GROUNDWATER MONITORING REPORT JULY THROUGH DECEMBER 2019

National Grid Former Albion MGP Site
Albion, New York

Prepared for:

National Grid
300 Erie Blvd West
Syracuse, New York 13202

Prepared by:

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March 2020

Project No. 0078000050.03.2B

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March 9, 2020

Project 0078000050.03.02B

Mr. Michael Squire
Assistant Engineer
New York State Department of Environmental Conservation
625 Broadway
Albany, NY 12233

Subject: **Groundwater Monitoring Report—July Through December 2019**
National Grid Former Albion MGP Site
Albion, New York
Case #837012

Dear Mr. Squire:

Wood Environment & Infrastructure Solutions, Inc., is submitting the subject report on behalf of our client, National Grid. This report presents the results of monitoring activities conducted during the period from July through December 2019.

Please contact either of the undersigned if you have any questions or require additional information.

Sincerely,
Wood Environment & Infrastructure Solutions, Inc.

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Enclosure

cc: Brian Stearns - National Grid
Steve Stucker - National Grid
Devin Shay – Groundwater & Environmental Services, Inc.

TABLE OF CONTENTS

TABLES

FIGURES

APPENDICES

GROUNDWATER MONITORING REPORT
JULY THROUGH DECEMBER 2019

National Grid Former Albion MGP Site
Albion, New York

1.0 INTRODUCTION

This report summarizes groundwater monitoring and sampling activities performed by Wood Environment & Infrastructure Solutions, Inc. ("Wood"), on behalf of National Grid Corporation ("National Grid"), during the period from July through December 2019 ("reporting period") at the Former Albion Manufactured Gas Plant (MGP), Site Identification Number 837012, in Albion, New York (the site; Figure 1). Groundwater monitoring and sampling activities were performed in accordance with the *Monitoring and Sampling Plan* (Wood, 2018), as summarized in Table 1. Additional groundwater monitoring well installation, development, and decommissioning activities were performed during the reporting period, as outlined in the *Monitoring and Sampling Plan*.

Activities performed at the site during the reporting period include the following:

- Installation of one new groundwater monitoring well (MW-9R);
- Decommissioning of three groundwater monitoring wells (MW-2, MW-3, and MW-4);
- Redevelopment of the remaining site wells;
- Collection of depth to groundwater measurements and routine groundwater monitoring samples;
- Collection of additional groundwater samples for analysis of emerging contaminants; and
- And inspection of the site Engineering Control (i.e. soil cap) and Institutional Controls (i.e. land use).

Groundwater well installation, development, and decommissioning activities are described in Section 2 and Appendix A. Depth to groundwater measurement and sampling procedures are described in Section 3, and groundwater monitoring results are provided in Section 4. A quality assurance/quality control (QA/QC) assessment of the groundwater data is provided in Section 5. Results of the inspection of the site Engineering Control and Institutional Controls

are described in Section 6. Project activities planned for the next monitoring period are outlined in Section 7.

1.1 BACKGROUND

The site consists of two adjoining parcels totaling approximately 0.5 acres formerly occupied by a single MGP that is bounded by the New York State Erie Barge Canal to the north, East Bank Street and a commercial property to the south, Ingersoll Street to the east, and a park and commercial property to the west (Figure 2). The western parcel (0.3 acres) is currently owned by National Grid, which maintains an active electrical substation on the property; previous environmental investigations did not identify environmental conditions requiring remediation. The eastern parcel (0.2 acres), currently owned by New York State Electric and Gas Corporation (NYSEG), has been remediated to commercial use and is currently vacant and undeveloped.

Niagara Mohawk Power Corporation (doing business as National Grid) entered into an Order of Consent in November 2003 with the NYSDEC to remediate soil and groundwater at the site, which have been impacted by historical MGP operations. The contaminants of concern (COCs) identified at the site, as listed in the Record of Decision (NYSDEC, 2010a) are: benzene, toluene, ethylbenzene, and xylene (collectively referred to as BTEX); polycyclic aromatic hydrocarbons (PAHs) acenaphthene, benzo(a)pyrene, benzo(b)fluoranthene, benzo[k]fluoranthene, chrysene, fluorene, and indeno(1,2,3-cd)pyrene; and cyanide. In 2012, Engineering Controls were constructed at the eastern parcel including remedial excavation of the upper two feet of impacted surficial soil and construction of a soil cap system consisting of 18 inches of clean soil underlain by a demarcation layer to delineate clean soil from historical fill.

In addition to Engineering Controls, Institutional Controls including a site-wide Site Management Plan (SMP) and Environmental Easement are part of the site remedy to control exposure to remaining contamination and to maintain protection of public health and the environment. The *Monitoring and Sampling Plan* will ultimately be incorporated with the site wide SMP, which is currently under development, to conduct post-remediation monitoring to assess the performance and effectiveness of the remedy.

2.0 MONITORING WELL INSTALLATION, DEVELOPMENT, AND DECOMMISSIONING

In accordance with the *Monitoring and Sampling Plan*, groundwater monitoring well installation, development, and decommissioning activities were performed at the site during the reporting period. Wood contracted with Nothnagle Drilling, Inc., of Scottsville, New York, a New York Registered Driller, to perform all well installation, development, and decommissioning activities. These activities are described in detail in Appendix A and summarized below:

- On October 8, 2019, one groundwater monitoring well (MW-11) was installed at the site. During well construction the annular materials of the well suddenly dropped, exposing the well screen to bentonite-cement grout, and the well location was subsequently abandoned by removing the well casing and backfilling the borehole with bentonite-cement grout. It is likely that during drilling the borehole intercepted an underground void, potentially related to historical site infrastructure, which led to instability of the annular materials and ultimately to the loss of the well.
- On October 8, 2019, a private utility contractor retained by Wood used geophysical tools to attempt to locate MW-9, a monitoring well previously installed in Ingersoll Street that was likely paved over during redevelopment activities. MW-9 could not be located and is presumed to have been damaged or destroyed.
- On October 9, 2019, three existing groundwater monitoring wells (MW-2, MW-3, and MW-4) were decommissioned in accordance with NYSDEC guidelines (NYSDEC, 2009) by removing the well casing and screen and backfilling the borehole with bentonite-cement grout using a tremie pipe.
- On October 8 and 9, 2019, the five remaining groundwater monitoring wells were redeveloped using bailing, surging, and pumping techniques to ensure strong hydraulic communication between each well and the surrounding formation.
- On November 18, 2019, well MW-9R was installed at the site. This well is located approximately downgradient of well MW-5, and the location was approved by NYSDEC (M. Squire of NYSDEC, personal communication, October 16, 2019). The well was developed on November 19, 2019, approximately 24 hours after completion of well installation activities.

Groundwater monitoring well MW-9R was installed northwest of the former MW-9 location, and approximately downgradient of the unsuccessful MW-11 installation. The location of MW-9R meets the intent of NYSDEC's request for installation of a new monitoring well hydraulically downgradient of well MW-5 (NYSDEC, 2018b).

3.0 GROUNDWATER MONITORING

This section describes groundwater monitoring activities performed by Wood during the reporting period. The groundwater monitoring program, including wells and their monitoring and sampling frequencies, is summarized in Table 1. Figure 2 shows the locations of groundwater monitoring wells at the site. Appendix B includes the logs on which field data were recorded. During the groundwater sampling event additional samples were collected from select site wells for analysis of emerging contaminants (1,4-dioxane and per- and polyfluoroalkyl substances), as requested by NYSDEC (NYSDEC, 2018a). The results of the emerging contaminant samples are presented in the *Emerging Contaminant Sampling Report* (Wood, 2020).

3.1 WATER LEVEL MEASUREMENTS

Depth to water measurements at site monitoring wells were measured on November 19 and 20, 2019, prior to sampling of the wells (Table 2). Depth to groundwater was measured with an electronic water level sounder, and measurements were recorded to the nearest 0.01 foot. The sounder was decontaminated with an anionic detergent/distilled water mixture, followed by a distilled water rinse, followed by a rinse using laboratory provided deionized water between uses at each well.

3.2 GROUNDWATER SAMPLING AND ANALYSIS

In accordance with *Monitoring and Sampling Plan*, groundwater samples were collected on November 18 and 19, 2019. Monitoring wells were purged using low-flow sampling techniques prior to sampling using a peristaltic pump. Water quality parameters, including temperature, pH, specific conductance, oxidation-reduction potential, and dissolved oxygen were measured periodically during purging and were recorded on the sampling records. Samples were collected when parameter measurements changed less than 10 percent between three sequential measurements. Sampling records are provided in Appendix B.

Groundwater samples were collected into laboratory-provided sample containers immediately following purging. The sample containers were immediately labeled with the project number, well number, date, time, and analyses requested, stored in an ice-cooled chest, and shipped to the analytical laboratory under Wood chain-of-custody procedures.

Eurofins TestAmerica Laboratories, Inc., of Amherst, New York, analyzed the samples for benzene, toluene, ethylbenzene, and xylenes using United States Environmental Protection Agency (U.S. EPA) Method 8260B and the U.S. EPA 16-PAH list of polycyclic aromatic hydrocarbons (PAHs) using U.S. EPA Method 8270D. The samples were analyzed for total cyanide by Eurofins TestAmerica of North Canton, Ohio, using Standard Method SM4500-CN-C/E. Both laboratories are accredited under the National Environmental Laboratory Accreditation Program.

3.3 INVESTIGATION DERIVED WASTE

Groundwater purged from the monitoring wells was stored in Department of Transportation-approved 55-gallon steel drums pending waste profiling. Following laboratory analysis and profiling, the investigation derived waste was disposed of at an off-site, permitted facility in accordance with state and federal regulations.

4.0 RESULTS

This section presents the results from the groundwater monitoring activities, including groundwater elevation measurement and analytical testing.

4.1 OCCURRENCE AND MOVEMENT OF GROUNDWATER

Measurements from the monitoring wells were used to evaluate the occurrence and movement of groundwater at the site.

On November 19 and 20, 2019, measured groundwater elevations in monitoring wells ranged from 5.46 (MW-6) to 12.92 feet (MW-10R). Depth to water measurements and water level elevations are summarized in Table 2. All elevations referenced are relative to the North American Vertical Datum 1988.

Figure 3 presents the potentiometric surface map for the water levels measured in the monitoring wells in November 2019. The potentiometric surface map indicates that groundwater flow is generally toward the southeast across the site. The horizontal gradient was approximately 0.024 foot per foot (ft/ft) in November 2019.

4.2 GROUNDWATER ANALYTICAL RESULTS

Groundwater samples were collected from six monitoring wells for BTEX, PAH, and total cyanide analysis on November 19 and 20, 2019. Groundwater evaluation criteria are the

Ambient Water Quality Standards and Guidance Values (Technical & Operational Guidance Series 1.1.1, Division of Water 1998). Groundwater results are compared to the Standard Values (or Guidance Values, where Standard Values are not available) for groundwater as a drinking water source. Copies of laboratory reports are included in Appendix C. Analytical results and evaluation criteria for BTEX, PAHs, and total cyanide are presented in Table 3, Table 4, and Table 5, respectively, and on Figure 4. Compounds that were detected at concentrations exceeding their respective evaluation criteria are summarized below:

- Benzene (MW-5 and MW-8R)
- Ethylbenzene (MW-5)
- Xylenes (MW-5 and MW-8R)
- Acenaphthene (MW-5 and MW-8R)
- Naphthalene (MW-5, MW-8R, and MW-9R)
- Total cyanide (MW-8R)

5.0 DATA QUALITY REVIEW

Analytical data (Appendix C) were reviewed by the laboratory and by Wood. Consistent with the DER-10 Section 2.2 (NYSDEC, 2010b), this report meets the submittal requirements for a Category A data deliverable. The data quality review included accuracy and precision assessments for the samples collected in November 2019. Consistent with the Quality Assurance Project Plan included in the *Monitoring and Sampling Plan*, the data quality review was performed in accordance with the procedures specified in the U.S. EPA National Functional Guidelines for Superfund Inorganic Methods Data Review (U.S. EPA, 2017a) and the U.S. EPA National Functional Guidelines for Superfund Organic Methods Data Review (U.S. EPA, 2017b). Results of the data validation and precision assessment indicate the following:

- Analytical accuracy was evaluated by reviewing laboratory control sample/laboratory control sample duplicate (LCS/LCSD) recoveries and matrix spike/matrix spike duplicate (MS/MSD) recoveries (recoveries of spiked compounds expressed as a percentage of the true concentrations). Surrogate recoveries, holding times, and field and laboratory blank results for samples collected in November 2019 were also used to assess accuracy. No QC issues requiring data qualifiers were identified for the laboratory and field QC samples, except for the recovery of one surrogate in sample MW-9R which was detected outside of control limits leading to a "J+" qualification on associated parameters for this sample. Results for several analytes in multiple samples were qualified "J," indicating that the analyte was positively detected in the sample, but that the reported result is

approximate because it was detected at a concentration below the reporting limit but above the method detection limit.

- Data precision was evaluated by comparing analytical results from duplicate pairs and evaluating the calculated RPDs between primary and blind field duplicate samples. The calculated RPD for the blind field duplicate sample collected from MW-5 were within acceptable limits (i.e. less than the project acceptance criterion of 30% for organics and 20% for inorganics). A summary of the data precision evaluation is included on Table 6.

Based upon the data quality review, the November 2019 results are considered valid and usable. The data are acceptable and can be used for decision-making purposes. Data completeness (the number of successful analyses relative to the number of requested analyses) was 100 percent for samples collected in November 2019.

6.0 SITE INSPECTION

During the semiannual groundwater sampling event, Wood field personnel performed a visual assessment of the soil cap in order to evaluate changes due to erosion, land use, construction, or other factors that may indicate a physical change in the soil cap. Observations were recorded on a "Soil Cap Inspection Form" (Appendix D).

The visual inspections did not indicate any damage to the physical integrity of the soil cap or the need for any repairs or maintenance.

7.0 PLANNED ACTIVITIES

The following activities are planned for the monitoring period of January to June 2020:

- The first 2020 semiannual groundwater monitoring event, which will include collection of depth to groundwater measurements and groundwater samples in accordance with the NYSDEC-approved groundwater monitoring program, will be performed.
- The first 2020 semiannual groundwater monitoring report will be submitted to the NYSDEC following the completion of groundwater monitoring and evaluation activities.

8.0 REFERENCES

Division of Water 1998. Technical and Operational Guidance Series (TOGS) 1.1.1. June. Available at https://www.dec.ny.gov/docs/water_pdf/togs111.pdf

New York State Department of Environmental Conservation (NYSDEC), 2009. CP-43: Groundwater Monitoring Well Decommissioning Policy. November 3. Available at https://www.dec.ny.gov/docs/remediation_hudson_pdf/cp43mwdecomm.pdf

NYSDEC, 2010a. Record of Decision. NM-Albion MGP State Superfund Project, Albion, Orleans County Site No.:837013. March.

NYSDEC, 2010b. DER-10: Technical Guidance for Site Investigation and Remediation. May 3. Available at https://www.dec.ny.gov/docs/remediation_hudson_pdf/der10.pdf

NYSDEC, 2018a. Request for Sampling of Emerging Contaminants, National Grid Upstate MGP Sites. May 30.

NYSDEC, 2018b. Recommendations for Groundwater Monitoring Program, NYSDEC Site No. 837012, Albion MGP, Albion, New York. August 30.

U.S. Environmental Protection Agency, 2017a. National Functional Guidelines for Superfund Inorganic Methods Data Review: OLEM 9355.0-135, EPA 540-R-2017-001, January.

U.S. Environmental Protection Agency, 2017b. National Functional Guidelines for Superfund Organic Methods Data Review: OLEM 9355.0-134, EPA 540-R-2017-002, January.

Wood Environment & Infrastructure Solutions, Inc. ("Wood"), 2018. Monitoring and Sampling Plan, National Grid Former Albion MGP Site, Albion, New York, December 21.

Wood, 2020. Emerging Contaminants Sampling Report, National Grid Former Albion MGP Site, Albion, New York, February 14.

TABLE 1

GROUNDWATER MONITORING PROGRAM

Former Albion MGP Site

Albion, New York

Well ID	Water Level Monitoring Schedule	Water Quality Monitoring Schedule	Laboratory Analysis
MW-1	Semiannual	Semiannual	BTEX by U.S. EPA 8260B, PAHs by U.S. EPA 8270D, Total Cyanide by SM4500-CN-C/E
MW-5			
MW-6			
MW-8R			
MW-9R			
MW-10R			

Abbreviations

BTEX = benzene, toluene, ethylbenzene, xylenes

PAHs = polycyclic aromatic hydrocarbons

U.S. EPA = United States Environmental Protection Agency

TABLE 2

GROUNDWATER ELEVATIONS
NOVEMBER 2019
Former Albion MGP Site
Albion, New York

Well ID	Well Location	Date Measured	Measuring Point Elevation (NAVD 88)	Depth Below Measuring Point (feet)	Groundwater Elevation (NAVD 88)
MW-1	Up-gradient	11/19/2019	515.04	7.91	507.13
MW-5	On-site	11/19/2019	513.14	7.92	505.22
MW-6	On-site	11/20/2019	510.74	5.46	505.28
MW-8R	On-site	11/20/2019	515.53	11.84	503.69
MW-9R	Down-gradient	11/20/2019	514.70	12.89	501.81
MW-10R	Down-gradient	11/19/2019	515.81	12.92	502.89

Notes

1. Wells were surveyed by Costich Engineering, Land Surveying & Landscape Architecture D.P.C. (Costich Engineering), a New York-licensed land surveyor in June, 2018. Monitoring well MW-9R was surveyed on November 11, 2019 by Costich Engineering. Water elevations are relative to the North American Vertical Datum 1988 (NAVD 88).

Abbreviations

NAVD 88 = North American Vertical Datum of 1988

TABLE 3

GROUNDWATER ANALYTICAL RESULTS - VOLATILE ORGANIC COMPOUNDS [1,2]
NOVEMBER 2019
Former Albion MGP Site
Albion, New York

Results in micrograms per liter (µg/L)

Well ID	Sample ID	Sample Date	Benzene	Toluene	Ethylbenzene	m-Xylene & p-Xylene	o-Xylene	Xylenes, Total	Total BTEX
MW-1	MW-1-111919	11/19/2019	<1.0 [3]	<1.0	<1.0	<2.0	<1.0	<2.0	<2.0
MW-5	MW-5-111919/DUP	11/19/2019	**23/23**	**4.0/4.1**	**13/12**	**9.1/8.6**	**12/11**	**21/20**	**61/59**
MW-6	MW-6-112019	11/20/2019	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0	<2.0
MW-8R	MW-8R-112019	11/20/2019	**49**	**2.6**	**3.7**	**12**	**5.7**	**18**	**73**
MW-9R	MW-9R-112019	11/20/2019	<1.0	**0.57 J**	<1.0	<2.0	<1.0	<2.0	<2.0
MW-10R	MW-10-111919	11/19/2019	**14**	<1.0	<1.0	<2.0	<1.0	<2.0	**14**
Ambient Water Quality Standards and Guidance Values [4]			1	5	5	5	5	5	--

Notes

1. Only detected compounds are presented. Detections are shown in **bold.** Highlighted cells indicate the concentration exceeds the respective screening criteria.
2. Samples analyzed for VOCs in accordance with U.S. EPA Methods 8260B by Eurofins TestAmerica of Buffalo, New York.
3. "<" indicates constituent was not detected at a concentration equal to or greater than the laboratory reporting limit shown.
4. Division of Water 1998. Technical and Operational Guidance Series 1.1.1. June. Groundwater Standard Values for groundwater as a drinking source are shown where available; Guidance Values are shown where no Standard Value is available. Available at https://www.dec.ny.gov/docs/water_pdf/togs111.pdf

Abbreviations

-- = not applicable
µg/L = micrograms per liter
BTEX = benzene, toluene, ethylbenzene, and xylenes
DUP = field duplicate sample
U.S. EPA = United States Environmental Protection Agency
J = the analyte detected at a level less than the reporting limit and greater than or equal to the method detection limit.
VOCs = volatile organic compounds

TABLE 4

GROUNDWATER ANALYTICAL RESULTS - POLYCYCLIC AROMATIC HYDROCARBONS [1,2]
NOVEMBER 2019
Former Albion MGP Site
Albion, New York

Results in micrograms per liter (µg/L)

Well ID	Sample ID	Sample Date	Acenaphthene	Acenaphthylene	Anthracene	Benzo[a]anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo[g,h,i]perylene	Chrysene	Dibenz[a,h]anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Phenanthrene	Pyrene	Naphthalene
MW-1	MW-1-111919	11/19/2019	<5.0 [3]	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
MW-5	MW-5-111919/DUP	11/19/2019	**34/38**	**33/36**	**6.2/6.4 J**	<5.0/<25	<5.0/<25	<5.0/<25	<5.0/<25	<5.0/<25	<5.0/<25	<5.0/<25	**5.6/5.4 J**	**45/46**	<5.0/<25	**23/23 J**	**3.1 J/3.5 J**	**24/25**
MW-6	MW-6-112019	11/20/2019	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
MW-8R	MW-8R-112019	11/20/2019	**57**	**21 J**	<25	<25	<25	<25	<25	<25	<25	<25	**4.2 J**	**34**	<25	**33**	**2.1 J**	**900**
MW-9R	MW-9R-112019	11/20/2019	**6.1 J+**	**0.38 J+**	**0.65 J+**	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**3.0 J+**	<5.0	**2.8 J+**	<5.0	**50**
MW-10R	MW-10-111919	11/19/2019	**0.86 J**	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**0.99 J**
Ambient Water Quality Standards and Guidance Values [4]			20	--	50	0.002	0.002	0.002	0.002	--	0.002	--	50	50	0.002	50	50	10

Notes

1. Only detected compounds are presented. Detections are shown in **bold**. Highlighted cells indicate the concentration exceeds the respective screening criteria.
2. Samples analyzed for PAHs in accordance with U.S. EPA Method 8270D by Eurofins TestAmerica of Buffalo, New York.
3. "<" indicates constituent was not detected at a concentration equal to or greater than the laboratory reporting limit shown.
4. Division of Water 1998. Technical and Operational Guidance Series 1.1.1. June. Groundwater Standard Values for groundwater as a drinking source are shown where available; Guidance Values are shown where no Standard Value is available. Available at https://www.dec.ny.gov/docs/water_pdf/togs111.pdf

Abbreviations

-- = not applicable
µg/L = micrograms per liter
DUP = field duplicate sample
U.S. EPA = United States Environmental Protection Agency
J = the analyte detected at a concentration less than the reporting limit and greater than or equal to the method detection limit.
J+ = the analyte is estimated high
PAH = polycyclic aromatic hydrocarbons

TABLE 5

GROUNDWATER ANALYTICAL RESULTS - TOTAL CYANIDE [1,2]
NOVEMBER 2019
Former Albion MGP Site
Albion, New York

Results in milligrams per liter (mg/L)

Well ID	Sample ID	Sample Date	Cyanide, Total
MW-1	MW-1-111919	11/19/2019	**0.098**
MW-5	MW-5-111919/DUP	11/19/2019	**0.16/0.16**
MW-6	MW-6-112019	11/20/2019	**0.041**
MW-8R	MW-8R-112019	11/20/2019	**0.21**
MW-9R	MW-9R-112019	11/20/2019	**0.054**
MW-10R	MW-10-111919	11/19/2019	**0.01**
Ambient Water Quality Standards and Guidance Values [3]			0.2

Notes

1. Only detected compounds are presented. Detections are shown in **bold**. Highlighted cells indicate the concentration exceeds the respective screening criteria.
2. Samples analyzed Total Cyanide in accordance with Standard Method 4500-CN-C/E by Eurofins TestAmerica of North Canton, Ohio.
3. Division of Water 1998. Technical and Operational Guidance Series 1.1.1. June. Groundwater Standard Value for groundwater as a drinking source is shown. Available at https://www.dec.ny.gov/docs/water_pdf/togs111.pdf

Abbreviations

DUP = field duplicate
mg/L = milligrams per liter

TABLE 6

PRECISION DATA SUMMARY

Former Albion MGP Site

Albion, New York

Results reported in (ug/L)

Primary Sample ID	Duplicate Sample ID	Collection Date	Compound[1]	Primary Sample		Duplicate Sample		RPD[2]	Absolute Difference Between
				Reporting Limit	Sample Result	Reporting Limit	Sample Result		
MW-5-111919	MW-50-111919	11/19/2019	Benzene	1.0	23	1.0	23	0.0	NA
			Toluene	1.0	4.0	1.0	4.1	2.5	NA
			Ethylbenzene	1.0	13	1.0	12	8.0	NA
			m-Xylene & p-Xylene	2.0	9.1	2.0	8.6	5.6	NA
			o-Xylene	1.0	12	1.0	11	8.7	NA
			Xylenes, Total	2.0	21	2.0	20	4.9	NA
			Total BTEX	2.0	61	2.0	59	3.3	NA
			Acenaphthene	5.0	34	25	38	NA	4.0
			Acenaphthylene	5.0	33	25	36	NA	3.0
			Anthracene	5.0	6.2	25	6.4	NA	0.20
			Fluoranthene	5.0	5.6	25	5.4	NA	0.20
			Fluorene	5.0	45	25	46	NA	1.0
			Naphthalene	5.0	24	25	25	NA	1.0
			Phenanthrene	5.0	23	25	23	NA	0.0
			Pyrene	5.0	3.1	25	3.5	NA	0.40
			Cyanide, Total	0.010	0.16	0.010	0.16	0.0	NA

Notes

1. Only compounds detected in at least one of the primary or duplicate samples are shown.
2. Relative Percent Difference (RPD) is calculated by: $$RPD\% = \left| \frac{2(S_1 - S_2)}{S_1 + S_2} \right| \times 100$$

   where S1 = primary sample concentration and S2 = duplicate sample concentration.
   Duplicate results are acceptable when the RPD between the results is less than 30% for **organics** or 20% for **inorganics.**
3. RPD is not applicable when one or both sample results are less than two times the reporting limit (RL) for **organics** or less than 5 times the RL for the **inorganics**. When the RPD is not appliocable, duplicate results are acceptable when:
   - **both results are positive**: the absolute difference between the results is less than the RL
   - **one ND and one positive result:** the absolute difference between the positive results and the reporting limit of the ND is

FIGURES

0 1.0 Mile
(approximate)

N

SITE VICINITY MAP
Albion Former Manufactured Gas Plant Site
Albion, New York

wood.	By: KLU	Proj. No. 0078000050.03.1B
	Date: 10/03/2018	Figure 1

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MW-1
MW-3
MW-5
MW-6
MW-2
MW-4
MW-11
MW-8R
MW-10R
MW-9R
MW-9
Western Parcel
73.6-3-92
(National Grid)
Eastern Parcel
73.6-3-7
(NYSEG)
Control Tower
Bridge Lift-Structure Pit
Ingersoll Street
Bridge
Erie Canal
Ingersoll Street
East Bank Street

Explanation

- Groundwater monitoring well
- Decommissioned groundwater monitoring well
- Decommissioned compromised monitoring well
- Parcel boundary
- Property boudnary

NOTES:
1. MW-9R was drilled, installed, and subsequently developed on November 18 and 19, 2019 to replace downgradient monitoring well MW-9.
2. Monitoring well MW-11 was installed in October 2019. Following installation, the well was compromised and subsequently decommissioned.

N

0 30 Feet

Aerial imagery from Google Earth.
Image date is 10/14/2016.

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SITE LAYOUT
Albion Former MGP Site
Albion, New York

wood.

By: KLU	Prj. No. 0078000050.03.2B
Date: 03/03/2020	Figure 2


MW-1
507.13
MW-2
MW-3
MW-4
MW-5
505.22
MW-6
505.28
MW-8R
503.69
MW-10R
502.89
MW-9
MW-9R[1]
501.81
507
506
505
504
503
502
Western Parcel
73.6-3-92
(National Grid)
Eastern Parcel
73.6-3-7
(NYSEG)
Control Tower
Bridge Lift-Structure Pit
Ingersoll Street
Bridge
Erie Canal
East Bank Street
Explanation
Groundwater monitoring well
Decommissioned groundwater monitoring well
Parcel boundary
Property boudnary
Notes:
1. MW-9R was drilled, installed, and subsequently developed on November 18 and 19, 2019 to replace downgradient monitoring well MW-9.
2. Water levels were measured on November 19 and 20, 2019 prior to sampling
N
0
30
Feet
Aerial imagery from Google Earth.
Image date is 10/14/2016.
POTENTIOMETRIC SURFACE MAP
NOVEMBER 2019
Albion Former MGP Site
Albion, New York
wood.
By: KLU
Date: 01/21/2020
Prj. No. 0078000050.03.2A
Figure 3
S:\7800s\7800\78000050\task_03.02A\20_0120_4Q19gwmn_fig_03.mxd

MW-1	
Date	11/19/2019
Total BTEX	<2.0
Acenaphthene	<5.0
Fluorene	<5.0
Acenaphthylene	<5.0
Anthracene	<5.0
Fluoranthene	<5.0
Naphthalene	<5.0
Phenanthrene	<5.0
Pyrene	<5.0
Cyanide, Total	0.098

MW-5	
Date	11/19/2019
Total BTEX	61/59
Acenaphthene	34/38
Fluorene	45/46
Acenaphthylene	33/36
Anthracene	6.2/6.4 J
Fluoranthene	5.6/5.4 J
Naphthalene	24/25
Phenanthrene	23/23 J
Pyrene	3.1 J/3.5 J
Cyanide, Total	0.16/0.16

MW-8R	
Date	11/20/2019
Total BTEX	73
Acenaphthene	57
Fluorene	34
Acenaphthylene	21 J
Anthracene	<25
Fluoranthene	4.2 J
Naphthalene	900
Phenanthrene	33
Pyrene	2.1 J
Cyanide, Total	0.21

MW-6	
Date	11/20/2019
Total BTEX	<2.0
Acenaphthene	<5.0
Fluorene	<5.0
Acenaphthylene	<5.0
Anthracene	<5.0
Fluoranthene	<5.0
Naphthalene	<5.0
Phenanthrene	<5.0
Pyrene	<5.0
Cyanide, Total	0.041

MW-9R	
Date	11/20/2019
Total BTEX	<2.0
Acenaphthene	6.1 J+
Fluorene	3.0 J+
Acenaphthylene	0.38 J+
Anthracene	0.65 J+
Fluoranthene	<5.0
Naphthalene	50
Phenanthrene	2.8 J+
Pyrene	<5.0
Cyanide, Total	0.054

MW-10R	
Date	11/19/2019
Total BTEX	14
Acenaphthene	0.86 J
Fluorene	<5.0
Acenaphthylene	<5.0
Anthracene	<5.0
Fluoranthene	<5.0
Naphthalene	0.99 J
Phenanthrene	<5.0
Pyrene	<5.0
Cyanide, Total	0.01

MW-1
MW-2
MW-3
MW-4
MW-5
MW-6
MW-8R
MW-9
MW-9R
MW-10R

Western Parcel
73.6-3-92
(National Grid)

Eastern Parcel
73.6-3-7
(NYSEG)

Ingersoll Street Bridge

Erie Canal

Control Tower

Bridge Lift-Structure Pit

East Bank Street

Explanation

- Groundwater monitoring well
- Decommissioned groundwater monitoring well
- Parcel boundary
- Property boudnary

MW-5 ← Well ID

MW-5	
Date	11/19/2019
Total BTEX	61/59
Acenaphthene	34/38
Fluorene	45/46
Acenaphthylene	33/36
Anthracene	6.2/6.4 J
Fluoranthene	5.6/5.4 J
Naphthalene	24/25
Phenanthrene	23/23 J
Pyrene	3.1 J/3.5 J
Cyanide, Total	0.16/0.16

Concentration in micrograms per liter (µg/L)

Concentration in milligrams per liter (mg/L)

Duplicate data

Abbreviations:
EPA Environmental Protection Agency
VOCs volatile organic compounds
J the analyte was positively identified; however, the associated numerical value is the approximate concentration of the analyte in the sample
J+ the analyte is estimated high
R rejected
DL Diluted Sample
BTEX Benzene, Toluene, Ethylbenzene, Xylenes

N

0 30 Feet

Aerial imagery from Google Earth. Image date is 10/14/2016.

Notes:
1. MW-9R was drilled, installed, and subsequently developed on November 18 and 19, 2019 to replace downgradient monitoring well MW-9.
2. Samples analyzed for VOCs, PAHs, and Total Cyanide in accordance with U.S. EPA Methods 8260B and 8270D, and SIM4500-CN-C/E respectively, by Eurofins TestAmerica of Buffalo, New York.
3. "<" indicates constituent was not detected at a concentration equal to or greater than the laboratory reporting limit shown.

GROUNDWATER ANALYTICAL RESULTS
NOVEMBER 2019
Albion Former MGP Site
Albion, New York

wood.

By: KLU
Date: 02/21/2020
Prj. No. 0078000050.03.2A
Figure 4

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APPENDIX A

Well Installation, Development, and Decommissioning Report

APPENDIX A

MONITORING WELL INSTALLATION, DEVELOPMENT AND DECOMMISSIONING REPORT

Former Albion MGP Site
Albion, New York

TABLE OF CONTENTS

TABLES

FIGURES

ATTACHMENTS

APPENDIX A

MONITORING WELL INSTALLATION, DEVELOPMENT AND DECOMMISSIONING REPORT

Former Albion MGP Site
Albion, New York

A1.0 INTRODUCTION

Wood Environment & Infrastructure Solutions, Inc. ("Wood") has prepared this *Monitoring Well Installation, Development and Decommissioning Report* on behalf of National Grid Corporation ("National Grid") for the Former Albion MGP Site, located in Albion, New York (the "site," Figure A-1). This report documents the installation of one groundwater monitoring well (MW-9R), the decommissioning of three groundwater monitoring wells (MW-2, MW-3, and MW-4), and redevelopment of additional site monitoring wells. All work was performed in general accordance with the methods outlined in the groundwater *Monitoring and Sampling Plan* (Wood, 2019).

A2.0 FIELD METHODOLOGY

The following sections summarize the pre-field activities, hollow-stem auger drilling, well installation, well decommissioning, and well development methodologies. Well construction details for wells installed and decommissioned are presented in Table A-1, and well locations are shown on Figure A-2.

A2.1 PRE-FIELD ACTIVITIES

Before initiating the fieldwork, Wood performed the following activities:

- Obtained street opening permits to work in the public right-of-way from the Village of Albion ("Village") Department of Public Works;
- Updated the existing site-specific health and safety plan;
- Marked the proposed boring locations and notified Dig Safely New York of the upcoming work;
- Contracted a private utility locator to assess the proposed drilling locations for subsurface features;

- Contracted with Nothnagle Drilling, Inc., of Scottsville, New York, a New York Registered Driller, to perform all drilling, well installation, well development, and well decommissioning activities; and
- Notified the New York State Department of Environmental Conservation (NYSDEC) of the work schedule.

A2.2 Geophysical Locating

As described in the *Monitoring and Sampling Plan*, groundwater monitoring well MW-9 was installed within the public right of way along Ingersoll Street, and was likely paved over during the reconstruction of the Ingersoll Street Lift Bridge. In an effort to locate this well, a private utility contractor retained by Wood used geophysical tools including ground penetrating radar, passive electromagnetic survey equipment, and a metal detector to attempt to locate the well. Unfortunately, the well could not be located, and is presumed to have been damaged or destroyed during road redevelopment activities.

A2.3 Groundwater Monitoring Wells

Groundwater well installation activities took place during two mobilizations (October 8 and 9, 2019 and November 18 and 19, 2019). A total of two on-site borings were advanced for installation of monitoring wells. During the first mobilization the borehole advanced for the installation of the proposed new well, MW-11, likely encountered a void space at depth. During well construction the annular materials of the well suddenly dropped, exposing the well screen to bentonite-cement grout. MW-11 was subsequently decommissioned by removing the well casing and backfilling the borehole with bentonite-cement grout. Due to the presence of underground utilities in the area and an existing tree, a replacement well could not be installed in the immediate vicinity of the MW-11 location.

Wood and National Grid notified the NYSDEC of the loss of MW-11 during an October 16, 2019 phone call. It was agreed that a monitoring well would be installed further downgradient of the proposed MW-11 location and MW-5, near the location of former monitoring well MW-9, which meets the intent of NYSDEC's request for installation of a new monitoring well hydraulically downgradient of well MW-5 (NYSDEC, 2018).The new well, MW-9R, is located within the western unpaved margin of the Ingersoll Street right-of-way (Figure A-2) and was installed and developed on November 18 and 19, 2019, as described in the following subsections.

A2.3.1 Drilling Procedures

Prior to drilling, the boring locations were cleared by advancing to a depth of 5 feet below ground surface (bgs) using a post-hole digger to check for the presence of subsurface utilities or obstructions. After the absence of buried utilities was confirmed, a GeoProbe 7822 DT drill rig equipped with 7-inch diameter hollow-stem augers and a 7-inch diameter tricone bit was used to advance to total depths of approximately 17.5 and 18.5 feet below ground surface (bgs) at the MW-9R and MW-11 locations, respectively.

The borings were logged continuously using a 2-foot-long split-spoon sampler. All downhole drilling and sampling equipment was decontaminated using a three-bucket rinse washing system prior to first use, and the split-spoon sampler was decontaminated using the same method between each sampling run.

Recovered soil cores were field screened using a MiniRAE 2000 photoionization detector calibrated with 100 parts per million by volume isobutylene gas. The core was then observed for general characteristics and was described by a Wood field geologist using for guidance the visual-manual procedures of the ASTM International Standard D2488, which is based on the Unified Soil Classification System. Boring logs that include geologic descriptions and sampling information are included in Attachment A-1.

A2.3.2 Monitoring Well Installation

Monitoring well MW-9R was installed and constructed on November 18, 2019 to a total depth of approximately 17.5 bgs. The well was constructed with 2-inch diameter Schedule 40 PVC casing and 10 feet of Schedule 40 slotted PVC (0.010-inch slot) well screen, with a screen interval of approximately 7.5 to 17.5 feet bgs. Centralizers were attached at above and below the screen in order to maintain the position in the center of the borehole. A size #00 sand filter pack was placed so that it extended from the bottom of the boring to approximately 1.5 feet above the screened interval. A 2.75-foot medium bentonite chip seal was placed above the filter pack sand and allowed to hydrate in place for at least 30 minutes. The remaining annular space was sealed using a mix of neat Portland cement and 3-5 percent bentonite gel (bentonite-cement grout). Annular materials were placed into the borehole through the augers as they were retracted to prevent bridging or borehole collapse. Well construction details are included on the boring log in Attachment A-1.

A2.3.3 Surface Completion

The ground surface at MW-9R was completed using a 12-inch diameter, flush-mounted, traffic-rated well boxes set into concrete. A locking, watertight plug was placed in the top of the well casing.

A2.3.4 Well Development

Well development activities were performed during two mobilizations. During the first mobilization (October 8 and 9, 2019) existing site monitoring wells MW-1, MW-5, MW-6, MW-8R, and MW-10R were developed to ensure that hydraulic communication between the wells and surrounding formation was sufficient to produce representative water level and analytical data. On November 19, 2019, during the second mobilization, monitoring well MW-9R was developed approximately 24 hours after well installation was completed.

All wells were developed using surging, bailing, and pumping techniques. Water quality parameters including pH, temperature, and specific electrical conductance were monitored and recorded during development using a multi-parameter water quality meter until each parameter stabilized to within 10 percent change in three consecutive measurements (made several minutes apart) or until relatively stable. At well MW-9R, the rate of recharge was insufficient to continuously remove water from the well, and well development activities were discontinued after the well was pumped dry and little to no recharge was observed. The rate of removal and volume of water removed were also monitored and recorded on the well development records included in Attachment A-2.

A2.4 GROUNDWATER MONITORING WELL DECOMMISSIONING

On October 8, 2019, groundwater monitoring wells MW-2, MW-3, and MW-4 were decommissioned in accordance with NYSDEC guidelines (NYSDEC, 2009). The surface completion at each well location was removed, and during this process the casing of each well was removed from the borehole intact. After the well casing was removed, each borehole was backfilled with bentonite-cement grout through a tremie pipe placed at 15 feet bgs. Following completion of well decommissioning activities, Well Decommissioning Reports for MW-2, MW-3 and MW-4 were submitted to the NYSDEC by Wood.

A2.5 INVESTIGATION DERIVED WASTE

Soil cuttings, decontamination water, and well development water generated during field activities were placed into Department of Transportation-approved 55-gallon steel drums pending waste profiling. Following laboratory analysis and profiling, the investigation derived waste was disposed of at off-site, permitted facilities in accordance with state and federal regulations.

A2.6 SURVEYING

Following completion of well installation activities, Costich Engineering, Land Surveying & Landscape Architecture D.P.C., a New York-licensed surveyor of Rochester, New York, determined the coordinate location and vertical elevation (top of casing elevation) for MW-9R referenced to a recognized survey marker. The top of casing elevation (north face) and ground surface elevation was surveyed to 0.01-foot accuracy, and the longitude and latitude was surveyed. Horizontal coordinates for each monitoring well referenced the North American Datum of 1983 (NAD 83); elevations of each top of casing referenced the North American Vertical Datum of 1988 (NAVD88). Survey data is included in Attachment A-3.

A3.0 REFERENCES

NYSDEC, 2009. CP-43: Groundwater Monitoring Well Decommissioning Policy. November 3. Available at https://www.dec.ny.gov/docs/remediation_hudson_pdf/cp43mwdecomm.pdf

NYSDEC, 2018. Recommendations for Groundwater Monitoring Program, NYSDEC Site No. 837012, Albion MGP, Albion, New York. August 30.

Wood Environmental & Infrastructure Solutions, Inc., 2018. Monitoring and Sampling Plan, National Grid Former Albion MGP Site, Albion, New York, No 83712. December 21.

TABLE

TABLE A-1

WELL CONSTRUCTION DETAILS

National Grid Former Albion MGP Site

Albion, New York

Well ID	Well Location	Date Installed	Date Decommissioned	Well Diameter (inches)	Coordinates		Elevation (NAVD 88)		Top of Screen (ft bgs)	Bottom of Screen (ft bgs)
					Latitude	Longitude	Top of Casing	Ground Surface		
Well Installed in November 2019										
MW-9R	Down-gradient	11/18/2019	--	2	N043° 14' 53.07"	W078° 11' 25.94"	514.70	514.80	7.5	17.5
Wells Decommissioned in October 2019										
MW-2	Up-gradient	6/25/1996	10/9/2019	2	N043° 14' 53.52"	W078° 11' 29.01"	516.42	Unknown	5.9	15.9
MW-3	Up-gradient	6/26/1996	10/9/2019	2	N043° 14' 54.28"	W078° 11' 27.78"	516.26	Unknown	8.2	18.2
MW-4	On-site	Unknown	10/9/2019	2	N043° 14' 53.11"	W078° 11' 27.95"	Unknown	513.52	Unknown	

Notes

1. All wells except MW-9R were surveyed by Costich Engineering, Land Surveying & Landscape Architecture D.P.C. (Costich Engineering), a New York-licensed land surveyor in June, 2018. Monitoring well MW-9R was surveyed on November 19, 2019 by Costich Engineering.

Abbreviations

-- = not applicable

ft bgs = feet below ground surface

NAVD 88 = North American Vertical Datum of 1988

FIGURES

New York State

0 1.0 Mile

(approximate)

SITE VICINITY MAP
Albion Former Manufactured Gas Plant Site
Albion, New York

wood.	By: KLU	Proj. No. 0078000050.03.2B
	Date: 02/19/2020	Figure **A-1**

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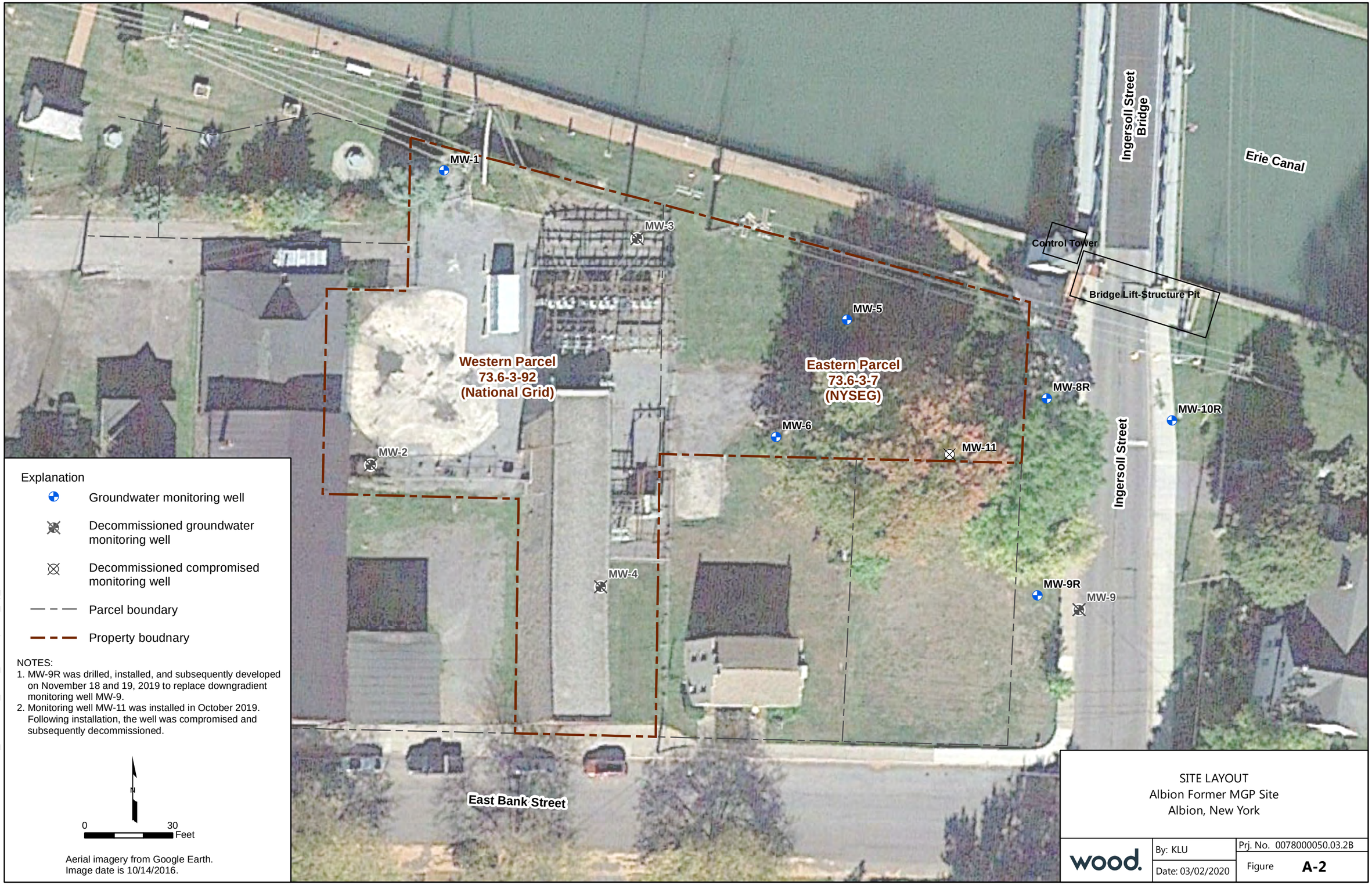

Explanation

- Groundwater monitoring well
- Decommissioned groundwater monitoring well
- Decommissioned compromised monitoring well
- Parcel boundary
- Property boudnary

NOTES:
1. MW-9R was drilled, installed, and subsequently developed on November 18 and 19, 2019 to replace downgradient monitoring well MW-9.
2. Monitoring well MW-11 was installed in October 2019. Following installation, the well was compromised and subsequently decommissioned.

N

0 30 Feet

Aerial imagery from Google Earth.
Image date is 10/14/2016.

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SITE LAYOUT
Albion Former MGP Site
Albion, New York

wood.

By: KLU	Prj. No. 0078000050.03.2B
Date: 03/02/2020	Figure **A-2**

ATTACHMENT A-1

Boring Logs

PROJECT: FORMER ALBION MGP SITE Albion, NY		**Log of Boring No. Explanation**	
BORING LOCATION:		TOP OF CASING ELEVATION AND DATUM:	
DRILLING CONTRACTOR:		DATE STARTED:	DATE FINISHED:
DRILLING METHOD:		TOTAL DEPTH (ft.): 15.0	MEASURING POINT:
DRILLING EQUIPMENT:		DEPTH TO WATER (ft.)	FIRST / COMPL.
SAMPLING METHOD:		LOGGED BY:	
HAMMER WEIGHT:	DROP:	RESPONSIBLE PROFESSIONAL:	REG. NO.

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ Foot	OVM READING (ppm)	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter. Ground Surface Elevation and Datum:	REMARKS
1					**Notes:** 1. Soil described using visual-manual procedures of American Society of Testing and Materials (ASTM) Standard D 2488 for guidance; a Standard based on the Unified Soil Classification System. 2. Soil color described according to Munsell Color Chart.	
3					3. Dashed lines separating soil strata represent inferred boundaries between sampled intervals that may be abrupt or gradual transitions.	
4						
5					4. Solid lines represent approximate boundaries observed within sample intervals. 5. OVM = organic vapor meter, reading in volumetric parts per million (ppm).	
6						
7						
8						
9					Interval of recovered soil collected with a continuous core sampler.	
10						
11					Interval of no recovery.	
12						
13						
14						
15						

PROJECT: FORMER ALBION MGP SITE
Albion, NY

Log of Well No. MW-9R

BORING LOCATION: Latitude: 43.248075; Longitude: -78.190539

TOP OF CASING ELEVATION AND DATUM: 514.70 (NAVD88)

DRILLING CONTRACTOR: Nothnagle Drilling

DATE STARTED: 11/18/19 | DATE FINISHED: 11/19/19

DRILLING METHOD: Hollow-stem auger

TOTAL DEPTH (ft.): 17.5 | SCREEN INTERVAL (ft.): 7-17'

DRILLING EQUIPMENT: Geoprobe 7822 DT

DEPTH TO WATER: FIRST 12.0 | COMPL. 12.89 | CASING: 2" Schedule 40 PVC

SAMPLING METHOD: Split-spoon drive sampler [24" x 2.5"]

LOGGED BY: J. Reeder

HAMMER WEIGHT: 140 lbs | DROP: 130"

RESPONSIBLE PROFESSIONAL: A. Rosenthal | REG. NO. 9387

DEPTH (feet)	SAMPLES Sample No.	SAMPLES Sample	SAMPLES Blows/ Foot	OVM Reading	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.
					Ground Surface Elevation and Datum: 514.80 (NAVD88)
0					SANDY LEAN CLAY with GRAVEL (CL): dark brown (10YR 3/3), moist, 50% low plasticity fines, 30% fine to medium sand, 20% fine gravel, soft
1				0	
2				0	POORLY-GRADED GRAVEL with SAND (GP): black (10YR 2/1), moist, 75% fine gravel, 15% fine to coarse sand, 10% low plasticity fines, gravel includes asphalt up to 0.2" x 1.0"
3				0	CLAYEY GRAVEL with SAND (GC): reddish brown (2.5YR 4/3), moist, 60% fine to coarse gravel, 25% low plasticity fines, 15% fine to coarse sand
4				0	white, ashy material in soil
5			14	0	POORLY-GRADED GRAVEL with CLAY and SAND (GP-GC): black (10YR 2/1), moist, 60% fine to coarse gravel, 30% fine to coarse sand, 10% low plasticity fines, white ashy material in soil
6			14		SANDY LEAN CLAY with GRAVEL (CL): reddish brown (2.5YR 4/3), 45% low plasticity fines, 30% fine to coarse sand, 25% fine gravel, firm
7			58		
8			90	0	2" cobble
9			15		
10			34	0	CLAYEY GRAVEL with SAND (GC): reddish brown (2.5YR 4/3), moist, 55% fine to coarse gravel, 30% fine to coarse sand, 15% low plasticity fines
11			36		2" cobble
12			64	0	POORLY-GRADED SAND (SP): reddish brown (2.5YR 4/3), wet, 95% fine to medium sand, 5% low plasticity fines
13			32	0	trace gravel
14			46	0	3" cobble POORLY-GRADED GRAVEL with CLAY and SAND (GP-GC): reddish brown (2.5YR 4/3), moist, 50% fine gravel, 40% fine to coarse sand, 10% low plasticity fines
15					

WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS

- Traffic Rated Well Box
- Expanding well cap
- Concrete
- 5% bentonite-cement grout
- 7" diameter borehole
- 2" diameter Schedule 40 PVC casing
- Hydrated bentonite chip seal
- #00 filter pack sand
- 2" diameter Schedule 40 PVC casing with 0.010" slotted screen

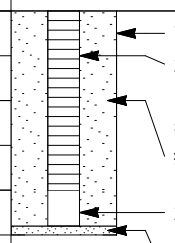
Notes:
1. Hand cleared to 5 feet bgs using post-hole digger.
2. OVM = MiniRAE 3000 PID calibrated with 100 ppm isobutylene standard.

OAKWELLV (REV. 2/2019)

PROJECT: FORMER ALBION MGP SITE
Albion, NY

Log of Well No. MW-9R (cont'd)

DEPTH (feet)	SAMPLES: Sample No.	SAMPLES: Sample	SAMPLES: Blows/ Foot	OVM Reading	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	WELL CONSTRUCTION DETAILS AND/OR DRILLING REMARKS
15			18	0	POORLY-GRADED GRAVEL with CLAY and SAND (GP-GC): Continued.	7" diameter borehole
					wet	2" diameter Schedule 40 PVC casing with 0.010" slotted screen
16			126		2" cobble	#00 filter pack sand
17					BEDROCK	2" diameter Schedule 40 PVC end cap
					Bottom of boring at 17.5 feet bgs	Native slough
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						
33						



OAKWELLV (REV. 2/2019)

PROJECT: FORMER ALBION MGP SITE Albion, NY	**Log of Boring No. MW-11**
BORING LOCATION: Not Surveyed	TOP OF CASING ELEVATION AND DATUM: Not Surveyed
DRILLING CONTRACTOR: Nothnagle Drilling	DATE STARTED: 10/8/19 / DATE FINISHED: 10/8/19
DRILLING METHOD: Hollow-stem auger	TOTAL DEPTH (ft.): 18.5 / MEASURING POINT: Not Surveyed
DRILLING EQUIPMENT: CME LC-55	DEPTH TO WATER (ft.) FIRST: 7.0 / COMPL.: --
SAMPLING METHOD: Split-spoon drive sampler [24" x 2.5"]	LOGGED BY: J. Reeder
HAMMER WEIGHT: 140 lbs / DROP: 30"	RESPONSIBLE PROFESSIONAL: A. Rosenthal / REG. NO. 9387

Ground Surface Elevation and Datum: Not Surveyed

DEPTH (feet)	Sample No.	Sample	Blows/ Foot	OVM READING (ppm)	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	REMARKS
1				14.9	CLAYEY SAND with GRAVEL (SC): dark reddish brown (5YR 2.5/2), moist, 50% fine to coarse sand, 30% fine to coarse gravel, 20% low plasticity fines, firm, roots in tailings	
2					Concrete	
3				43.8 21.3	Fabric barrier black (5Y 2.5/1), 50% fine to coarse sand, 40% fine to coarse gravel, 10% fines	
4				0 75.8	white, fine-grained, ash-like material	
5			22	0	CLAYEY SAND (SC): reddish brown (5R 4/4), moist, 80% fine to coarse sand, 15% low plasticity fines, 5% fine gravel, soft	
6			20	0	yellowish red (5YR 5/6), 80% fine to medium sand, 20% low plasticity fines, firm	
7			9			
8			21	0	CLAYEY GRAVEL with SAND (GC): reddish brown (5YR 4/4), wet, 60% fine gravel, 20% fine to coarse sand, 20% low plasticity fines	
9			16			
10			50	0	wet gravel, dark staining	
11			31		wood material	
12			28	0.5 0.5	POORLY-GRADED GRAVEL with CLAY and SAND (GP-GC): olive gray (5YR 5/2), moist, 75% fine to coarse gravel, 15% fine to coarse sand, 10% fines, odor and sheen black asphaltic sand CLAYEY SAND (SC): reddish brown (5YR 4/4), moist, 70% fine to coarse sand, 20% low plasticity fines, 10% fine gravel	
13			17		wood material	
14			55	0.6	POORLY-GRADED GRAVEL with SAND (GP): brown (10YR 4/3), wet, 75% fine to coarse gravel, 20% fine to coarse sand, 5% fines	
15						

PROJECT: FORMER ALBION MGP SITE
Albion, NY

Log of Boring No. MW-11 (cont'd)

DEPTH (feet)	SAMPLES Sample No.	SAMPLES Sample	SAMPLES Blows/ Foot	OVM READING (ppm)	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	REMARKS
16			87		POORLY-GRADED GRAVEL with SAND (GP): Continued.	
			100			
17			26		red (2.5YR 4/6), 80% fine to coarse gravel, 20% fine to coarse sand, trace gravel	
18			50			
19					Bottom of boring at 18.5 feet bgs Monitoring well MW-11 was installed with a screen interval from 7.5-17.5 feet bgs. During well construction the annular materials suddenly dropped, exposing the well screen to bentonite-cement grout. The well was decommissioned by removing the well casing and screen and backfilling the boring from total depth to ground surface using a tremie pipe.	
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						
33						

OAKBOREV (REV. 2/2019)

ATTACHMENT A-2

Well Development Records

MONITORING WELL DEVELOPMENT LOG

Project:	Job #/Decription:	Well Number:
Former Albion MGP Site	60780000 50.03.02A	MW-1
Prepared By:	**Purging Start Date:**	**Purging End Date:**
Jack Reeder	10 / 9 / ~~2016~~ 19	10 / 9 / ~~2016~~ 2019

Development Protocol: 1) Record a depth to water before purging, bailing, surging or swabbing the well 2) Use surge block and bailer as needed to clean screen, filter pack and well of fines 3) Purge while monitoring water quality parameters. See stabilization criteria below. 4a) If parameters stabilize prior to purging 10 well volumes, development is complete. 4b) If parameters do not stabilize, purge 10 well volumes. 5) Development is complete. 6) Record the actual total depth of the well with a tag line. 7) Following development all equipment is decontaminated with liquinox and DI water, or hot pressure washer and sampling is performed by normal methods after a minimum of 24 hours.

Field Equipment

Equipment	Model	Serial #/Rental ID	Date Received/Serviced	Date Calibrated
Multi-Probe	Horiba	14159	10/4/19	10/~~4~~9/19
Turbidimeter				

Purge Volume Calculations & Final Measurements

A. Depth to Water = ~5 ft ft.	E. Sediment Column (B-C) = _____ ft.	I. Development PSI = _____ PSI (2.3 ft per 1 PSI)
B. Well TD (construction log) 14 ft.	F. Water Column (B – A) = _____ ft.	J. Well TD ~~after~~ development (tagged) = _____ ft.
C. Well TD before dev.(tagged) = _____ ft.	G. Well Volume (D^2 x 0.0408 x F) = _____ gal.	K. Actual Vol. Purged (from below) _____ gal.
D. ~~Well~~ Diameter = 2 in.	H. 10 Well Volumes (10 x G) = _____ gal.	

Purging Data			Water Quality Parameters				
Time (24 hr)	Purge Volume ☒ gal ☐ ml	Flow Rate ☒ gpm ☐ ml/min	Temp (°C)	Specific Conductance (µS/cm)	pH	Turbidity[1] (NTU)	Observations
			Stabilization:	± 3%	± 0.2	±10% or <10 NTU	
0845		5	13.92	830	8.00	>1000	Bailers
0855	3	↓	14.62	824	7.92	>1000	
0900		↓	14.61	852	7.85	>1000	← begin pumping
0905	10	5 ~~gpm~~	14.83	867	7.75	>1000	dry @ 10 gal, Pumps well is recharging
0912	20	variable	14.72	921	7.75	>1000	beg. clearing up, pumping intermittently
0920		↓	15.09	896	7.60	>1000	
0925		↓	15.06	888	7.67	947	
0930		↓	14.93	894	7.72	615	
0935		↓	14.85	899	7.75	939	

Remarks:

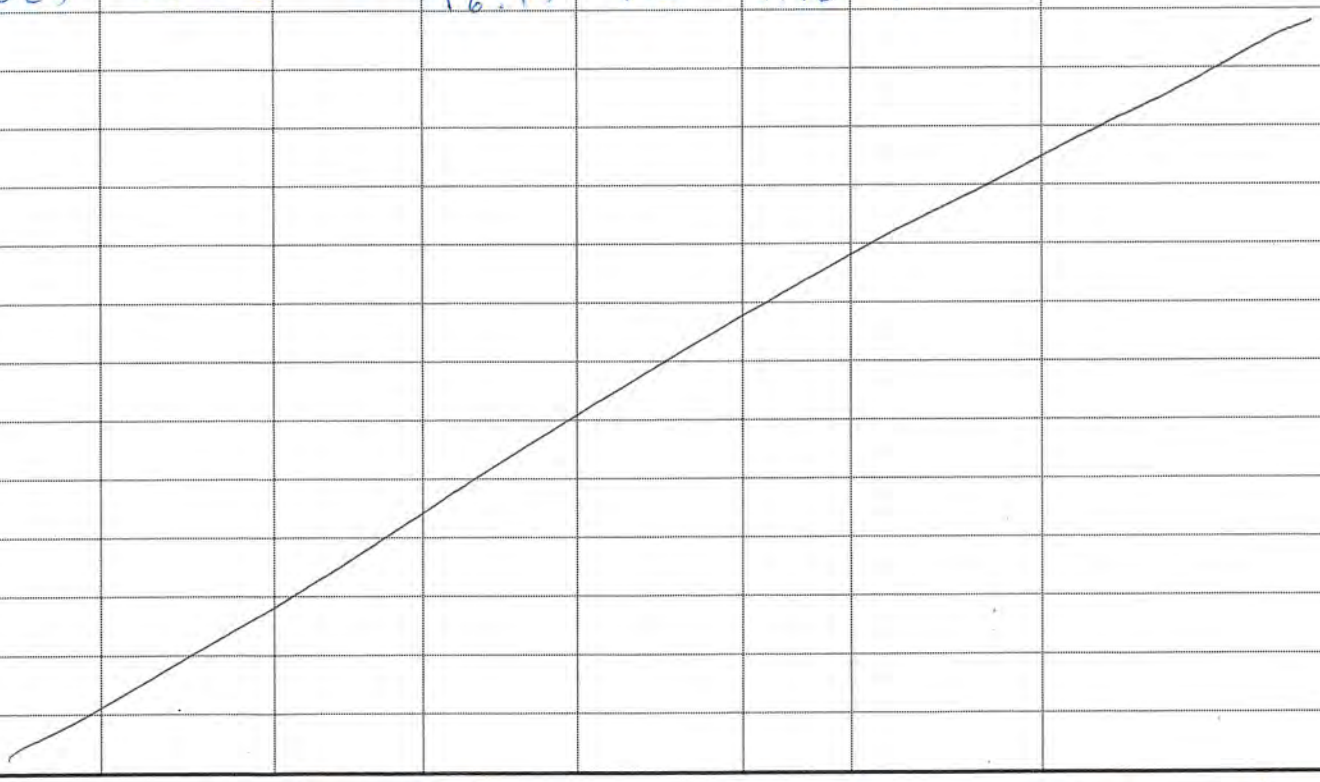
[1] Turbidity is to be observed, but not used as stabilization criteria.

Signature: [signature] Checked By:

Purging/Sampling Date: 10/9/19 | **Well Number:** MW-1

ADDITIONAL FIELD PARAMETER COLLECTION LOG for MONITORING WELL DEVELOPMENT (continued from front side)

Purging Data			Water Quality Parameters				
Time (24 hr)	Purge Volume ☐ gal ☐ ml	Flow Rate ☐ gpm ☐ ml/min	Temp (°C)	Specific Conductance (µS/cm)	pH	Turbidity[1] (NTU)	Observations
			Stabilization:	± 3%	± 0.2	±10% or <10 NTU	
0943	1/3 drum	variable	15.25	905	7.57	310	
0947			15.56	902	7.58	420	
0950			15.58	901	7.59	354	
0955			15.75	906	7.54	267	
1000			15.83	906	7.53	215	
1008			16.04	906	7.50	213	
1011			15.91	904	7.52	253	
1020			16.08	904	7.48	248	
1025	1/2 drum		16.15	910	7.46	150	



Remarks: * water heats up as sun gets more intense, meter sitting in sun.

[1] Turbidity is to be observed, but not used as stabilization criteria.

MONITORING WELL DEVELOPMENT LOG

Project:	Job #/Decription:	Well Number:
Former Albion MGP Site	60780000050.0302A	MW-5
Prepared By:	**Purging Start Date:**	**Purging End Date:**
Jack Reeder	10 / 24 / 2019 ~~2016~~	10 / 29 / 2019 ~~2016~~

wood.

Development Protocol: 1) Record a depth to water before purging, bailing, surging or swabbing the well 2) Use surge block and bailer as needed to clean screen, filter pack and well of fines 3) Purge while monitoring water quality parameters. See stabilization criteria below. 4a) If parameters stabilize prior to purging 10 well volumes, development is complete. 4b) If parameters do not stabilize, purge 10 well volumes. 5) Development is complete. 6) Record the actual total depth of the well with a tag line. 7) Following development all equipment is decontaminated with liquinox and DI water, or hot pressure washer and sampling is performed by normal methods after a minimum of 24 hours.

Field Equipment

Equipment	Model	Serial #/Rental ID	Date Received/Serviced	Date Calibrated
Multi-Probe	Horiba	14159	10/8/19	10/8/2019
Turbidimeter				

Purge Volume Calculations & Final Measurements

A. Depth to Water = _____ ft.	E. Sediment Column (B-C) = _____ ft.	I. Development PSI = _____ PSI (2.3 ft per 1 PSI)
B. Well TD (construction log) _____ ft.	F. Water Column (B – A) = _____ ft.	J. Well TD after development (tagged) = _____ ft.
C. Well TD before dev.(tagged) = _____ ft.	G. Well Volume (D^2 x 0.0408 x F) = _____ gal.	K. Actual Vol. Purged (from below) _____ gal.
D. Well Diameter = _____ in.	H. 10 Well Volumes (10 x G) = _____ gal.	

Purging Data			Water Quality Parameters				
Time (24 hr)	Purge Volume ☒ gal ☐ ml	Flow Rate ☐ gpm ☐ ml/min	Temp (°C)	Specific Conductance (µS/cm)	pH	Turbidity[1] (NTU)	Observations
			Stabilization:	± 3%	± 0.2	±10% or <10 NTU	
1315	2	↓	14.68	1090	7.44	>1000	dark grey water bailing, surging @ 2.5
1330		↓	14.67	1070	7.44	>1000	Begin pumping
1335		Variable	14.65	1080	7.41	>1000	dry @ ~5 gal, begins clearing up
1340			15.02	1070	7.47	>1000	
1350			15.15	1020	7.50	>1000	
1356			15.22	1000	7.49	>1000	
1400			15.23	979	7.48	504	
1406			15.51	977	7.48	330	
1411		↓	15.63	985	7.47	860	

Remarks:

[1] Turbidity is to be observed, but not used as stabilization criteria.

Signature: _____ Checked By: _____

Purging/Sampling Date: 10/9/19	Well Number: MW-5

ADDITIONAL FIELD PARAMETER COLLECTION LOG for MONITORING WELL DEVELOPMENT (continued from front side)

Purging Data			Water Quality Parameters				
Time (24 hr)	Purge Volume ☑ gal ☐ ml	Flow Rate ☐ gpm ☐ ml/min	Temp (°C)	Specific Conductance (µS/cm)	pH	Turbidity[1] (NTU)	Observations
			Stabilization:	± 3%	± 0.2	±10% or <10 NTU	
1416	10	variable	15.68	975	7.46	620	
1424			15.84	975	7.45	272	
1430			16.01	970	7.48	245	
1435			15.74	960	7.47	407	
1440			15.70	967	7.50	316	
1447	15		15.60	969	7.53	258	moved meter into theader before last reading (Temp drop)

Remarks:

[1] Turbidity is to be observed, but not used as stabilization criteria.

MONITORING WELL DEVELOPMENT LOG

Project:	Job #/Decription:	Well Number:	wood.
Former Albion MGP Site	0078000050.03.02A	MW-6	
Prepared By:	**Purging Start Date:**	**Purging End Date:**	
Jack Reeder	10 / 9 / ~~2016~~ 2019	10 / 9 / ~~2016~~ 2019	

Development Protocol: 1) Record a depth to water before purging, bailing, surging or swabbing the well 2) Use surge block and bailer as needed to clean screen, filter pack and well of fines 3) Purge while monitoring water quality parameters. See stabilization criteria below. 4a) If parameters stabilize prior to purging 10 well volumes, development is complete. 4b) If parameters do not stabilize, purge 10 well volumes. 5) Development is complete. 6) Record the actual total depth of the well with a tag line. 7) Following development all equipment is decontaminated with liquinox and DI water, or hot pressure washer and sampling is performed by normal methods after a minimum of 24 hours.

Field Equipment

Equipment	Model	Serial #/Rental ID	Date Received/Serviced	Date Calibrated
Multi-Probe	Horiba	1459	10/8/2019	10/8/2019
Turbidimeter				

Purge Volume Calculations & Final Measurements

A. Depth to Water = _____ ft.	E. Sediment Column (B-C) = _____ ft.	I. Development PSI = _____ PSI ~~(2.3 ft per 1 PSI)~~
B. Well TD (construction log) _____ ft.	F. Water Column (B – A) = _____ ft.	J. Well TD after development (tagged) = _____ ft.
C. Well TD before dev.(tagged) = _____ ft.	G. Well Volume (D^2 x 0.0408 x F) = _____ gal.	K. Actual Vol. Purged (from below) _____ gal.
D. ~~Well~~ Diameter = _____ in.	H. 10 Well Volumes (10 x G) = _____ gal.	

Purging Data			Water Quality Parameters				
Time (24 hr)	Purge Volume ☒ gal ☐ ml	Flow Rate ☐ gpm ☐ ml/min	Temp (°C)	Specific Conductance (µS/cm)	pH	Turbidity[1] (NTU)	Observations
			Stabilization:	± 3%	± 0.2	±10% or <10 NTU	
1325	1	5	14.75	743	7.51	>1000	Bailing, medium water
1345	5	↓	14.71	768	7.51	>1000	Beg. pumping
1352		Variable	14.87	775	7.49	>1000	dry @ 7-8 gal
~~1358~~			~~15.03~~	790	7.45	>1000	Begins clearing up
1403			15.08	796	7.45	687	
1408	1/3 drum		15.18	790	7.49	504	
1414	~~1/3 drum~~		15.34	792	7.42	295	
1419			15.~~46~~	794	7.42	161	
1425		↓	15.43	799	7.45	309	

Remarks:

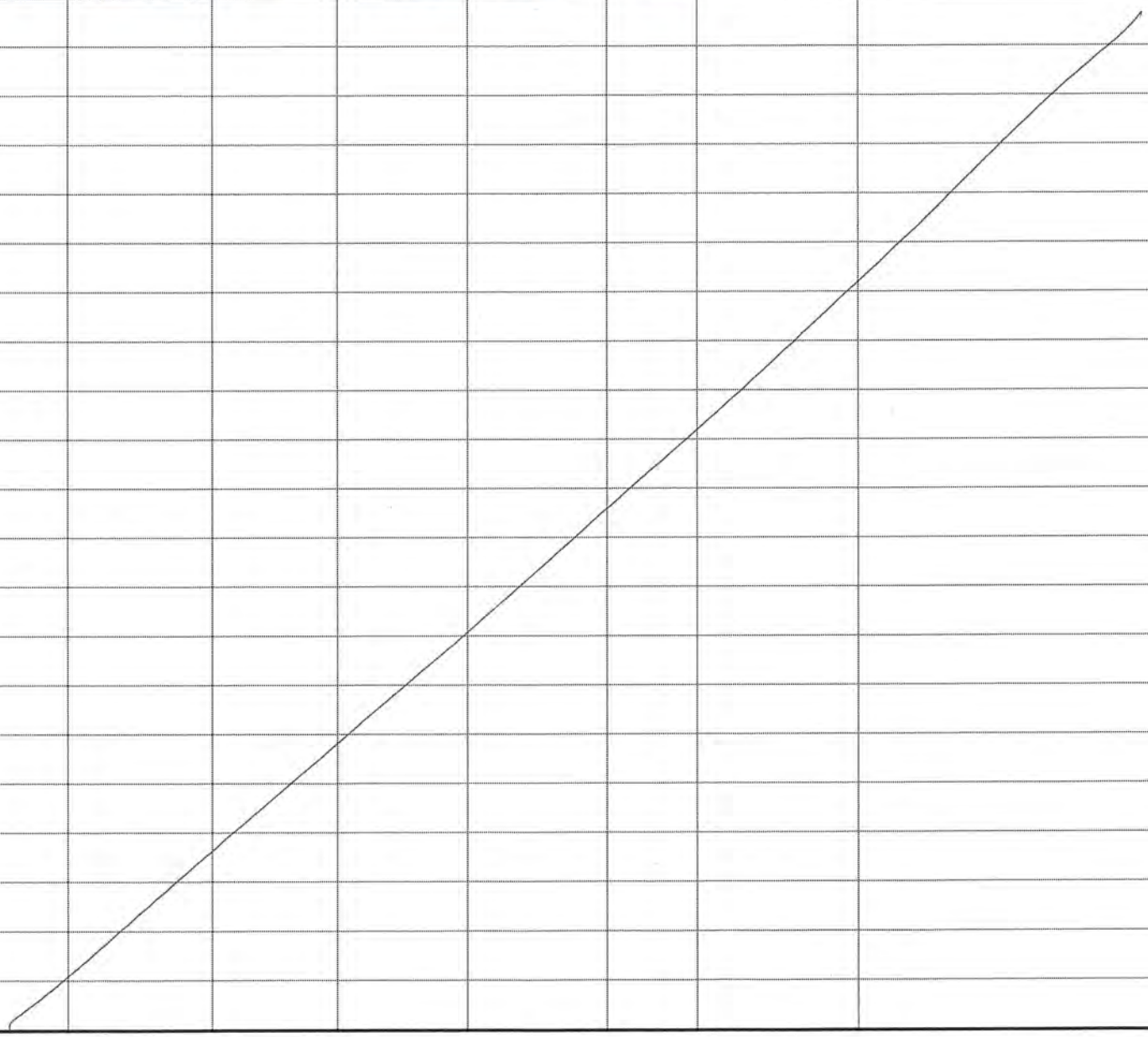
[1] Turbidity is to be observed, but not used as stabilization criteria.

Signature: Jack Reeder Checked By:

Purging/Sampling Date: 10/4/19	Well Number: MW-6

ADDITIONAL FIELD PARAMETER COLLECTION LOG for MONITORING WELL DEVELOPMENT (continued from front side)

Purging Data			Water Quality Parameters				
Time (24 hr)	Purge Volume ☐ gal ☐ ml	Flow Rate ☐ gpm ☐ ml/min	Temp (°C)	Specific Conductance (µS/cm)	pH	Turbidity[1] (NTU)	Observations
			Stabilization:	± 3%	± 0.2	±10% or <10 NTU	
1432	1/2 drum	variable	15.50	799	7.42	87.0	



Remarks:

[1] Turbidity is to be observed, but not used as stabilization criteria.

MONITORING WELL DEVELOPMENT LOG

Project:	Job #/Decription:	Well Number:
Former Albion MGP Site	0078000050.03.02A	MW-8R
Prepared By:	**Purging Start Date:**	**Purging End Date:**
Jack Reeder	10 / 9 / 2019 ~~/2016~~	10 / 9 / 2019 ~~/2016~~

wood.

Development Protocol: 1) Record a depth to water before purging, bailing, surging or swabbing the well 2) Use surge block and bailer as needed to clean screen, filter pack and well of fines 3) Purge while monitoring water quality parameters. See stabilization criteria below. 4a) If parameters stabilize prior to purging 10 well volumes, development is complete. 4b) If parameters do not stabilize, purge 10 well volumes. 5) Development is complete. 6) Record the actual total depth of the well with a tag line. 7) Following development all equipment is decontaminated with liquinox and DI water, or hot pressure washer and sampling is performed by normal methods after a minimum of 24 hours.

Field Equipment

Equipment	Model	Serial #/Rental ID	Date Received/Serviced	Date Calibrated
Multi-Probe	Horiba	14159	10/8/2019	10/8/2019
Turbidimeter				

Purge Volume Calculations & Final Measurements

A. Depth to Water = _____ ft.	E. Sediment Column (B-C) = _____ ft.	I. Development PSI = _____ PSI (2.3 ft per 1 PSI)
B. Well TD (construction log) _____ ft.	F. Water Column (B – A) = _____ ft.	J. Well TD after development (tagged) = _____ ft.
C. Well TD before dev.(tagged) = _____ ft.	G. Well Volume (D^2 x 0.0408 x F) = _____ gal.	K. Actual Vol. Purged (from below) _____ gal.
D. Well Diameter = _____ in.	H. 10 Well Volumes (10 x G) = _____ gal.	

Purging Data			Water Quality Parameters				
Time (24 hr)	Purge Volume ☑ gal ☐ ml	Flow Rate ☑ gpm ☐ ml/min	Temp (°C)	Specific Conductance (µS/cm)	pH	Turbidity[1] (NTU)	Observations
			Stabilization:	± 3%	± 0.2	±10% or <10 NTU	
1445	2	↓	14.20	2600	7.17	700	dark grey water, bailing not clear
1502	3		13.91	2300	7.41	~~360~~ >1000	Begin Pumping
1505	10	~2 gpm	13.69	2020	7.41	>1000	dry @ 10 gal, pumping intermittently
1510		variable	13.72	1900	7.46	>1000	
1515			13.82	1670	7.45	>1000	
1520			13.72	1520	7.49	>1000	water turning more clear
1525			13.61	1410	7.51	950	
1530			13.51	1340	7.51	620	
1535		↓	13.60	1290	7.51	417	

Remarks:

1445

[1] Turbidity is to be observed, but not used as stabilization criteria.

Signature: Jack Reeder Checked By:

Purging/Sampling Date: 10/4/19 | **Well Number:** MW-4

ADDITIONAL FIELD PARAMETER COLLECTION LOG for MONITORING WELL DEVELOPMENT (continued from front side)

Purging Data			Water Quality Parameters				
Time (24 hr)	Purge Volume ☐ gal ☐ ml	Flow Rate ☐ gpm ☐ ml/min	Temp (°C)	Specific Conductance (µS/cm)	pH	Turbidity[1] (NTU)	Observations
			Stabilization:	± 3%	± 0.2	±10% or <10 NTU	
1540		variable	13.70	1290	7.52	625	
~~1545~~							pump issues
1550	1/3 drum		14.22	1330	7.51	>1000	continued pump issues battery died
1615	1/3 drum		13.60	1270	7.54	630	

Remarks:

[1] Turbidity is to be observed, but not used as stabilization criteria.

512 340 2829

MONITORING WELL DEVELOPMENT LOG

Project:	Job #/Decription:	Well Number:	wood.
Former Albion MGP Site	0078000050 03.02A	MW-10R	
Prepared By: Jack Reesler	**Purging Start Date:** 10/8/2019 ~~/2016~~	**Purging End Date:** 10/8/2019 ~~/2016~~	

Development Protocol: 1) Record a depth to water before purging, bailing, surging or swabbing the well 2) Use surge block and bailer as needed to clean screen, filter pack and well of fines 3) Purge while monitoring water quality parameters. See stabilization criteria below. 4a) If parameters stabilize prior to purging 10 well volumes, development is complete. 4b) If parameters do not stabilize, purge 10 well volumes. 5) Development is complete. 6) Record the actual total depth of the well with a tag line. 7) Following development all equipment is decontaminated with liquinox and DI water, or hot pressure washer and sampling is performed by normal methods after a minimum of 24 hours.

Field Equipment

Equipment	Model	Serial #/Rental ID	Date Received/Serviced	Date Calibrated
Multi-Probe	Horiba	14159	10/6/2019	10/8/2019
Turbidimeter				

Purge Volume Calculations & Final Measurements

A. Depth to Water = ~14.0 ft.	E. Sediment Column (B-C) = _____ ft.	I. Development PSI = _____ PSI (2.3 ft per 1 PSI)
B. Well TD (construction log) 19 ft.	F. Water Column (B – A) = _____ ft.	J. Well TD after development (tagged) = _____ ft.
C. Well TD before dev.(tagged) = 19 ft.	G. Well Volume (D^2 x 0.0408 x F) = _____ gal.	K. Actual Vol. Purged (from below) _____ gal.
D. Well Diameter = 2" in.	H. 10 Well Volumes (10 x G) = _____ gal.	

Purging Data			Water Quality Parameters				
Time (24 hr)	Purge Volume ☒ gal ☐ ml	Flow Rate ☐ gpm ☒ ml/min	Temp (°C)	Specific Conductance mS/cm (µS/cm)	pH	Turbidity[1] (NTU)	Observations
			Stabilization:	± 3%	± 0.2	±10% or <10 NTU	
0845	2	~500	13.66	6.15	7.21	>1000	←switch to pump
0900	~4	~500	13.63	5.55	7.08	>1000	dry
0930	~6	↓	14.57	4.39	7.13	>1000	
0945	~7	~200	14.22	4.92	7.19	640	←water clearing up. well pumps w/ recharge (~200ml/min)
1000			14.55	4.90	7.02	194	
1010			14.47	4.94	7.14	140	
1020			14.60	4.91	7.04	529	
1030	~10		14.94	4.74	7.11	158	
1040		↓	14.87	4.80	7.09	116	

Remarks:

[1] Turbidity is to be observed, but not used as stabilization criteria.

Signature: Jack Reesler Checked By:

MONITORING WELL DEVELOPMENT LOG

Project:	Job #/Decription:	Well Number:
Former Albion MGP Site	0078000050.03.02A	MW-9R
Prepared By:	**Purging Start Date:**	**Purging End Date:**
Jack Reeder	11 / 19 / 19	11 / 19 / 19

wood.

Development Protocol: 1) Record a depth to water before purging, bailing, surging or swabbing the well 2) Use surge block and bailer as needed to clean screen, filter pack and well of fines 3) Purge while monitoring water quality parameters. See stabilization criteria below. 4a) If parameters stabilize prior to purging 10 well volumes, development is complete. 4b) If parameters do not stabilize, purge 10 well volumes. 5) Development is complete. 6) Record the actual total depth of the well with a tag line. 7) Following development all equipment is decontaminated with liquinox and DI water, or hot pressure washer and sampling is performed by normal methods after a minimum of 24 hours.

Field Equipment

Equipment	Model	Serial #/Rental ID	Date Received/Serviced	Date Calibrated
Multi-Probe	YSI ProPlus	17A102908 37314	11/18/19	11/19/19
Turbidimeter				

Purge Volume Calculations & Final Measurements

A. Depth to Water = 12.70 ft.	E. Sediment Column (B-C) = _____ ft.	I. Development PSI = _____ PSI (2.3 ft per 1 PSI)
B. Well TD (construction log) 17 ft.	F. Water Column (B – A) = _____ ft.	J. Well TD after development (tagged) = _____ ft.
C. Well TD before dev.(tagged) = 16.97 ft.	G. Well Volume (D^2 x 0.0408 x F) = _____ gal.	K. Actual Vol. Purged (from below) _____ gal.
D. Well Diameter = 2 in.	H. 10 Well Volumes (10 x G) = _____ gal.	

Purging Data			Water Quality Parameters				
Time (24 hr)	Purge Volume ☒ gal ☐ ml	Flow Rate ☐ gpm ☐ ml/min	Temp (°C)	Specific Conductance (µS/cm)	pH	~~Turbidity~~ ORP (NTU)	Observations
			Stabilization:	± 3%	± 0.2	±10% or <10 NTU	
0850		bailer	14.0	6506	6.76	196.5	Bailing
0853	1		14.1	6335	6.77	187.1	"
0857	2		14.2	4936	6.93	180.3	"
0907	2.5	pump	14.6	5475	7.13	175.0	Begin Pumping, well dry @ 2.5 gal
0925	3		14.6	5960	7.14	164.7	pump intermittently to allow recharge
							no recharge/slow recharge end development.

Remarks:

(1) Turbidity is to be observed, but not used as stabilization criteria.

Signature: Checked By:

ATTACHMENT A-3

Survey Data

COSTICH
ENGINEERING

Project No. 6735

December 03, 2019

Alex A. Rosenthal, PG
Wood, PLC
180 Grand Ave
Suite 1100
Oakland, California 94612

RE: Bank Street Monitoring Well Location
Albion, NY

I certify that the latitude of 43°-14'-53.07" and the longitude of 78°-11'-25.94" of newly installed monitoring well are accurate to within ± 0.20 feet horizontally; and that the top of well head elevation of 514.7 AMSL is accurate to within ± 0.5 feet vertically. Ground elevation at monitoring well is 514.8' The horizontal datum (coordinates) are in terms of the North American Datum of 1983 (NAD 83) and are expressed as degrees, minutes and seconds, to the nearest hundredth of a second. The vertical datum (heights) are in terms of the North American Vertical Datum of 1988 (NAVD 88).

Charles J. Costich, III, L.S.

License No. 050428
Costich Engineering

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APPENDIX B

Groundwater Sampling Records

MONITORING WELL SAMPLE COLLECTION LOG

Project Name: Former Albion MGP Site			wood.
Project/Task #: 0078000050.03.02A	Sampled by: JR	Date: 11 / 19 / 19	

Well Number/ID: MW-1	Sample ID: MW-1-111919	Duplicate ID: ~~FB~~ NA
Method of Purging: low flow	Method of Sampling: low flow	Intake Depth: 131

Field Equipment

Equipment	Model	Serial #/Rental ID	Date Received/Serviced	Date Calibrated
Multi-Probe	YSI Pro Plus	17A102908	11/18/19	11/19/19
Turbidimeter				

Casing Purge Volume Calculations

A. Depth to Water = 7.91 ft.	D. Water Column (B-A) = _____ ft.	Depth to Water After Sampling = _____ ft.
B. Well TD (construction log) _____ ft.	E. 1 Well Volume (C^2 x 0.0408 x D) = _____ gal.	Actual Volume Purged (from below) = _____ gal/ml.
C. Well Diameter = _____ in.	F. 3 Well Volumes (3 x E) = _____ gal.	(If applicable, see pumping system volume calculation below)

Pump and Flow Cell Volume	V_p	=		ml	**Pumping System Volume Calculation**
Tubing Inside Diameter	D	=		In.	Pumping System Volume (V_S)
Tubing Length	L	=		In.	$V_S = V_P + \pi * D^2 / 4 * L * 16.39$ ml/in^3
Conversion from Inches^3 to ml	1 in^3	=		ml	_____ V_S = (_____) + (3.1415 * _____ ^{2} / 4) * (_____) * 16.39

Purging Data			Water Quality Parameters (within range for 3 consecutive readings if low-flow sampling)						
Time (24 hr)	Purge Volume ☒ gal ☐ ml	Flow Rate ☐ gpm ☒ ml/min	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential (mV)	Turbidity (NTU)	Remarks
			Stabilization[1]	± 3%	± 0.2 mg/L	± 0.2	± 20 mV	±10% or <10 NTU	
1435	C ~~2.5~~	190	13.4	1053	1.50	7.81	94.6		
1440	"		14.8	1124	0.52	7.68	95.0		
1445	"		14.2	1080	0.54	7.53	105.6		
1450	1.0		14.2	1168	0.69	7.40	116.7		
1455	"		14.2	1123	0.63	7.36	127.3		
1500	1.25	~~190~~	14.1	1149	0.59	7.33	140.2		

Remarks:

Sample MW-1-111919 @ 1500

[1] Based on EPA low-flow sampling guidelines.

Signature: _____ Checked By: _____

MONITORING WELL SAMPLE COLLECTION LOG

Project Name: Former Albion MGP Site MW-5

Project/Task #: 0078000050.03.02A

Sampled by: JR

Date: 11/19/19

wood.

Well Number/ID:	Sample ID:	Duplicate ID:
MW-5	MW-5_111919 ~~MW-50_111919~~	MW-50_111919
Method of Purging:	**Method of Sampling:**	**Intake Depth:**
low flow	low flow	14.5'

Field Equipment

Equipment	Model	Serial #/Rental ID	Date Received/Serviced	Date Calibrated
Multi-Probe	YSI Pro Plus	17A102908	11/18/19	11/19/19
Turbidimeter				

Casing Purge Volume Calculations

A. Depth to Water = 7.92 ft.	D. Water Column (B-A) = _____ ft.	Depth to Water After Sampling = 8.55 ft.
B. Well TD (construction log) _____ ft.	E. 1 Well Volume (C^2 x 0.0408 x D) = _____gal.	Actual Volume Purged (from below) = ____ gal/ml.
C. Well Diameter = _____in.	F. 3 Well Volumes (3 x E) = _____ gal.	(If applicable, see pumping system volume calculation below)

Pump and Flow Cell Volume	V_p	=		ml	**Pumping System Volume Calculation**
Tubing Inside Diameter	D	=		In.	Pumping System Volume (V_S)
Tubing Length	L	=		In.	$V_S = V_P + \pi * D^2/4 * L * 16.39$ ml/in^3
Conversion from Inches^3 to ml	1 in^3	=		ml	_____V_S = (_____) + (3.1415 * _____^{2}/4) * (_____) * 16.39

Purging Data			Water Quality Parameters (within range for 3 consecutive readings if low-flow sampling)						
Time (24 hr)	Purge Volume ☒ gal ☐ ml	Flow Rate ☐ gpm ☑ ml/min	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential (mV)	Turbidity (NTU)	Remarks
			Stabilization[1]	± 3%	± 0.2 mg/L	± 0.2	± 20 mV	±10% or <10 NTU	
1255		160	13.0	1457	2.21	7.63	45.1		
1300			14.0	1417	2.56	7.40	-20.0		pump as slow as possible
1305	0.5		13.6	1381	1.86	7.29	-34.9		
1310			13.6	1375	1.06	7.24	-58.8		
1315			14.2	1371	0.98	7.25	-78.6		
1320	1.0		13.9	1339	0.96	7.23	-82.5		
1325	1.25		13.9	1339	0.42	7.23	-89.7		

Remarks:

12-17' screen - set @ 14.5

Sampled @ 1330, Duplicate sample MW-50_111919 collected from this well (@1340)

[1] Based on EPA low-flow sampling guidelines.

Signature: _____ Checked By: _____

MONITORING WELL SAMPLE COLLECTION LOG

Project Name: Former Albion MGP Site			wood.
Project/Task #: 0078000050.03.02A	Sampled by: Jack Reeder	Date: 11/20/19	

Well Number/ID: MW-6	Sample ID: MW-6_112019	Duplicate ID: —
Method of Purging: low flow	Method of Sampling: low flow	Intake Depth: 13.5'

Field Equipment

Equipment	Model	Serial #/Rental ID	Date Received/Serviced	Date Calibrated
Multi-Probe	~~MW-6~~ YSI Pro Plus	17A102908	11/18/19	11/19/19
Turbidimeter				

Casing Purge Volume Calculations

A. Depth to Water = 5.46 ft.	D. Water Column (B-A) = _____ ft.	Depth to Water After Sampling = 5.55 ft.
B. Well TD (construction log) _____ ft.	E. 1 Well Volume (C^2 x 0.0408 x D) = _____ gal.	Actual Volume Purged (from below) = _____ gal/ml.
C. Well Diameter = _____ in.	F. 3 Well Volumes (3 x E) = _____ gal.	(If applicable, see pumping system volume calculation below)

Pump and Flow Cell Volume	V_p	=		ml	**Pumping System Volume Calculation**
Tubing Inside Diameter	D	=		In.	Pumping System Volume (V_S)
Tubing Length	L	=		In.	$V_S = V_P + \pi * D^2 / 4 * L * 16.39$ ml/in^3
Conversion from Inches^3 to ml	1 in^3	=		ml	_____V_S = (_____) + (3.1415 * _____^{2}/ 4) * (_____) * 16.39

Purging Data			Water Quality Parameters (within range for 3 consecutive readings if low-flow sampling)						
Time (24 hr)	Purge Volume ☒ gal ☐ ml	Flow Rate ☐ gpm ☒ ml/min	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential (mV)	Turbidity (NTU)	Remarks
			Stabilization[1]	± 3%	± 0.2 mg/L	± 0.2	± 20 mV	±10% or <10 NTU	
0645	0	190	13.4	1016	1.82	7.97	163.7		
0650			13.3	1001	1.13	7.73	167.2		
0655			13.4	999	1.14	7.54	168.0		
0700			13.5	1005	0.66	7.44	168.3		
0705			13.4	1011	0.63	7.39	168.9		
0710			13.4	1011	0.45	7.36	169.6		
0715	1.5		13.5	1018	0.35	7.32	170.6		

Remarks:

* MS/MSD

Sampled @ 1715

[1] Based on EPA low-flow sampling guidelines.

Signature: _____ Checked By: _____

MONITORING WELL SAMPLE COLLECTION LOG

Project Name: Former Albion MGP Site			wood.
Project/Task #: 0078000050.03.02A	Sampled by: Jack Reeder	Date: 11/20/19	

Well Number/ID: MW-8R	Sample ID: MW-8R-11.2019	Duplicate ID: —
Method of Purging: low flow	Method of Sampling: low flow	Intake Depth: ~~24~~ 16'

Field Equipment

Equipment	Model	Serial #/Rental ID	Date Received/Serviced	Date Calibrated
Multi-Probe	YSI Pro Plus	17A102908	11/18/19	11/19/19
Turbidimeter				

Casing Purge Volume Calculations

A. Depth to Water = 11.84 ft.	D. Water Column (B-A) = _____ ft.	Depth to Water After Sampling = 12.55 ft.
B. Well TD (construction log) _____ ft.	E. 1 Well Volume (C^2 x 0.0408 x D) = _____gal.	Actual Volume Purged (from below) = ____ gal/ml.
C. Well Diameter = _____in.	F. 3 Well Volumes (3 x E) = _____ gal.	(If applicable, see pumping system volume calculation below)

					Pumping System Volume Calculation
Pump and Flow Cell Volume	V_p	=		ml	
Tubing Inside Diameter	D	=		In.	Pumping System Volume (V_S)
Tubing Length	L	=		In.	$V_S = V_P + \pi * D^2/4 * L * 16.39$ ml/in^3
Conversion from Inches^3 to ml	1 in^3	=		ml	_____V_S = (_____) + (3.1415 * _____ ^{2}/ 4) * (_____) * 16.39

Purging Data			Water Quality Parameters (within range for 3 consecutive readings if low-flow sampling)						
Time (24 hr)	Purge Volume ☑ gal ☐ ml	Flow Rate ☐ gpm ☑ ml/min	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential (mV)	Turbidity (NTU)	Remarks
			Stabilization[1]	± 3%	± 0.2 mg/L	± 0.2	± 20 mV	±10% or <10 NTU	
0840	0	190	5.7	5.4?	4.88	7.50	196.4		
0845			12.7	3576	1.40	7.27	-48.6		
0850			12.8	3554	1.06	7.18	-74.3		
0855			12.9	3462	1.06	7.14	-83.4		
0900	1.00		12.9	3317	0.86	7.14	-89.0		

Remarks:

Sampled @ 0900

[1] Based on EPA low-flow sampling guidelines.

Signature:	Checked By:

MONITORING WELL SAMPLE COLLECTION LOG

Project Name: Former Albion MGP Site

Project/Task #: 0078000050.03.02A

Sampled by: Jack Reeder

Date: 11 / 20 / 19

wood.

Well Number/ID: MW-9R

Sample ID: MW-9R_112019

Duplicate ID: —

Method of Purging: low flow

Method of Sampling: low flow

Intake Depth: 7-17

Field Equipment

Equipment	Model	Serial #/Rental ID	Date Received/Serviced	Date Calibrated
Multi-Probe	YSI Pro Plus	17A 102 908	11/18/19	11/19/19
Turbidimeter				

Casing Purge Volume Calculations

A. Depth to Water = 12.89 ft.

B. Well TD (construction log) _____ ft.

C. Well Diameter = _____ in.

D. Water Column (B-A) = _____ ft.

E. 1 Well Volume (C^2 x 0.0408 x D) = _____ gal.

F. 3 Well Volumes (3 x E) = _____ gal.

Depth to Water After Sampling = 14.41 ft.

Actual Volume Purged (from below) = ____ gal/ml.

(If applicable, see pumping system volume calculation below)

Pump and Flow Cell Volume	V_p	=		ml	**Pumping System Volume Calculation**
Tubing Inside Diameter	D	=		In.	Pumping System Volume (V_S)
Tubing Length	L	=		In.	$V_S = V_P + \pi * D^2 / 4 * L * 16.39$ ml/in^3
Conversion from Inches^3 to ml	1 in^3	=		ml	_____V_S = (_____) + (3.1415 * _____^{2}/ 4) * (_____) * 16.39

Purging Data			Water Quality Parameters (within range for 3 consecutive readings if low-flow sampling)						
Time (24 hr)	Purge Volume ☑ gal ☐ ml	Flow Rate ☐ gpm ☑ ml/min	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential (mV)	Turbidity (NTU)	Remarks
			Stabilization[1]	± 3%	± 0.2 mg/L	± 0.2	± 20 mV	±10% or <10 NTU	
0930	○	190	12.8	7339	9.02	7.42	57.7		
0935			13.8	5929	9.13	7.28	67.9		
0940			13.6	6987	8.52	7.19	83.9		
0945			13.5	8074	7.91	7.14	93.2		
0950			13.6	8497	7.57	7.12	99.7		
0955	1.25	↓	13.6	8686	7.53	7.10	105.5		

Remarks:

*only 2 VOAs

Sampled @ 0955

[1] Based on EPA low-flow sampling guidelines.

Signature: [signature]

Checked By:

MONITORING WELL SAMPLE COLLECTION LOG

Project Name: Former Albion MGP Site

Project/Task #: 0078000050.03.02A

Sampled by: Jack Reader

Date: 11 / 19 / 19

wood.

Well Number/ID:	Sample ID:	Duplicate ID:
MW-10	MW-10_111919	—
Method of Purging:	**Method of Sampling:**	**Intake Depth:**
low flow	low flow	~~14~~ 16'

Field Equipment

Equipment	Model	Serial #/Rental ID	Date Received/Serviced	Date Calibrated
Multi-Probe	YSI Pro Plus	17A102908	11/18/19	11/19/19
Turbidimeter				

Casing Purge Volume Calculations

A. Depth to Water = 12.92 ft.	D. Water Column (B-A) = _____ ft.	Depth to Water After Sampling = 13.78 ft.
B. Well TD (construction log) _____ ft.	E. 1 Well Volume (C^2 x 0.0408 x D) = _____ gal.	Actual Volume Purged (from below) = _____ gal/ml.
C. Well Diameter = _____ in.	F. 3 Well Volumes (3 x E) = _____ gal.	(If applicable, see pumping system volume calculation below)

Pump and Flow Cell Volume	V_p	=		ml	**Pumping System Volume Calculation**
Tubing Inside Diameter	D	=		In.	Pumping System Volume (Vs)
Tubing Length	L	=		In.	$V_S = V_P + \pi * D^2 / 4 * L * 16.39$ ml/in^3
Conversion from Inches^3 to ml	1 in^3	=		ml	_____ V_S = (_____) + (3.1415 * _____ ^{2}/ 4) * (_____) * 16.39

Purging Data			Water Quality Parameters (within range for 3 consecutive readings if low-flow sampling)						
Time (24 hr)	Purge Volume ☑ gal ☐ ml	Flow Rate ☐ gpm ☑ ml/min	Temp (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/L)	pH	Oxidation Reduction Potential (mV)	Turbidity (NTU)	Remarks
			Stabilization[1]	± 3%	± 0.2 mg/L	± 0.2	± 20 mV	±10% or <10 NTU	
1600	0	~200	14.0	4772	1.57	7.05	154.2		
1605			14.1	4173	1.72	6.99	147.2		
1610			13.6	4449	1.81	6.89	148.2		
1615			14.6	4578	1.74	6.85	146.9		
1620			14.0	4892	1.67	6.83	147.8		
1625			13.8	5217	1.52	6.81	148.5		
1630			13.7	5326	1.45	6.81	148.9		
1635	2.0		13.5	5414	1.32	6.82	148.6		

Remarks:

Sampled @ 1635

[1] Based on EPA low-flow sampling guidelines.

Signature: [signature]

Checked By:

APPENDIX C

Analytical Laboratory Reports

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

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

Laboratory Job ID: 480-163165-1
Client Project/Site: Albion, NY Groundwater Project

For:
Wood E&I Solutions Inc
180 Grand Avenue
Suite 1100
Oakland, California 94612

Attn: Mr. Alex Rosenthal

Joseph V. Giacomazza

Authorized for release by:
12/3/2019 9:43:05 AM
Joe Giacomazza, Project Management Assistant II
joe.giacomazza@testamericainc.com

Designee for

Brian Fischer, Manager of Project Management
(716)504-9835
brian.fischer@testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Definitions/Glossary

Client: Wood E&I Solutions Inc
Job ID: 480-163165-1
Project/Site: Albion, NY Groundwater Project

Qualifiers

GC/MS VOA

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

GC/MS Semi VOA

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

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Case Narrative

Client: Wood E&I Solutions Inc
Project/Site: Albion, NY Groundwater Project

Job ID: 480-163165-1

Job ID: 480-163165-1

Laboratory: Eurofins TestAmerica, Buffalo

Narrative

Job Narrative
480-163165-1

Comments
No additional comments.

Receipt
The samples were received on 11/21/2019 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 4 coolers at receipt time were 1.9º C, 2.2º C, 2.4º C and 3.2º C.

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

GC/MS Semi VOA
Method 8270D: Surrogate recovery for the following sample was outside the upper control limit: MW-9R-112019 (480-163165-5). This sample did not contain any target analytes; therefore, re-extraction and/or re-analysis was not performed.

Method 8270D: The following sample was diluted due to the nature of the sample matrix: MW-8R-112019 (480-163165-4). Elevated reporting limits (RLs) are provided.

Method 8270D: The following sample was diluted to bring the concentration of target analytes within the calibration range: MW-8R-112019 (480-163165-4). Elevated reporting limits (RLs) are provided.

Method 8270D: The following sample required a dilution due to the abundance of target analytes: MW-8R-112019 (480-163165-4). Because of this dilution, the surrogate spike concentration in the sample was reduced to a level where the recovery calculation does not provide useful information.

Method 8270D: The following sample was diluted due to the nature of the sample matrix: MW-50-111919 (480-163165-7). Elevated reporting limits (RLs) are provided.

Method 8270D: Three surrogates are used for this analysis. The laboratory's SOP allows one of these surrogates to be outside acceptance criteria without performing re-extraction/re-analysis. The following sample contained an allowable number of surrogate compounds outside limits: MW-9R-112019 (480-163165-5). These results have been reported and qualified.

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

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

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

Detection Summary

Client: Wood E&I Solutions Inc
Project/Site: Albion, NY Groundwater Project

Job ID: 480-163165-1

Client Sample ID: MW-1-111919 — Lab Sample ID: 480-163165-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cyanide, Total	0.098		0.010	0.0060	mg/L	1		4500 CN E-2011	Total/NA

Client Sample ID: MW-5-111919 — Lab Sample ID: 480-163165-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	23		1.0	0.41	ug/L	1		8260C	Total/NA
Toluene	4.0		1.0	0.51	ug/L	1		8260C	Total/NA
Ethylbenzene	13		1.0	0.74	ug/L	1		8260C	Total/NA
m-Xylene & p-Xylene	9.1		2.0	0.66	ug/L	1		8260C	Total/NA
o-Xylene	12		1.0	0.76	ug/L	1		8260C	Total/NA
Xylenes, Total	21		2.0	0.66	ug/L	1		8260C	Total/NA
Total BTEX	61		2.0	1.0	ug/L	1		8260C	Total/NA
Acenaphthene	34		5.0	0.41	ug/L	1		8270D	Total/NA
Acenaphthylene	33		5.0	0.38	ug/L	1		8270D	Total/NA
Anthracene	6.2		5.0	0.28	ug/L	1		8270D	Total/NA
Fluoranthene	5.6		5.0	0.40	ug/L	1		8270D	Total/NA
Fluorene	45		5.0	0.36	ug/L	1		8270D	Total/NA
Naphthalene	24		5.0	0.76	ug/L	1		8270D	Total/NA
Phenanthrene	23		5.0	0.44	ug/L	1		8270D	Total/NA
Pyrene	3.1	J	5.0	0.34	ug/L	1		8270D	Total/NA
Cyanide, Total	0.16		0.010	0.0060	mg/L	1		4500 CN E-2011	Total/NA

Client Sample ID: MW-6-112019 — Lab Sample ID: 480-163165-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cyanide, Total	0.041		0.010	0.0060	mg/L	1		4500 CN E-2011	Total/NA

Client Sample ID: MW-8R-112019 — Lab Sample ID: 480-163165-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	49		1.0	0.41	ug/L	1		8260C	Total/NA
Toluene	2.6		1.0	0.51	ug/L	1		8260C	Total/NA
Ethylbenzene	3.7		1.0	0.74	ug/L	1		8260C	Total/NA
m-Xylene & p-Xylene	12		2.0	0.66	ug/L	1		8260C	Total/NA
o-Xylene	5.7		1.0	0.76	ug/L	1		8260C	Total/NA
Xylenes, Total	18		2.0	0.66	ug/L	1		8260C	Total/NA
Total BTEX	73		2.0	1.0	ug/L	1		8260C	Total/NA
Acenaphthene	57		25	2.1	ug/L	5		8270D	Total/NA
Acenaphthylene	21	J	25	1.9	ug/L	5		8270D	Total/NA
Fluoranthene	4.2	J	25	2.0	ug/L	5		8270D	Total/NA
Fluorene	34		25	1.8	ug/L	5		8270D	Total/NA
Phenanthrene	33		25	2.2	ug/L	5		8270D	Total/NA
Pyrene	2.1	J	25	1.7	ug/L	5		8270D	Total/NA
Naphthalene - DL	900		100	15	ug/L	20		8270D	Total/NA
Cyanide, Total	0.21		0.010	0.0060	mg/L	1		4500 CN E-2011	Total/NA

Client Sample ID: MW-9R-112019 — Lab Sample ID: 480-163165-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Toluene	0.57	J	1.0	0.51	ug/L	1		8260C	Total/NA
Acenaphthene	6.1		5.0	0.41	ug/L	1		8270D	Total/NA
Acenaphthylene	0.38	J	5.0	0.38	ug/L	1		8270D	Total/NA
Anthracene	0.65	J	5.0	0.28	ug/L	1		8270D	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-9R-112019 (Continued) — Lab Sample ID: 480-163165-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Fluorene	3.0	J	5.0	0.36	ug/L	1		8270D	Total/NA
Naphthalene	50		5.0	0.76	ug/L	1		8270D	Total/NA
Phenanthrene	2.8	J	5.0	0.44	ug/L	1		8270D	Total/NA
Cyanide, Total	0.054		0.010	0.0060	mg/L	1		4500 CN E-2011	Total/NA

Client Sample ID: MW-10-111919 — Lab Sample ID: 480-163165-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	14		1.0	0.41	ug/L	1		8260C	Total/NA
Total BTEX	14		2.0	1.0	ug/L	1		8260C	Total/NA
Acenaphthene	0.86	J	5.0	0.41	ug/L	1		8270D	Total/NA
Naphthalene	0.99	J	5.0	0.76	ug/L	1		8270D	Total/NA
Cyanide, Total	0.010		0.010	0.0060	mg/L	1		4500 CN E-2011	Total/NA

Client Sample ID: MW-50-111919 — Lab Sample ID: 480-163165-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	23		1.0	0.41	ug/L	1		8260C	Total/NA
Toluene	4.1		1.0	0.51	ug/L	1		8260C	Total/NA
Ethylbenzene	12		1.0	0.74	ug/L	1		8260C	Total/NA
m-Xylene & p-Xylene	8.6		2.0	0.66	ug/L	1		8260C	Total/NA
o-Xylene	11		1.0	0.76	ug/L	1		8260C	Total/NA
Xylenes, Total	20		2.0	0.66	ug/L	1		8260C	Total/NA
Total BTEX	59		2.0	1.0	ug/L	1		8260C	Total/NA
Acenaphthene	38		25	2.1	ug/L	5		8270D	Total/NA
Acenaphthylene	36		25	1.9	ug/L	5		8270D	Total/NA
Anthracene	6.4	J	25	1.4	ug/L	5		8270D	Total/NA
Fluoranthene	5.4	J	25	2.0	ug/L	5		8270D	Total/NA
Fluorene	46		25	1.8	ug/L	5		8270D	Total/NA
Naphthalene	25		25	3.8	ug/L	5		8270D	Total/NA
Phenanthrene	23	J	25	2.2	ug/L	5		8270D	Total/NA
Pyrene	3.5	J	25	1.7	ug/L	5		8270D	Total/NA
Cyanide, Total	0.16		0.010	0.0060	mg/L	1		4500 CN E-2011	Total/NA

Client Sample ID: TRIP BLANK — Lab Sample ID: 480-163165-8

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-1-111919
Lab Sample ID: 480-163165-1

Date Collected: 11/19/19 15:00
Matrix: Water
Date Received: 11/21/19 09:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		1.0	0.41	ug/L			11/25/19 16:28	1
Toluene	ND		1.0	0.51	ug/L			11/25/19 16:28	1
Ethylbenzene	ND		1.0	0.74	ug/L			11/25/19 16:28	1
m-Xylene & p-Xylene	ND		2.0	0.66	ug/L			11/25/19 16:28	1
o-Xylene	ND		1.0	0.76	ug/L			11/25/19 16:28	1
Xylenes, Total	ND		2.0	0.66	ug/L			11/25/19 16:28	1
Total BTEX	ND		2.0	1.0	ug/L			11/25/19 16:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*95*		*80 - 120*		*11/25/19 16:28*	*1*
1,2-Dichloroethane-d4 (Surr)	*102*		*77 - 120*		*11/25/19 16:28*	*1*
4-Bromofluorobenzene (Surr)	*105*		*73 - 120*		*11/25/19 16:28*	*1*
Dibromofluoromethane (Surr)	*108*		*75 - 123*		*11/25/19 16:28*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		5.0	0.41	ug/L		11/25/19 15:25	11/28/19 00:41	1
Acenaphthylene	ND		5.0	0.38	ug/L		11/25/19 15:25	11/28/19 00:41	1
Anthracene	ND		5.0	0.28	ug/L		11/25/19 15:25	11/28/19 00:41	1
Benzo[a]anthracene	ND		5.0	0.36	ug/L		11/25/19 15:25	11/28/19 00:41	1
Benzo[a]pyrene	ND		5.0	0.47	ug/L		11/25/19 15:25	11/28/19 00:41	1
Benzo[b]fluoranthene	ND		5.0	0.34	ug/L		11/25/19 15:25	11/28/19 00:41	1
Benzo[g,h,i]perylene	ND		5.0	0.35	ug/L		11/25/19 15:25	11/28/19 00:41	1
Benzo[k]fluoranthene	ND		5.0	0.73	ug/L		11/25/19 15:25	11/28/19 00:41	1
Chrysene	ND		5.0	0.33	ug/L		11/25/19 15:25	11/28/19 00:41	1
Dibenz(a,h)anthracene	ND		5.0	0.42	ug/L		11/25/19 15:25	11/28/19 00:41	1
Fluoranthene	ND		5.0	0.40	ug/L		11/25/19 15:25	11/28/19 00:41	1
Fluorene	ND		5.0	0.36	ug/L		11/25/19 15:25	11/28/19 00:41	1
Indeno[1,2,3-cd]pyrene	ND		5.0	0.47	ug/L		11/25/19 15:25	11/28/19 00:41	1
Naphthalene	ND		5.0	0.76	ug/L		11/25/19 15:25	11/28/19 00:41	1
Phenanthrene	ND		5.0	0.44	ug/L		11/25/19 15:25	11/28/19 00:41	1
Pyrene	ND		5.0	0.34	ug/L		11/25/19 15:25	11/28/19 00:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*107*		*48 - 120*	*11/25/19 15:25*	*11/28/19 00:41*	*1*
Nitrobenzene-d5 (Surr)	*94*		*46 - 120*	*11/25/19 15:25*	*11/28/19 00:41*	*1*
p-Terphenyl-d14 (Surr)	*105*		*60 - 148*	*11/25/19 15:25*	*11/28/19 00:41*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	**0.098**		0.010	0.0060	mg/L		11/26/19 18:53	11/26/19 19:33	1

Client Sample ID: MW-5-111919
Lab Sample ID: 480-163165-2

Date Collected: 11/19/19 13:30
Matrix: Water
Date Received: 11/21/19 09:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**23**		1.0	0.41	ug/L			11/25/19 16:52	1
Toluene	**4.0**		1.0	0.51	ug/L			11/25/19 16:52	1
Ethylbenzene	**13**		1.0	0.74	ug/L			11/25/19 16:52	1

Client Sample ID: MW-5-111919
Lab Sample ID: 480-163165-2
Date Collected: 11/19/19 13:30
Matrix: Water
Date Received: 11/21/19 09:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
m-Xylene & p-Xylene	9.1		2.0	0.66	ug/L			11/25/19 16:52	1
o-Xylene	12		1.0	0.76	ug/L			11/25/19 16:52	1
Xylenes, Total	21		2.0	0.66	ug/L			11/25/19 16:52	1
Total BTEX	61		2.0	1.0	ug/L			11/25/19 16:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*91*		*80 - 120*		*11/25/19 16:52*	*1*
1,2-Dichloroethane-d4 (Surr)	*99*		*77 - 120*		*11/25/19 16:52*	*1*
4-Bromofluorobenzene (Surr)	*100*		*73 - 120*		*11/25/19 16:52*	*1*
Dibromofluoromethane (Surr)	*104*		*75 - 123*		*11/25/19 16:52*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	34		5.0	0.41	ug/L		11/25/19 15:25	11/28/19 01:10	1
Acenaphthylene	33		5.0	0.38	ug/L		11/25/19 15:25	11/28/19 01:10	1
Anthracene	6.2		5.0	0.28	ug/L		11/25/19 15:25	11/28/19 01:10	1
Benzo[a]anthracene	ND		5.0	0.36	ug/L		11/25/19 15:25	11/28/19 01:10	1
Benzo[a]pyrene	ND		5.0	0.47	ug/L		11/25/19 15:25	11/28/19 01:10	1
Benzo[b]fluoranthene	ND		5.0	0.34	ug/L		11/25/19 15:25	11/28/19 01:10	1
Benzo[g,h,i]perylene	ND		5.0	0.35	ug/L		11/25/19 15:25	11/28/19 01:10	1
Benzo[k]fluoranthene	ND		5.0	0.73	ug/L		11/25/19 15:25	11/28/19 01:10	1
Chrysene	ND		5.0	0.33	ug/L		11/25/19 15:25	11/28/19 01:10	1
Dibenz(a,h)anthracene	ND		5.0	0.42	ug/L		11/25/19 15:25	11/28/19 01:10	1
Fluoranthene	5.6		5.0	0.40	ug/L		11/25/19 15:25	11/28/19 01:10	1
Fluorene	45		5.0	0.36	ug/L		11/25/19 15:25	11/28/19 01:10	1
Indeno[1,2,3-cd]pyrene	ND		5.0	0.47	ug/L		11/25/19 15:25	11/28/19 01:10	1
Naphthalene	24		5.0	0.76	ug/L		11/25/19 15:25	11/28/19 01:10	1
Phenanthrene	23		5.0	0.44	ug/L		11/25/19 15:25	11/28/19 01:10	1
Pyrene	3.1	J	5.0	0.34	ug/L		11/25/19 15:25	11/28/19 01:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*101*		*48 - 120*	*11/25/19 15:25*	*11/28/19 01:10*	*1*
Nitrobenzene-d5 (Surr)	*101*		*46 - 120*	*11/25/19 15:25*	*11/28/19 01:10*	*1*
p-Terphenyl-d14 (Surr)	*88*		*60 - 148*	*11/25/19 15:25*	*11/28/19 01:10*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	0.16		0.010	0.0060	mg/L		11/26/19 18:53	11/26/19 19:38	1

Client Sample ID: MW-6-112019
Lab Sample ID: 480-163165-3
Date Collected: 11/20/19 07:15
Matrix: Water
Date Received: 11/21/19 09:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		1.0	0.41	ug/L			11/26/19 03:48	1
Toluene	ND		1.0	0.51	ug/L			11/26/19 03:48	1
Ethylbenzene	ND		1.0	0.74	ug/L			11/26/19 03:48	1
m-Xylene & p-Xylene	ND		2.0	0.66	ug/L			11/26/19 03:48	1
o-Xylene	ND		1.0	0.76	ug/L			11/26/19 03:48	1
Xylenes, Total	ND		2.0	0.66	ug/L			11/26/19 03:48	1

Client Sample ID: MW-6-112019
Lab Sample ID: 480-163165-3
Date Collected: 11/20/19 07:15
Matrix: Water
Date Received: 11/21/19 09:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total BTEX	ND		2.0	1.0	ug/L			11/26/19 03:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*108*		*80 - 120*		*11/26/19 03:48*	*1*
1,2-Dichloroethane-d4 (Surr)	*105*		*77 - 120*		*11/26/19 03:48*	*1*
4-Bromofluorobenzene (Surr)	*90*		*73 - 120*		*11/26/19 03:48*	*1*
Dibromofluoromethane (Surr)	*99*		*75 - 123*		*11/26/19 03:48*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		5.0	0.41	ug/L		11/25/19 15:25	11/28/19 01:39	1
Acenaphthylene	ND		5.0	0.38	ug/L		11/25/19 15:25	11/28/19 01:39	1
Anthracene	ND		5.0	0.28	ug/L		11/25/19 15:25	11/28/19 01:39	1
Benzo[a]anthracene	ND		5.0	0.36	ug/L		11/25/19 15:25	11/28/19 01:39	1
Benzo[a]pyrene	ND		5.0	0.47	ug/L		11/25/19 15:25	11/28/19 01:39	1
Benzo[b]fluoranthene	ND		5.0	0.34	ug/L		11/25/19 15:25	11/28/19 01:39	1
Benzo[g,h,i]perylene	ND		5.0	0.35	ug/L		11/25/19 15:25	11/28/19 01:39	1
Benzo[k]fluoranthene	ND		5.0	0.73	ug/L		11/25/19 15:25	11/28/19 01:39	1
Chrysene	ND		5.0	0.33	ug/L		11/25/19 15:25	11/28/19 01:39	1
Dibenz(a,h)anthracene	ND		5.0	0.42	ug/L		11/25/19 15:25	11/28/19 01:39	1
Fluoranthene	ND		5.0	0.40	ug/L		11/25/19 15:25	11/28/19 01:39	1
Fluorene	ND		5.0	0.36	ug/L		11/25/19 15:25	11/28/19 01:39	1
Indeno[1,2,3-cd]pyrene	ND		5.0	0.47	ug/L		11/25/19 15:25	11/28/19 01:39	1
Naphthalene	ND		5.0	0.76	ug/L		11/25/19 15:25	11/28/19 01:39	1
Phenanthrene	ND		5.0	0.44	ug/L		11/25/19 15:25	11/28/19 01:39	1
Pyrene	ND		5.0	0.34	ug/L		11/25/19 15:25	11/28/19 01:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*96*		*48 - 120*	*11/25/19 15:25*	*11/28/19 01:39*	*1*
Nitrobenzene-d5 (Surr)	*80*		*46 - 120*	*11/25/19 15:25*	*11/28/19 01:39*	*1*
p-Terphenyl-d14 (Surr)	*94*		*60 - 148*	*11/25/19 15:25*	*11/28/19 01:39*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	**0.041**		0.010	0.0060	mg/L		11/27/19 10:39	11/27/19 16:30	1

Client Sample ID: MW-8R-112019
Lab Sample ID: 480-163165-4
Date Collected: 11/20/19 09:00
Matrix: Water
Date Received: 11/21/19 09:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**49**		1.0	0.41	ug/L			11/25/19 17:16	1
Toluene	**2.6**		1.0	0.51	ug/L			11/25/19 17:16	1
Ethylbenzene	**3.7**		1.0	0.74	ug/L			11/25/19 17:16	1
m-Xylene & p-Xylene	**12**		2.0	0.66	ug/L			11/25/19 17:16	1
o-Xylene	**5.7**		1.0	0.76	ug/L			11/25/19 17:16	1
Xylenes, Total	**18**		2.0	0.66	ug/L			11/25/19 17:16	1
Total BTEX	**73**		2.0	1.0	ug/L			11/25/19 17:16	1

Client Sample ID: MW-8R-112019

Lab Sample ID: 480-163165-4

Date Collected: 11/20/19 09:00

Matrix: Water

Date Received: 11/21/19 09:30

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	*88*		*80 - 120*		*11/25/19 17:16*	*1*
1,2-Dichloroethane-d4 (Surr)	*96*		*77 - 120*		*11/25/19 17:16*	*1*
4-Bromofluorobenzene (Surr)	*92*		*73 - 120*		*11/25/19 17:16*	*1*
Dibromofluoromethane (Surr)	*93*		*75 - 123*		*11/25/19 17:16*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	**57**		25	2.1	ug/L		11/25/19 15:25	11/28/19 02:07	5
Acenaphthylene	**21**	**J**	25	1.9	ug/L		11/25/19 15:25	11/28/19 02:07	5
Anthracene	ND		25	1.4	ug/L		11/25/19 15:25	11/28/19 02:07	5
Benzo[a]anthracene	ND		25	1.8	ug/L		11/25/19 15:25	11/28/19 02:07	5
Benzo[a]pyrene	ND		25	2.4	ug/L		11/25/19 15:25	11/28/19 02:07	5
Benzo[b]fluoranthene	ND		25	1.7	ug/L		11/25/19 15:25	11/28/19 02:07	5
Benzo[g,h,i]perylene	ND		25	1.8	ug/L		11/25/19 15:25	11/28/19 02:07	5
Benzo[k]fluoranthene	ND		25	3.7	ug/L		11/25/19 15:25	11/28/19 02:07	5
Chrysene	ND		25	1.7	ug/L		11/25/19 15:25	11/28/19 02:07	5
Dibenz(a,h)anthracene	ND		25	2.1	ug/L		11/25/19 15:25	11/28/19 02:07	5
Fluoranthene	**4.2**	**J**	25	2.0	ug/L		11/25/19 15:25	11/28/19 02:07	5
Fluorene	**34**		25	1.8	ug/L		11/25/19 15:25	11/28/19 02:07	5
Indeno[1,2,3-cd]pyrene	ND		25	2.4	ug/L		11/25/19 15:25	11/28/19 02:07	5
Phenanthrene	**33**		25	2.2	ug/L		11/25/19 15:25	11/28/19 02:07	5
Pyrene	**2.1**	**J**	25	1.7	ug/L		11/25/19 15:25	11/28/19 02:07	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	*97*		*48 - 120*	*11/25/19 15:25*	*11/28/19 02:07*	*5*
Nitrobenzene-d5 (Surr)	*61*		*46 - 120*	*11/25/19 15:25*	*11/28/19 02:07*	*5*
p-Terphenyl-d14 (Surr)	*79*		*60 - 148*	*11/25/19 15:25*	*11/28/19 02:07*	*5*

Method: 8270D - Semivolatile Organic Compounds (GC/MS) - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Naphthalene	**900**		100	15	ug/L		11/25/19 15:25	11/29/19 16:18	20

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	*101*		*48 - 120*	*11/25/19 15:25*	*11/29/19 16:18*	*20*
Nitrobenzene-d5 (Surr)	*67*		*46 - 120*	*11/25/19 15:25*	*11/29/19 16:18*	*20*
p-Terphenyl-d14 (Surr)	*76*		*60 - 148*	*11/25/19 15:25*	*11/29/19 16:18*	*20*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	**0.21**		0.010	0.0060	mg/L		11/26/19 18:53	11/26/19 19:40	1

Client Sample ID: MW-9R-112019

Lab Sample ID: 480-163165-5

Date Collected: 11/20/19 09:55

Matrix: Water

Date Received: 11/21/19 09:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		1.0	0.41	ug/L			11/25/19 17:40	1
Toluene	**0.57**	**J**	1.0	0.51	ug/L			11/25/19 17:40	1
Ethylbenzene	ND		1.0	0.74	ug/L			11/25/19 17:40	1
m-Xylene & p-Xylene	ND		2.0	0.66	ug/L			11/25/19 17:40	1
o-Xylene	ND		1.0	0.76	ug/L			11/25/19 17:40	1

Client Sample ID: MW-9R-112019
Lab Sample ID: 480-163165-5
Date Collected: 11/20/19 09:55
Matrix: Water
Date Received: 11/21/19 09:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Xylenes, Total	ND		2.0	0.66	ug/L			11/25/19 17:40	1
Total BTEX	ND		2.0	1.0	ug/L			11/25/19 17:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*90*		*80 - 120*		*11/25/19 17:40*	*1*
1,2-Dichloroethane-d4 (Surr)	*97*		*77 - 120*		*11/25/19 17:40*	*1*
4-Bromofluorobenzene (Surr)	*94*		*73 - 120*		*11/25/19 17:40*	*1*
Dibromofluoromethane (Surr)	*99*		*75 - 123*		*11/25/19 17:40*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	**6.1**		5.0	0.41	ug/L		11/25/19 15:25	11/28/19 02:36	1
Acenaphthylene	**0.38**	**J**	5.0	0.38	ug/L		11/25/19 15:25	11/28/19 02:36	1
Anthracene	**0.65**	**J**	5.0	0.28	ug/L		11/25/19 15:25	11/28/19 02:36	1
Benzo[a]anthracene	ND		5.0	0.36	ug/L		11/25/19 15:25	11/28/19 02:36	1
Benzo[a]pyrene	ND		5.0	0.47	ug/L		11/25/19 15:25	11/28/19 02:36	1
Benzo[b]fluoranthene	ND		5.0	0.34	ug/L		11/25/19 15:25	11/28/19 02:36	1
Benzo[g,h,i]perylene	ND		5.0	0.35	ug/L		11/25/19 15:25	11/28/19 02:36	1
Benzo[k]fluoranthene	ND		5.0	0.73	ug/L		11/25/19 15:25	11/28/19 02:36	1
Chrysene	ND		5.0	0.33	ug/L		11/25/19 15:25	11/28/19 02:36	1
Dibenz(a,h)anthracene	ND		5.0	0.42	ug/L		11/25/19 15:25	11/28/19 02:36	1
Fluoranthene	ND		5.0	0.40	ug/L		11/25/19 15:25	11/28/19 02:36	1
Fluorene	**3.0**	**J**	5.0	0.36	ug/L		11/25/19 15:25	11/28/19 02:36	1
Indeno[1,2,3-cd]pyrene	ND		5.0	0.47	ug/L		11/25/19 15:25	11/28/19 02:36	1
Naphthalene	**50**		5.0	0.76	ug/L		11/25/19 15:25	11/28/19 02:36	1
Phenanthrene	**2.8**	**J**	5.0	0.44	ug/L		11/25/19 15:25	11/28/19 02:36	1
Pyrene	ND		5.0	0.34	ug/L		11/25/19 15:25	11/28/19 02:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*130*	*X*	*48 - 120*	*11/25/19 15:25*	*11/28/19 02:36*	*1*
Nitrobenzene-d5 (Surr)	*88*		*46 - 120*	*11/25/19 15:25*	*11/28/19 02:36*	*1*
p-Terphenyl-d14 (Surr)	*92*		*60 - 148*	*11/25/19 15:25*	*11/28/19 02:36*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	**0.054**		0.010	0.0060	mg/L		11/26/19 18:53	11/26/19 19:42	1

Client Sample ID: MW-10-111919
Lab Sample ID: 480-163165-6
Date Collected: 11/19/19 16:35
Matrix: Water
Date Received: 11/21/19 09:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**14**		1.0	0.41	ug/L			11/25/19 18:04	1
Toluene	ND		1.0	0.51	ug/L			11/25/19 18:04	1
Ethylbenzene	ND		1.0	0.74	ug/L			11/25/19 18:04	1
m-Xylene & p-Xylene	ND		2.0	0.66	ug/L			11/25/19 18:04	1
o-Xylene	ND		1.0	0.76	ug/L			11/25/19 18:04	1
Xylenes, Total	ND		2.0	0.66	ug/L			11/25/19 18:04	1
Total BTEX	**14**		2.0	1.0	ug/L			11/25/19 18:04	1

Client Sample ID: MW-10-111919
Lab Sample ID: 480-163165-6

Date Collected: 11/19/19 16:35
Matrix: Water
Date Received: 11/21/19 09:30

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	92		80 - 120		11/25/19 18:04	1
1,2-Dichloroethane-d4 (Surr)	99		77 - 120		11/25/19 18:04	1
4-Bromofluorobenzene (Surr)	103		73 - 120		11/25/19 18:04	1
Dibromofluoromethane (Surr)	104		75 - 123		11/25/19 18:04	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	**0.86**	**J**	5.0	0.41	ug/L		11/25/19 15:25	11/29/19 16:47	1
Acenaphthylene	ND		5.0	0.38	ug/L		11/25/19 15:25	11/29/19 16:47	1
Anthracene	ND		5.0	0.28	ug/L		11/25/19 15:25	11/29/19 16:47	1
Benzo[a]anthracene	ND		5.0	0.36	ug/L		11/25/19 15:25	11/29/19 16:47	1
Benzo[a]pyrene	ND		5.0	0.47	ug/L		11/25/19 15:25	11/29/19 16:47	1
Benzo[b]fluoranthene	ND		5.0	0.34	ug/L		11/25/19 15:25	11/29/19 16:47	1
Benzo[g,h,i]perylene	ND		5.0	0.35	ug/L		11/25/19 15:25	11/29/19 16:47	1
Benzo[k]fluoranthene	ND		5.0	0.73	ug/L		11/25/19 15:25	11/29/19 16:47	1
Chrysene	ND		5.0	0.33	ug/L		11/25/19 15:25	11/29/19 16:47	1
Dibenz(a,h)anthracene	ND		5.0	0.42	ug/L		11/25/19 15:25	11/29/19 16:47	1
Fluoranthene	ND		5.0	0.40	ug/L		11/25/19 15:25	11/29/19 16:47	1
Fluorene	ND		5.0	0.36	ug/L		11/25/19 15:25	11/29/19 16:47	1
Indeno[1,2,3-cd]pyrene	ND		5.0	0.47	ug/L		11/25/19 15:25	11/29/19 16:47	1
Naphthalene	**0.99**	**J**	5.0	0.76	ug/L		11/25/19 15:25	11/29/19 16:47	1
Phenanthrene	ND		5.0	0.44	ug/L		11/25/19 15:25	11/29/19 16:47	1
Pyrene	ND		5.0	0.34	ug/L		11/25/19 15:25	11/29/19 16:47	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	100		48 - 120	11/25/19 15:25	11/29/19 16:47	1
Nitrobenzene-d5 (Surr)	81		46 - 120	11/25/19 15:25	11/29/19 16:47	1
p-Terphenyl-d14 (Surr)	77		60 - 148	11/25/19 15:25	11/29/19 16:47	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	**0.010**		0.010	0.0060	mg/L		11/26/19 18:53	11/26/19 19:44	1

Client Sample ID: MW-50-111919
Lab Sample ID: 480-163165-7

Date Collected: 11/19/19 13:40
Matrix: Water
Date Received: 11/21/19 09:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	**23**		1.0	0.41	ug/L			11/25/19 18:29	1
Toluene	**4.1**		1.0	0.51	ug/L			11/25/19 18:29	1
Ethylbenzene	**12**		1.0	0.74	ug/L			11/25/19 18:29	1
m-Xylene & p-Xylene	**8.6**		2.0	0.66	ug/L			11/25/19 18:29	1
o-Xylene	**11**		1.0	0.76	ug/L			11/25/19 18:29	1
Xylenes, Total	**20**		2.0	0.66	ug/L			11/25/19 18:29	1
Total BTEX	**59**		2.0	1.0	ug/L			11/25/19 18:29	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	89		80 - 120		11/25/19 18:29	1
1,2-Dichloroethane-d4 (Surr)	99		77 - 120		11/25/19 18:29	1
4-Bromofluorobenzene (Surr)	95		73 - 120		11/25/19 18:29	1

Client Sample ID: MW-50-111919

Lab Sample ID: 480-163165-7

Date Collected: 11/19/19 13:40
Matrix: Water
Date Received: 11/21/19 09:30

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	*93*		*75 - 123*		*11/25/19 18:29*	*1*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	**38**		25	2.1	ug/L		11/25/19 15:25	11/29/19 17:15	5
Acenaphthylene	**36**		25	1.9	ug/L		11/25/19 15:25	11/29/19 17:15	5
Anthracene	**6.4**	**J**	25	1.4	ug/L		11/25/19 15:25	11/29/19 17:15	5
Benzo[a]anthracene	ND		25	1.8	ug/L		11/25/19 15:25	11/29/19 17:15	5
Benzo[a]pyrene	ND		25	2.4	ug/L		11/25/19 15:25	11/29/19 17:15	5
Benzo[b]fluoranthene	ND		25	1.7	ug/L		11/25/19 15:25	11/29/19 17:15	5
Benzo[g,h,i]perylene	ND		25	1.8	ug/L		11/25/19 15:25	11/29/19 17:15	5
Benzo[k]fluoranthene	ND		25	3.7	ug/L		11/25/19 15:25	11/29/19 17:15	5
Chrysene	ND		25	1.7	ug/L		11/25/19 15:25	11/29/19 17:15	5
Dibenz(a,h)anthracene	ND		25	2.1	ug/L		11/25/19 15:25	11/29/19 17:15	5
Fluoranthene	**5.4**	**J**	25	2.0	ug/L		11/25/19 15:25	11/29/19 17:15	5
Fluorene	**46**		25	1.8	ug/L		11/25/19 15:25	11/29/19 17:15	5
Indeno[1,2,3-cd]pyrene	ND		25	2.4	ug/L		11/25/19 15:25	11/29/19 17:15	5
Naphthalene	**25**		25	3.8	ug/L		11/25/19 15:25	11/29/19 17:15	5
Phenanthrene	**23**	**J**	25	2.2	ug/L		11/25/19 15:25	11/29/19 17:15	5
Pyrene	**3.5**	**J**	25	1.7	ug/L		11/25/19 15:25	11/29/19 17:15	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
2-Fluorobiphenyl	*95*		*48 - 120*	*11/25/19 15:25*	*11/29/19 17:15*	*5*
Nitrobenzene-d5 (Surr)	*86*		*46 - 120*	*11/25/19 15:25*	*11/29/19 17:15*	*5*
p-Terphenyl-d14 (Surr)	*89*		*60 - 148*	*11/25/19 15:25*	*11/29/19 17:15*	*5*

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	**0.16**		0.010	0.0060	mg/L		11/26/19 18:53	11/26/19 19:46	1

Client Sample ID: TRIP BLANK

Lab Sample ID: 480-163165-8

Date Collected: 11/20/19 00:00
Matrix: Water
Date Received: 11/21/19 09:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		1.0	0.41	ug/L			11/25/19 11:55	1
Toluene	ND		1.0	0.51	ug/L			11/25/19 11:55	1
Ethylbenzene	ND		1.0	0.74	ug/L			11/25/19 11:55	1
m-Xylene & p-Xylene	ND		2.0	0.66	ug/L			11/25/19 11:55	1
o-Xylene	ND		1.0	0.76	ug/L			11/25/19 11:55	1
Xylenes, Total	ND		2.0	0.66	ug/L			11/25/19 11:55	1
Total BTEX	ND		2.0	1.0	ug/L			11/25/19 11:55	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	*109*		*80 - 120*		*11/25/19 11:55*	*1*
1,2-Dichloroethane-d4 (Surr)	*109*		*77 - 120*		*11/25/19 11:55*	*1*
4-Bromofluorobenzene (Surr)	*97*		*73 - 120*		*11/25/19 11:55*	*1*
Dibromofluoromethane (Surr)	*101*		*75 - 123*		*11/25/19 11:55*	*1*

Surrogate Summary

Client: Wood E&I Solutions Inc
Project/Site: Albion, NY Groundwater Project

Job ID: 480-163165-1

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

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)			
Lab Sample ID	Client Sample ID	TOL (80-120)	DCA (77-120)	BFB (73-120)	DBFM (75-123)
480-163165-1	MW-1-111919	95	102	105	108
480-163165-2	MW-5-111919	91	99	100	104
480-163165-3	MW-6-112019	108	105	90	99
480-163165-4	MW-8R-112019	88	96	92	93
480-163165-5	MW-9R-112019	90	97	94	99
480-163165-6	MW-10-111919	92	99	103	104
480-163165-7	MW-50-111919	89	99	95	93
480-163165-8	TRIP BLANK	109	109	97	101
LCS 480-506510/5	Lab Control Sample	84	89	88	91
LCS 480-506534/5	Lab Control Sample	104	100	90	95
LCS 480-506692/5	Lab Control Sample	105	100	94	96
MB 480-506510/7	Method Blank	90	93	95	99
MB 480-506534/7	Method Blank	104	104	88	98
MB 480-506692/7	Method Blank	112	108	100	103

Surrogate Legend

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

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)		
Lab Sample ID	Client Sample ID	FBP (48-120)	NBZ (46-120)	TPHd14 (60-148)
480-163165-1	MW-1-111919	107	94	105
480-163165-2	MW-5-111919	101	101	88
480-163165-3	MW-6-112019	96	80	94
480-163165-4	MW-8R-112019	97	61	79
480-163165-4 - DL	MW-8R-112019	101	67	76
480-163165-5	MW-9R-112019	130 X	88	92
480-163165-6	MW-10-111919	100	81	77
480-163165-7	MW-50-111919	95	86	89
LCS 480-506656/2-A	Lab Control Sample	110	90	118
MB 480-506656/1-A	Method Blank	105	91	110

Surrogate Legend

FBP = 2-Fluorobiphenyl
NBZ = Nitrobenzene-d5 (Surr)
TPHd14 = p-Terphenyl-d14 (Surr)

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

Lab Sample ID: MB 480-506510/7
Matrix: Water
Analysis Batch: 506510

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		1.0	0.41	ug/L			11/25/19 11:52	1
Toluene	ND		1.0	0.51	ug/L			11/25/19 11:52	1
Ethylbenzene	ND		1.0	0.74	ug/L			11/25/19 11:52	1
m-Xylene & p-Xylene	ND		2.0	0.66	ug/L			11/25/19 11:52	1
o-Xylene	ND		1.0	0.76	ug/L			11/25/19 11:52	1
Xylenes, Total	ND		2.0	0.66	ug/L			11/25/19 11:52	1
Total BTEX	ND		2.0	1.0	ug/L			11/25/19 11:52	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*90*		*80 - 120*		*11/25/19 11:52*	*1*
1,2-Dichloroethane-d4 (Surr)	*93*		*77 - 120*		*11/25/19 11:52*	*1*
4-Bromofluorobenzene (Surr)	*95*		*73 - 120*		*11/25/19 11:52*	*1*
Dibromofluoromethane (Surr)	*99*		*75 - 123*		*11/25/19 11:52*	*1*

Lab Sample ID: LCS 480-506510/5
Matrix: Water
Analysis Batch: 506510

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	25.0	22.0		ug/L		88	71 - 124
Toluene	25.0	20.5		ug/L		82	80 - 122
Ethylbenzene	25.0	20.4		ug/L		82	77 - 123
m-Xylene & p-Xylene	25.0	21.0		ug/L		84	76 - 122
o-Xylene	25.0	20.8		ug/L		83	76 - 122

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*84*		*80 - 120*
1,2-Dichloroethane-d4 (Surr)	*89*		*77 - 120*
4-Bromofluorobenzene (Surr)	*88*		*73 - 120*
Dibromofluoromethane (Surr)	*91*		*75 - 123*

Lab Sample ID: MB 480-506534/7
Matrix: Water
Analysis Batch: 506534

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		1.0	0.41	ug/L			11/25/19 11:00	1
Toluene	ND		1.0	0.51	ug/L			11/25/19 11:00	1
Ethylbenzene	ND		1.0	0.74	ug/L			11/25/19 11:00	1
m-Xylene & p-Xylene	ND		2.0	0.66	ug/L			11/25/19 11:00	1
o-Xylene	ND		1.0	0.76	ug/L			11/25/19 11:00	1
Xylenes, Total	ND		2.0	0.66	ug/L			11/25/19 11:00	1
Total BTEX	ND		2.0	1.0	ug/L			11/25/19 11:00	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*104*		*80 - 120*		*11/25/19 11:00*	*1*
1,2-Dichloroethane-d4 (Surr)	*104*		*77 - 120*		*11/25/19 11:00*	*1*

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

Lab Sample ID: MB 480-506534/7
Matrix: Water
Analysis Batch: 506534

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

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	88		73 - 120		11/25/19 11:00	1
Dibromofluoromethane (Surr)	98		75 - 123		11/25/19 11:00	1

Lab Sample ID: LCS 480-506534/5
Matrix: Water
Analysis Batch: 506534

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	25.0	22.2		ug/L		89	71 - 124
Toluene	25.0	23.8		ug/L		95	80 - 122
Ethylbenzene	25.0	23.4		ug/L		94	77 - 123
m-Xylene & p-Xylene	25.0	23.2		ug/L		93	76 - 122
o-Xylene	25.0	22.6		ug/L		91	76 - 122

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Toluene-d8 (Surr)	104		80 - 120
1,2-Dichloroethane-d4 (Surr)	100		77 - 120
4-Bromofluorobenzene (Surr)	90		73 - 120
Dibromofluoromethane (Surr)	95		75 - 123

Lab Sample ID: MB 480-506692/7
Matrix: Water
Analysis Batch: 506692

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		1.0	0.41	ug/L			11/25/19 22:45	1
Toluene	ND		1.0	0.51	ug/L			11/25/19 22:45	1
Ethylbenzene	ND		1.0	0.74	ug/L			11/25/19 22:45	1
m-Xylene & p-Xylene	ND		2.0	0.66	ug/L			11/25/19 22:45	1
o-Xylene	ND		1.0	0.76	ug/L			11/25/19 22:45	1
Xylenes, Total	ND		2.0	0.66	ug/L			11/25/19 22:45	1
Total BTEX	ND		2.0	1.0	ug/L			11/25/19 22:45	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	112		80 - 120		11/25/19 22:45	1
1,2-Dichloroethane-d4 (Surr)	108		77 - 120		11/25/19 22:45	1
4-Bromofluorobenzene (Surr)	100		73 - 120		11/25/19 22:45	1
Dibromofluoromethane (Surr)	103		75 - 123		11/25/19 22:45	1

Lab Sample ID: LCS 480-506692/5
Matrix: Water
Analysis Batch: 506692

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	25.0	22.5		ug/L		90	71 - 124
Toluene	25.0	23.9		ug/L		96	80 - 122
Ethylbenzene	25.0	23.7		ug/L		95	77 - 123
m-Xylene & p-Xylene	25.0	23.5		ug/L		94	76 - 122

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

Lab Sample ID: LCS 480-506692/5
Matrix: Water
Analysis Batch: 506692

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
o-Xylene			25.0	23.4		ug/L		94	76 - 122		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*105*		*80 - 120*
1,2-Dichloroethane-d4 (Surr)	*100*		*77 - 120*
4-Bromofluorobenzene (Surr)	*94*		*73 - 120*
Dibromofluoromethane (Surr)	*96*		*75 - 123*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 480-506656/1-A
Matrix: Water
Analysis Batch: 507156

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 506656

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		5.0	0.41	ug/L		11/25/19 15:25	11/27/19 17:59	1
Acenaphthylene	ND		5.0	0.38	ug/L		11/25/19 15:25	11/27/19 17:59	1
Anthracene	ND		5.0	0.28	ug/L		11/25/19 15:25	11/27/19 17:59	1
Benzo[a]anthracene	ND		5.0	0.36	ug/L		11/25/19 15:25	11/27/19 17:59	1
Benzo[a]pyrene	ND		5.0	0.47	ug/L		11/25/19 15:25	11/27/19 17:59	1
Benzo[b]fluoranthene	ND		5.0	0.34	ug/L		11/25/19 15:25	11/27/19 17:59	1
Benzo[g,h,i]perylene	ND		5.0	0.35	ug/L		11/25/19 15:25	11/27/19 17:59	1
Benzo[k]fluoranthene	ND		5.0	0.73	ug/L		11/25/19 15:25	11/27/19 17:59	1
Chrysene	ND		5.0	0.33	ug/L		11/25/19 15:25	11/27/19 17:59	1
Dibenz(a,h)anthracene	ND		5.0	0.42	ug/L		11/25/19 15:25	11/27/19 17:59	1
Fluoranthene	ND		5.0	0.40	ug/L		11/25/19 15:25	11/27/19 17:59	1
Fluorene	ND		5.0	0.36	ug/L		11/25/19 15:25	11/27/19 17:59	1
Indeno[1,2,3-cd]pyrene	ND		5.0	0.47	ug/L		11/25/19 15:25	11/27/19 17:59	1
Naphthalene	ND		5.0	0.76	ug/L		11/25/19 15:25	11/27/19 17:59	1
Phenanthrene	ND		5.0	0.44	ug/L		11/25/19 15:25	11/27/19 17:59	1
Pyrene	ND		5.0	0.34	ug/L		11/25/19 15:25	11/27/19 17:59	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*105*		*48 - 120*	*11/25/19 15:25*	*11/27/19 17:59*	*1*
Nitrobenzene-d5 (Surr)	*91*		*46 - 120*	*11/25/19 15:25*	*11/27/19 17:59*	*1*
p-Terphenyl-d14 (Surr)	*110*		*60 - 148*	*11/25/19 15:25*	*11/27/19 17:59*	*1*

Lab Sample ID: LCS 480-506656/2-A
Matrix: Water
Analysis Batch: 507156

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 506656

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Acenaphthene			32.0	35.6		ug/L		111	60 - 120		
Acenaphthylene			32.0	33.3		ug/L		104	63 - 120		
Anthracene			32.0	34.4		ug/L		108	67 - 120		
Benzo[a]anthracene			32.0	34.6		ug/L		108	70 - 121		
Benzo[a]pyrene			32.0	34.8		ug/L		109	60 - 123		
Benzo[b]fluoranthene			32.0	35.9		ug/L		112	66 - 126		

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 480-506656/2-A
Matrix: Water
Analysis Batch: 507156

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 506656

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzo[g,h,i]perylene	32.0	34.8		ug/L		109	66 - 150
Benzo[k]fluoranthene	32.0	33.9		ug/L		106	65 - 124
Chrysene	32.0	32.8		ug/L		103	69 - 120
Dibenz(a,h)anthracene	32.0	35.3		ug/L		110	65 - 135
Fluoranthene	32.0	35.5		ug/L		111	69 - 126
Fluorene	32.0	36.5		ug/L		114	66 - 120
Indeno[1,2,3-cd]pyrene	32.0	34.7		ug/L		108	69 - 146
Naphthalene	32.0	29.7		ug/L		93	57 - 120
Phenanthrene	32.0	31.9		ug/L		100	68 - 120
Pyrene	32.0	38.9		ug/L		122	70 - 125

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2-Fluorobiphenyl	*110*		*48 - 120*
Nitrobenzene-d5 (Surr)	*90*		*46 - 120*
p-Terphenyl-d14 (Surr)	*118*		*60 - 148*

Method: 4500 CN E-2011 - Cyanide, Total: Colorimetric Method

Lab Sample ID: MB 240-412782/1-A
Matrix: Water
Analysis Batch: 412786

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 412782

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		0.010	0.0060	mg/L		11/26/19 18:53	11/26/19 19:30	1

Lab Sample ID: LCS 240-412782/2-A
Matrix: Water
Analysis Batch: 412786

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 412782

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	0.194	0.192		mg/L		99	85 - 115

Lab Sample ID: 480-163165-1 MS
Matrix: Water
Analysis Batch: 412786

Client Sample ID: MW-1-111919
Prep Type: Total/NA
Prep Batch: 412782

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	0.098		0.0400	0.135		mg/L		92	22 - 135

Lab Sample ID: 480-163165-1 MSD
Matrix: Water
Analysis Batch: 412786

Client Sample ID: MW-1-111919
Prep Type: Total/NA
Prep Batch: 412782

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide, Total	0.098		0.0400	0.133		mg/L		86	22 - 135	2	40

Method: 4500 CN E-2011 - Cyanide, Total: Colorimetric Method (Continued)

Lab Sample ID: MB 240-412916/1-A
Matrix: Water
Analysis Batch: 412995

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 412916

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		0.010	0.0060	mg/L		11/27/19 10:39	11/27/19 16:27	1

Lab Sample ID: LCS 240-412916/2-A
Matrix: Water
Analysis Batch: 412995

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 412916

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Cyanide, Total			0.194	0.188		mg/L		97	85 - 115		

Lab Sample ID: 480-163165-3 MS
Matrix: Water
Analysis Batch: 412995

Client Sample ID: MW-6-112019
Prep Type: Total/NA
Prep Batch: 412916

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Cyanide, Total	0.041		0.0400	0.0762		mg/L		89	22 - 135		

Lab Sample ID: 480-163165-3 MSD
Matrix: Water
Analysis Batch: 412995

Client Sample ID: MW-6-112019
Prep Type: Total/NA
Prep Batch: 412916

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide, Total	0.041		0.0400	0.0787		mg/L		95	22 - 135	3	40

GC/MS VOA

Analysis Batch: 506510

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-163165-1	MW-1-111919	Total/NA	Water	8260C	
480-163165-2	MW-5-111919	Total/NA	Water	8260C	
480-163165-4	MW-8R-112019	Total/NA	Water	8260C	
480-163165-5	MW-9R-112019	Total/NA	Water	8260C	
480-163165-6	MW-10-111919	Total/NA	Water	8260C	
480-163165-7	MW-50-111919	Total/NA	Water	8260C	
MB 480-506510/7	Method Blank	Total/NA	Water	8260C	
LCS 480-506510/5	Lab Control Sample	Total/NA	Water	8260C	

Analysis Batch: 506534

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-163165-8	TRIP BLANK	Total/NA	Water	8260C	
MB 480-506534/7	Method Blank	Total/NA	Water	8260C	
LCS 480-506534/5	Lab Control Sample	Total/NA	Water	8260C	

Analysis Batch: 506692

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-163165-3	MW-6-112019	Total/NA	Water	8260C	
MB 480-506692/7	Method Blank	Total/NA	Water	8260C	
LCS 480-506692/5	Lab Control Sample	Total/NA	Water	8260C	

GC/MS Semi VOA

Prep Batch: 506656

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-163165-1	MW-1-111919	Total/NA	Water	3510C	
480-163165-2	MW-5-111919	Total/NA	Water	3510C	
480-163165-3	MW-6-112019	Total/NA	Water	3510C	
480-163165-4 - DL	MW-8R-112019	Total/NA	Water	3510C	
480-163165-4	MW-8R-112019	Total/NA	Water	3510C	
480-163165-5	MW-9R-112019	Total/NA	Water	3510C	
480-163165-6	MW-10-111919	Total/NA	Water	3510C	
480-163165-7	MW-50-111919	Total/NA	Water	3510C	
MB 480-506656/1-A	Method Blank	Total/NA	Water	3510C	
LCS 480-506656/2-A	Lab Control Sample	Total/NA	Water	3510C	

Analysis Batch: 507156

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-163165-1	MW-1-111919	Total/NA	Water	8270D	506656
480-163165-2	MW-5-111919	Total/NA	Water	8270D	506656
480-163165-3	MW-6-112019	Total/NA	Water	8270D	506656
480-163165-4	MW-8R-112019	Total/NA	Water	8270D	506656
480-163165-5	MW-9R-112019	Total/NA	Water	8270D	506656
MB 480-506656/1-A	Method Blank	Total/NA	Water	8270D	506656
LCS 480-506656/2-A	Lab Control Sample	Total/NA	Water	8270D	506656

Analysis Batch: 507364

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-163165-4 - DL	MW-8R-112019	Total/NA	Water	8270D	506656
480-163165-6	MW-10-111919	Total/NA	Water	8270D	506656
480-163165-7	MW-50-111919	Total/NA	Water	8270D	506656

QC Association Summary

Client: Wood E&I Solutions Inc
Project/Site: Albion, NY Groundwater Project

Job ID: 480-163165-1

General Chemistry

Prep Batch: 412782

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-163165-1	MW-1-111919	Total/NA	Water	Distill/CN	
480-163165-2	MW-5-111919	Total/NA	Water	Distill/CN	
480-163165-4	MW-8R-112019	Total/NA	Water	Distill/CN	
480-163165-5	MW-9R-112019	Total/NA	Water	Distill/CN	
480-163165-6	MW-10-111919	Total/NA	Water	Distill/CN	
480-163165-7	MW-50-111919	Total/NA	Water	Distill/CN	
MB 240-412782/1-A	Method Blank	Total/NA	Water	Distill/CN	
LCS 240-412782/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	
480-163165-1 MS	MW-1-111919	Total/NA	Water	Distill/CN	
480-163165-1 MSD	MW-1-111919	Total/NA	Water	Distill/CN	

Analysis Batch: 412786

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-163165-1	MW-1-111919	Total/NA	Water	4500 CN E-2011	412782
480-163165-2	MW-5-111919	Total/NA	Water	4500 CN E-2011	412782
480-163165-4	MW-8R-112019	Total/NA	Water	4500 CN E-2011	412782
480-163165-5	MW-9R-112019	Total/NA	Water	4500 CN E-2011	412782
480-163165-6	MW-10-111919	Total/NA	Water	4500 CN E-2011	412782
480-163165-7	MW-50-111919	Total/NA	Water	4500 CN E-2011	412782
MB 240-412782/1-A	Method Blank	Total/NA	Water	4500 CN E-2011	412782
LCS 240-412782/2-A	Lab Control Sample	Total/NA	Water	4500 CN E-2011	412782
480-163165-1 MS	MW-1-111919	Total/NA	Water	4500 CN E-2011	412782
480-163165-1 MSD	MW-1-111919	Total/NA	Water	4500 CN E-2011	412782

Prep Batch: 412916

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-163165-3	MW-6-112019	Total/NA	Water	Distill/CN	
MB 240-412916/1-A	Method Blank	Total/NA	Water	Distill/CN	
LCS 240-412916/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	
480-163165-3 MS	MW-6-112019	Total/NA	Water	Distill/CN	
480-163165-3 MSD	MW-6-112019	Total/NA	Water	Distill/CN	

Analysis Batch: 412995

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
480-163165-3	MW-6-112019	Total/NA	Water	4500 CN E-2011	412916
MB 240-412916/1-A	Method Blank	Total/NA	Water	4500 CN E-2011	412916
LCS 240-412916/2-A	Lab Control Sample	Total/NA	Water	4500 CN E-2011	412916
480-163165-3 MS	MW-6-112019	Total/NA	Water	4500 CN E-2011	412916
480-163165-3 MSD	MW-6-112019	Total/NA	Water	4500 CN E-2011	412916

Lab Chronicle

Client: Wood E&I Solutions Inc
Job ID: 480-163165-1
Project/Site: Albion, NY Groundwater Project

Client Sample ID: MW-1-111919
Lab Sample ID: 480-163165-1
Date Collected: 11/19/19 15:00
Matrix: Water
Date Received: 11/21/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	506510	11/25/19 16:28	S1V	TAL BUF
Total/NA	Prep	3510C			506656	11/25/19 15:25	AAP	TAL BUF
Total/NA	Analysis	8270D		1	507156	11/28/19 00:41	PJQ	TAL BUF
Total/NA	Prep	Distill/CN			412782	11/26/19 18:53	AGC	TAL CAN
Total/NA	Analysis	4500 CN E-2011		1	412786	11/26/19 19:33	AGC	TAL CAN

Client Sample ID: MW-5-111919
Lab Sample ID: 480-163165-2
Date Collected: 11/19/19 13:30
Matrix: Water
Date Received: 11/21/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	506510	11/25/19 16:52	S1V	TAL BUF
Total/NA	Prep	3510C			506656	11/25/19 15:25	AAP	TAL BUF
Total/NA	Analysis	8270D		1	507156	11/28/19 01:10	PJQ	TAL BUF
Total/NA	Prep	Distill/CN			412782	11/26/19 18:53	AGC	TAL CAN
Total/NA	Analysis	4500 CN E-2011		1	412786	11/26/19 19:38	AGC	TAL CAN

Client Sample ID: MW-6-112019
Lab Sample ID: 480-163165-3
Date Collected: 11/20/19 07:15
Matrix: Water
Date Received: 11/21/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	506692	11/26/19 03:48	OMI	TAL BUF
Total/NA	Prep	3510C			506656	11/25/19 15:25	AAP	TAL BUF
Total/NA	Analysis	8270D		1	507156	11/28/19 01:39	PJQ	TAL BUF
Total/NA	Prep	Distill/CN			412916	11/27/19 10:39	JR	TAL CAN
Total/NA	Analysis	4500 CN E-2011		1	412995	11/27/19 16:30	JR	TAL CAN

Client Sample ID: MW-8R-112019
Lab Sample ID: 480-163165-4
Date Collected: 11/20/19 09:00
Matrix: Water
Date Received: 11/21/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	506510	11/25/19 17:16	S1V	TAL BUF
Total/NA	Prep	3510C			506656	11/25/19 15:25	AAP	TAL BUF
Total/NA	Analysis	8270D		5	507156	11/28/19 02:07	PJQ	TAL BUF
Total/NA	Prep	3510C	DL		506656	11/25/19 15:25	AAP	TAL BUF
Total/NA	Analysis	8270D	DL	20	507364	11/29/19 16:18	PJQ	TAL BUF
Total/NA	Prep	Distill/CN			412782	11/26/19 18:53	AGC	TAL CAN
Total/NA	Analysis	4500 CN E-2011		1	412786	11/26/19 19:40	AGC	TAL CAN

Lab Chronicle

Client: Wood E&I Solutions Inc
Job ID: 480-163165-1
Project/Site: Albion, NY Groundwater Project

Client Sample ID: MW-9R-112019
Lab Sample ID: 480-163165-5
Date Collected: 11/20/19 09:55
Matrix: Water
Date Received: 11/21/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	506510	11/25/19 17:40	S1V	TAL BUF
Total/NA	Prep	3510C			506656	11/25/19 15:25	AAP	TAL BUF
Total/NA	Analysis	8270D		1	507156	11/28/19 02:36	PJQ	TAL BUF
Total/NA	Prep	Distill/CN			412782	11/26/19 18:53	AGC	TAL CAN
Total/NA	Analysis	4500 CN E-2011		1	412786	11/26/19 19:42	AGC	TAL CAN

Client Sample ID: MW-10-111919
Lab Sample ID: 480-163165-6
Date Collected: 11/19/19 16:35
Matrix: Water
Date Received: 11/21/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	506510	11/25/19 18:04	S1V	TAL BUF
Total/NA	Prep	3510C			506656	11/25/19 15:25	AAP	TAL BUF
Total/NA	Analysis	8270D		1	507364	11/29/19 16:47	PJQ	TAL BUF
Total/NA	Prep	Distill/CN			412782	11/26/19 18:53	AGC	TAL CAN
Total/NA	Analysis	4500 CN E-2011		1	412786	11/26/19 19:44	AGC	TAL CAN

Client Sample ID: MW-50-111919
Lab Sample ID: 480-163165-7
Date Collected: 11/19/19 13:40
Matrix: Water
Date Received: 11/21/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	506510	11/25/19 18:29	S1V	TAL BUF
Total/NA	Prep	3510C			506656	11/25/19 15:25	AAP	TAL BUF
Total/NA	Analysis	8270D		5	507364	11/29/19 17:15	PJQ	TAL BUF
Total/NA	Prep	Distill/CN			412782	11/26/19 18:53	AGC	TAL CAN
Total/NA	Analysis	4500 CN E-2011		1	412786	11/26/19 19:46	AGC	TAL CAN

Client Sample ID: TRIP BLANK
Lab Sample ID: 480-163165-8
Date Collected: 11/20/19 00:00
Matrix: Water
Date Received: 11/21/19 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	506534	11/25/19 11:55	BTP	TAL BUF

Laboratory References:

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

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

Accreditation/Certification Summary

Client: Wood E&I Solutions Inc
Job ID: 480-163165-1
Project/Site: Albion, NY Groundwater Project

Laboratory: Eurofins TestAmerica, Buffalo

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
New York	NELAP	10026	03-31-20

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
8260C		Water	Total BTEX

Laboratory: Eurofins TestAmerica, Canton

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

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-23-20
Connecticut	State	PH-0590	12-31-19
Florida	NELAP	E87225	06-30-20
Georgia	State	4062	02-23-20
Illinois	NELAP	004498	07-31-20
Iowa	State	421	06-01-20
Kansas	NELAP	E-10336	04-30-20
Kentucky (UST)	State	112225	02-23-20
Kentucky (WW)	State	KY98016	12-31-19
Minnesota	NELAP	OH00048	12-31-19
Minnesota (Petrofund)	State Program	3506	07-31-21
New Jersey	NELAP	OH001	06-30-20
New York	NELAP	10975	03-31-20
Ohio VAP	State	CL0024	06-05-21
Oregon	NELAP	4062	02-23-20
Pennsylvania	NELAP	68-00340	08-31-20
Texas	NELAP	T104704517-18-10	08-31-20
USDA	US Federal Programs	P330-16-00404	12-28-19
Virginia	NELAP	010101	09-14-20
Washington	State	C971	01-12-20
West Virginia DEP	State	210	12-31-19

Method Summary

Client: Wood E&I Solutions Inc
Project/Site: Albion, NY Groundwater Project

Job ID: 480-163165-1

Method	Method Description	Protocol	Laboratory
8260C	Volatile Organic Compounds by GC/MS	SW846	TAL BUF
8270D	Semivolatile Organic Compounds (GC/MS)	SW846	TAL BUF
4500 CN E-2011	Cyanide, Total: Colorimetric Method	SM	TAL CAN
3510C	Liquid-Liquid Extraction (Separatory Funnel)	SW846	TAL BUF
5030C	Purge and Trap	SW846	TAL BUF
Distill/CN	Distillation, Cyanide	None	TAL CAN

Protocol References:

None = None

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

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

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

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

Sample Summary

Client: Wood E&I Solutions Inc
Project/Site: Albion, NY Groundwater Project

Job ID: 480-163165-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
480-163165-1	MW-1-111919	Water	11/19/19 15:00	11/21/19 09:30	
480-163165-2	MW-5-111919	Water	11/19/19 13:30	11/21/19 09:30	
480-163165-3	MW-6-112019	Water	11/20/19 07:15	11/21/19 09:30	
480-163165-4	MW-8R-112019	Water	11/20/19 09:00	11/21/19 09:30	
480-163165-5	MW-9R-112019	Water	11/20/19 09:55	11/21/19 09:30	
480-163165-6	MW-10-111919	Water	11/19/19 16:35	11/21/19 09:30	
480-163165-7	MW-50-111919	Water	11/19/19 13:40	11/21/19 09:30	
480-163165-8	TRIP BLANK	Water	11/20/19 00:00	11/21/19 09:30	

PROJECT NAME: Former Albion MGP Site | DATE: 11/20/19 | PAGE 1 OF 1

PROJECT NUMBER: 0078000050.03.02A	LABORATORY: TestAmerica	CLIENT: Wood Environment & Infrastructure Solutions	REPORTING REQUIREMENTS:
RESULTS TO: alex.rosenthal@woodplc.com	Lab Address: 10 Hazelwood Dr #106	ADDRESS: 180 Grand Ave., Suite 1100	
TURNAROUND TIME: Standard	Amherst, NY 14228	Oakland, CA 94612-3702	
SAMPLE SHIPMENT METHOD: FedEx	Lab Contact: ~~Tony Masse~~ Brian Fischer (JR)	Client Contact: Alex Rosenthal	Geotrack
	Lab Phone #: ~~315-431-0171~~ 716-504-9835	D 510-663-4152 M 510-301-4943	Site Specific Global ID ...

480-163165 Chain of Custody

SAMPLERS (SIGN & PRINT): Jack Reeder

ANALYSES

DATE	TIME	SAMPLE ID	Soil (S), Water (W), Vapor (V), or Other (O)	Filtered	MS/MSD	No. of Containers	CONTAINER TYPE AND SIZE	BTEX (8260B)	PAHs (8270D)	Total Cyanide (SM4500-CN-C/E)	ADDITIONAL COMMENTS
11/19/19	1500	MW-1_111919	W	N	N	6	3x VOA 1x250 plastic 2x250 Amber	X	X	X	
11/19/19	1330	MW-5-111919				6					
11/20/19	0715	MW-6-112019				6					
11/20/19	0900	MW-8R-112019				6					
11/20/19	0955	MW-9R-112019				5					
11/19/19	1635	MW-10-111919				6					
11/19/19	1340	MW-50-111919				6					
		TRIP BLANK				1	1 VOA				

JR

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	DATE	TIME
SIGNATURE: [signature] PRINTED NAME: Jack Reeder COMPANY: Wood	11/20/19	1230	SIGNATURE: PRINTED NAME: COMPANY:		
SIGNATURE: PRINTED NAME: COMPANY:			SIGNATURE: [signature] PRINTED NAME: C Kold COMPANY: TA	11/21/19	0930

SAMPLING COMMENTS:
* One VOA came pre-filled. Included in cooler as "TRIP BLANK"

Data Package (circle one): Level II / Level III / Level IV

180 Grand Avenue, Suite 1100
Oakland, CA 94612-3753
Tel 510.663.4100 Fax 510.663.4141

wood.

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

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Fischer, Brian J	Carrier Tracking No(s):	COC No: 480-53362.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: brian.fischer@testamericainc.com	State of Origin: New York	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): NELAP - New York		Job #: 480-163165-1
Address: 4101 Shuffel Street NW,	Due Date Requested: 12/5/2019	Analysis Requested		Preservation Codes:
City: North Canton	TAT Requested (days):			
State, Zip: OH, 44720				
Phone: 330-497-9396(Tel) 330-497-0772(Fax)	PO #:			
Email:	WO #:			
Project Name: Albion, NY Groundwater Project	Project #: 48021262			
Site:	SSOW#:			Other:

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA
M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	4500_CN_E/Distill_CN	Total Number of containers	Special Instructions/Note: w 160
			Preservation Code:						
MW-1-111919 (480-163165-1)	11/19/19	15:00 Eastern		Water			X	1	
MW-5-111919 (480-163165-2)	11/19/19	13:30 Eastern		Water			X	1	
MW-6-112019 (480-163165-3)	11/20/19	07:15 Eastern		Water			X	1	
MW-8R-112019 (480-163165-4)	11/19/19	09:00 Eastern		Water			X	1	
MW-9R-112019 (480-163165-5)	11/19/19	09:55 Eastern		Water			X	1	
MW-10-111919 (480-163165-6)	11/19/19	16:35 Eastern		Water			X	1	
MW-50-111919 (480-163165-7)	11/19/19	13:40 Eastern		Water			X	1	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification
Unconfirmed

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

Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:	
Relinquished by: [signature]	Date/Time: 11/25/19 1700	Company: TA	Received by: [signature]	Date/Time: 11-26-19 945	Company: ETAC
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:
Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:	

Ver: 01/16/2019

Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # :** _____

Canton Facility

Client E-TA Buffalo Site Name _____ Cooler unpacked by:

Cooler Received on 11-26-19 Opened on 11-26-19

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

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

TestAmerica Cooler # 114 Foam Box Client Cooler Box Other _____

Packing material used: (Bubble Wrap) Foam (Plastic Bag) None Other _____

COOLANT: (Wet Ice) Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☑ See Multiple Cooler Form

IR GUN# IR-10 (CF +0.7 °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

IR GUN #IR-11 (CF +0.9°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 3	(Yes)	No
-Were the seals on the outside of the cooler(s) signed & dated?	(Yes)	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	(No)
-Were tamper/custody seals intact and uncompromised?	(Yes)	No NA
3. Shippers' packing slip attached to the cooler(s)?	(Yes)	No
4. Did custody papers accompany the sample(s)?	(Yes)	No
5. Were the custody papers relinquished & signed in the appropriate place?	(Yes)	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	(No)
7. Did all bottles arrive in good condition (Unbroken)?	(Yes)	No
8. Could all bottle labels be reconciled with the COC?	(Yes)	No
9. Were correct bottle(s) used for the test(s) indicated?	(Yes)	No
10. Sufficient quantity received to perform indicated analyses?	(Yes)	No
11. Are these work share samples?	(Yes)	No
If yes, Questions 12-16 have been checked at the originating laboratory.		
12. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC995364
13. Were VOAs on the COC?	Yes	No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot #_____	Yes	No
16. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

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

Concerning _____

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

18. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

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

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

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login # : ______________

Eurofins TestAmerica Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	**IR-10** IR-11	2.4	3.1	**Wet Ice** Blue Ice Dry Ice Water None
TA Client Box Other	**IR-10** IR-11	3.2	3.9	**Wet Ice** Blue Ice Dry Ice Water None
TA Client Box Other	**IR-10** IR-11	1.5	2.2	**Wet Ice** Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
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TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
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TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-10 IR-11			Wet Ice Blue Ice Dry Ice Water None
			☐ See Temperature Excursion Form	

WI-NC-099 Cooler Receipt Form Page 2 – Multiple Coolers

Login Sample Receipt Checklist

Client: Wood E&I Solutions Inc

Job Number: 480-163165-1

Login Number: 163165
List Number: 1
Creator: Wallace, Cameron

List Source: Eurofins TestAmerica, Buffalo

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time (Excluding tests with immediate HTs)..	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	True	
Chlorine Residual checked.	N/A	

APPENDIX D

Soil Cap Inspection Form

wood.

SOIL CAP INSPECTION FORM

Former Albion MPG Site No. 837012

Albion, New York

Date: 11/20/19
Inspection By: Jack Reeder
Others On Site: National Grid

Weather: Overcast, 30-40° F
Time In: 0630
Time Out: 1100

Visual Observations – Soil Cap and Monitoring Well Network:

	YES	NO	Comments
Is the Soil Cap intact?	✓		
Any signs of significant erosion?		✓	
Any signs of tree roots or vegetation damaging the cap?		✓	
Any signs of intrusive work (earth disturbing activities) in the capped area?	✓		see below
Are the groundwater monitoring wells accessible and intact?	✓		

If maintenance is required to resolve any of the above noted items, describe what actions taken, if any. Were all maintenance items resolved during this site visit? If no, what items remain to be resolved?

Drilling for attempted MW-11 in October 2019 w/in capped area. Boring abandoned, no maintenance or follow up required.

wood.

Documentation:

	YES	NO	Comments
Is the Site Management Plan on-site?		✓	
If there is intrusive work being performed: - Is there a Health and Safety Plan on-site?	✓		
- If the surface area of construction activities is greater than 1 acre in size, is there a Stormwater Pollution Prevention Plan (SWPPP) on-site?			NA

If maintenance is required to resolve any of the above noted items, describe what actions taken, if any. Were all maintenance items resolved during this site visit? If no, what items remain to be resolved?