propylbenzene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Styrene	ND	1.0	0.11	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
1,1,1,2-Tetrachloroethane	ND	1.0	0.27	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
1,1,2,2-Tetrachloroethane	ND	0.50	0.22	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Tetrachloroethylene	ND	1.0	0.18	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Tetrahydrofuran	ND	10	0.51	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Toluene	ND	1.0	0.14	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
1,2,3-Trichlorobenzene	ND	5.0	0.57	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
1,2,4-Trichlorobenzene	ND	1.0	0.40	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
1,3,5-Trichlorobenzene	ND	1.0	0.30	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
1,1,1-Trichloroethane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
1,1,2-Trichloroethane	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Trichloroethylene	ND	1.0	0.24	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Trichlorofluoromethane (Freon 11)	ND	2.0	0.33	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
1,2,3-Trichloropropane	ND	2.0	0.25	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	1.0	0.32	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
1,2,4-Trimethylbenzene	ND	1.0	0.18	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
1,3,5-Trimethylbenzene	ND	1.0	0.14	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Vinyl Chloride	ND	2.0	0.45	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
m+p Xylene	ND	2.0	0.30	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
o-Xylene	ND	1.0	0.17	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:03	EEH
Surrogates	% Recovery	Recovery Limits		Flag/Qual						
1,2-Dichloroethane-d4	100	70-130						8/21/19	16:03	
Toluene-d8	97.2	70-130						8/21/19	16:03	
4-Bromofluorobenzene	96.6	70-130						8/21/19	16:03	

MT 9/19/19

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1028

Date Received: 8/20/2019

Field Sample #: MMW-03

Sampled: 8/19/2019 12:34

Sample ID: 19H1028-02

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	8.7	50	3.8	µg/L	1	J	SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Acrylonitrile	ND	5.0	0.52	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
tert-Amyl Methyl Ether (TAME)	ND	0.50	0.14	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Benzene	ND	1.0	0.18	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Bromobenzene	ND	1.0	0.15	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Bromochloromethane	ND	1.0	0.32	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Bromodichloromethane	ND	0.50	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Bromoform	ND	1.0	0.46	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Bromomethane	ND	2.0	0.78	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
2-Butanone (MEK)	ND	20	1.9	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
tert-Butyl Alcohol (TBA)	ND	20	4.2	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
n-Butylbenzene	ND	1.0	0.21	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
sec-Butylbenzene	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
tert-Butylbenzene	ND	1.0	0.17	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
tert-Butyl Ethyl Ether (TBEE)	ND	0.50	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Carbon Disulfide	ND	5.0	4.4	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Carbon Tetrachloride	ND	5.0	0.11	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Chlorobenzene	ND	1.0	0.15	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Chlorodibromomethane	ND	0.50	0.21	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Chloroethane	ND	2.0	0.35	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Chloroform	ND	2.0	0.17	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Chloromethane	ND	2.0	0.45	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
2-Chlorotoluene	ND	1.0	0.12	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
4-Chlorotoluene	ND	1.0	0.14	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	0.53	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
1,2-Dibromomethane (EDB)	ND	0.50	0.19	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Dibromomethane	ND	1.0	0.37	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
1,2-Dichlorobenzene	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
1,3-Dichlorobenzene	ND	1.0	0.12	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
1,4-Dichlorobenzene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
trans-1,4-Dichloro-2-butene	ND	2.0	0.31	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Dichlorodifluoromethane (Freon 12)	ND	2.0	0.26	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
1,1-Dichloroethane	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
1,2-Dichloroethane	ND	1.0	0.41	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
1,1-Dichloroethylene	ND	1.0	0.32	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
cis-1,2-Dichloroethylene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
trans-1,2-Dichloroethylene	ND	1.0	0.31	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
1,2-Dichloropropane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
1,3-Dichloropropane	ND	0.50	0.11	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
2,2-Dichloropropane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
1,1-Dichloropropene	ND	2.0	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
cis-1,3-Dichloropropene	ND	0.50	0.13	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
trans-1,3-Dichloropropene	ND	0.50	0.23	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Diethyl Ether	ND	2.0	0.34	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1028

Date Received: 8/20/2019

Field Sample #: MMW-03

Sampled: 8/19/2019 12:34

Sample ID: 19H1028-02

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Diisopropyl Ether (DIPE)	ND	0.50	0.17	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
1,4-Dioxane	ND	50	22	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Ethylbenzene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Hexachlorobutadiene	ND	0.60	0.47	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
2-Hexanone (MBK)	ND	10	1.5	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Isopropylbenzene (Cumene)	ND	1.0	0.17	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
p-Isopropyltoluene (p-Cymene)	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Methyl Acetate	ND	1.0	0.42	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Methyl tert-Butyl Ether (MTBE)	ND	1.0	0.25	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Methyl Cyclohexane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Methylene Chloride	ND	5.0	0.34	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
4-Methyl-2-pentanone (MIBK)	ND	10	1.7	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Naphthalene	ND	2.0	0.31	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
n-Propylbenzene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Styrene	ND	1.0	0.11	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
1,1,1,2-Tetrachloroethane	ND	1.0	0.27	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
1,1,2,2-Tetrachloroethane	ND	0.50	0.22	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Tetrachloroethylene	ND	1.0	0.18	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Tetrahydrofuran	ND	10	0.51	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Toluene	0.77	1.0	0.14	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
1,2,3-Trichlorobenzene	ND	5.0	0.57	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
1,2,4-Trichlorobenzene	ND	1.0	0.40	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
1,3,5-Trichlorobenzene	ND	1.0	0.30	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
1,1,1-Trichloroethane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
1,1,2-Trichloroethane	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Trichloroethylene	ND	1.0	0.24	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Trichlorofluoromethane (Freon 11)	ND	2.0	0.33	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
1,2,3-Trichloropropane	ND	2.0	0.25	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	1.0	0.32	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
1,2,4-Trimethylbenzene	ND	1.0	0.18	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
1,3,5-Trimethylbenzene	ND	1.0	0.14	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
Vinyl Chloride	ND	2.0	0.45	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
m+p Xylene	ND	2.0	0.30	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH
o-Xylene	ND	1.0	0.17	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:29	EEH

Surrogates	% Recovery	Recovery Limits	Flag/Qual
1,2-Dichloroethane-d4	101	70-130	
Toluene-d8	99.7	70-130	
4-Bromofluorobenzene	98.2	70-130	

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1028

Date Received: 8/20/2019

Field Sample #: MMW-04

Sampled: 8/19/2019 10:17

Sample ID: 19H1028-03

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	11	50	3.8	µg/L	1	J	SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Acrylonitrile	ND	5.0	0.52	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
tert-Amyl Methyl Ether (TAME)	ND	0.50	0.14	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Benzene	ND	1.0	0.18	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Bromobenzene	ND	1.0	0.15	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Bromochloromethane	ND	1.0	0.32	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Bromodichloromethane	ND	0.50	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Bromoform	ND	1.0	0.46	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Bromomethane	ND US	2.0	0.78	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH CCV
2-Butanone (MEK)	ND	20	1.9	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
tert-Butyl Alcohol (TBA)	ND	20	4.2	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
n-Butylbenzene	ND	1.0	0.21	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
sec-Butylbenzene	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
tert-Butylbenzene	ND	1.0	0.17	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
tert-Butyl Ethyl Ether (TBEE)	ND	0.50	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Carbon Disulfide	ND	5.0	4.4	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Carbon Tetrachloride	ND	5.0	0.11	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Chlorobenzene	ND	1.0	0.15	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Chlorodibromomethane	ND	0.50	0.21	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Chloroethane	ND	2.0	0.35	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Chloroform	ND	2.0	0.17	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Chloromethane	ND	2.0	0.45	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
2-Chlorotoluene	ND	1.0	0.12	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
4-Chlorotoluene	ND	1.0	0.14	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	0.53	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
1,2-Dibromoethane (EDB)	ND	0.50	0.19	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Dibromomethane	ND	1.0	0.37	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
1,2-Dichlorobenzene	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
1,3-Dichlorobenzene	ND	1.0	0.12	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
1,4-Dichlorobenzene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
trans-1,4-Dichloro-2-butene	ND	2.0	0.31	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Dichlorodifluoromethane (Freon 12)	ND	2.0	0.26	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
1,1-Dichloroethane	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
1,2-Dichloroethane	ND	1.0	0.41	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
1,1-Dichloroethylene	ND	1.0	0.32	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
cis-1,2-Dichloroethylene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
trans-1,2-Dichloroethylene	ND	1.0	0.31	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
1,2-Dichloropropane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
1,3-Dichloropropane	ND	0.50	0.11	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
2,2-Dichloropropane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
1,1-Dichloropropene	ND	2.0	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
cis-1,3-Dichloropropene	ND	0.50	0.13	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
trans-1,3-Dichloropropene	ND	0.50	0.23	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Diethyl Ether	ND	2.0	0.34	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1028

Date Received: 8/20/2019

Field Sample #: MMW-04

Sampled: 8/19/2019 10:17

Sample ID: 19H1028-03

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Diisopropyl Ether (DIPE)	ND	0.50	0.17	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
1,4-Dioxane	ND	50	22	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Ethylbenzene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Hexachlorobutadiene	ND	0.60	0.47	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
2-Hexanone (MBK)	ND	10	1.5	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Isopropylbenzene (Cumene)	ND	1.0	0.17	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
p-Isopropyltoluene (p-Cymene)	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Methyl Acetate	ND	1.0	0.42	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Methyl tert-Butyl Ether (MTBE)	ND	1.0	0.25	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Methyl Cyclohexane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Methylene Chloride	ND	5.0	0.34	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
4-Methyl-2-pentanone (MIBK)	ND	10	1.7	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Naphthalene	ND	2.0	0.31	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
n-Propylbenzene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Styrene	ND	1.0	0.11	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
1,1,1,2-Tetrachloroethane	ND	1.0	0.27	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
1,1,2,2-Tetrachloroethane	ND	0.50	0.22	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Tetrachloroethylene	ND	1.0	0.18	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Tetrahydrofuran	ND	10	0.51	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Toluene	ND	1.0	0.14	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
1,2,3-Trichlorobenzene	ND	5.0	0.57	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
1,2,4-Trichlorobenzene	ND	1.0	0.40	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
1,3,5-Trichlorobenzene	ND	1.0	0.30	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
1,1,1-Trichloroethane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
1,1,2-Trichloroethane	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Trichloroethylene	ND	1.0	0.24	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Trichlorofluoromethane (Freon 11)	ND	2.0	0.33	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
1,2,3-Trichloropropane	ND	2.0	0.25	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	1.0	0.32	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
1,2,4-Trimethylbenzene	ND	1.0	0.18	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
1,3,5-Trimethylbenzene	ND	1.0	0.14	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
Vinyl Chloride	ND	2.0	0.45	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
m+p Xylene	ND	2.0	0.30	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH
o-Xylene	ND	1.0	0.17	µg/L	1		SW-846 8260C	8/21/19	8/21/19 16:56	EEH

Surrogates	% Recovery	Recovery Limits	Flag/Qual
1,2-Dichloroethane-d4	101	70-130	8/21/19 16:56
Toluene-d8	96.7	70-130	8/21/19 16:56
4-Bromofluorobenzene	95.8	70-130	8/21/19 16:56

MT 9/19/19

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1028

Date Received: 8/20/2019

Field Sample #: TPW-3

Sampled: 8/19/2019 13:59

Sample ID: 19H1028-04

Sample Matrix: Ground Water

Sample Flags: RL-11

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	25	200	15	µg/L	4	J	SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Acrylonitrile	ND	20	2.1	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
tert-Amyl Methyl Ether (TAME)	ND	2.0	0.56	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Benzene	ND	4.0	0.72	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Bromobenzene	ND	4.0	0.60	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Bromochloromethane	ND	4.0	1.3	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Bromodichloromethane	ND	2.0	0.64	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Bromoform	ND	4.0	1.8	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Bromomethane	ND <i>VS</i>	8.0	3.1	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH <i>cev</i>
2-Butanone (MEK)	ND	80	7.8	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
tert-Butyl Alcohol (TBA)	ND	80	17	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
n-Butylbenzene	ND	4.0	0.84	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
sec-Butylbenzene	ND	4.0	0.64	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
tert-Butylbenzene	ND	4.0	0.68	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
tert-Butyl Ethyl Ether (TBEE)	ND	2.0	0.64	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Carbon Disulfide	ND	20	18	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Carbon Tetrachloride	ND	20	0.44	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Chlorobenzene	ND	4.0	0.60	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Chlorodibromomethane	ND	2.0	0.84	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Chloroethane	ND	8.0	1.4	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Chloroform	ND	8.0	0.68	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Chloromethane	ND	8.0	1.8	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
2-Chlorotoluene	ND	4.0	0.48	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
4-Chlorotoluene	ND	4.0	0.56	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
1,2-Dibromo-3-chloropropane (DBCP)	ND	20	2.1	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
1,2-Dibromoethane (EDB)	ND	2.0	0.76	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Dibromomethane	ND	4.0	1.5	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
1,2-Dichlorobenzene	ND	4.0	0.64	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
1,3-Dichlorobenzene	ND	4.0	0.48	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
1,4-Dichlorobenzene	ND	4.0	0.52	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
trans-1,4-Dichloro-2-butene	ND	8.0	1.2	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Dichlorodifluoromethane (Freon 12)	ND	8.0	1.0	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
1,1-Dichloroethane	ND	4.0	0.64	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
1,2-Dichloroethane	ND	4.0	1.6	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
1,1-Dichloroethylene	1.4	4.0	1.3	µg/L	4	J	SW-846 8260C	8/21/19	8/21/19 22:13	EEH
cis-1,2-Dichloroethylene	390	4.0	0.52	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
trans-1,2-Dichloroethylene	1.8	4.0	1.2	µg/L	4	J	SW-846 8260C	8/21/19	8/21/19 22:13	EEH
1,2-Dichloropropane	ND	4.0	0.80	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
1,3-Dichloropropane	ND	2.0	0.44	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
2,2-Dichloropropane	ND	4.0	0.80	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
1,1-Dichloropropene	ND	8.0	0.64	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
cis-1,3-Dichloropropene	ND	2.0	0.52	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
trans-1,3-Dichloropropene	ND	2.0	0.92	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Diethyl Ether	ND	8.0	1.4	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1028

Date Received: 8/20/2019

Field Sample #: TPW-3

Sampled: 8/19/2019 13:59

Sample ID: 19H1028-04

Sample Matrix: Ground Water

Sample Flags: RL-11

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Diisopropyl Ether (DIPE)	ND	2.0	0.68	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
1,4-Dioxane	ND	200	90	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Ethylbenzene	ND	4.0	0.52	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Hexachlorobutadiene	ND	2.4	1.9	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
2-Hexanone (MBK)	ND	40	6.1	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Isopropylbenzene (Cumene)	ND	4.0	0.68	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
p-Isopropyltoluene (p-Cymene)	ND	4.0	0.80	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Methyl Acetate	ND	4.0	1.7	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Methyl tert-Butyl Ether (MTBE)	ND	4.0	1.0	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Methyl Cyclohexane	ND	4.0	0.80	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Methylene Chloride	ND	20	1.4	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
4-Methyl-2-pentanone (MIBK)	ND	40	6.7	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Naphthalene	ND	8.0	1.2	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
n-Propylbenzene	ND	4.0	0.52	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Styrene	ND	4.0	0.44	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
1,1,1,2-Tetrachloroethane	ND	4.0	1.1	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
1,1,2,2-Tetrachloroethane	ND	2.0	0.88	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Tetrachloroethylene	ND	4.0	0.72	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Tetrahydrofuran	ND	40	2.0	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Toluene	ND	4.0	0.56	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
1,2,3-Trichlorobenzene	ND	20	2.3	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
1,2,4-Trichlorobenzene	ND	4.0	1.6	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
1,3,5-Trichlorobenzene	ND	4.0	1.2	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
1,1,1-Trichloroethane	ND	4.0	0.80	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
1,1,2-Trichloroethane	ND	4.0	0.64	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Trichloroethylene	1.1	4.0	0.96	µg/L	4	J	SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Trichlorofluoromethane (Freon 11)	ND	8.0	1.3	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
1,2,3-Trichloropropane	ND	8.0	1.0	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	4.0	1.3	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
1,2,4-Trimethylbenzene	ND	4.0	0.72	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
1,3,5-Trimethylbenzene	ND	4.0	0.56	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
Vinyl Chloride	260	8.0	1.8	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
m+p Xylene	ND	8.0	1.2	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH
o-Xylene	ND	4.0	0.68	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:13	EEH

Surrogates	% Recovery	Recovery Limits	Flag/Qual
1,2-Dichloroethane-d4	105	70-130	8/21/19 22:13
Toluene-d8	98.3	70-130	8/21/19 22:13
4-Bromofluorobenzene	94.7	70-130	8/21/19 22:13

MT 9/9/19

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1028

Date Received: 8/20/2019

Field Sample #: TPW-4

Sampled: 8/19/2019 14:05

Sample ID: 19H1028-05

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	50	3.8	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Acrylonitrile	ND	5.0	0.52	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
tert-Amyl Methyl Ether (TAME)	ND	0.50	0.14	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Benzene	ND	1.0	0.18	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Bromobenzene	ND	1.0	0.15	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Bromochloromethane	ND	1.0	0.32	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Bromodichloromethane	ND	0.50	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Bromoform	ND	1.0	0.46	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Bromomethane	ND ^{US}	2.0	0.78	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH ^{CEW}
2-Butanone (MEK)	ND	20	1.9	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
tert-Butyl Alcohol (TBA)	ND	20	4.2	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
n-Butylbenzene	ND	1.0	0.21	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
sec-Butylbenzene	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
tert-Butylbenzene	ND	1.0	0.17	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
tert-Butyl Ethyl Ether (TBEE)	ND	0.50	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Carbon Disulfide	ND	5.0	4.4	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Carbon Tetrachloride	ND	5.0	0.11	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Chlorobenzene	ND	1.0	0.15	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Chlorodibromomethane	ND	0.50	0.21	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Chloroethane	ND	2.0	0.35	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Chloroform	ND	2.0	0.17	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Chloromethane	ND	2.0	0.45	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
2-Chlorotoluene	ND	1.0	0.12	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
4-Chlorotoluene	ND	1.0	0.14	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	0.53	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
1,2-Dibromoethane (EDB)	ND	0.50	0.19	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Dibromomethane	ND	1.0	0.37	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
1,2-Dichlorobenzene	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
1,3-Dichlorobenzene	ND	1.0	0.12	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
1,4-Dichlorobenzene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
trans-1,4-Dichloro-2-butene	ND	2.0	0.31	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Dichlorodifluoromethane (Freon 12)	ND	2.0	0.26	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
1,1-Dichloroethane	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
1,2-Dichloroethane	ND	1.0	0.41	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
1,1-Dichloroethylene	ND	1.0	0.32	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
cis-1,2-Dichloroethylene	13	1.0	0.13	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
trans-1,2-Dichloroethylene	ND	1.0	0.31	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
1,2-Dichloropropane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
1,3-Dichloropropane	ND	0.50	0.11	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
2,2-Dichloropropane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
1,1-Dichloropropene	ND	2.0	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
cis-1,3-Dichloropropene	ND	0.50	0.13	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
trans-1,3-Dichloropropene	ND	0.50	0.23	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Diethyl Ether	ND	2.0	0.34	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH

MT 8/19/19

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1028

Date Received: 8/20/2019

Field Sample #: TPW-4

Sampled: 8/19/2019 14:05

Sample ID: 19H1028-05

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Diisopropyl Ether (DIPE)	ND	0.50	0.17	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
1,4-Dioxane	ND	50	22	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Ethylbenzene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Hexachlorobutadiene	ND	0.60	0.47	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
2-Hexanone (MBK)	ND	10	1.5	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Isopropylbenzene (Cumene)	ND	1.0	0.17	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
p-Isopropyltoluene (p-Cymene)	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Methyl Acetate	ND	1.0	0.42	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Methyl tert-Butyl Ether (MTBE)	ND	1.0	0.25	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Methyl Cyclohexane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Methylene Chloride	ND	5.0	0.34	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
4-Methyl-2-pentanone (MIBK)	ND	10	1.7	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Naphthalene	ND	2.0	0.31	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
n-Propylbenzene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Styrene	ND	1.0	0.11	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
1,1,1,2-Tetrachloroethane	ND	1.0	0.27	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
1,1,2,2-Tetrachloroethane	ND	0.50	0.22	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Tetrachloroethylene	ND	1.0	0.18	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Tetrahydrofuran	ND	10	0.51	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Toluene	0.14	1.0	0.14	µg/L	1	J	SW-846 8260C	8/21/19	8/21/19 17:22	EEH
1,2,3-Trichlorobenzene	ND	5.0	0.57	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
1,2,4-Trichlorobenzene	ND	1.0	0.40	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
1,3,5-Trichlorobenzene	ND	1.0	0.30	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
1,1,1-Trichloroethane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
1,1,2-Trichloroethane	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Trichloroethylene	ND	1.0	0.24	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Trichlorofluoromethane (Freon 11)	ND	2.0	0.33	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
1,2,3-Trichloropropane	ND	2.0	0.25	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	1.0	0.32	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
1,2,4-Trimethylbenzene	ND	1.0	0.18	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
1,3,5-Trimethylbenzene	ND	1.0	0.14	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
Vinyl Chloride	52	2.0	0.45	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
m+p Xylene	ND	2.0	0.30	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH
o-Xylene	ND	1.0	0.17	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:22	EEH

Surrogates	% Recovery	Recovery Limits	Flag/Qual
1,2-Dichloroethane-d4	102	70-130	
Toluene-d8	99.9	70-130	
4-Bromofluorobenzene	94.6	70-130	

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1028

Date Received: 8/20/2019

Field Sample #: DUP-01

Sampled: 8/19/2019 00:00

Sample ID: 19H1028-06

Sample Matrix: Ground Water

Sample Flags: RL-11

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	21	200	15	µg/L	4	J	SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Acrylonitrile	ND	20	2.1	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
tert-Amyl Methyl Ether (TAME)	ND	2.0	0.56	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Benzene	ND	4.0	0.72	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Bromobenzene	ND	4.0	0.60	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Bromochloromethane	ND	4.0	1.3	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Bromodichloromethane	ND	2.0	0.64	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Bromoform	ND	4.0	1.8	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Bromomethane	ND US	8.0	3.1	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
2-Butanone (MEK)	ND	80	7.8	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
tert-Butyl Alcohol (TBA)	ND	80	17	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
n-Butylbenzene	ND	4.0	0.84	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
sec-Butylbenzene	ND	4.0	0.64	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
tert-Butylbenzene	ND	4.0	0.68	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
tert-Butyl Ethyl Ether (TBEE)	ND	2.0	0.64	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Carbon Disulfide	ND	20	18	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Carbon Tetrachloride	ND	20	0.44	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Chlorobenzene	ND	4.0	0.60	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Chlorodibromomethane	ND	2.0	0.84	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Chloroethane	ND	8.0	1.4	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Chloroform	ND	8.0	0.68	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Chloromethane	ND	8.0	1.8	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
2-Chlorotoluene	ND	4.0	0.48	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
4-Chlorotoluene	ND	4.0	0.56	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
1,2-Dibromo-3-chloropropane (DBCP)	ND	20	2.1	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
1,2-Dibromomethane (EDB)	ND	2.0	0.76	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Dibromomethane	ND	4.0	1.5	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
1,2-Dichlorobenzene	ND	4.0	0.64	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
1,3-Dichlorobenzene	ND	4.0	0.48	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
1,4-Dichlorobenzene	ND	4.0	0.52	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
trans-1,4-Dichloro-2-butene	ND	8.0	1.2	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Dichlorodifluoromethane (Freon 12)	ND	8.0	1.0	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
1,1-Dichloroethane	ND	4.0	0.64	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
1,2-Dichloroethane	ND	4.0	1.6	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
1,1-Dichloroethylene	1.5	4.0	1.3	µg/L	4	J	SW-846 8260C	8/21/19	8/21/19 22:39	EEH
cis-1,2-Dichloroethylene	430	4.0	0.52	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
trans-1,2-Dichloroethylene	2.0	4.0	1.2	µg/L	4	J	SW-846 8260C	8/21/19	8/21/19 22:39	EEH
1,2-Dichloropropane	ND	4.0	0.80	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
1,3-Dichloropropane	ND	2.0	0.44	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
2,2-Dichloropropane	ND	4.0	0.80	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
1,1-Dichloropropene	ND	8.0	0.64	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
cis-1,3-Dichloropropene	ND	2.0	0.52	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
trans-1,3-Dichloropropene	ND	2.0	0.92	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Diethyl Ether	ND	8.0	1.4	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1028

Date Received: 8/20/2019

Field Sample #: DUP-01

Sampled: 8/19/2019 00:00

Sample ID: 19H1028-06

Sample Matrix: Ground Water

Sample Flags: RL-11

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Diisopropyl Ether (DIPE)	ND	2.0	0.68	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
1,4-Dioxane	ND	200	90	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Ethylbenzene	ND	4.0	0.52	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Hexachlorobutadiene	ND	2.4	1.9	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
2-Hexanone (MBK)	ND	40	6.1	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Isopropylbenzene (Cumene)	ND	4.0	0.68	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
p-Isopropyltoluene (p-Cymene)	ND	4.0	0.80	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Methyl Acetate	ND	4.0	1.7	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Methyl tert-Butyl Ether (MTBE)	ND	4.0	1.0	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Methyl Cyclohexane	ND	4.0	0.80	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Methylene Chloride	ND	20	1.4	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
4-Methyl-2-pentanone (MIBK)	ND	40	6.7	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Naphthalene	ND	8.0	1.2	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
n-Propylbenzene	ND	4.0	0.52	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Styrene	ND	4.0	0.44	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
1,1,1,2-Tetrachloroethane	ND	4.0	1.1	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
1,1,2,2-Tetrachloroethane	ND	2.0	0.88	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Tetrachloroethylene	ND	4.0	0.72	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Tetrahydrofuran	ND	40	2.0	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Toluene	ND	4.0	0.56	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
1,2,3-Trichlorobenzene	ND	20	2.3	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
1,2,4-Trichlorobenzene	ND	4.0	1.6	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
1,3,5-Trichlorobenzene	ND	4.0	1.2	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
1,1,1-Trichloroethane	ND	4.0	0.80	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
1,1,2-Trichloroethane	ND	4.0	0.64	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Trichloroethylene	1.4	4.0	0.96	µg/L	4	J	SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Trichlorofluoromethane (Freon 11)	ND	8.0	1.3	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
1,2,3-Trichloropropane	ND	8.0	1.0	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	4.0	1.3	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
1,2,4-Trimethylbenzene	ND	4.0	0.72	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
1,3,5-Trimethylbenzene	ND	4.0	0.56	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
Vinyl Chloride	290	8.0	1.8	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
m+p Xylene	ND	8.0	1.2	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH
o-Xylene	ND	4.0	0.68	µg/L	4		SW-846 8260C	8/21/19	8/21/19 22:39	EEH

Surrogates	% Recovery	Recovery Limits	Flag/Qual
1,2-Dichloroethane-d4	104	70-130	
Toluene-d8	100	70-130	
4-Bromofluorobenzene	94.6	70-130	

MT 9/19/19

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1028

Date Received: 8/20/2019

Field Sample #: TPM-2

Sampled: 8/19/2019 14:35

Sample ID: 19H1028-07

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	32	50	3.8	µg/L	1	J	SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Acrylonitrile	ND	5.0	0.52	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
tert-Amyl Methyl Ether (TAME)	ND	0.50	0.14	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Benzene	ND	1.0	0.18	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Bromobenzene	ND	1.0	0.15	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Bromochloromethane	ND	1.0	0.32	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Bromodichloromethane	ND	0.50	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Bromoform	ND	1.0	0.46	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Bromomethane	ND <i>US</i>	2.0	0.78	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH <i>cen</i>
2-Butanone (MEK)	ND	20	1.9	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
tert-Butyl Alcohol (TBA)	ND	20	4.2	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
n-Butylbenzene	ND	1.0	0.21	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
sec-Butylbenzene	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
tert-Butylbenzene	ND	1.0	0.17	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
tert-Butyl Ethyl Ether (TBEE)	ND	0.50	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Carbon Disulfide	ND	5.0	4.4	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Carbon Tetrachloride	ND	5.0	0.11	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Chlorobenzene	ND	1.0	0.15	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Chlorodibromomethane	ND	0.50	0.21	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Chloroethane	ND	2.0	0.35	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Chloroform	ND	2.0	0.17	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Chloromethane	ND	2.0	0.45	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
2-Chlorotoluene	ND	1.0	0.12	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
4-Chlorotoluene	ND	1.0	0.14	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	0.53	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
1,2-Dibromoethane (EDB)	ND	0.50	0.19	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Dibromomethane	ND	1.0	0.37	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
1,2-Dichlorobenzene	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
1,3-Dichlorobenzene	ND	1.0	0.12	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
1,4-Dichlorobenzene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
trans-1,4-Dichloro-2-butene	ND	2.0	0.31	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Dichlorodifluoromethane (Freon 12)	ND	2.0	0.26	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
1,1-Dichloroethane	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
1,2-Dichloroethane	ND	1.0	0.41	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
1,1-Dichloroethylene	ND	1.0	0.32	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
cis-1,2-Dichloroethylene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
trans-1,2-Dichloroethylene	ND	1.0	0.31	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
1,2-Dichloropropane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
1,3-Dichloropropane	ND	0.50	0.11	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
2,2-Dichloropropane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
1,1-Dichloropropene	ND	2.0	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
cis-1,3-Dichloropropene	ND	0.50	0.13	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
trans-1,3-Dichloropropene	ND	0.50	0.23	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Diethyl Ether	ND	2.0	0.34	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH

MT 9/9/19

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1028

Date Received: 8/20/2019

Field Sample #: TPM-2

Sampled: 8/19/2019 14:35

Sample ID: 19H1028-07

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Diisopropyl Ether (DIPE)	ND	0.50	0.17	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
1,4-Dioxane	ND	50	22	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Ethylbenzene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Hexachlorobutadiene	ND	0.60	0.47	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
2-Hexanone (MBK)	ND	10	1.5	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Isopropylbenzene (Cumene)	ND	1.0	0.17	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
p-Isopropyltoluene (p-Cymene)	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Methyl Acetate	ND	1.0	0.42	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Methyl tert-Butyl Ether (MTBE)	ND	1.0	0.25	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Methyl Cyclohexane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Methylene Chloride	ND	5.0	0.34	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
4-Methyl-2-pentanone (MIBK)	ND	10	1.7	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Naphthalene	ND	2.0	0.31	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
n-Propylbenzene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Styrene	ND	1.0	0.11	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
1,1,1,2-Tetrachloroethane	ND	1.0	0.27	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
1,1,2,2-Tetrachloroethane	ND	0.50	0.22	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Tetrachloroethylene	ND	1.0	0.18	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Tetrahydrofuran	ND	10	0.51	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Toluene	0.63	1.0	0.14	µg/L	1	J	SW-846 8260C	8/21/19	8/21/19 17:49	EEH
1,2,3-Trichlorobenzene	ND	5.0	0.57	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
1,2,4-Trichlorobenzene	ND	1.0	0.40	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
1,3,5-Trichlorobenzene	ND	1.0	0.30	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
1,1,1-Trichloroethane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
1,1,2-Trichloroethane	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Trichloroethylene	ND	1.0	0.24	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Trichlorofluoromethane (Freon 11)	ND	2.0	0.33	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
1,2,3-Trichloropropane	ND	2.0	0.25	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	1.0	0.32	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
1,2,4-Trimethylbenzene	ND	1.0	0.18	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
1,3,5-Trimethylbenzene	ND	1.0	0.14	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
Vinyl Chloride	ND	2.0	0.45	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH
m+p Xylene	0.37	2.0	0.30	µg/L	1	J	SW-846 8260C	8/21/19	8/21/19 17:49	EEH
o-Xylene	ND	1.0	0.17	µg/L	1		SW-846 8260C	8/21/19	8/21/19 17:49	EEH

Surrogates	% Recovery	Recovery Limits	Flag/Qual
1,2-Dichloroethane-d4	105	70-130	8/21/19 17:49
Toluene-d8	98.7	70-130	8/21/19 17:49
4-Bromofluorobenzene	96.2	70-130	8/21/19 17:49

MT 8/19/19

**DATA USABILITY SUMMARY REPORT
CLINTON WEST PLAZA, ITHACA, NEW YORK**

Client: EA Engineering, Science & Technology, Inc., Syracuse, New York
SDG: 19H1134
Laboratory: Con-Test Analytical Laboratory, East Longmeadow, Massachusetts
Site: Clinton West Plaza, Ithaca, New York
Date: September 25, 2019

EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	TPM-01	19H1134-01	Water
2	TPM-03	19H1134-02	Water
3	MMW-01	19H1134-03	Water
4	TRIP BLANK	19H1134-04	Water

A Data Usability Summary Review was performed on the analytical data for three water samples and one aqueous trip blank sample collected by EA Engineering on August 20, 2019 at the Clinton West Plaza site in Ithaca, New York. The samples were analyzed under Environmental Protection Agency (USEPA) "Test Methods for the Evaluation of Solid Waste, USEPA SW-846, Third Edition, September 1986, with revisions".

Specific method references are as follows:

Analysis
VOCs

Method References
USEPA SW-846 Method 8260C

The data have been validated according to the protocols and quality control (QC) requirements of the analytical methods and the USEPA Region II Data Review Standard Operating Procedures (SOPs) as follows:

- SOP Number HW-24, Revision 4, September 2014: Validating Volatile Organic Compounds by SW-846 Method 8260B & 8260C;
- and the reviewer's professional judgment.

The following items/criteria were reviewed for this report:

Organics

- Data Completeness
- Holding times and sample preservation
- Surrogate Spike recoveries
- Matrix Spike/Matrix Spike Duplicate (MS/MSD) recoveries
- Laboratory Control Sample (LCS) recoveries

- Method blank and field blank contamination
- Gas Chromatography (GC)/Mass Spectroscopy (MS) tuning
- Initial and continuing calibration summaries
- Compound Quantitation
- Internal standard area and retention time summary forms
- Tentatively Identified Compounds (TICs)
- Field Duplicate sample precision

Data Usability Assessment

There were no rejections of data.

Overall the data are acceptable for the intended purposes as qualified for the data quality indicator criteria as detailed in this report.

Please note that any results qualified (U) due to blank contamination may be then qualified (J) due to another action. Therefore, the results may be qualified (UJ) due to the culmination of the blank contaminations and actions from other exceedances of QC criteria.

Data Completeness

- The data is a complete Category B data package as defined under the requirements for the NYS Department of Environmental Conservation Analytical Services Protocol.

Volatile Organic Compounds (VOCs)

Holding Times

- All samples were analyzed within 14 days for preserved water samples.

Surrogate Spike Recoveries

- All samples exhibited acceptable surrogate %R values.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries

- MS/MSD samples were not analyzed.

Laboratory Control Samples

- The LCS samples exhibited acceptable percent recoveries (%R).

Method Blank

- The method blanks were free of contamination.

Field Blank

- Field QC results are summarized below.

Blank ID	Compound	Conc. ug/L	Qualifier	Affected Samples
TRIP BLANK	None - ND	-	-	-

GC/MS Tuning

- All criteria were met.

Initial Calibration

- The initial calibrations exhibited acceptable %RSD and/or correlation coefficients and mean RRF values.

Continuing Calibration

- The following table presents compounds that exceeded percent differences (%D) and/or RRF values <0.05 in the continuing calibration (CCAL). A low RRF indicates poor instrument sensitivity for these compounds. Positive results for these compounds in the affected samples are considered estimated and qualified (J). Non-detect results for these compounds in the affected samples are rejected (R) and are unusable for project objectives. A high %D may indicate a potential high or low bias. All results for these compounds in affected samples are considered estimated and qualified (J/UJ).

CCAL Date	Compound	%D/RRF	Qualifier	Affected Samples
08/22/19	tert-Butyl Alcohol	33.0%	J/UJ	All Samples
	Chloromethane	41.7%	UJ	

Compound Quantitation

- SEDS Sample 3 was analyzed at a 200X dilution due to high concentrations of target compounds. The reporting limits were adjusted accordingly. No action was required.

Internal Standard (IS) Area Performance

- All internal standards met response and retention time (RT) criteria.

Tentatively Identified Compounds (TICs)

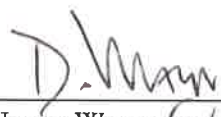
- TICs were not reported.

Field Duplicate Sample Precision

- Field duplicate samples were not collected.

Please contact the undersigned at (757) 564-0090 if you have any questions or need further information.

Signed:



Nancy Weaver
Senior Chemist

Dated: 9/26/19

Data Qualifiers

- J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ = The analyte was not detected above the sample reporting limit; and the reporting limit is approximate.
- U = The analyte was analyzed for, but was not detected above the sample reporting limit.
- R = The sample results is rejected due to serious deficiencies. The presence or absence of the analyte cannot be verified.

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1134

Date Received: 8/21/2019

Field Sample #: TPM-01

Sampled: 8/20/2019 11:10

Sample ID: 19H1134-01

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	110	50	3.8	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Acrylonitrile	ND	5.0	0.52	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
tert-Amyl Methyl Ether (TAME)	ND	0.50	0.14	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Benzene	ND	1.0	0.18	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Bromobenzene	ND	1.0	0.15	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Bromochloromethane	ND	1.0	0.32	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Bromodichloromethane	ND	0.50	0.16	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Bromoform	ND	1.0	0.46	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Bromomethane	ND	2.0	0.78	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
2-Butanone (MEK)	ND	20	1.9	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
tert-Butyl Alcohol (TBA)	21 J	20	4.2	µg/L	1	4-06	SW-846 8260C	8/22/19	8/22/19 18:30	MFF CCV
n-Butylbenzene	ND	1.0	0.21	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
sec-Butylbenzene	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
tert-Butylbenzene	ND	1.0	0.17	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
tert-Butyl Ethyl Ether (TBEE)	ND	0.50	0.16	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Carbon Disulfide	ND	5.0	4.4	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Carbon Tetrachloride	ND	5.0	0.11	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Chlorobenzene	ND	1.0	0.15	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Chlorodibromomethane	ND	0.50	0.21	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Chloroethane	ND	2.0	0.35	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Chloroform	ND	2.0	0.17	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Chloromethane	ND US	2.0	0.45	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF CCV
2-Chlorotoluene	ND	1.0	0.12	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
4-Chlorotoluene	ND	1.0	0.14	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	0.53	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
1,2-Dibromoethane (EDB)	ND	0.50	0.19	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Dibromomethane	ND	1.0	0.37	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
1,2-Dichlorobenzene	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
1,3-Dichlorobenzene	ND	1.0	0.12	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
1,4-Dichlorobenzene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
trans-1,4-Dichloro-2-butene	ND	2.0	0.31	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Dichlorodifluoromethane (Freon 12)	ND	2.0	0.26	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
1,1-Dichloroethane	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
1,2-Dichloroethane	ND	1.0	0.41	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
1,1-Dichloroethylene	ND	1.0	0.32	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
cis-1,2-Dichloroethylene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
trans-1,2-Dichloroethylene	ND	1.0	0.31	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
1,2-Dichloropropane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
1,3-Dichloropropane	ND	0.50	0.11	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
2,2-Dichloropropane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
1,1-Dichloropropene	ND	2.0	0.16	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
cis-1,3-Dichloropropene	ND	0.50	0.13	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
trans-1,3-Dichloropropene	ND	0.50	0.23	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Diethyl Ether	ND	2.0	0.34	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF

MT 9/19/19

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1134

Date Received: 8/21/2019

Field Sample #: TPM-01

Sampled: 8/20/2019 11:10

Sample ID: 19H1134-01

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Diisopropyl Ether (DIPE)	ND	0.50	0.17	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
1,4-Dioxane	ND	50	22	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Ethylbenzene	0.20	1.0	0.13	µg/L	1	J	SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Hexachlorobutadiene	ND	0.60	0.47	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
2-Hexanone (MBK)	ND	10	1.5	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Isopropylbenzene (Cumene)	ND	1.0	0.17	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
p-Isopropyltoluene (p-Cymene)	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Methyl Acetate	ND	1.0	0.42	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Methyl tert-Butyl Ether (MTBE)	ND	1.0	0.25	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Methyl Cyclohexane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Methylene Chloride	ND	5.0	0.34	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
4-Methyl-2-pentanone (MIBK)	ND	10	1.7	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Naphthalene	ND	2.0	0.31	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
n-Propylbenzene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Styrene	ND	1.0	0.11	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
1,1,1,2-Tetrachloroethane	ND	1.0	0.27	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
1,1,2,2-Tetrachloroethane	ND	0.50	0.22	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Tetrachloroethylene	ND	1.0	0.18	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Tetrahydrofuran	ND	10	0.51	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Toluene	1.6	1.0	0.14	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
1,2,3-Trichlorobenzene	ND	5.0	0.57	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
1,2,4-Trichlorobenzene	ND	1.0	0.40	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
1,3,5-Trichlorobenzene	ND	1.0	0.30	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
1,1,1-Trichloroethane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
1,1,2-Trichloroethane	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Trichloroethylene	ND	1.0	0.24	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Trichlorofluoromethane (Freon 11)	ND	2.0	0.33	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
1,2,3-Trichloropropane	ND	2.0	0.25	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	1.0	0.32	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
1,2,4-Trimethylbenzene	0.21	1.0	0.18	µg/L	1	J	SW-846 8260C	8/22/19	8/22/19 18:30	MFF
1,3,5-Trimethylbenzene	ND	1.0	0.14	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
Vinyl Chloride	ND	2.0	0.45	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:30	MFF
m+p Xylene	0.79	2.0	0.30	µg/L	1	J	SW-846 8260C	8/22/19	8/22/19 18:30	MFF
o-Xylene	0.37	1.0	0.17	µg/L	1	J	SW-846 8260C	8/22/19	8/22/19 18:30	MFF

Surrogates	% Recovery	Recovery Limits	Flag/Qual
1,2-Dichloroethane-d4	105	70-130	
Toluene-d8	99.0	70-130	
4-Bromofluorobenzene	96.1	70-130	

MT 8/19/19

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1134

Date Received: 8/21/2019

Field Sample #: TPM-03

Sampled: 8/20/2019 12:25

Sample ID: 19H1134-02

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	16	50	3.8	µg/L	1	J	SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Acrylonitrile	ND	5.0	0.52	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
tert-Amyl Methyl Ether (TAME)	ND	0.50	0.14	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Benzene	ND	1.0	0.18	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Bromobenzene	ND	1.0	0.15	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Bromochloromethane	ND	1.0	0.32	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Bromodichloromethane	ND	0.50	0.16	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Bromoform	ND	1.0	0.46	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Bromomethane	ND	2.0	0.78	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
2-Butanone (MEK)	ND	20	1.9	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
tert-Butyl Alcohol (TBA)	ND US	20	4.2	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF CW
n-Butylbenzene	ND	1.0	0.21	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
sec-Butylbenzene	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
tert-Butylbenzene	ND	1.0	0.17	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
tert-Butyl Ethyl Ether (TBEE)	ND	0.50	0.16	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Carbon Disulfide	ND	5.0	4.4	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Carbon Tetrachloride	ND	5.0	0.11	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Chlorobenzene	ND	1.0	0.15	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Chlorodibromomethane	ND	0.50	0.21	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Chloroethane	ND	2.0	0.35	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Chloroform	ND	2.0	0.17	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Chloromethane	ND US	2.0	0.45	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF CW
2-Chlorotoluene	ND	1.0	0.12	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
4-Chlorotoluene	ND	1.0	0.14	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	0.53	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
1,2-Dibromoethane (EDB)	ND	0.50	0.19	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Dibromomethane	ND	1.0	0.37	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
1,2-Dichlorobenzene	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
1,3-Dichlorobenzene	ND	1.0	0.12	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
1,4-Dichlorobenzene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
trans-1,4-Dichloro-2-butene	ND	2.0	0.31	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Dichlorodifluoromethane (Freon 12)	ND	2.0	0.26	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
1,1-Dichloroethane	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
1,2-Dichloroethane	ND	1.0	0.41	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
1,1-Dichloroethylene	ND	1.0	0.32	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
cis-1,2-Dichloroethylene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
trans-1,2-Dichloroethylene	ND	1.0	0.31	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
1,2-Dichloropropane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
1,3-Dichloropropane	ND	0.50	0.11	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
2,2-Dichloropropane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
1,1-Dichloropropene	ND	2.0	0.16	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
cis-1,3-Dichloropropene	ND	0.50	0.13	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
trans-1,3-Dichloropropene	ND	0.50	0.23	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Diethyl Ether	ND	2.0	0.34	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1134

Date Received: 8/21/2019

Field Sample #: TPM-03

Sampled: 8/20/2019 12:25

Sample ID: 19H1134-02

Sample Matrix: Ground Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Diisopropyl Ether (DIPE)	ND	0.50	0.17	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
1,4-Dioxane	ND	50	22	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Ethylbenzene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Hexachlorobutadiene	ND	0.60	0.47	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
2-Hexanone (MBK)	ND	10	1.5	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Isopropylbenzene (Cumene)	ND	1.0	0.17	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
p-Isopropyltoluene (p-Cymene)	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Methyl Acetate	ND	1.0	0.42	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Methyl tert-Butyl Ether (MTBE)	ND	1.0	0.25	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Methyl Cyclohexane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Methylene Chloride	ND	5.0	0.34	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
4-Methyl-2-pentanone (MIBK)	ND	10	1.7	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Naphthalene	ND	2.0	0.31	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
n-Propylbenzene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Styrene	ND	1.0	0.11	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
1,1,1,2-Tetrachloroethane	ND	1.0	0.27	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
1,1,2,2-Tetrachloroethane	ND	0.50	0.22	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Tetrachloroethylene	ND	1.0	0.18	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Tetrahydrofuran	ND	10	0.51	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Toluene	0.26	1.0	0.14	µg/L	1	J	SW-846 8260C	8/22/19	8/22/19 18:57	MFF
1,2,3-Trichlorobenzene	ND	5.0	0.57	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
1,2,4-Trichlorobenzene	ND	1.0	0.40	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
1,3,5-Trichlorobenzene	ND	1.0	0.30	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
1,1,1-Trichloroethane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
1,1,2-Trichloroethane	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Trichloroethylene	ND	1.0	0.24	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Trichlorofluoromethane (Freon 11)	ND	2.0	0.33	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
1,2,3-Trichloropropane	ND	2.0	0.25	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	1.0	0.32	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
1,2,4-Trimethylbenzene	ND	1.0	0.18	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
1,3,5-Trimethylbenzene	ND	1.0	0.14	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
Vinyl Chloride	ND	2.0	0.45	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
m+p Xylene	ND	2.0	0.30	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF
o-Xylene	ND	1.0	0.17	µg/L	1		SW-846 8260C	8/22/19	8/22/19 18:57	MFF

Surrogates	% Recovery	Recovery Limits	Flag/Qual
1,2-Dichloroethane-d4	105	70-130	8/22/19 18:57
Toluene-d8	99.3	70-130	8/22/19 18:57
4-Bromofluorobenzene	92.6	70-130	8/22/19 18:57

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1134

Date Received: 8/21/2019

Field Sample #: MMW-01

Sampled: 8/20/2019 11:15

Sample ID: 19H1134-03

Sample Matrix: Ground Water

Sample Flags: RL-11

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	10000	760	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Acrylonitrile	ND	1000	100	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
tert-Amyl Methyl Ether (TAME)	ND	100	28	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Benzene	ND	200	36	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Bromobenzene	ND	200	30	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Bromochloromethane	ND	200	64	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Bromodichloromethane	ND	100	32	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Bromoform	ND	200	92	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Bromomethane	ND	400	160	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
2-Butanone (MEK)	ND	4000	390	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
tert-Butyl Alcohol (TBA)	ND US	4000	830	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF CW
n-Butylbenzene	ND	200	42	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
sec-Butylbenzene	ND	200	32	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
tert-Butylbenzene	ND	200	34	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
tert-Butyl Ethyl Ether (TBEE)	ND	100	32	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Carbon Disulfide	ND	1000	890	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Carbon Tetrachloride	ND	1000	22	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Chlorobenzene	ND	200	30	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Chlorodibromomethane	ND	100	42	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Chloroethane	ND	400	70	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Chloroform	ND	400	34	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Chloromethane	ND US	400	90	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF CW
2-Chlorotoluene	ND	200	24	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
4-Chlorotoluene	ND	200	28	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
1,2-Dibromo-3-chloropropane (DBCP)	ND	1000	110	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
1,2-Dibromoethane (EDB)	ND	100	38	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Dibromomethane	ND	200	74	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
1,2-Dichlorobenzene	ND	200	32	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
1,3-Dichlorobenzene	ND	200	24	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
1,4-Dichlorobenzene	ND	200	26	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
trans-1,4-Dichloro-2-butene	ND	400	62	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Dichlorodifluoromethane (Freon 12)	ND	400	52	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
1,1-Dichloroethane	ND	200	32	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
1,2-Dichloroethane	ND	200	82	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
1,1-Dichloroethylene	ND	200	64	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
cis-1,2-Dichloroethylene	4200	200	26	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
trans-1,2-Dichloroethylene	ND	200	62	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
1,2-Dichloropropane	ND	200	40	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
1,3-Dichloropropane	ND	100	22	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
2,2-Dichloropropane	ND	200	40	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
1,1-Dichloropropene	ND	400	32	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
cis-1,3-Dichloropropene	ND	100	26	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
trans-1,3-Dichloropropene	ND	100	46	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Diethyl Ether	ND	400	68	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF

MT 9/19/19

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1134

Date Received: 8/21/2019

Field Sample #: MMW-01

Sampled: 8/20/2019 11:15

Sample ID: 19H1134-03

Sample Matrix: Ground Water

Sample Flags: RL-11

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Diisopropyl Ether (DIPE)	ND	100	34	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
1,4-Dioxane	ND	10000	4500	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Ethylbenzene	ND	200	26	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Hexachlorobutadiene	ND	120	94	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
2-Hexanone (MBK)	ND	2000	300	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Isopropylbenzene (Cumene)	ND	200	34	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
p-Isopropyltoluene (p-Cymene)	ND	200	40	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Methyl Acetate	ND	200	84	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Methyl tert-Butyl Ether (MTBE)	ND	200	50	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Methyl Cyclohexane	ND	200	40	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Methylene Chloride	ND	1000	68	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
4-Methyl-2-pentanone (MIBK)	ND	2000	330	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Naphthalene	ND	400	62	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
n-Propylbenzene	ND	200	26	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Styrene	ND	200	22	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
1,1,1,2-Tetrachloroethane	ND	200	54	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
1,1,2,2-Tetrachloroethane	ND	100	44	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Tetrachloroethylene	ND	200	36	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Tetrahydrofuran	ND	2000	100	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Toluene	ND	200	28	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
1,2,3-Trichlorobenzene	ND	1000	110	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
1,2,4-Trichlorobenzene	ND	200	80	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
1,3,5-Trichlorobenzene	ND	200	60	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
1,1,1-Trichloroethane	ND	200	40	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
1,1,2-Trichloroethane	ND	200	32	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Trichloroethylene	ND	200	48	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Trichlorofluoromethane (Freon 11)	ND	400	66	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
1,2,3-Trichloropropane	ND	400	50	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	200	64	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
1,2,4-Trimethylbenzene	ND	200	36	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
1,3,5-Trimethylbenzene	ND	200	28	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
Vinyl Chloride	13000	400	90	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
m+p Xylene	ND	400	60	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF
o-Xylene	ND	200	34	µg/L	200		SW-846 8260C	8/22/19	8/22/19 19:23	MFF

Surrogates	% Recovery	Recovery Limits	Flag/Qual
1,2-Dichloroethane-d4	104	70-130	8/22/19 19:23
Toluene-d8	96.9	70-130	8/22/19 19:23
4-Bromofluorobenzene	96.9	70-130	8/22/19 19:23

MT 8/19/19

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1134

Date Received: 8/21/2019

Field Sample #: Trip Blank

Sampled: 8/20/2019 00:00

Sample ID: 19H1134-04

Sample Matrix: Trip Blank Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	50	3.8	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Acrylonitrile	ND	5.0	0.52	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
tert-Amyl Methyl Ether (TAME)	ND	0.50	0.14	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Benzene	ND	1.0	0.18	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Bromobenzene	ND	1.0	0.15	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Bromochloromethane	ND	1.0	0.32	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Bromodichloromethane	ND	0.50	0.16	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Bromoform	ND	1.0	0.46	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Bromomethane	ND	2.0	0.78	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
2-Butanone (MEK)	ND	20	1.9	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
tert-Butyl Alcohol (TBA)	ND	20	4.2	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
n-Butylbenzene	ND	1.0	0.21	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
sec-Butylbenzene	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
tert-Butylbenzene	ND	1.0	0.17	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
tert-Butyl Ethyl Ether (TBEE)	ND	0.50	0.16	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Carbon Disulfide	ND	5.0	4.4	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Carbon Tetrachloride	ND	5.0	0.11	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Chlorobenzene	ND	1.0	0.15	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Chlorodibromomethane	ND	0.50	0.21	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Chloroethane	ND	2.0	0.35	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Chloroform	ND	2.0	0.17	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Chloromethane	ND	2.0	0.45	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
2-Chlorotoluene	ND	1.0	0.12	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
4-Chlorotoluene	ND	1.0	0.14	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.0	0.53	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
1,2-Dibromoethane (EDB)	ND	0.50	0.19	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Dibromomethane	ND	1.0	0.37	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
1,2-Dichlorobenzene	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
1,3-Dichlorobenzene	ND	1.0	0.12	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
1,4-Dichlorobenzene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
trans-1,4-Dichloro-2-butene	ND	2.0	0.31	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Dichlorodifluoromethane (Freon 12)	ND	2.0	0.26	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
1,1-Dichloroethane	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
1,2-Dichloroethane	ND	1.0	0.41	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
1,1-Dichloroethylene	ND	1.0	0.32	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
cis-1,2-Dichloroethylene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
trans-1,2-Dichloroethylene	ND	1.0	0.31	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
1,2-Dichloropropane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
1,3-Dichloropropane	ND	0.50	0.11	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
2,2-Dichloropropane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
1,1-Dichloropropene	ND	2.0	0.16	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
cis-1,3-Dichloropropene	ND	0.50	0.13	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
trans-1,3-Dichloropropene	ND	0.50	0.23	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Diethyl Ether	ND	2.0	0.34	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Ithaca, NY

Sample Description:

Work Order: 19H1134

Date Received: 8/21/2019

Field Sample #: Trip Blank

Sampled: 8/20/2019 00:00

Sample ID: 19H1134-04

Sample Matrix: Trip Blank Water

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	DL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Diisopropyl Ether (DIPE)	ND	0.50	0.17	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
1,4-Dioxane	ND	50	22	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Ethylbenzene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Hexachlorobutadiene	ND	0.60	0.47	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
2-Hexanone (MBK)	ND	10	1.5	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Isopropylbenzene (Cumene)	ND	1.0	0.17	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
p-Isopropyltoluene (p-Cymene)	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Methyl Acetate	ND	1.0	0.42	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Methyl tert-Butyl Ether (MTBE)	ND	1.0	0.25	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Methyl Cyclohexane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Methylene Chloride	ND	5.0	0.34	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
4-Methyl-2-pentanone (MIBK)	ND	10	1.7	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Naphthalene	ND	2.0	0.31	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
n-Propylbenzene	ND	1.0	0.13	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Styrene	ND	1.0	0.11	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
1,1,1,2-Tetrachloroethane	ND	1.0	0.27	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
1,1,2,2-Tetrachloroethane	ND	0.50	0.22	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Tetrachloroethylene	ND	1.0	0.18	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Tetrahydrofuran	ND	10	0.51	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Toluene	ND	1.0	0.14	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
1,2,3-Trichlorobenzene	ND	5.0	0.57	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
1,2,4-Trichlorobenzene	ND	1.0	0.40	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
1,3,5-Trichlorobenzene	ND	1.0	0.30	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
1,1,1-Trichloroethane	ND	1.0	0.20	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
1,1,2-Trichloroethane	ND	1.0	0.16	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Trichloroethylene	ND	1.0	0.24	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Trichlorofluoromethane (Freon 11)	ND	2.0	0.33	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
1,2,3-Trichloropropane	ND	2.0	0.25	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	1.0	0.32	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
1,2,4-Trimethylbenzene	ND	1.0	0.18	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
1,3,5-Trimethylbenzene	ND	1.0	0.14	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
Vinyl Chloride	ND	2.0	0.45	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
m+p Xylene	ND	2.0	0.30	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF
o-Xylene	ND	1.0	0.17	µg/L	1		SW-846 8260C	8/22/19	8/22/19 16:45	MFF

Surrogates	% Recovery	Recovery Limits	Flag/Qual
1,2-Dichloroethane-d4	103	70-130	8/22/19 16:45
Toluene-d8	98.8	70-130	8/22/19 16:45
4-Bromofluorobenzene	94.9	70-130	8/22/19 16:45

MT 9/19/19

Section 1: Identification

Product Name:	BAC-9 aka SDC-9
Chemical Description:	Non-toxic, naturally occurring, non-pathogenic, non-genetically altered anaerobic microbes in a water-based medium
Manufacturer:	Aptim 17 Princess Road Lawrenceville, NJ 08648 609-895-5340
Recommended Use:	Groundwater bioremediation (environmental applications)
Restricted Use:	Not for human consumption.
24-Hour Emergency Contact:	CHEMTREC (P): 800-424-9300

Section 2: Hazard(s) Identification

Hazard Classification:	Irritant (skin and eye)
Signal Word:	Warning
Hazard Statement(s):	Potential eye and skin irritant in hypersensitive humans.
Pictograms:	
Precautionary Statement(s):	Not for human consumption. Avoid contact with eyes and skin. Wear protective gloves and eye protection.

Section 3: Composition/Information on Ingredients

Common Name(s)	CAS NO.	% by Weight
Microbial consortium in water (comprised of microorganism of the genera <i>Dehalococcoides</i>)	N/A	100

Section 4: First-Aid Measures

Routes of Exposure	Emergency First-Aid Procedures
Inhalation	Get medical attention if allergic symptoms develop.
Eye Contact	Flush eyes with plenty of water for at least 15 minutes.. Get medical attention if irritation occurs.
Skin Contact	N/A
Ingestion	Thoroughly rinse mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Get immediate medical attention.

Section 5: Fire-Fighting Measures

Extinguishing Media:	CO ₂ , foam, dry chemical
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Special Fire Fighting Procedures:	None
Fire Hazard(s):	None

Section 6: Accidental Release Measures

Personal Precautions:	Avoid contact with skin or eyes.
Emergency Procedures:	N/A
Methods & Materials used for Containment:	Compatible granular absorbent
Cleanup Procedures:	Spread compatible granular absorbent over spill area and sweep using broom and pan; dispose in appropriate receptacle. Clean area with water.

Section 7: Handling and Storage

Safe Handling & Storage:	Use personal protective equipment recommended in Section 8. Keep containers tightly closed in a cool, well-ventilated area. The DHC microbial consortium can be supplied in stainless steel kegs designed for maximum working pressure of 130 psi and equipped with pressure relief valves. The kegs are pressurized with Nitrogen up 15 psi. Do not exceed pressure of 15 psi during transfer of DHC microbial consortium from kegs. Do not open keg if content of the keg is under pressure.
Other Precautions:	BAC-9 may be stored for up to 3 weeks at a temperature range of 2-4°C without aeration. Avoid freezing.

Section 8: Exposure Controls/Personal Protection

Exposure Limits

OSHA PEL:	NE	
ACGIH TLV:	NE	
NIOSH REL:	NE	

Personal Protective Measures

Respiratory Protection:	Not normally required. N95 respirator if aerosols might be generated.
Hand Protection:	Protective gloves are recommended.
Eye Protection:	Recommended. An eyewash station in the work area is recommended.
Engineering Measures:	Local exhaust ventilation if aerosols are generated
Hygiene Measures:	Wash promptly with soap & water following skin contact.
Other Protection:	Wear appropriate clothing to prevent skin contact.

Section 9: Physical and Chemical Properties

Appearance:	Light greenish murky liquid	Explosive Limits:	N/A
Odor:	Musty	Vapor Pressure:	24 mm Hg
Odor Threshold:	N/A	Vapor Density:	N/A
pH:	6.0-8.0	Relative Density:	0.9-1.1
Melting Point/Freezing Point:	0°C	Solubility:	Soluble
Boiling Point:	100°C	Partition coefficient:	NE
Flash Point:	N/A	Auto-ignition Temperature:	N/A
Evaporation Rate:	0.9-1.1	Decomposition Temperature:	N/A
Flammability (solid, gas):	N/A	Viscosity:	NE

Section 10: Stability and Reactivity

Stability:	Stable
Incompatibility:	Water-reactive materials
Hazardous Decomposition Products:	None
Hazardous Reactions/Polymerization:	None
Conditions to Avoid:	None

Section 11: Toxicological Information

Routes of Exposure:	Ingestion, Eye Contact
Signs and Symptoms of Exposure:	Ingestion of large quantities may result in abdominal discomfort including nausea, vomiting, cramps, diarrhea, and fever. Skin may become irritated upon prolonged contact. Hypersensitive individuals may experience allergic reactions. May cause eye irritation unless immediately rinsed.
Health Hazards	
Acute:	Irritation of the skin or eyes. Ingestion may result in abdominal discomfort.
Chronic:	None
Carcinogenicity	
NTP:	No
IARC:	No
OSHA:	No

Section 12: Ecological Information (non-mandatory)

Ecotoxicity: this material will degrade in the environment

Section 13: Disposal Considerations (non-mandatory)

Waste Disposal Methods:	Dispose of according to Federal and local regulations for non-hazardous waste. Recycle, if practical.
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Section 14: Transport Information (non-mandatory)

The product is not covered by international regulation on the transport of dangerous goods.
No transport warning required.

Section 15: Regulatory Information (non-mandatory)

N/A

Section 16: Other Information

Date of Preparation:	15 August 2014
Last Modified Date:	12 August 2019
The information contained herein is based on available data and is believed to be correct. However, EOS Remediation, LLC makes no warranty, expressed or implied, regarding the accuracy of this data or the results to be obtained thereof. This information and product are furnished on the condition that the person receiving them shall make his/her own determination as to the suitability of the product for his/her particular purpose.	

Section 1: Identification

Product Name:	EOS Pro
Chemical Description:	Mixture; vegetable oil emulsion
Manufacturer:	EOS Remediation PO Box 14266 Research Triangle Park NC 27709 (P): 919-873-2204 www.eosremediation.com
Recommended Use:	Groundwater bioremediation (environmental applications)
Restricted Use:	Not for human consumption.
24-Hour Emergency Contact:	ChemTel: United States (P): 800-255-3924 ChemTel: International (P): 813-248-0585

Section 2: Hazard(s) Identification

Hazard Classification:	Irritant (skin and eye)
Signal Word:	Warning
Hazard Statement(s):	Potential eye and skin irritant.
Pictograms:	
Precautionary Statement(s):	Not for human consumption. Do not store near excessive heat or oxidizers. Avoid contact with eyes and skin. Wear protective gloves and eye protection.

Section 3: Composition/Information on Ingredients

Common Name(s)	CAS NO.	% by Weight
Soybean Oil	8001-22-7	60
Food Grade Emulsifiers Trade Secret ^{1,2}	111-03-5	10
Soluble Substrates (glycerol) Trade Secret ^{1,2}	56-81-5	4
Water	7732-18-5	26

1 – The precise composition of this product is proprietary information. A more complete disclosure will be provided to a physician in the event of a medical emergency.

2 – The soluble substrates and emulsifiers are generally recognized as safe for food contact.

Section 4: First-Aid Measures

Routes of Exposure	Emergency First-Aid Procedures
Inhalation	Remove to fresh air.
Eye Contact	Flush with water for 15 minutes; if irritation persists see a physician.
Skin Contact	Wash with mild soap and water.
Ingestion	Product is non-toxic. If nausea occurs, induce vomiting and seek medical attention.

Section 5: Fire-Fighting Measures

Extinguishing Media:	CO ₂ , foam, dry chemical Note: Water, fog and foam may cause frothing and spattering.
Special Fire Fighting Procedures:	Wear self-contained breathing apparatus and chemical resistant clothing. Use water spray to cool fire exposed containers.
Fire Hazard(s):	Burning will cause oxides of carbon.

Section 6: Accidental Release Measures

Personal Precautions:	Avoid contact with eyes and skin. Do not consume.
Emergency Procedures:	N/A
Methods & Materials used for Containment:	Compatible granular absorbent
Cleanup Procedures:	Spread compatible granular absorbent over spill area and sweep using broom and pan; dispose in appropriate receptacle. Clean area with water.

Section 7: Handling and Storage

Safe Handling & Storage:	Do not store near excessive heat or oxidizers.
Other Precautions:	Consumption of food and beverages should be prevented in work area where product is being used. After handling product, always wash hands and face thoroughly with soap and water before eating, drinking, or smoking.

Section 8: Exposure Controls/Personal Protection**Exposure Limits**

OSHA PEL:	NE	
ACGIH TLV:	NE	
NIOSH REL:	NE	

Personal Protective Measures

Respiratory Protection:	Not normally required. P95 respirator if aerosols might be generated.
Hand Protection:	Protective gloves are recommended
Eye Protection:	Recommended
Engineering Measures:	Local exhaust ventilation if aerosols are generated
Hygiene Measures:	Wash promptly with soap & water if skin becomes irritated from contact.
Other Protection:	Wear appropriate clothing to prevent skin contact.

Section 9: Physical and Chemical Properties

Appearance:	White Liquid	Explosive Limits:	NE
Odor:	Vegetable Oil	Vapor Pressure:	NE
Odor Threshold:	NE	Vapor Density:	Heavier than air
pH:	6.0-7.0 (su)	Relative Density:	0.96-0.98
Melting Point/Freezing Point:	Liquid at room temperature	Solubility:	Dispersible
Boiling Point:	212°F (100°C)	Partition coefficient:	NE
Flash Point:	>300°F (149°C)	Auto-ignition Temperature:	NE
Evaporation Rate:	NE	Decomposition Temperature:	N/A
Flammability (solid, gas):	NE	Viscosity:	500-1500 cP

NE – Not Established

Section 10: Stability and Reactivity

Stability:	Stable
Incompatibility:	Strong acids and oxidizers
Hazardous Decomposition Products:	Thermal decomposition may produce oxides of carbon
Hazardous Reactions/Polymerization:	Will not occur
Conditions to Avoid:	None known

Section 11: Toxicological Information

Likely Routes of Exposure:	Ingestion, dermal and eye contact
Signs and Symptoms of Exposure:	None known
Health Hazards	
Acute:	Potential eye and skin irritant
Chronic:	None known
Carcinogenicity	
NTP:	No
IARC:	No
OSHA:	No

Section 12: Ecological Information (non-mandatory)

There is no data on the ecotoxicity of this product.

Section 13: Disposal Considerations (non-mandatory)

Waste Disposal Methods:	Dispose of according to Federal and local regulations for non-hazardous waste. Recycle, if practical.
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Section 14: Transport Information (non-mandatory)

The product is not covered by international regulation on the transport of dangerous goods.

No transport warning required.

Section 15: Regulatory Information (non-mandatory)

N/A

Section 16: Other Information

Date of Preparation:	29 May 2014
Last Modified Date:	27 June 2019
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Section 1: Identification	
Product Name:	EOS QR
Chemical Description:	Clear liquid; soluble substrate
Manufacturer:	EOS Remediation PO Box 14266 Research Triangle Park NC, 27709 (P): 919-873-2204
Recommended Use:	Groundwater bioremediation (environmental applications)
Restricted Use:	Not for human consumption.
24-Hour Emergency Contact:	ChemTel: United States (P): 800-255-3924 ChemTel: International (P): 813-248-0585

Section 2: Hazard(s) Identification	
Hazard Classification:	Respiratory tract irritant; Irritant (skin and eye)
Signal Word:	Warning
Hazard Statement(s):	Potential eye and skin irritant; Inhalation may aggravate any preexisting respiratory disease.
Pictograms:	
Precautionary Statement(s):	Not for human consumption. Avoid contact with eyes and skin. Wear protective gloves and eye protection.

Section 3: Composition/Information on Ingredients		
Common Name(s)	CAS NO.	% by Weight
Quick Release Soluble Substrate Trade Secret ¹	Proprietary	99
Water	7732-18-5	1

1 – The soluble substrates and emulsifiers are generally recognized as safe for food contact.

Section 4: First-Aid Measures	
Routes of Exposure	Emergency First-Aid Procedures
Inhalation	Remove to fresh air; as with exposure to any environment without adequate personal protection, inhalation may aggravate any preexisting respiratory disease.
Eye Contact	Flush with water for 15 minutes; if irritation persists see a physician.
Skin Contact	Wash with mild soap and water for 15 minutes.
Ingestion	Rinse mouth with water and drink 1-2 glasses of milk or water. Do not

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	induce vomiting. Immediately seek medical attention.
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Section 5: Fire-Fighting Measures

Extinguishing Media:	CO ₂ , foam, dry chemical
Special Fire Fighting Procedures:	Wear self-contained breathing apparatus and chemical resistant clothing. Use water spray to cool fire exposed containers.
Fire Hazard(s):	Burning will cause oxides of carbon.

Section 6: Accidental Release Measures

Personal Precautions:	Avoid contact with eyes and skin. Avoid breathing vapor or mist.
Emergency Procedures:	N/A
Methods & Materials used for Containment:	Spread coarse-grained kitty litter over spill area and sweep using broom and pan or dilute with water and mop up.
Cleanup Procedures:	Soak up with inert dry absorbent. Mop excess material into containers for disposal. Flush remaining area with water to remove trace residue and dispose of properly. Avoid discharge to sewers and surface waters.

Section 7: Handling and Storage

Safe Handling & Storage:	Store in cool, dry, well-ventilated area away from all sources of heat and ignition. Keep out of direct sunlight and protect from moisture and incompatible materials. Do not store near excessive heat or oxidizers.
Other Precautions:	Consumption of food and beverages should be avoided in work area where product is being used. After handling product, always wash hands and face thoroughly with soap and water before eating, drinking, or smoking.

Section 8: Exposure Controls/Personal Protection

Exposure Limits

OSHA PEL:	Mist	15mg/m ₃ (total) 5mg/m ₃ (respirable)
ACGIH TLV:	Mist	10mg/m ₃
NIOSH REL:	Mist	15mg/m ₃ (total) 5mg/m ₃ (respirable)

Personal Protective Measures

Respiratory Protection:	Not normally required.
Hand Protection:	Protective gloves are recommended
Eye Protection:	Recommended
Engineering Measures:	Local exhaust ventilation
Hygiene Measures:	Wash promptly with soap & water if skin becomes irritated from contact.
Other Protection:	Wear appropriate clothing to prevent excessive skin contact.

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Section 9: Physical and Chemical Properties			
Appearance:	Clear Liquid	Explosive Limits:	NE
Odor:	Odorless	Vapor Pressure:	0 kPa (@ 20°C)
Odor Threshold:	NE	Vapor Density:	Heavier than air
pH:	Neutral	Relative Density:	1.26 g/cm ³
Melting Point/Freezing Point:	19°C	Solubility:	Miscible
Boiling Point:	290°C	Partition coefficient:	NE
Flash Point:	>160°C	Auto-ignition Temperature:	400°C
Evaporation Rate:	NE	Decomposition Temperature:	290°C
Flammability (solid, gas):	NE	Viscosity:	NE

Section 10: Stability and Reactivity	
Stability:	Stable
Incompatibility:	Strong oxidizers
Hazardous Decomposition Products:	Thermal decomposition may produce oxides of carbon, and irritating and toxic fumes and gases
Hazardous Reactions/Polymerization:	Will not occur
Conditions to Avoid:	Ignition sources, excess heat

Section 11: Toxicological Information		
Likely Routes of Exposure:		Ingestion, dermal, inhalation
Signs and Symptoms of Exposure:		Coughing, redness & irritation of the eyes or skin.
Health Hazards		
	Acute:	Potential eye and skin irritant; potential respiratory and digestive tract irritant.
	Chronic:	None known
Carcinogenicity		
	NTP:	No
	IARC:	No
	OSHA:	No

Section 12: Ecological Information (non-mandatory)	
There is no data on the ecotoxicity of this product.	

Section 13: Disposal Considerations (non-mandatory)	
Waste Disposal Methods:	Dispose of according to Federal and local regulations for non-hazardous waste. Recycle, if practical.

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Section 14: Transport Information (non-mandatory)

The product is not covered by international regulation on the transport of dangerous goods.

No transport warning required.

Section 15: Regulatory Information (non-mandatory)

N/A

Section 16: Other Information

Date of Preparation: 29 May 2014

Last Modified Date: 12 August 2019

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