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June 2020

Spring 2020 Annual Groundwater Monitoring Report, Former Carborundum Company, Hyde Park Facility
Town of Niagara, Niagara County, NY
NYSDEC Site No. 932036

Submitted to:

New York State Department of Environmental Conservation
Division of Hazardous Waste Remediation
270 Michigan Avenue
Buffalo, NY 14203

On behalf of:

Elm Holdings Inc.

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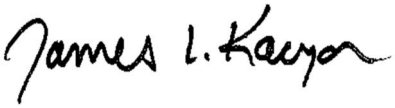

Reviewed By James L. Kaczor, P.G.

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1.0 Introduction

This Spring 2020 Annual Groundwater Monitoring Report summarizes the groundwater monitoring activities completed at the Former Carborundum Company, Hyde Park Facility (Site) in the Town of Niagara, New York (see Figure 1 – Project Location Plan). This report provides the results from the recent Spring 2020 annual monitoring event conducted from March 17 through March 20, 2020, with a comparison to previous results. The annual groundwater monitoring is conducted on an alternating spring (even years)/fall (odd years) schedule, and includes the collection of groundwater samples for the analysis of chlorinated volatile organic compounds (CVOCs) and natural attenuation parameters.

This work was completed in accordance with the groundwater monitoring work plan (DE&S 2000) for Operable Unit 2 (OU2), approved by the New York State Department of Environmental Conservation (NYSDEC), correspondence from NYSDEC dated September 28, 2005 (NYSDEC 2005) and April 8, 2014 (NYSDEC 2014), and letters to NYSDEC dated August 20, 2013 (Parsons 2013) and April 3, 2014 (Parsons 2014).

The scope of the Spring 2020 annual groundwater monitoring program included:

- Collection of water level measurements from overburden and bedrock monitoring wells, injection wells, and performance monitoring wells;
- Purging of select overburden and bedrock monitoring wells and collection of field measurements of pH, temperature, specific conductivity, oxidation/reduction potential (ORP), dissolved oxygen (DO), and turbidity;
- Collection of groundwater samples from monitoring wells for specific CVOC analyses; and,
- Collection of groundwater samples from select overburden and bedrock monitoring wells for analysis of natural attenuation parameters to aid in remedial action optimization (RAO) evaluations.

Figure 2 – Site Plan presents monitoring well locations, injection well locations, performance monitoring well locations, and site features.

2.0 Site Remedial Summary

The following section briefly summarizes the remedial work completed at the Site. Primary tasks included emulsified vegetable oil substrate injections in 2008, 2009, 2011 and 2013, and associated performance groundwater monitoring events. Terra Systems, Inc. (TSI) SRS®-SD was used for all overburden injections, SRS®-FR was used for all bedrock injections, and TSI-DC® bioaugmentation culture was used for microorganism bioaugmentation. Additional detail regarding Site background and remedial summaries are presented in event-specific performance reports and Five-Year Review Reports.

The following is a timeline of key remedial actions and associated groundwater monitoring:

Task	Start & Completion Date
2008 Injection Event	
Baseline Performance Monitoring	August 2008
Overburden Substrate Injection (INJ-1 and INJ-2)	September 4 – 5, 2008
Overburden Bioaugmentation (INJ-1 and INJ-2)	October 21 – 22, 2008
Performance Groundwater Monitoring	October 2008, December 2008, January 2009, March 2009
2009 Injection Event	
Baseline Groundwater Monitoring	October 2009
Bedrock Substrate Injections (INJ-3 and INJ-4)	November 11 – 12, 2009
Overburden Substrate Injections (INJ-1 and INJ-2)	November 17 – 18, 2009
Overburden and Bedrock Bioaugmentation (INJ-1 through INJ-4)	December 17 – 22, 2009
Performance Groundwater Monitoring	December 2009, February 2010, March-April 2010, May 2010
2011 Injection Event	
Overburden Injection Well Installation (INJ-5U, INJ-5L, INJ-6U, INJ-6L, INJ-7, INJ-8, INJ-9, INJ-10)	October 6 – 20, 2011

Task	Start & Completion Date
Baseline Sampling	October 20 – November 7, 2011
Overburden Substrate Injections and Bioaugmentation (INJ-1, INJ-2, INJ-5U, INJ-5L, INJ-6U, INJ-6L, INJ-7, INJ-8, INJ-9, INJ-10)	November 11 – December 13, 2011
3-month Performance Sampling	March 12 – 15, 2012
6-month Performance Sampling	June 11 – 18, 2012
12-month Performance Sampling	November 26 – 30, 2012
2013 Injection Event	
Overburden and Bedrock Substrate Injections and Bioaugmentation (INJ-1, INJ-2, INJ-3, INJ-4, MW-16B, MW-18B, INJ-9, INJ-10)	September 9 – October 1, 2013
Tracer Dye Injections (MW-16B, MW-18B)	September 19 – 24, 2013
Tracer Dye Sampling	September 20, 2013 – January 17, 2014
3-month Performance Sampling	January 13 – 20, 2014
6-month Performance Sampling	March 30 – April 3, 2014
12-month Performance Sampling	October 8 – 14, 2014

3.0 Groundwater Monitoring Program Summary

The Spring 2020 annual groundwater monitoring program included water level measurements, groundwater sampling at 17 well locations, and submission of groundwater samples for analysis of CVOCs and natural attenuation parameters. Quality assurance/quality control (QA/QC) samples, including one field duplicate, one matrix spike/matrix spike duplicate sample, and three trip blanks were also collected and submitted for analysis. Table 1 presents a summary of groundwater sample locations and associated QA/QC samples.

3.1 Groundwater Elevation Measurements

Water levels were measured on March 17, 2020 in the monitoring wells, injection wells, and performance monitoring wells relative to the top of the inner well casing using an electronic water level tape accurate to 0.01 foot (ft). The depth to water was measured in each well from a surveyed point on the casing. The water levels were then converted to elevations presented as feet above mean sea level (ft AMSL, NAVD 88 datum). The groundwater elevations were used to construct groundwater elevation contour maps in both the overburden and bedrock zones. Table 2 provides a summary of the groundwater level measurements and calculated groundwater elevations. Figure 3 presents overburden groundwater potentiometric surface contours and Figure 4 presents bedrock groundwater potentiometric contours. Section 4.1 presents a discussion of groundwater elevations and flow directions.

3.2 Groundwater Sampling

The locations of the 17 monitoring wells sampled are shown in Figure 2. Wells were sampled following the methodology outlined in the groundwater monitoring work plan and approved revisions per subsequent correspondence with NYSDEC. A list of wells, dates sampled, sample IDs, and purge volumes is provided in Table 1. A copy of the groundwater sampling logs is provided in Appendix A. As described in the Site Management (SM) Periodic Review Report (PRR) Response letter from the NYSDEC dated October 6, 2018, four locations (MW-2B, MW-4A, MW-8, and MW-11B), are no longer required to be sampled as part of the annual groundwater monitoring program.

During purging, groundwater was monitored for temperature, specific conductivity, pH, DO, ORP, and turbidity. An aliquot of the groundwater sample was tested in the field for alkalinity, carbon dioxide, ferrous iron, and hydrogen sulfide using Hach™ test kits. Table 3 presents a summary of the groundwater sampling field parameter results.

The 17 monitoring wells were purged following low-flow procedures with dedicated tubing and a peristaltic pump. MW-12A was found to be destroyed during the Fall 2019 sampling event and therefore was not sampled. All samples for chemical analyses were hand-delivered to Eurofins TestAmerica Laboratories, Inc., (ETAL) in Amherst, New York under secure chain-of-custody (COC). ETAL Amherst transferred the samples to ETAL, Canton, Ohio which performed the analyses. Both ETAL locations are New York State Department of Health Environmental Laboratory Approval Program certified laboratories.

Table 4 provides a summary of sample collection and analysis specifications for each analysis type including sample containers, preservation methods, analytical methods, and other quality control information.

Table 5 presents a summary of scheduled analyses for each well sampled. Samples from each well were analyzed for select CVOCs, including tetrachloroethene (PCE), trichloroethene (TCE), cis-1,2-dichloroethene (DCE), trans-1,2-DCE, 1,1-DCE, 1,1-dichloroethane (DCA), 1,1,1-trichloroethane (TCA), vinyl chloride (VC), and chloroethane. In addition, samples from 14 wells consisting of two overburden wells and six overburden and bedrock well pairs were analyzed for natural attenuation evaluation parameters, consisting of:

- dissolved iron;
- methane, ethane, ethene, and propane;
- total chloride, sulfate, and sulfide; and,
- total organic carbon (TOC), BOD, chemical oxygen demand, nitrate, and nitrite.

The six well pairs chosen for these additional analyses are located within, upgradient, downgradient, and side gradient of the source area, and consist of MW-5A and -5B, MW-7A and -7B, MW-10A and -10B, MW-16A and -16B, MW-17A and -17B, and MW-18A and -18B. A seventh well pair, MW-12A and MW-12B, has historically also been sampled; but, in Fall 2019 MW-12A was found destroyed and only MW-12B was able to be sampled in Fall 2019 and Spring 2020.

BOD, nitrate, and nitrite are short hold time analyses. The samples were submitted to the laboratory in laboratory-supplied bottles. However, due to a login error and subsequent shipping delays, samples collected on March 19, 2020 for BOD, nitrate, and nitrite exceeded the laboratory hold time. Results for nitrate and nitrite analyses were qualified due to the hold time expiration. The BOD analysis for the affected locations (MW-7A, MW-7B, MW-12B, MW-17A, MW-17B, MW-18A, and MW-18B) was cancelled; as a result, there are no BOD data for these locations for Spring 2020.

Purge water and decontamination water were contained and staged in a secure area onsite in a holding tank or new steel 55-gallon drum for later characterization and proper disposal.

3.3 Data Validation

Analytical results for samples collected March 18 through March 20, 2020 were reviewed by AECOM for usability with respect to the following requirements:

- Work Plan and associated correspondence;
- NYSDEC Analytical Services Protocol (ASP); and,
- USEPA Region II Standard Operating Procedures (SOPs).

The data submitted by the laboratory have been reviewed and validated. The analytical data were found to be acceptable in terms of deliverable completeness, accuracy, precision, representativeness, completeness and comparability. Data validation was performed in accordance with the most current editions of the USEPA Region II SOPs and NYSDEC ASP for organic and inorganic data review.

Analytical holding times, laboratory control sample recoveries, laboratory method blanks, MS/MSD precision and accuracy for designated spiked project samples, and surrogate recoveries associated with project samples, were considered acceptable with the following exceptions:

The samples in Work Order (WO) # 240-128064-1 (collected 3/19/20) were received at the analyzing laboratory after the holding time (HT) (i.e., 48 hrs) had expired for nitrate and nitrite. The results for nitrate and nitrite in these samples have been qualified ‘UJ’ due to the HT exceedance. The BOD5 analysis originally requested on these samples was cancelled by AECOM due to the HT exceedance.

The method blanks associated with samples MW-5B, MW-7B, MW-10B, MW-12B, and MW-18A exhibited contamination above the method detection limit (MDL), but below the quantitation limit (QL) for ethane. The ethane for the above referenced samples were qualified ‘U’ at the QL. Those sample results that were greater than the QL for ethane had the ‘B’ qualifier removed.

The trip blank (sample date 3/18/20) exhibited a detection for DCE above the MDL but less than the QL (i.e., ‘J’ value). The result for this compound in associated sample MW-14B has been qualified ‘U’ at the QL.

The sample data are considered usable and valid for their intended purpose. Those results qualified ‘J’, ‘U’, or ‘UJ’ during the data review are considered conditionally usable. A copy of the data usability summary report (DUSR) for groundwater samples is included in Appendix B.

4.0 Groundwater Monitoring Program Summary

4.1 Groundwater Elevations and Flow Directions

A summary of groundwater elevation monitoring data for the Spring 2020 annual event is provided in Table 2, including New York State Plane Coordinate System location coordinates, top of casing elevation, depth to water and calculated groundwater elevations for the monitoring wells, injection wells, and performance monitoring wells.

Figure 3 presents an overburden groundwater contour map based on the March 17, 2020 water level data. Overburden groundwater was measured at elevations between 595.56 ft AMSL (MW-3A) in the northeast portion of the Site to 585.66 ft AMSL (MW-14A) in the southwest corner of the Site. In general, groundwater flow is from northeast to southwest. Overall overburden groundwater in the central portion of the site exhibited little change in slope. Gradients and flow directions were more defined in both the northeast and southwest corners of the site.

Figure 4 presents a bedrock groundwater potentiometric surface contour map based on the March 17, 2020 water level data. Bedrock groundwater elevations ranged from 590.58 ft AMSL (MW-1B) on the southeast side of the Site to 588.80 ft AMSL (MW-4B) in the northwest corner of the Site. The general bedrock groundwater flow direction is west/southwesterly towards Hyde Park Boulevard and Rhode Island Avenue, consistent with historical observations of groundwater flow. Overall the gradient is shallow. There is a localized area of a slight groundwater mound in the central part of the site near PMW-7 (589.39 ft AMSL). MW-15 was not measured on March 17, 2020 due to health and safety concerns (traffic and road access in Hyde Park Boulevard); MW-15 was last measured during its most recent 5-year sampling event on June 14, 2018 at 587.31 ft AMSL, consistent with the west/ southwesterly gradient observed on March 17, 2020.

Downward vertical gradients were observed more commonly in overburden/bedrock well pairs in the north, east and central portions of the Site; upward vertical gradients were observed more commonly in well pairs in the south/southwest portion of the Site.

4.2 Data Summary

Groundwater samples collected during the Spring 2020 annual groundwater monitoring program were submitted to the analytical laboratory for select CVOC analysis and other parameters as discussed in Section 3.2 and as summarized on Tables 4 and 5. Field measurements for the sampling program are provided in Table 3. A summary of the Spring 2020 analytical laboratory data is provided in Table 6. Figure 5 presents select CVOC concentrations in overburden groundwater for 2000 and 2009 through 2020 and Figure 6 presents select CVOC concentrations in bedrock groundwater for the same time period. Analytical data results from monitoring well samples for the period October 2007 through March 2020 are included in Appendix C.

Comments are noted below for wells where concentrations or trends varied from recent and historical monitoring data.

4.2.1 Long-term Bioremediation Results

Figure 7 illustrates the long-term time-series plots for total CVOCs at source area and downgradient wells indicating the improvement in groundwater conditions that has occurred as the result of enhanced bioremediation activities. Source area wells MW-4A, MW-7A, MW-16A, and MW-17B exhibited mainly steady, elevated levels of total CVOCs prior to injections, followed by significant, two to three order of magnitude decreases in concentration following the injections.

Bioremediation injections from 2008 to 2013 were also intended to decrease total CVOCs in downgradient wells over time. Downgradient wells MW-11B, MW-12B, MW-14B, and MW-15 exhibited slowly decreasing levels of total CVOC concentrations prior to injections, followed by significant decreases of approximately two orders of magnitude relative to pre-2008 total CVOC concentrations (Figure 7).

4.2.2 CVOC Results

Groundwater samples from 17 monitoring wells (6 overburden and 11 bedrock) were collected and analyzed for CVOCs. Overall, concentrations of CVOCs at most of the sample locations have decreased or remained stable since 2000. Over the past few sampling events, there are select locations that have shown a slight increase from post-injection low results for TCE degradation products DCE and/or VC (MW-5B, MW-7A, MW-10B, and MW-12B). Additionally, the Spring 2020 MW-16A result for VC (a degradation product of TCE through DCE) was a historical high. The overall total CVOC reductions are due to both natural attenuation and enhanced biodegradation that included four rounds of vegetable oil substrate injections in 2008, 2009, 2011, and 2013.

Figures 8 through 15 are examples that illustrate long-term trends for six overburden and ten bedrock wells. The time-series plots typically show gradual decreasing trends in TCE and DCE, and in some cases, stable trends, followed by significant decreases in concentrations following injection events. Most of these plots show stable VC concentrations prior to the injections, followed by significant decreases after the injections, and a slight increase of DCE degradation product VC in the most recent round of sampling in the wells mentioned above.

4.2.2.1 Overburden Results

Figure 5 shows a summary of the overburden well CVOC analytical results from the Spring 2020 annual sampling program, the data from the most recent twelve previous annual sampling programs, and data from 2000 as a reference point. The results for the six overburden groundwater samples were generally consistent with previous rounds of monitoring and long-term trends. Key observations are listed below.

Overburden Source Area Wells:

The concentration of TCE at MW-7A in Spring 2020 was below groundwater standards[1] and consistent with historical post-injection concentrations. However, the concentrations of DCE, and VC at MW-7A were slightly higher than in December 2019, consistent with Spring 2020, but higher than post-injection sampling events as of April 2016 and above groundwater standards (Figures 7 and 8).

[1] NYSDEC Technical & Operational Guidance Series (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations and revisions

MW-7A is in an area that exhibited the highest CVOC concentrations in shallow groundwater prior to the first injection, and is within the area that was targeted during the emulsified vegetable oil substrate injections in 2008, 2009, 2011 and 2013. MW-7A will continue to be monitored as a part of the annual sampling program.

MW-16A was targeted in the November 2011 injection event to address VC concentrations, but only a negligible amount of substrate was injected due to low permeability of the soils. Concentrations of TCE and DCA have been below groundwater standards since 2007. DCE has been below 10 micrograms per liter (µg/L) since 2012 and was non-detect this event. VC concentration was detected at a historical high for this location (Figures 7 and 14). VC is a degradation product of TCE via DCE. MW-16A will continue to be monitored as a part of the annual sampling program.

MW-17A is an overburden well in the area of targeted bedrock injections in 2009 and 2013. The DCE concentration was lower than recent historical data for the third year in a row and TCE, VC, and DCA concentrations were consistent with recent historical data. Since 2009, TCE has been reduced to non-detect, DCE (38 µg/L) has steadily decreased to less than one-quarter the 2000 concentration (230 µg/L), while VC (78 µg/L) has increased as compared to pre-injection concentration (18 µg/L), and been relatively stable since 2013 round of injections. MW-17A will continue to be monitored as a part of the annual sampling program.

Overburden Downgradient Wells:

MW-5A, located south of the east end of the former facility building, showed sporadic increases and decreases in DCE and VC before and after substrate injections in 2009, 2011, and 2013 (Figure 9). This trend continued in Spring 2020 where concentrations of DCE, VC, and DCA increased from Fall 2019 but remained within the mid-range of the historical average (Figure 9). There appears to be a direct relationship between degradation product concentrations and water level fluctuations in MW-5A. Furthermore, there is a consistent upward hydraulic gradient between the bedrock and overburden zones at this location. MW-5A will continue to be monitored as a part of the annual sampling program.

MW-10A, located central to and south of the former facility building, showed DCE and VC concentrations similar to the previous few sampling events (Figure 10). TCE increased slightly to an estimated 7.6 µg/L, slightly above groundwater standard (5 µg/L). TCA was non-detect for the fourth consecutive round. Groundwater elevation measurements indicate an upward hydraulic gradient between MW-10A and MW-10B (from bedrock to overburden). MW-10A will continue to be monitored as a part of the annual sampling program.

MW-12A, located west of the former facility building along Hyde Park Boulevard, was found destroyed during the Fall 2019 sampling event and no sample was collected in Fall 2019 or Spring 2020. Recent historical data are presented on Figure 5 and Figure 11.

MW-18A, located east of the former facility building, showed VC and DCA below groundwater standards for the fourth consecutive event, and TCE (34 µg/L) and DCE (46 µg/L) at similar concentrations as compared to 2010 through 2019 concentrations (Figure 5). MW-18A will continue to be monitored as a part of the annual sampling program.

4.2.2.2 Bedrock Results

Figure 6 shows a summary of the bedrock well CVOC analytical results from the Spring 2020 annual sampling program, data from the most recent twelve previous annual sampling events, and data from 2000 as a reference point. Key observations are listed below.

Bedrock Source Area Wells:

Significant reductions in DCE and VC concentrations have been observed in MW-6 relative to 2000 concentrations, which were measured prior to bioremediation injections in the area of MW-7A in 2008. Since 2009, DCE has steadily decreased (85 µg/L in 2009 to 11 µg/L in 2020) and is stable compared to the last sampling event, while VC (72 µg/L in 2019) was at the upper end but within the observed range at his location and again, similar to the previous sampling event. The reduction of DCE to the current result with a generally stable VC concentration indicates natural attenuation is continuing to occur, although the rate of reduction of VC is less than that of DCE. TCE and DCA have consistently been non-detect or detected at an estimated concentration below the groundwater standard since 2000. MW-6 will continue to be monitored as a part of the annual sampling program to monitor progress of attenuation of DCE and VC.

Significant reductions in DCE and VC concentrations have been observed in MW-7B relative to 2000 concentrations, which were measured prior to bioremediation injections in the area of MW-7A in 2008. TCE, and DCA concentrations have been below groundwater standard since 2012. The DCE concentration (5.4 µg/L) was just above standard this round. The VC concentration (18 µg/L) was within the historic range and shows an increase from 2019 but is similar to Spring 2018. MW-7B will continue to be monitored as a part of the annual sampling program to monitor progress of attenuation of VC.

TCE, DCE, and VC concentrations increased at MW-16B in early 2012 and 2013 after injections were performed at overburden injection wells (INJ-6L, INJ-7 and INJ-8) in the vicinity of MW-16A in October 2011. TCE concentrations decreased in 2013 and have remained below groundwater standard since that time. DCE and VC concentrations remained elevated through 2015 and then sharply decreased in 2016, with DCE below groundwater standard and VC only slightly above groundwater standard in the five most recent monitoring events (Figure 6 and Figure 14). MW-16B will continue to be monitored as a part of the annual sampling program to monitor progress of attenuation of VC.

The TCE concentration in MW-17B has been non-detect for more than the past decade except for an estimated value in 2017 (0.68 J µg/L), and DCE was below standard in Spring 2020 (1.4 µg/L) (Figure 6). VC concentration decreased over the course of the bioremediation injections from 69 µg/L in 2000 to 0.88 µg/L in April 2016, and was 2.6 µg/L in Spring 2020. MW-17B is located within the area of the bedrock bioremediation injections performed in November 2009 and September 2013 and was the location of the highest CVOCs in bedrock prior to bioremediation activities. MW-17B will continue to be monitored as a part of the annual sampling program to monitor progress of attenuation of VC.

At MW-18B, TCE and DCA have consistently been non-detect at the reporting limit since 2009. DCE and VC concentrations have fluctuated since 2009, with historical lows occurring in October 2014 following injections at MW-18B in September 2013. DCE and VC showed increases in April 2016 and September 2017 followed by decreases through Spring 2020 (32 µg/L DCE and 51 µg/L VC) (Figure 15). MW-18B will continue to be monitored as a part of the annual sampling program to monitor progress of attenuation of DCE and VC.

MW-19B is located east of the main facility in the area remediated as part of Operable Unit 1. Concentrations of TCE and DCA have been below groundwater standards from 2012 through 2020. Concentrations of DCE and VC showed an increase relative to Fall 2019 but were less than Spring 2020. MW-19B will continue to be monitored as a part of the annual sampling program to monitor progress of attenuation of DCE and VC.

Bedrock Downgradient Wells:

At MW-5B, TCE has consistently been non-detect or detected at an estimated concentration near the reporting limit since 2000, indicating this area is not a source area for TCE. Total concentrations of DCE and VC have remained relatively constant since 2009, with a slightly decreasing trend of DCE and an increasing trend of VC indicating ongoing reductive dechlorination (Figure 9). MW-5B will continue to be monitored as a part of the annual sampling program.

At MW-10B, TCE has consistently been non-detect since 2009, indicating this area is not a source area for TCE. In addition, DCA has consistently been non-detect or detected at a concentration near the reporting limit and below groundwater standard since 2000. DCE and VC concentrations have remained relatively constant since 2009 (Figure 10). MW-10B will continue to be monitored as a part of the annual sampling program.

At downgradient location MW-12B, TCE has consistently been non-detect or detected at an estimated concentration near the reporting limit since 2000, indicating this area is not a source area for TCE. In addition, DCA has consistently been non-detect or detected at a concentration near the reporting limit and below groundwater standard since 2000. Significant reductions in DCE and VC concentrations have been observed in MW-12B relative to concentrations measured prior to bioremediation injections in the vicinity of MW-17B in 2009. Concentrations of DCE and VC increased following injections in the vicinity of MW-17B in 2013 and have remained relatively stable since (Figures 7 and 11). MW-12B will continue to be monitored as a part of the annual sampling program to monitor attenuation of DCE and VC.

Significant reductions in TCE, DCE, and VC concentrations have also been observed in downgradient well MW-14B relative to concentrations measured prior to bioremediation injections (Figures 7 and 13). Including March 2020 data, TCE, DCE, and DCA concentrations have been below groundwater standards since 2011. VC concentrations had been below groundwater standards since August 2013, except for a September 2017 VC concentration of 2.9 µg/L; VC concentration in December 2020 (1 µg/L) was below groundwater standard. It is recommended that MW-14B continue to be monitored as part of the annual sampling program to monitor for perimeter concentrations of constituents of concern.

MW-15B is currently sampled every five years. The well was last sampled on June 14, 2018. Consistent with prior results, TCE and DCA concentrations were below groundwater standard. DCE and VC concentrations increased above groundwater standards (5.2 µg/L for DCE and 16 µg/L for VC), similar to May 2010 concentrations.

4.2.3 Attenuation Monitoring Results

As part of the ongoing groundwater sampling program, natural attenuation parameters have been sampled during each monitoring event (see Table 5 and Appendix C). The results for Spring 2020 were generally consistent with previous monitoring events, with the following exceptions:

- A decrease in TOC from 2014 to 2015 was observed in wells targeted during the 2013 injections, including overburden wells MW-7A, and bedrock wells MW-16B, MW-17B, and MW-18B, with all values similar to last year's results. TOC concentrations in these wells have decreased to the point where they are near pre-injection concentrations.
- From 2014 to 2015, increases in ethene concentrations at wells MW-10B, MW-16A, and MW-16B were noted. Ethene concentrations in 2016 through 2020 for MW-10B and MW-16B are noted to be lower in each location as compared to 2015 levels; although, MW-16A increased in 2020 to 270 µg/L, and coincides with the increase in VC mentioned above. Ethene is the final degradation product of TCE, providing solid evidence of substantial biodegradation. MW-16B was an injection location in 2013, and MW-16A was an injection location in 2011, although a negligible amount of substrate was injected due to low permeability of the soils. MW-10B is located downgradient, and south of the building.
- Elevated methane concentrations (>20 mg/L) are noted in several wells, indicating an environment conducive to anaerobic biodegradation.

Overall, the environmental conditions and Site-wide long-term changes in concentrations indicate that the enhanced biodegradation program has been effective and natural attenuation is an ongoing, active process.

5.0 Conclusions and Recommendations

The following conclusions and recommendations were developed following the Spring 2020 groundwater monitoring event:

Conclusions:

CVOC concentrations have steadily declined in the overburden and bedrock groundwater over the past 20 years, with more recent substantial declines related to the 2008, 2009, 2011, and 2013 bioremediation injections.

MW-7A, located in the area of the vegetable oil substrate injections conducted in September 2008, November 2009, November 2011, and September 2013, continued to show decreased levels of CVOCs. Fluctuations in concentrations of CVOC degradation products at MW-5A appear to have a direct relationship with water level fluctuations and are consistent with historical concentrations following substrate injections. MW-16A VC and ethene results increased sharply compared to recent years. Overall, overburden groundwater CVOC concentrations in 2020 were generally consistent with the previous sampling program results.

Bedrock groundwater CVOC concentrations generally showed declines related to the previous substrate injections. Notably, CVOC concentrations decreased substantially in several downgradient bedrock monitoring wells since 2009. TCE was non-detect in all bedrock wells sampled. This trend will continue to be monitored.

Groundwater samples for natural attenuation monitoring have been collected since October 2000 and continue to indicate that natural attenuation processes are active. The results for Spring 2020 were generally consistent with recent monitoring events.

Natural anaerobic biodegradation of TCE, which was occurring at the Site prior to 2008, was substantially enhanced by the bioremediation injection program conducted over multiple years. The enhanced bioremediation injections effectively contributed to the observed decreasing concentration trends, and ongoing natural attenuation processes continue to improve groundwater quality at the Site. Additional enhanced bioremediation injections could further reduce groundwater CVOC concentrations.

Recommendations:

The annual groundwater monitoring program should be continued as currently established. At present, CVOCs within the source area and downgradient of that area have decreased as a result of remedial measures including emulsified vegetable oil substrate injections in 2008, 2009, 2011 and 2013. Terra Systems, Inc. (TSI) SRS®-SD was used for all overburden injections, SRS®-FR was used for all bedrock injections, and TSI-DC® bioaugmentation culture was used for microorganism bioaugmentation. Evaluation of targeted injections to enhance the natural attenuation process is being performed.

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Parsons, 2014. Letter to NYSDEC regarding Proposed Revision to Annual Sampling- MW-15. April 3, 2014.

Tables

Table 1
Summary of Groundwater Sampling
Spring 2020 Monitoring Event
Former Carborundum Company, Hyde Park Facility
Niagara, New York

Well ID	Date Sampled	Sample ID	Volume Purged (gallons)
MW-5A	18-Mar-20	MW-5A, FD-20200318-1[3]	2.5
MW-5B	18-Mar-10	MW-5B, MS, MSD	5.0
MW-6	19-Mar-20	MW-6	6.0
MW-7A	19-Mar-20	MW-7A	3.5
MW-7B	19-Mar-20	MW-7B	2.5
MW-10A	18-Mar-20	MW-10A	2.0
MW-10B	18-Mar-20	MW-10B	4.5
MW-12A[2]	NA	NA	NA
MW-12B	19-Mar-20	MW-12B	10.0
MW-13B	19-Mar-20	MW-13B	2.0
MW-14B	18-Mar-20	MW-14B	2.5
MW-15[1]	NA	NA	NA
MW-16A	20-Mar-20	MW-16A	4.5
MW-16B	20-Mar-20	MW-16B	2.5
MW-17A	19-Mar-20	MW-17A	2.5
MW-17B	19-Mar-20	MW-17B	5.0
MW-18A	19-Mar-20	MW-18A	4.0
MW-18B	19-Mar-20	MW-18B	6.0
MW-19B	20-Mar-20	MW-19B	11.5

Note:

(1) MW-15 is to be sampled every 5 years in accordance with NYSDEC approval on April 8, 2014, and is to be sampled next in 2023.

(2) During the Fall 2019 sampling event, it was discovered that well MW-12A well has been destroyed.

(3) FD-20200318-1 is a field duplicate of MW-5A.

MS - Matrix Spike

MSD - Matrix Spike Duplicate

NA - Not Applicable (see Notes 1 & 2)

Table 2
Water Level Measurements
Spring 2020 Monitoring Event
Former Carborundum Company, Hyde Park Facility
Niagara, New York

Well ID	Elevation Top of Casing	Easting	Northing	3/17/2020	
				Depth to Water	Groundwater Elevation
PMW-1	596.62	1028372.30	1136886.30	6.34	590.28
PMW-2	595.98	1028371.76	1136875.49	5.12	590.86
PMW-3	596.59	1028379.73	1136882.30	5.48	591.11
PMW-4	597.05	1028384.66	1136909.84	6.56	590.49
PMW-5	592.65	1028308.62	1136764.72	3.00	589.65
PMW-6	592.44	1028310.46	1136747.77	3.14	589.30
PMW-7	592.93	1028325.51	1136758.05	3.54	589.39
PMW-8	593.11	1028352.65	1136824.51	3.44	589.67
PMW-9	592.45	1028282.58	1136689.24	2.97	589.48
INJ-1	596.66	1028382.45	1136887.25	5.94	590.72
INJ-2	595.89	1028374.60	1136890.69	5.84	590.05
INJ-3	592.87	1028313.28	1136774.48	3.27	589.60
INJ-4	593.26	1028332.65	1136771.29	3.41	589.85
INJ-5U	596.08	1028365.66	1136878.92	4.42	591.66
INJ-5L	596.00	1028365.66	1136878.92	6.14	589.86
INJ-6U	596.96	1028376.98	1136868.99	4.87	592.09
INJ-6L	595.97	1028376.98	1136868.99	6.10	589.87
INJ-7	592.76	1028409.44	1136837.46	1.95	590.81
INJ-8	592.98	1028418.16	1136832.59	3.21	589.77
INJ-9	591.62	1028023.50	1136898.15	2.33	589.29
INJ-10	591.49	1028032.17	1136890.90	2.02	589.47
MW-1A	597.56	1028606.44	1136554.99	6.91	590.65
MW-1B	597.64	1028611.01	1136554.66	7.06	590.58
MW-2A	595.73	1028335.27	1136881.61	4.45	591.28
MW-2B	595.80	1028337.09	1136888.34	6.04	589.76
MW-3A	599.94	1028627.22	1136895.86	4.38	595.56
MW-3B	599.70	1028624.57	1136899.80	9.44	590.26
MW-4A	591.60	1028027.77	1136890.77	2.00	589.60
MW-4B	591.49	1028023.72	1136890.65	2.69	588.80
MW-5A	597.91	1028256.93	1136567.66	8.66	589.25
MW-5B	597.79	1028256.86	1136562.36	8.24	589.55
MW-6	595.51	1028293.24	1136889.98	5.87	589.64
MW-7A	596.59	1028379.67	1136889.32	5.81	590.78
MW-7B	596.66	1028377.01	1136884.33	6.46	590.20
MW-8	599.63	1028584.29	1136897.91	9.06	590.57
MW-10A	596.87	1028134.19	1136571.96	7.76	589.11
MW-10B	596.71	1028129.79	1136571.87	7.19	589.52
MW-11A	595.48	1027992.43	1136576.28	6.98	588.50
MW-11B	595.57	1027996.44	1136575.71	6.74	588.83
MW-12A[1]	590.79	1027887.31	1136654.88	NA	NA
MW-12B	590.89	1027886.62	1136658.22	1.36	589.53

Table 2
Water Level Measurements
Spring 2020 Monitoring Event
Former Carborundum Company, Hyde Park Facility
Niagara, New York

Well ID	Elevation Top of Casing	Easting	Northing	3/17/2020	
				Depth to Water	Groundwater Elevation
MW-13A	595.18	1028202.92	1136517.75	6.02	589.16
MW-13B	594.73	1028199.59	1136517.64	5.71	589.02
MW-14A	592.97	1027954.11	1136524.76	7.31	585.66
MW-14B	592.85	1027951.17	1136524.55	3.48	589.37
MW-15[2]	591.44	1027851.99	1136475.97	NA	NA
MW-16A	591.64	1028415.02	1136829.41	2.49	589.15
MW-16B	592.38	1028414.66	1136826.44	2.01	590.37
MW-17A	593.13	1028319.92	1136765.00	2.72	590.41
MW-17B	592.92	1028319.47	1136763.41	3.29	589.63
MW-18A	593.78	1028377.39	1136661.13	3.59	590.19
MW-18B	593.43	1028375.07	1136659.79	3.76	589.67
MW-19A	594.95	1028610.90	1136747.48	3.99	590.96
MW-19B	594.65	1028611.64	1136749.89	4.19	590.46

Note:
NA - Not Available.
1. Well MW-12A discovered destroyed during Fall 2019 sampling event.
2. MW-15 is to be sampled every 5 years in accordance with NYSDEC approval on April 8, 2014 and is to be sampled next in 2023. A water level will be obtained at that time.

Table 3
Groundwater Sampling Field Parameter Results
Spring 2020 Sampling Event
Former Carborundum Company, Hyde Park Facility
Niagara, New York

Monitoring Well ID	Sample Date	Temperature (deg C)	Specific Conductivity (mS/cm)	Dissolved Oxygen + (mg/L)	pH (standard units)	ORP (mV)	Turbidity (NTU)	Alkalinity (mg/L)	Carbon Dioxide (mg/L)	Ferrous Iron (mg/L)	Hydrogen Sulfide (mg/L)
MW-5A	3/18/2020	10.6	0.969	1.65	7.34	58.9	1.74	220	20	0.04	0.1
MW-5B	3/18/2020	10.6	1.288	2.11	8.35	-9.0	0.70	280	40	0.30	0.1
MW-6	3/19/2020	10.9	1.347	1.04	7.53	-238.8	0.52	300	35	0.05	1.0
MW-7A	3/19/2020	10.7	1.123	1.06	6.97	-223.1	6.33	580	95	0.54	5.0
MW-7B	3/19/2020	11.6	1.361	0.61	7.10	-128.0	1.78	300	30	0.00	2.0
MW-10A	3/18/2020	9.8	1.281	9.70	7.48	-40.9	0.79	280	20	0.61	0.1
MW-10B	3/18/2020	10.4	1.405	1.09	7.31	37.7	0.01	320	30	0.00	0.0
MW-12A	Well Destroyed										
MW-12B	3/19/2020	10.7	1.325	1.01	7.46	-67.5	0.34	280	25	0.00	0.3
MW-13B	3/19/2020	10.4	4.566	0.94	7.33	6.7	12.69	160	20	0.22	0.0
MW-14B	3/18/2020	10.7	3.205	1.73	7.37	-23.2	8.10	220	25	0.00	0.0
MW-16A	3/20/2020	11.7	2.687	1.50	7.72	-38.7	1.16	500	35	0.20	0.1
MW-16B	3/20/2020	12.3	1.398	0.64	7.39	-261.4	8.00	400	45	0.13	2.0
MW-17A	3/19/2020	10.6	1.061	0.60	7.37	-50.8	8.21	480	25	0.71	0.1
MW-17B	3/19/2020	11.4	1.402	3.18	6.53	-168.1	3.88	580	225	1.67	3.0
MW-18A	3/19/2020	10.0	0.995	1.60	7.51	-29.3	0.67	360	40	0.79	0.1
MW-18B	3/19/2020	11.7	1.352	0.54	7.07	-316.8	1.96	440	95	0.19	4.0
MW-19B	3/20/2020	12.4	0.965	1.40	7.44	-39.8	0.43	260	35	0.14	0.3

Notes:

- Not Measured
+ Elevated dissolved oxygen readings in some cases conflict with negative oxidation/reduction potential readings.
mS/cm - milliSiemen per centimeter
mg/L - milligram per liter
mV - millivolt
NTU - nephelometric turbidity unit
ORP - oxidation-reduction potential

Table 4
Summary of Analytical Specifications
Spring 2020 Monitoring Event
Former Carborundum Company, Hyde Park Facility
Niagara, New York

Sample Type	Container Type	Sample Volume	Preservation Method	Max. Holding Time	Analytical Method
Constituents of Concern					
Select VOCs	40 mL glass vial with septum top	3x40 mL	Hydrochloric acid, Cool 4◦C	14 days	SW846 Method 8260C
Natural Attenuation Parameters					
Methane, Ethene, Ethane, Propane,	40 mL glass vial with septum top	3x40 mL	Hydrochloric acid, Cool 4◦C	14 days	USEPA RSK175
TOC	40 mL glass vial with septum top	2x40 mL	Sulfuric acid, Cool 4°C	28 days	USEPA 5310C
BOD	1000 mL plastic	1000 mL	None, Cool 4◦C	48 hours	USEPA 5120B
COD	250 mL plastic	250 mL	Sulfuric Acid,Cool 4◦C	28 days	USEPA 410.4
Dissolved Iron	500 mL plastic	500 mL	Nitric Acid, Cool 4◦C	6 months	USEPA 6010C
Chloride, Sulfate; Nitrate, Nitrite	500 mL plastic	500 mL	None, Cool 4◦C	28 days; 48 hours	USEPA 300.0 USEPA 353.2
Sulfide	500 mL plastic	500 mL	Sodium hydroxide and zinc acetate, Cool 4◦C	7 days	Standard Method (SM) 4500-S2

Notes:

VOC - volatile organic compound
TOC - total organic carbon
BOD - biological oxygen demand
COD - chemical oxygen demand
mL - milliliter

Table 5
Sample Matrix
Spring 2020 Monitoring Event
Former Carborundum Company, Hyde Park Facility
Niagara, New York

Location	Unit	VOCs[A/] (SW8260C)	Methane, Ethane, Ethene (RSKSOP-175mod)[B/]	Propane (RSKSOP-175mod) [B/]	Chloride, Sulfate (300.0)	Total Organic Carbon (5310C)	BOD (5120B), COD (410.4)	Dissolved Iron (6010C)	Nitrate (353.2), Nitrite (353.2)	Sulfide (SM 4500-S2)	Well Head Analysis [C/]	Field Analyses (Hach kits) [D/]
Existing Site Investigation Monitoring Wells												
MW-5A	overburden	1	1	1	1	1	1	1	1	1	1	1
MW-5B	bedrock	1	1	1	1	1	1	1	1	1	1	1
MW-6	bedrock	1									1	1
MW-7A	overburden	1	1	1	1	1	1[(2)]	1	1	1	1	1
MW-7B	bedrock	1	1	1	1	1	1[(2)]	1	1	1	1	1
MW-10A	overburden	1	1	1	1	1	1	1	1	1	1	1
MW-10B	bedrock	1	1	1	1	1	1	1	1	1	1	1
MW-12A	overburden	Well Destroyed										
MW-12B	bedrock	1	1	1	1	1	1[(2)]	1	1	1	1	1
MW-13B	bedrock	1									1	1
MW-14B	bedrock	1									1	1
MW-15[(1)]	bedrock											
MW-16A	overburden	1	1	1	1	1	1	1	1	1	1	1
MW-16B	bedrock	1	1	1	1	1	1	1	1	1	1	1
MW-17A	overburden	1	1	1	1	1	1[(2)]	1	1	1	1	1
MW-17B	bedrock	1	1	1	1	1	1[(2)]	1	1	1	1	1
MW-18A	overburden	1	1	1	1	1	1[(2)]	1	1	1	1	1
MW-18B	bedrock	1	1	1	1	1	1[(2)]	1	1	1	1	1
MW-19B	bedrock	1									1	1

QA/QC

Matrix spike/matrix spike duplicate pairs and field duplicates were collected at a rate of 5%.

Name field duplicates blind, using a similar scheme but non-existent well, such as MW-190B or MW-60.

Notes:

(1) MW-15 to be sampled every 5 years as approved by DEC in April 2014. Next sample event is in 2023.

Requires permit from the Department of Transportation (DOT), Niagara County Residency (716) 438-2396.

(2) The BOD sample was received after the holding time (48hrs) had expired. The BOD analysis originally requested was cancelled.

[A/] VOCs (volatile organic compounds): tetrachloroethene, trichloroethene, cis-1,2-dichloroethene, trans-1,2- dichloroethene, 1,1-dichloroethene, 1,1-dichloroethane, 1-1-1-,trichloroethane, vinyl chloride, and chloroethane.

[B/] Analytical method for dissolved gases will be a laboratory-specific standard operating procedure (RSK-175).

[C/] Well head analyses include dissolved oxygen, oxidation-reduction potential, pH, temperature, electrical conductivity, turbidity and visual appearance.

[D/] Field analyses include alkalinity, carbon dioxide, hydrogen sulfide, and ferrous iron.

BOD - biological oxygen demand

COD - chemical oxygen demand

Table 6
Monitoring Well Groundwater Analytical Result Summary - Spring 2020
Former Carborundum Company, Hyde Park Facility
Niagara, New York

Parameter	Criteria[1]	MW-5A	MW-5B	MW-6	MW-7A	MW-7B	MW-10A	MW-10B	MW-12B	MW-13B
Valatile Organic Compounds										
PCE (µg/L)	5	5.0 U	2.0 U	1.0 U	2.0 U	1.0 U	20 U	5.0 U	2.0 U	1.0 U
TCE (µg/L)	5	0.52 J	2.0 U	1.0 U	2.0 U	1.0 U	7.6 J	5.0 U	2.0 U	1.0 U
Cis-1,2-DCE (µg/L)	5	130	26	11	50	5.4	570	210	51	1.6
Trans-1,2-DCE (µg/L)	5	1.2 J	2.0 U	1.0 U	2.0 U	1.0 U	4.4 J	5.0 U	2.0 U	1.0 U
1,1-DCE (µg/L)	5	5.0 U	2.0 U	1.0 U	2.0 U	1.0 U	20 U	5.0 U	2.0 U	1.0 U
Vinyl Chloride (µg/L)	2	180	68	72	45	18	130	23	85	2.0
1,1,1-Trichloroethane (µg/L)	5	5.0 U	2.0 U	1.0 U	2.0 U	1.0 U	20 U	5.0 U	2.0 U	1.0 U
1,1-Dichloroethane (µg/L)	5	2.5 J	2.0 U	1.0 U	59	1.0 U	20 U	5.0 U	0.41 J	1.0 U
Chloroethane (µg/L)	5	5.0 U	2.0 U	1.0 U	23	1.0 U	20 U	5.0 U	2.0 U	1.0 U
Dissolved Metals										
Dissolved Iron (mg/L)	--	0.2 U	0.37	NA	0.91	0.2 U	0.88	0.086 J	0.2 U	NA
Dissolved Gases										
Ethane (µg/L)	--	38	1.0 U	NA	80	1.0 U	2.7	1.0 U	1.0 U	NA
Ethene (µg/L)	--	47	2.9	NA	20	6.4	34	1.9	5.9	NA
Methane (µg/L)	--	2,600	160	NA	16,000 D	230	2,400	78	410	NA
Propane (µg/L)	--	0.80 J	0.65 J	NA	1.0 U	1.0 U	1.0 U	0.55 J	0.81 J	NA
Miscellaneous Parameters										
BOD (mg/L)	--	1.3 J	2.0 U	NA	NA	NA	2.0 U	2.0 U	NA	NA
COD (mg/L)	--	12	10	NA	36	11	8.3 J	12	7.3 J	NA
TOC (mg/L)	--	1.2	3.2	NA	12	3.2	1.4	3.2	3.1	NA
Chloride (mg/L)	250	130	140	NA	8	130	190	140	150	NA
Sulfate (mg/L)	250	67	220	NA	82	260	120	230	220	NA
Sulfide (mg/L)	0.05	1.0 U	1.0 U	NA	2.1	1.7	1.0 U	1.0 U	0.67 J	NA
Nitrate (mg/L)	10	0.098 J	0.50 U	NA	0.50 UJ	0.50 UJ	0.50 U	0.50 U	0.50 UJ	NA
Nitrite (mg/L)	1	0.10 U	0.10 U	NA	0.10 UJ	0.10 UJ	0.10 U	0.10 U	0.10 UJ	NA

See Page 2 of 2 for notes.

Table 6
Monitoring Well Groundwater Analytical Result Summary - Spring 2020
Former Carborundum Company, Hyde Park Facility
Niagara, New York

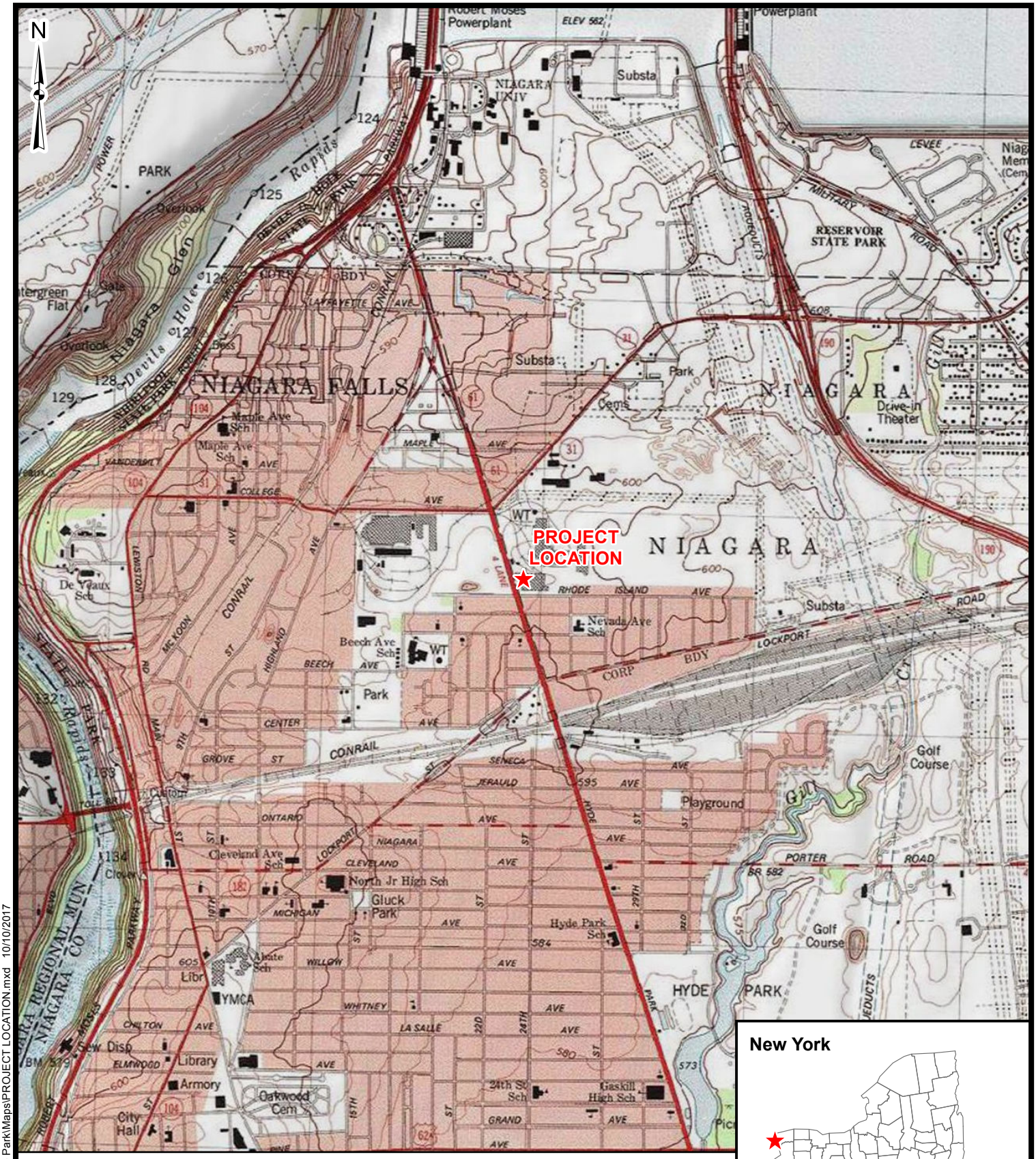
Parameter	Criteria[1]	MW-14B	MW-16A	MW-16B	MW-17A	MW-17B	MW-18A	MW-18B	MW-19B	MW-5A (Duplicate)
Valatile Organic Compounds										
PCE (µg/L)	5	1.0 U	13 U	1.0 U	2.0 U	1.0 U	2.0 U	2.0 U	1.0 U	5.0 U
TCE (µg/L)	5	1.0 U	13 U	1.0 U	2.0 U	1.0 U	34	2.0 U	1.0 U	0.52 J
Cis-1,2-DCE (µg/L)	5	1.0 U	8.7 J	0.6 J	38	1.4	46	32	11	120
Trans-1,2-DCE (µg/L)	5	1.0 U	13 U	1.0 U	2.0 U	1.0 U	0.81 J	2.0 U	1.0 U	1.2 J
1,1-DCE (µg/L)	5	1.0 U	13 U	1.0 U	2.0 U	1.0 U	0.87 J	2.0 U	1.0 U	5.0 U
Vinyl Chloride (µg/L)	2	1	560	2.9	78	2.6	1.1 J	51	2.3	180
1,1,1-Trichloroethane (µg/L)	5	1.0 U	13 U	1.0 U	2.0 U	1.0 U	2.0 U	2.0 U	1.0 U	5.0 U
1,1-Dichloroethane (µg/L)	5	0.24 J	13 U	1.0 U	12	4.5	3.7	2.0 U	1.0 U	2.4 J
Chloroethane (µg/L)	5	1.0 U	13 U	1.0 U	2.0 U	8.9	2.0 U	2.0 U	1.0 U	5.0 U
Dissolved Metals										
Dissolved Iron (mg/L)	--	NA	0.43	0.048 J	0.7	4.1	0.99	0.23	NA	0.2 U
Dissolved Gases										
Ethane (µg/L)	--	NA	3.1	1.5	17	23	1.0 U	2.5	NA	43
Ethene (µg/L)	--	NA	270	1.1	21	6.5	1.0 U	29	NA	53
Methane (µg/L)	--	NA	290	14,000 D	17,000 D	33,000 D	17	24,000 D	NA	2,800
Propane (µg/L)	--	NA	0.43 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	0.86 J
Miscellaneous Parameters										
BOD (mg/L)	--	NA	2.0 U	17	NA	NA	NA	NA	NA	2.0 U
COD (mg/L)	--	NA	17	32	7.6 J	21	4.1 J	53	NA	8.0 J
TOC (mg/L)	--	NA	6.7	3.4	2.7	5.4	1.3	7.2	NA	1.2
Chloride (mg/L)	250	NA	210	120	53	110	65	100	NA	130
Sulfate (mg/L)	250	NA	1,000	250	70	39	130	170	NA	67
Sulfide (mg/L)	0.05	NA	1.0 U	13	1.0 U	2.9	1.0 U	16	NA	1.0 U
Nitrate (mg/L)	10	NA	1.0 U	0.50 U	0.50 UJ	0.50 UJ	0.50 UJ	0.50 UJ	NA	0.10
Nitrite (mg/L)[2]	1	NA	0.10 U	0.10 U	0.10 UJ	0.10 UJ	0.10 UJ	0.10 UJ	NA	0.10 U

Notes:
(1) NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, April 2000, Glass GA.
(2) Bold concentrations exceed criteria.
J = The reported concentration is an estimated value.
J- = The reported concentration is an estmated value biased low.
D = Result reported from a secondary dilution analysis.
U = Not detected above the reporting limit.
UJ = Not detected. The reporting limit is an estimated value.
NA - Not Analyzed

µg/L - micrograms per liter
mg/L - milligrams per liter
PCE - tetrachlorethene
TCE- trichloroethene
DCE - dichloroethene

BOD - biological oxygen demand
COD - chemical oxygen demand
TOC - total organic carbon

Figures



Source: USA Topo Maps, ESRI Map Service;
1:24,000-scale USGS Topographic Map,
Lewiston, 1996
Niagara Falls, 1996

2,000 0 2,000 Feet

New York

AECOM

FORMER CARBORUNDUM COMPANY
TOWN OF NIAGARA, NEW YORK
PROJECT LOCATION PLAN

FIGURE 1

J:\Projects\60481767_BPIP\MISC\GIS\Hyde Park\Maps\PROJECT LOCATION.mxd 10/10/2017

N

PMW- 1
INJ- 2
INJ- 5L
INJ- 5U
PMW- 4
MW-7A
INJ- 1
MW- 8
MW- 3B
MW- 3A
INJ- 9
MW- 4B
INJ-10
MW- 4A
MW- 6
MW- 2B
MW- 2A
PMW- 3
PMW- 2
MW-7B
INJ- 6L
INJ- 6U
INJ- 7
INJ- 8
MW-16A
MW-16B
PMW- 8
KANTHAL-GLOBAR BUILDING
INJ- 3
MW-17A
INJ- 4
PMW- 5
MW-17B
PMW- 7
MW-19B
MW-19A
PMW- 6
BRICK
BLDG
PMW- 9
MW-18A
MW-18B
HYDE PARK BOULEVARD
MW-12B
MW-12A
MW-11A
MW-11B
MW-10B
MW-10A
MW- 5A
MW- 5B
MW- 1A
MW- 1B
RHODE ISLAND AVENUE
MW-14B
MW-14A
MW-13B
MW-13A
MW-15

Legend

- Injection Well
- Monitoring Well
- Performance Monitoring Well
- Fence Line

Source: ESRI World Imagery

60 0 60 Feet

FORMER CARBORUNDUM COMPANY
TOWN OF NIAGARA, NEW YORK
SITE PLAN

AECOM

FIGURE 2

J:\Projects\60481767_BPIPO\MtSC\GIS\Hyde Park\Maps\SITE PLAN.mxd 10/26/2017

Legend

- Injection Well
- Monitoring Well
- Monitoring Well (Destroyed)
- Performance Monitoring Well
- Groundwater Flow Direction
- Fence Line
- Groundwater Elevation Contour

Source: ESRI World Imagery

60 0 60 Feet

FORMER CARBORUNDUM COMPANY
TOWN OF NIAGARA, NEW YORK
GROUNDWATER CONTOURS
OVERBURDEN WELLS (MARCH 17, 2020)

AECOM

FIGURE 3

J:\Projects\60481767_BPIPO\MISC\GIS\Hyde Park\Maps\2020\GROUNDWATER CONTOURS - OVERBURDEN.mxd 6/17/2020

Legend

- Injection Well
- Monitoring Well
- Performance Monitoring Well
- Groundwater Flow Direction
- Fence Line
- Groundwater Elevation Contour

Source: ESRI World Imagery

60 0 60 Feet

FORMER CARBORUNDUM COMPANY
TOWN OF NIAGARA, NEW YORK
GROUNDWATER CONTOURS
BEDROCK WELLS (MARCH 17, 2020)

AECOM

FIGURE 4

C:\Hyde Park\GROUNDWATER CONTOURS - BEDROCK.mxd 4/2/2020

MW-7A	2000	Oct-09	May-10	Oct-11	Jun-12	Aug-13	Apr-14	Nov-15	Apr-16	Sep-17	Apr-18	Dec-19	Mar-20
TCE	1200	1.8 J	1 U	1 U	1.2 J	1 U	0.5 U	0.5 U	0.5 U	0.66 U	1.7 U	0.25 U	0.20 U
DCE	4800	210	65	20	3.8 J	3.9 J	3	1.5	1.9	26	46	21 J	50
VC	220	150	50	19	1 U	2.2 J	1	3.1	3.7	33	42	35 J	45
DCA	1000	49	33	22	9.1	15	12	11	12	61 J	140	69	59

MW-4A	2000	Oct-09	May-10	Oct-11	Jun-12	Aug-13	Apr-14	Nov-15	Apr-16	Sep-17	Apr-18	Dec-19	Mar-20
TCE	2.8 J	130	94	160	7.5	4.2 J	1.2	1.2	3.4	1.3	0.44 J	NS	NS
DCE	74	115.7	254.9	150	140	31	3.7	1.3	2.8	0.68 J	1.1	NS	NS
VC	45	41	45	73	20	11	4.1	1.1	1.1	2.6	0.96 J	NS	NS
DCA	4.6 J	17	21	18	5.4	1.3 J	0.5 U	1	1.4	1.4	1.8	NS	NS

MW-2A	2000	Oct-09	May-10	Oct-11	Jun-12	Aug-13	Apr-14	Nov-15	Apr-16	Sep-17	Apr-18	Dec-19	Mar-20
TCE	5 U	5 U	1 U	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DCE	1.2 J	5 U	5 U	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
VC	2 U	1.3 J	1.2 U	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DCA	13 J	26	18	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

MW-3A	2000	Oct-09	May-10	Oct-11	Jun-12	Aug-13	Apr-14	Nov-15	Apr-16	Sep-17	Apr-18	Dec-19	Mar-20
TCE	0.43 J	5 U	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DCE	1.5 J	5 U	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
VC	2 U	2 U	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DCA	5 U	5 U	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

MW-16A	2000	Oct-09	May-10	Oct-11	Jun-12	Aug-13	Apr-14	Nov-15	Apr-16	Sep-17	Apr-18	Dec-19	Mar-20
TCE	NS	5 U	1 U	1 U	1 U	1 U	0.5 U	0.5 U	0.5 U	3.3 U	0.33 U	0.6 J	1.3 U
DCE	NS	8.2	10	11	8.4	8.5	5.9	9.1	6.5	7.3 J	1.4	3.6 J	8.7 J
VC	NS	75	180	340	110	300	140	250	18	190	33	120	560
DCA	NS	5 U	1 U	1 U	1 U	1 U	0.5 U	0.5 U	0.5 U	2.5 U	0.25 U	0.68 U	2.1 U

MW-17A	2000	Oct-09	May-10	Oct-11	Jun-12	Aug-13	Apr-14	Nov-15	Apr-16	Sep-17	Apr-18	Dec-19	Mar-20
TCE	115	22	15	11	5.3	3.1 J	0.62 J	0.5 U	0.5 U	1.7 U	1.7 U	0.20 U	0.20 U
DCE	230	180	210	160	140	180	150	160	110	120	59	50	38
VC	18	25	27	30	25	45	49	86	89	120	91	83	78
DCA	59	30	20	26	21	22	16	18	15	17	11	13	12

MW-19A	2000	Oct-09	May-10	Oct-11	Jun-12	Aug-13	Apr-14	Nov-15	Apr-16	Sep-17	Apr-18	Dec-19	Mar-20
TCE	1.7 J	5 U	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DCE	33	3.7	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
VC	2 U	2.8	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DCA	5 U	5 U	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

MW-12A	2000	Oct-09	May-10	Oct-11	Jun-12	Aug-13	Apr-14	Nov-15	Apr-16	Sep-17	Apr-18	Dec-19	Mar-20
TCE	2.6 J	5 U	1 U	1 U	1 U	1 U	0.5 U	0.5 U	0.5 U	0.33 U	0.33 U	NS	NS
DCE	540	64	16	19	19	22	8.9	1.6	9.5	21	16	NS	NS
VC	49	38	16	16	13	14	6.8	9.6	8.8	13	9.2	NS	NS
DCA	5.9	2.7	1.6 J	1.8 J	1.8 J	1.9 J	0.89 J	0.7 J	1.1	1.6	0.91 J	NS	NS

MW-18A	2000	Oct-09	May-10	Oct-11	Jun-12	Aug-13	Apr-14	Nov-15	Apr-16	Sep-17	Apr-18	Dec-19	Mar-20
TCE	36	25	25	23	21	25	27	38	37	29	36	32	34
DCE	47	43	51	42	56	58	43	53	51	58	42	43	46
VC	4.4	7	2.6 J	8.4	2.4 J	3.4 J	0.86 J	2.3	0.62 J	1.8 J	1.1	0.97 J	1.1 J
DCA	5.6	4.7 J	4.2 J	4.7 J	4.2 J	4.9 J	3.6	4.7	4.3	5.0	3.7	3.6	3.7

MW-10A	2000	Oct-09	May-10	Oct-11	Jun-12	Aug-13	Apr-14	Nov-15	Apr-16	Sep-17	Apr-18	Dec-19	Mar-20
TCE	5 U	5 U	1 U	1 U	1 U	1 U	0.5 U	0.5 U	0.57 J	6.6 U	6.6 U	5 J	7.6
DCE	1200	409.4	397.6	630	620	580	560	710	960 D	590	540	500	570
VC	86	140	140	250	170	130	95	130	83	130	94	130	130
DCA	25	6.4	5.7	7.7	7	5.6	4.4	5.3	5.4	5.0 UJ	5.0 U	4.3 U	3.4 U

MW-5A	2000	Oct-09	May-10	Oct-11	Jun-12	Aug-13	Apr-14	Nov-15	Apr-16	Sep-17	Apr-18	Dec-19	Mar-20
TCE	1.3 J	5 U	1 U	1 U	1 U	1 U	0.5 U	0.5 U	0.5 U	0.66 U	4.1 U	0.47 J	0.52 J
DCE	320	5.9	110.97	5.7	88	110	240	150	340 D	61	250	10	130
VC	42	1.8	84	3.3 J	82	190	300	140	340 D	68	310	13	180
DCA	2.1 J	5 U	1 U	1 U	1 U	1.3 U	3.3	1.4	4.2	0.88 J	3.3 J	0.17 J	2.5 J

MW-11A	2000	Oct-09	May-10	Oct-11	Jun-12	Aug-13	Apr-14	Nov-15	Apr-16	Sep-17	Apr-18	Dec-19	Mar-20
TCE	5 U	5 U	1 U	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DCE	1.3 J	5 U	1.9 J	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
VC	2 U	2 U	3.2 J	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DCA	5 U	5 U	1 U	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

MW-1A	2000	Oct-09	May-10	Oct-11	Jun-12	Aug-13	Apr-14	Nov-15	Apr-16	Sep-17	Apr-18	Dec-19	Mar-20
TCE	5 U	1 U	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DCE	2.4 J	1 U	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
VC	0.44 J	1 U	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DCA	5 UJ	1 U	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

MW-13A	2000	Oct-09	May-10	Oct-11	Jun-12	Aug-13	Apr-14	Nov-15	Apr-16	Sep-17	Apr-18	Dec-19	Mar-20
TCE	5 U	5 U	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DCE	5 U	5 U	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
VC	2 U	2 U	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DCA	5 U	5 U	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

MW-14A	2000	Oct-09	May-10	Oct-11	Jun-12	Aug-13	Apr-14	Nov-15	Apr-16	Sep-17	Apr-18	Dec-19	Mar-20
TCE	5 U	5 U	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DCE	1.6 J	1.4	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
VC	0.37 J	2.7	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DCA	5 U	5 U	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Legend

- Monitoring Well
- Fence Line

LOCATION ID — DATE

MW-1A	2000
TCE	5 U
DCE	2.4 J
VC	0.44 J
DCA	5 UJ

TRICHLOROETHENE
CIS 1,2-DICHLOROETHENE
VINYL CHLORIDE
1,1 DICHLOROETHANE
RESULT

Notes:
1. Units are shown in µg/L
2. NS = Not Sampled
3. D = Result reported from a secondary dilution analysis.
4. J = The reported concentration is an estimated value.
5. U = Not detected above the reported method detection limit.
6. UJ = Not detected. The reported method detection limit is an estimated value.
7. Monitoring well MW-12A was found destroyed in December 2019.

Source: ESRI World Imagery

60 0 60 Feet

FORMER CARBORUNDUM COMPANY TOWN OF NIAGARA, NEW YORK VOC CONCENTRATIONS IN OVERBURDEN GROUNDWATER (2000 - 2020)

AECOM

FIGURE 5

J:\Projects\60481767_BPIPOMISC\GIS\Hyde Park\Maps\2020\GROUNDWATER VOC - OVERBURDEN.mxd 6/17/2020

MW-6	2000	Oct-09	May-10	Oct-11	Jun-12	Aug-13	Apr-14	Nov-15	Apr-16	Sep-17	Apr-18	Dec-19	Mar-20
TCE	5 U	5 U	1 U	1 U	1 U	1 U	0.5 U	0.5 U	0.5 U	1.7 U	0.33 U	0.10 U	0.10 U
DCE	560	85	39	33	30	24	18	20	18	16	12	10	11
VC	91	69	48	57	47	42	39	57	59	79	48	78	72
DCA	0.28 J	5 U	1 U	1 U	1 U	1 U	0.5 U	0.5 U	0.5 U	1.3 U	0.25 U	0.17 U	0.17 U

MW-7B	2000	Oct-09	May-10	Oct-11	Jun-12	Aug-13	Apr-14	Nov-15	Apr-16	Sep-17	Apr-17	Dec-19	Mar-20
TCE	5 U	1 U	1 U	1 U	1 U	1 U	0.5 U	0.5 U	0.5 U	0.33 U	0.33 U	0.10 U	0.10 U
DCE	84	7.3	4.5 J	6	1.6 J	1.2 J	0.5 U	1.2	0.82 J	2.2	2.2	1.3	5.4
VC	39	24	31	25	9.2	75	5.5	6.1	10	18	17	10	18
DCA	5 U	1 U	1 U	1 U	1 U	1 U	0.5 U	0.5 U	0.5 U	0.25 U	0.25 U	0.17 U	0.17 U

MW-3B	2000	Oct-09	May-10	Oct-11	Jun-12	Aug-13	Apr-14	Nov-15	Apr-16	Sep-17	Apr-18	Dec-19	Mar-20
TCE	5 U	5 U	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DCE	4.8 J	1.5	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
VC	2.3	2.9	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DCA	5	5 U	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

MW-4B	2000	Oct-09	May-10	Oct-11	Jun-12	Aug-13	Apr-14	Nov-15	Apr-16	Sep-17	Apr-18	Dec-19	Mar-20
TCE	3.2 J	5 U	1 U	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DCE	39	9.7	2.8	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
VC	35	9.5	12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DCA	3.2 J	5 U	1 U	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

MW-2B	2000	Oct-09	May-10	Oct-11	Jun-12	Aug-13	Apr-14	Nov-15	Apr-16	Sep-17	Apr-18	Dec-19	Mar-20
TCE	0.44 J	5 U	1 U	1 U	1 U	1 U	0.5 U	0.5 U	0.5 U	0.33 U	0.33 U	NS	NS
DCE	260	9.1	3.7 J	1.8 J	2.7 J	2.3 J	1	0.87 J	0.95 J	0.77 J	1.3	NS	NS
VC	92	16	7.6 J	2.6 J	8.6	4 J	2.2	3.4	2.2	1.8	2.6	NS	NS
DCA	5 UJ	5 U	1 U	1 U	1 U	1 U	0.92 J	0.65 J	0.96 J	0.50 J	0.25 U	NS	NS

MW-8	2000	Oct-09	May-10	Oct-11	Jun-12	Aug-13	Apr-14	Nov-15	Apr-16	Sep-17	Apr-18	Dec-19	Mar-20
TCE	5 U	5 U	1 U	1 U	1 U	1 U	0.5 U	0.5 U	0.5 U	0.33 U	0.33 U	NS	NS
DCE	5.55	2.1	2.3	1.9 J	1.6 J	1.7 J	1.6	1.7	1.9	1.7	1.9	NS	NS
VC	1.9 J	2.6	2.2	2.1 J	1.1 J	1.8 J	1.5	1.9	1.8	1.4	1.6	NS	NS
DCA	5 U	5 U	1 U	1 U	1 U	1 U	0.5 U	0.5 U	0.5 U	0.25 U	0.25 U	NS	NS

MW-17B	2000	Oct-09	May-10	Oct-11	Jun-12	Aug-13	Apr-14	Nov-15	Apr-16	Sep-17	Apr-18	Dec-19	Mar-20
TCE	22	3.1 J	1 U	1 U	1 U	1 U	0.5 U	0.5 U	0.5 U	0.68 J	0.33 U	0.10 U	0.10 U
DCE	1000	280	8.5	19	20	35	1.3	0.5 U	0.5 U	10	4.9	11	1.4
VC	69	69	9.6	27	18	40	2.1	0.8 J	0.88 J	12	7.9	14	2.6
DCA	5.4	26	45	48	43	38	8.2	1.5	1.7	6.3 J	4.5	4.3	4.5

MW-16B	2000	Oct-09	May-10	Oct-11	Jun-12	Aug-13	Apr-14	Nov-15	Apr-16	Sep-17	Apr-18	Dec-19	Mar-20
TCE	0.97 J	5 U	1 U	1 U	74	2.2 J	2.5 U	4.8	0.5 U	0.33 U	0.33 U	0.10 U	0.10 U
DCE	130	511.8	81	27	4700	600	2300	1100	0.5 U	0.30 U	0.63 J	1	0.60 J
VC	35	130	48	43	600	610	2000	780	4.3	2.6	4.6	6.7	2.9
DCA	5 U	5 U	1 U	1 U	4 J	1 J	3.4 J	6.6	2	0.39 J	0.25 U	0.17 U	0.17 U

MW-19B	2000	Oct-09	May-10	Oct-11	Jun-12	Aug-13	Apr-14	Nov-15	Apr-16	Sep-17	Apr-18	Dec-19	Mar-20
TCE	2.4 J	5 U	1 U	1 U	1 U	1 U	0.5 U	0.5 U	0.5 U	0.33 U	0.33 U	0.10 U	0.10 U
DCE	41	68	2.1	8.7	2.3 J	2.1 J	2.9	1.8	1.1	1.6	24	1.4	11
VC	6.3	7.2	2.1 J	3.3 J	1.6 J	1.2 J	0.65 J	1	1.1	1.5	5.0	1.2	2.3
DCA	5 U	5 U	1 U	1 U	1 U	1 U	0.5 U	0.5 U	0.5 U	0.25 UJ	0.25 U	0.17 U	0.17 U

MW-12B	2000	Oct-09	May-10	Oct-11	Jun-12	Aug-13	Apr-14	Nov-15	Apr-16	Sep-17	Apr-18	Dec-19	Mar-20
TCE	5 U	5 U	1 U	1 U	1 U	1 U	0.5 U	0.5 U	0.5 U	0.66 U	0.83 U	0.25 U	0.20 U
DCE	210	2.6	11	0.98 J	5.6	43	57	13	73	52	62	65	51
VC	77	2 U	1 U	1 U	10	73	75	9.1	59	110	73	94	85
DCA	2.3 J	5 U	1 U	1 U	1 U	1 U	0.5 U	0.5 U	0.5 U	0.66 J	0.63 U	0.43 U	0.41 J

MW-18B	2000	Oct-09	May-10	Oct-11	Jun-12	Aug-13	Apr-14	Nov-15	Apr-16	Sep-17	Apr-18	Dec-19	Mar-20
TCE	7.7	5 U	1 U	1 U	1 U	1 U	0.5 U	0.5 U	0.5 U	6.6 U	0.83 U	0.20 U	0.20 U
DCE	690	62	69	150	110	120	43	35	90	380	69	56	32
VC	90	220	190	220	140	190	71	40	120	210	92	70	51
DCA	5 U	5 U	1 U	1 U	1 U	1 U	0.5 U	0.5 U	0.5 U	5.0 UJ	0.63 U	0.34 U	0.34 U

MW-11B	2000	Oct-09	May-10	Oct-11	Jun-12	Aug-13	Apr-14	Nov-15	Apr-16	Sep-17	Apr-18	Dec-19	Mar-20
TCE	5 U	1 U	1 U	1 U	1 U	0.8 U	0.5 U	0.56 J	0.54 J	1.1	0.65 J	NS	NS
DCE	590	56	1.9 J	2.2 J	1 U	0.8 U	0.5 U	0.56 J	0.54 J	1.1	0.65 J	NS	NS
VC	81	48	7.4	4.6 J	6.1	1.4 J	1.2	1.7	9.7	6.5	1.9	NS	NS
DCA	3.5 J	U	1.3 J	1.8 J	1.4 J	1.9 J	2	1	1.7	0.95 J	1.9	NS	NS

MW-10B	2000	Oct-09	May-10	Oct-11	Jun-12	Aug-13	Apr-14	Nov-15	Apr-16	Sep-17	Apr-18	Dec-19	Mar-20
TCE	68	1 U	1 U	2 U	1 U	1 U	0.5 U	0.5 U	0.5 U	3.3 U	2.6 U	2.0 U	0.50 U
DCE	1800	370	220	960	280	230	190	190	220	360	210	420	210
VC	95	150	83	180	110	120	22	190	6.1	270	12	180	23
DCA	1.2 J	1 U	1 U	2 U	1 U	1 U	0.5 U	0.9 J	0.59 J	2.5 UJ	2.0 U	3.4 U	0.85 U

MW-5B	2000	Oct-09	May-10	Oct-11	Jun-12	Aug-13	Apr-14	Nov-15	Apr-16	Sep-17	Apr-18	Dec-19	Mar-20
TCE	2.6 J	5 U	1.1 J	1 U	1 U	1 U	0.97 J	0.58 J	0.5 U	1.7 U	0.33 U	0.20 U	0.20 U
DCE	420	39	36	48	33	32	19	34	32	36	32	32	26
VC	45	37	39	63	34	44	33	63	71	91	78	90	68
DCA	1.1 J	5 U	1 U	1 U	1 U	1 U	0.5 U	0.5 U	0.5 U	1.3 U	0.30 J	0.34 U	0.34 U

MW-14B	2000	Oct-09	May-10	Oct-11	Jun-12	Aug-13	Apr-14	Nov-15	Apr-16	Sep-17	Apr-18	Dec-19	Mar-20
TCE	5 U	5 U	1 U	1 U	1 U	1 U	0.5 U	0.5 U	0.5 U	0.33 U	0.33 U	0.10 U	0.10 U
DCE	300	64	16	4.1 J	1.5 J	0.8 U	0.67 J	0.95 J	0.94 J	0.92 J	0.72 J	0.37 J	1.0 U
VC	110	86	33	5.4	5.4	1.5 J	1.2	1.5	1.2	2.9	1.3	0.7 J	1.0
DCA	0.61 J	5 U	1 U	1 U	1 U	1 U	0.5 U	0.53 J	0.5 U	0.43 J	0.34 J	0.19 J	0.24 J

MW-1B	2000	Oct-09	May-10	Oct-11	Jun-12	Aug-13	Apr-14	Nov-15	Apr-16	Sep-17	Apr-18	Dec-19	Mar-20
TCE	5 U	1 U	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DCE	4.7 J	0.8	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
VC	3.8	1.7	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DCA	1.5 J	1 U	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

MW-15	2000	Oct-09	May-10	Oct-11	Jun-12	Aug-13	Apr-14	Nov-15	Apr-16	Sep-17	Apr-18	Dec-19	Mar-20
TCE	5 U	5 U	1 U	1 U	1 U	1 U	NS	NS	NS	NS	0.10 UJ	NS	NS
DCE	400	57.1	5.9	32	0.8 U	0.8 U	NS	NS	NS	NS	5.2	NS	NS
VC	120	82	17	52	1.8 J	2 J	NS	NS	NS	NS	16	NS	NS
DCA	0.95 J	2	1.3 J	1.4 J	1.2 J	1 U	NS	NS	NS	NS	1.1	NS	NS

MW-13B	2000	Oct-09	May-10	Oct-11	Jun-12	Aug-13	Apr-14	Nov-15	Apr-16	Sep-17	Apr-18	Dec-19	Mar-20
TCE	12	5 U	1 U	1 U	1 U	1 U	0.5 U	0.5 U	0.5 U	0.33 U	0.33 U	0.19 J	0.10 U
DCE	310	88	46	17	27	8.6	19	18	9.9	22	7.8	16	1.6
VC	40	68	47	24	57	48	15	21	12	38	9.7	21	2.0
DCA	0.91 J	5 U	1 U	1 U	1 U	1 U	0.5 U	0.5 U	0.5 U	0.25 UJ	0.25 U	0.17 J	0.17 U

KANTHAL-GLOBAR BUILDING

BRICK BLDG

HYDE PARK BOULEVARD

RHODE ISLAND AVENUE

Legend

- Monitoring Well
- Fence Line

LOCATION ID — MW-1B | DATE — 2000

TRICHLOROETHENE	TCE 5 U
CIS 1,2-DICHLOROETHENE	DCE 4.7 J
VINYL CHLORIDE	VC 3.8
1,1 DICHLOROETHANE	DCA 1.5 J

RESULT

Notes:
1. Units are shown in µg/L
2. NS = Not Sampled
3. D = Result reported from a secondary dilution analysis.
4. J = The reported concentration is an estimated value.
5. U = Not detected above the reported method detection limit.
6. UJ = Not detected. The reported method detection limit is an estimated value.

Source: ESRI World Imagery

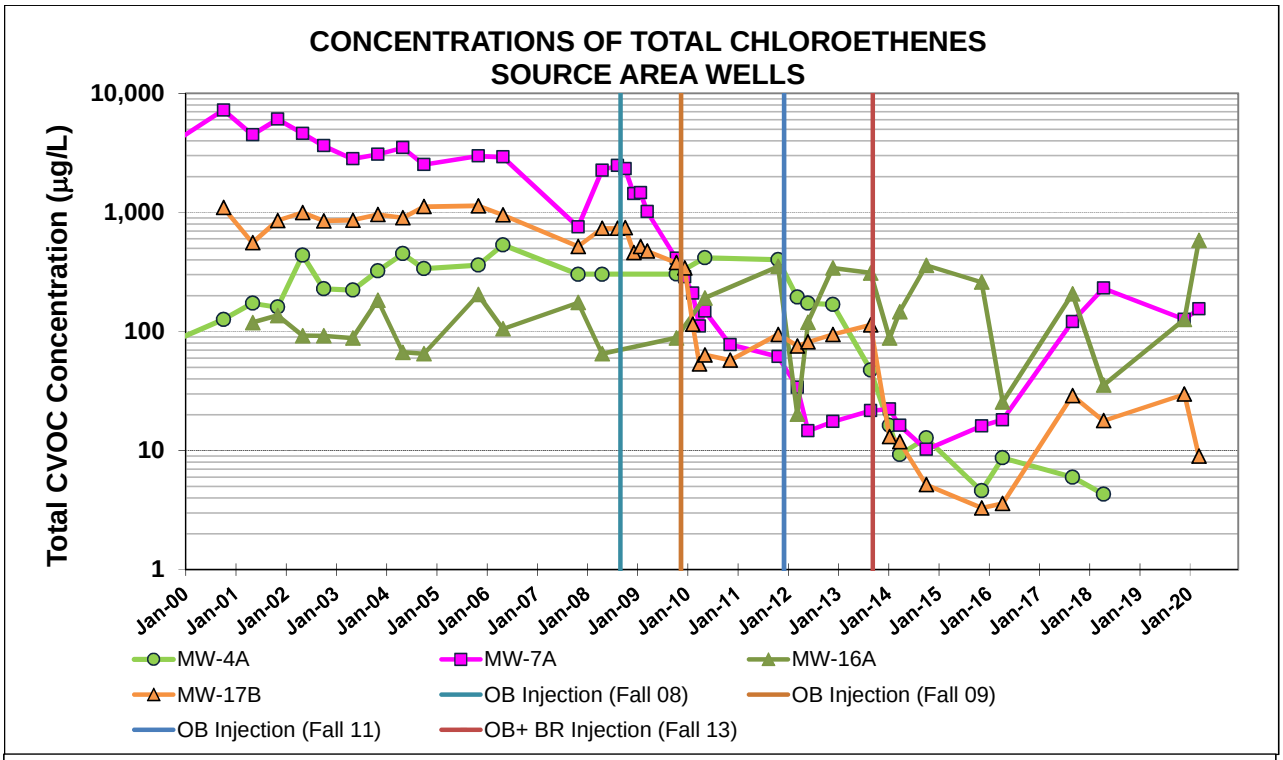
60 0 60 Feet

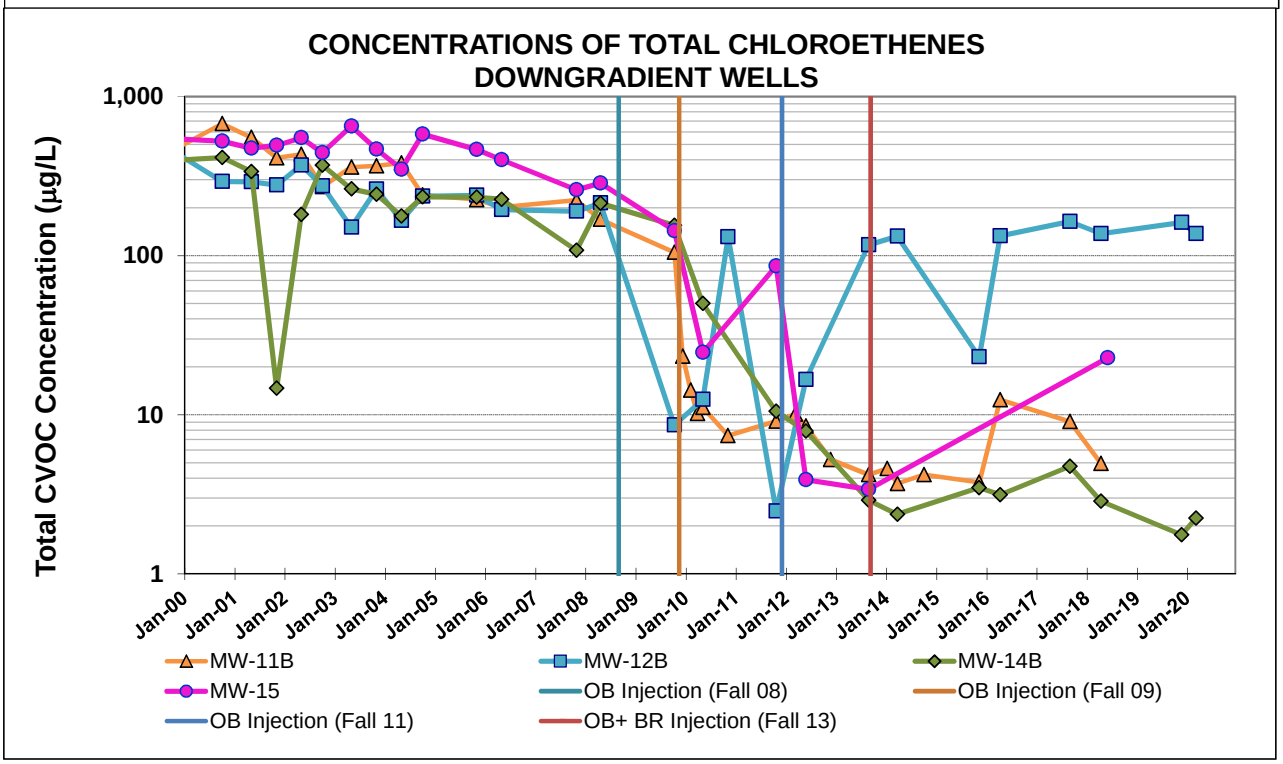
FORMER CARBORUNDUM COMPANY
TOWN OF NIAGARA, NEW YORK
VOC CONCENTRATIONS IN BEDROCK GROUNDWATER
(2000 - 2020)

AECOM

FIGURE 6

J:\Projects\60481767_BPIPO\MISC\GIS\Hyde Park\Maps\2020\GROUNDWATER VOC - BEDROCK.mxd 6/17/2020





Note:
Total CVOC Concentration is the sum of TCE, cis-1,2-DCE, VC, and DCA concentrations.

FIGURE 7

FORMER CARBORUNDUM COMPANY

LONG TERM TRENDS OF TOTAL CHLORINATED ETHENES IN SOURCE AREA AND DOWNGRADIENT WELLS

AECOM

257 West Genesee Street, Buffalo, NY 14202

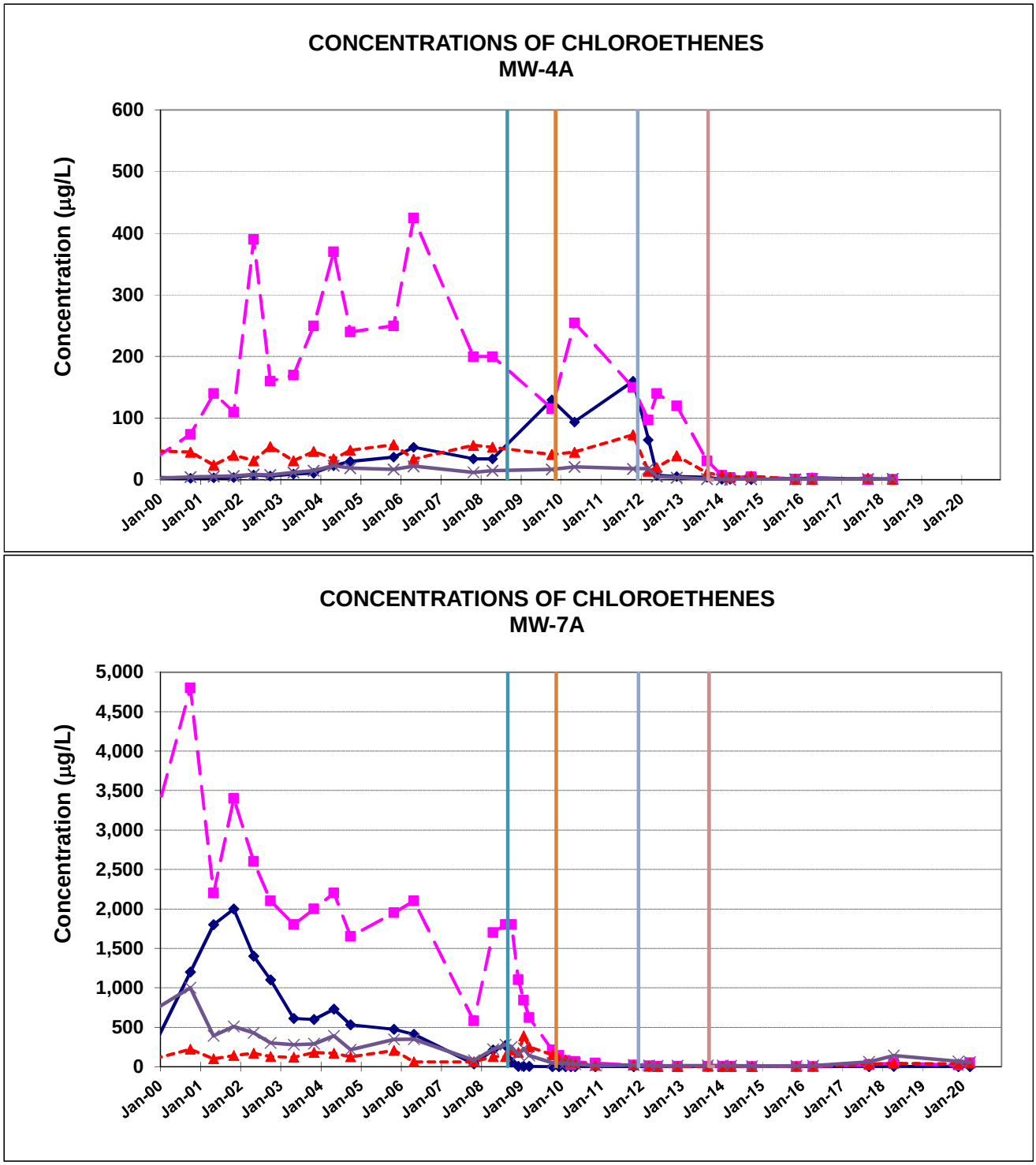


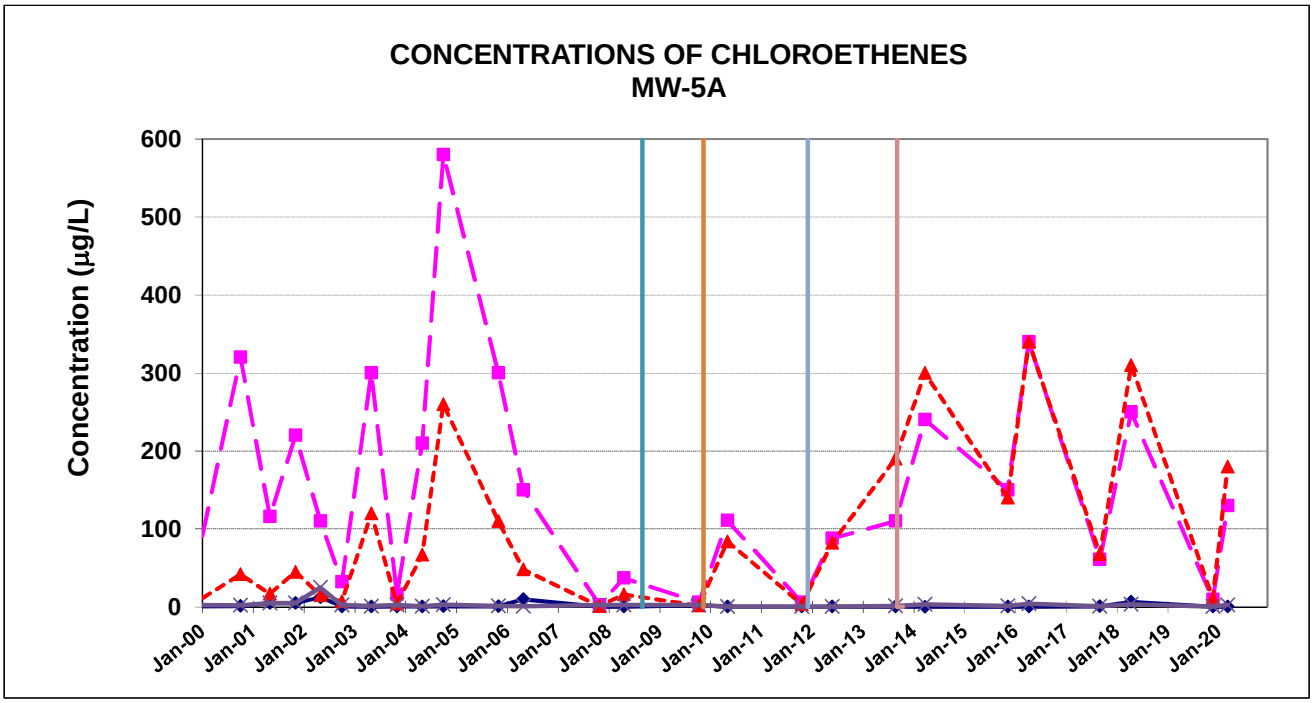
FIGURE 8

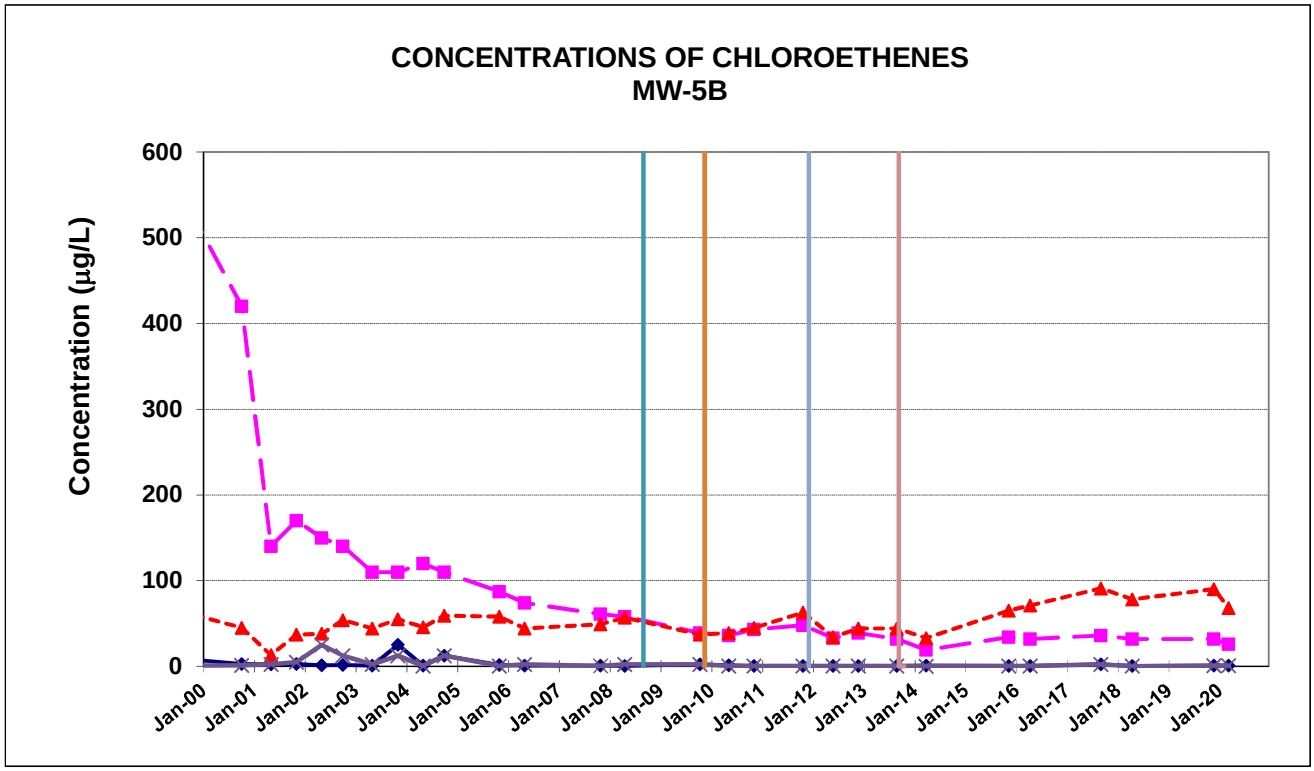
FORMER CARBORUNDUM COMPANY

LONG TERM TRENDS OF CHLORINATED ETHENES IN WELLS MW-4A AND MW-7A

AECOM

257 West Genesee Street, Buffalo, NY 14202





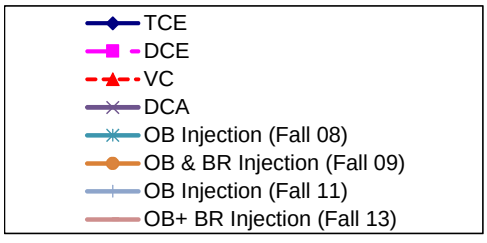


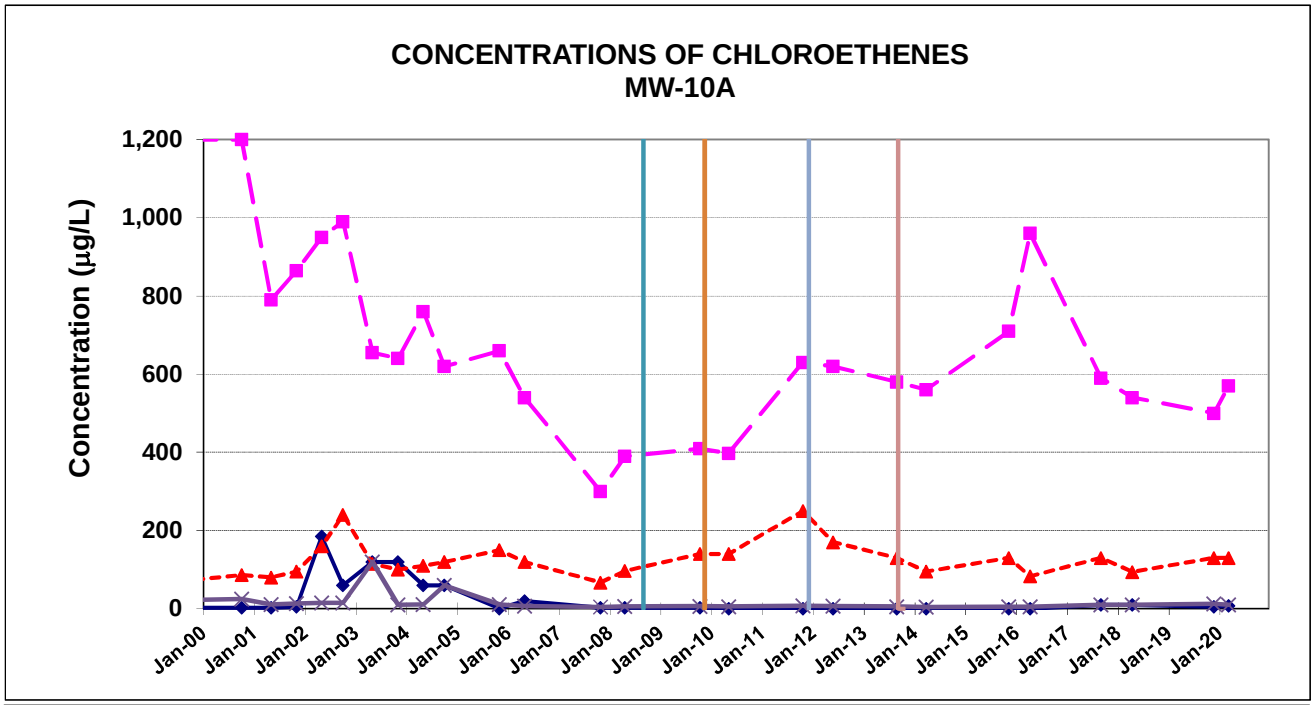
FIGURE 9

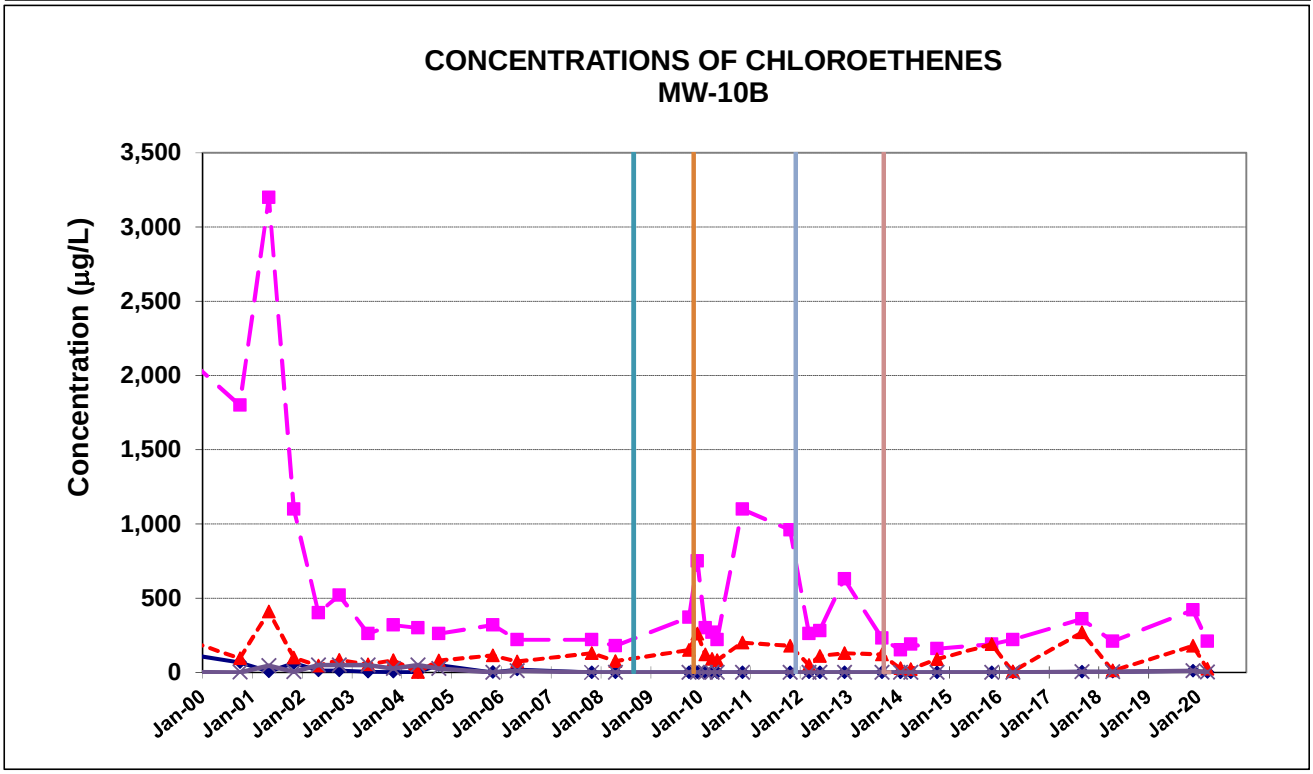
FORMER CARBORUNDUM COMPANY

LONG TERM TRENDS OF CHLORINATED ETHENES IN WELLS MW-5A AND MW-5B

AECOM

257 West Genesee Street, Buffalo, NY 14202





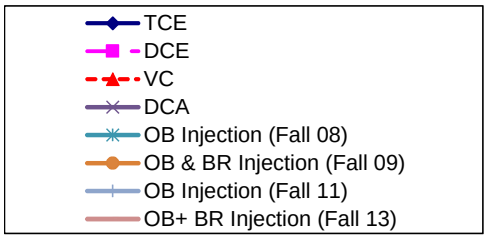


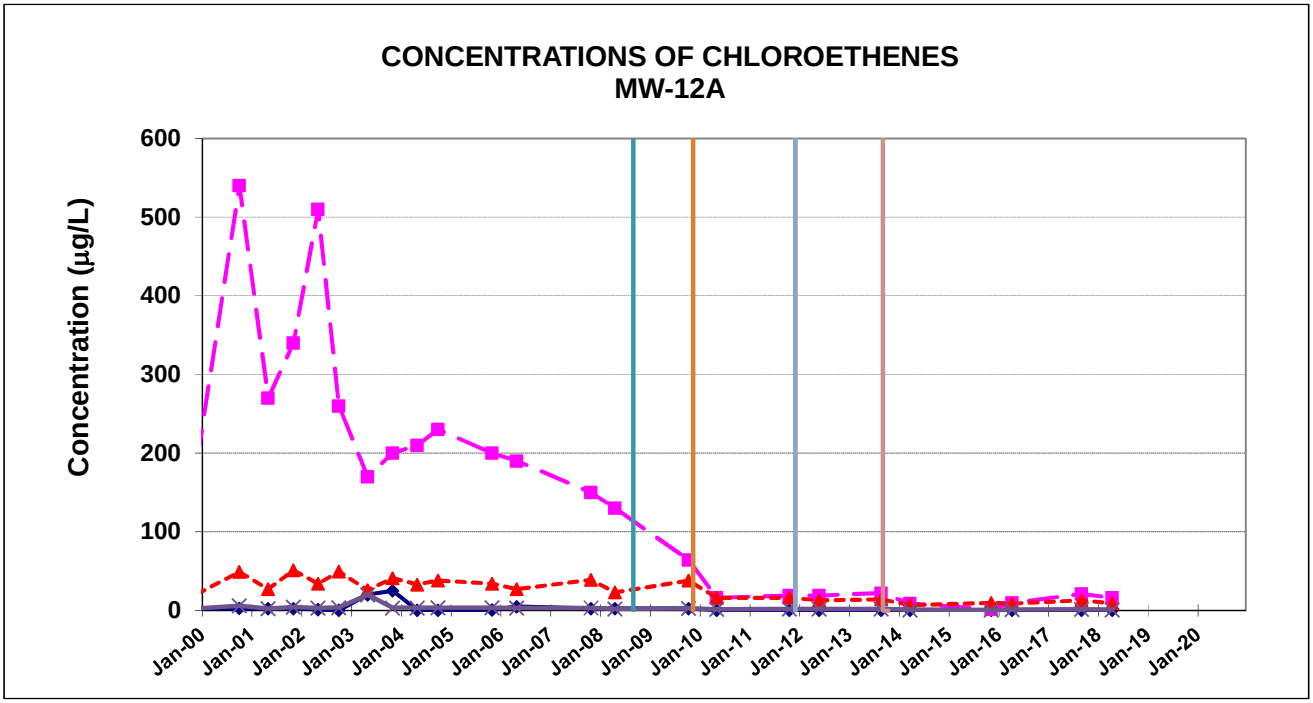
FIGURE 10

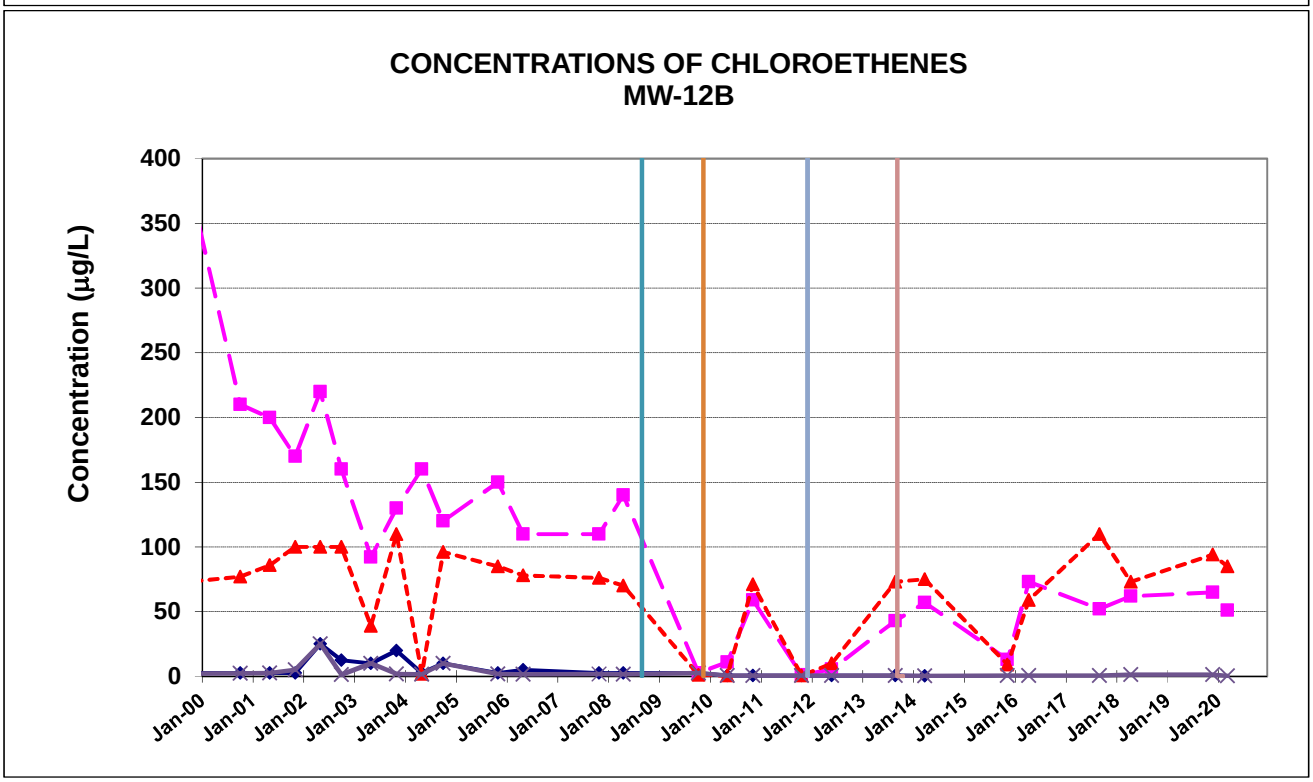
FORMER CARBORUNDUM COMPANY

LONG TERM TRENDS OF CHLORINATED ETHENES IN WELLS MW-10A AND MW-10B

AECOM

257 West Genesee Street, Buffalo, NY 14202





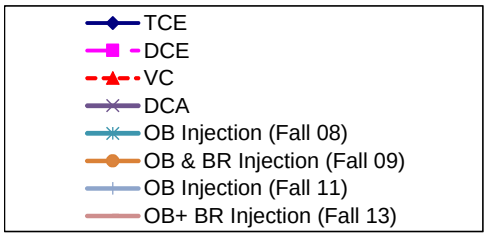


FIGURE 11

FORMER CARBORUNDUM COMPANY

LONG TERM TRENDS OF CHLORINATED ETHENES IN WELLS MW-12A AND MW-12B

AECOM

257 West Genesee Street, Buffalo, NY 14202

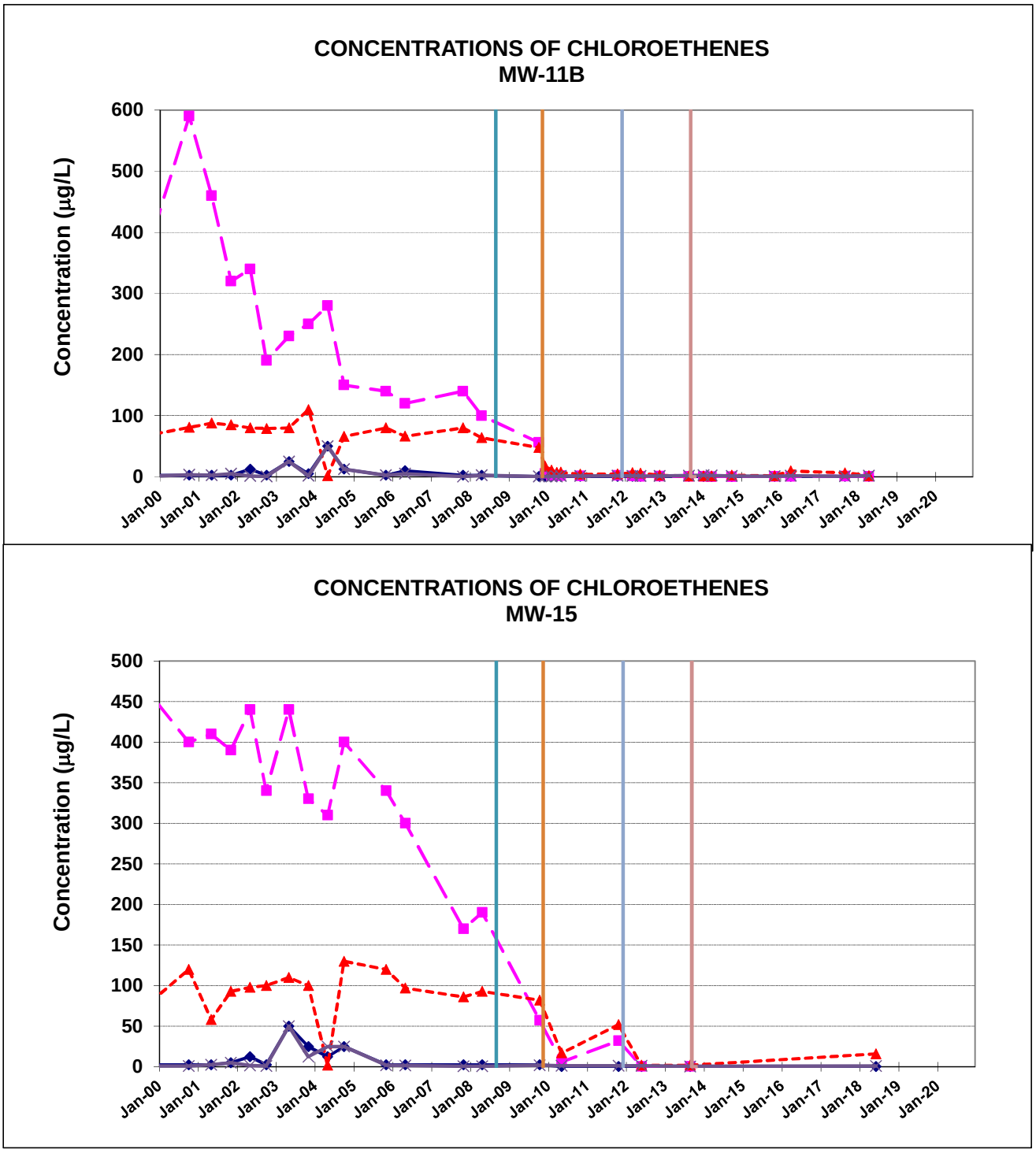


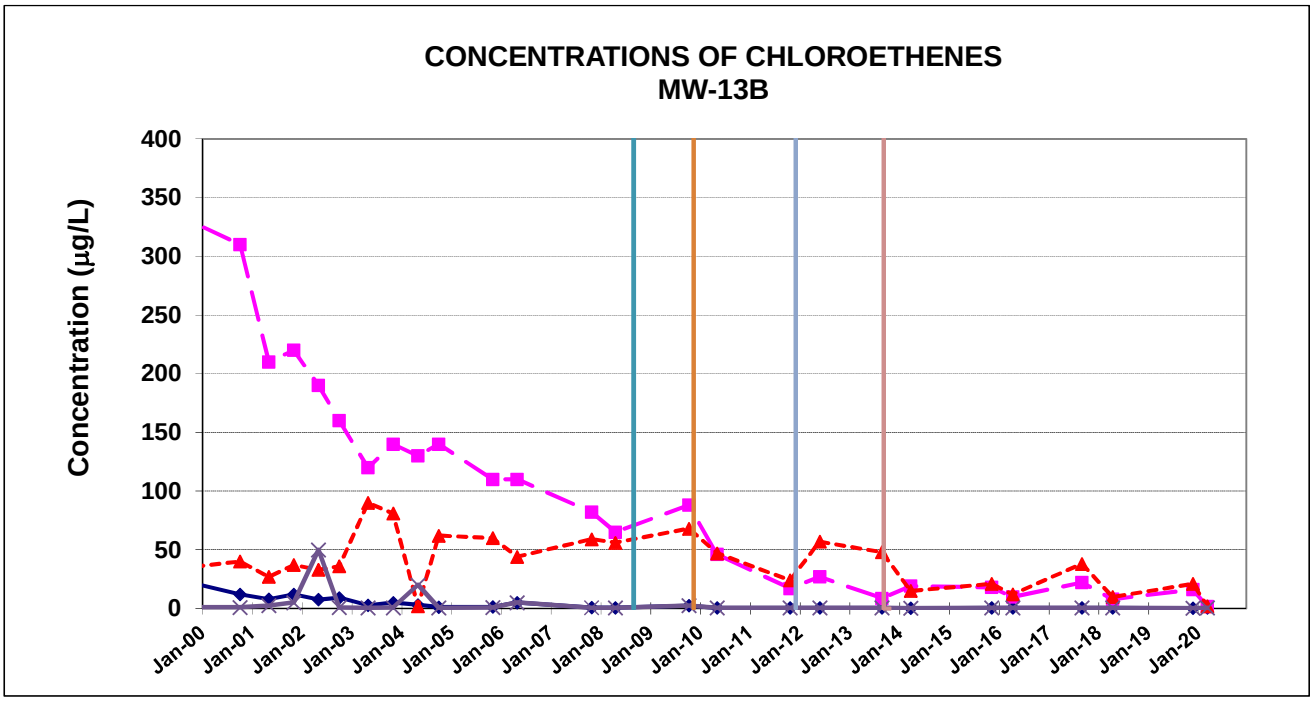
FIGURE 12

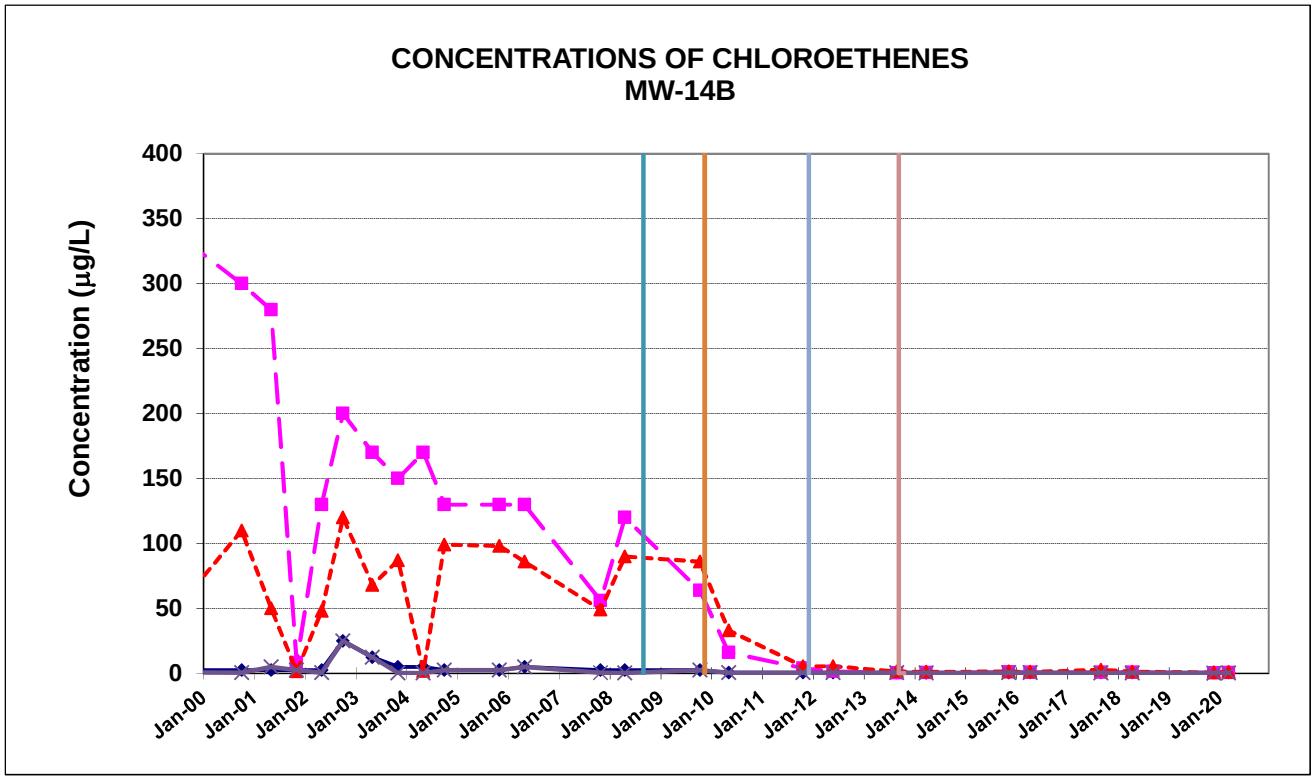
FORMER CARBORUNDUM COMPANY

LONG TERM TRENDS OF CHLORINATED ETHENES IN WELLS MW-11B AND MW-15

AECOM

257 West Genesee Street, Buffalo, NY 14202





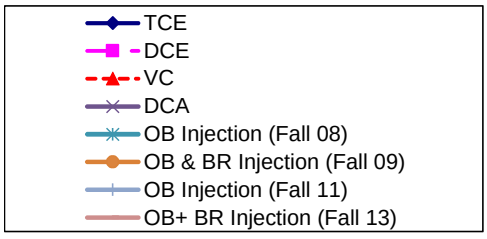


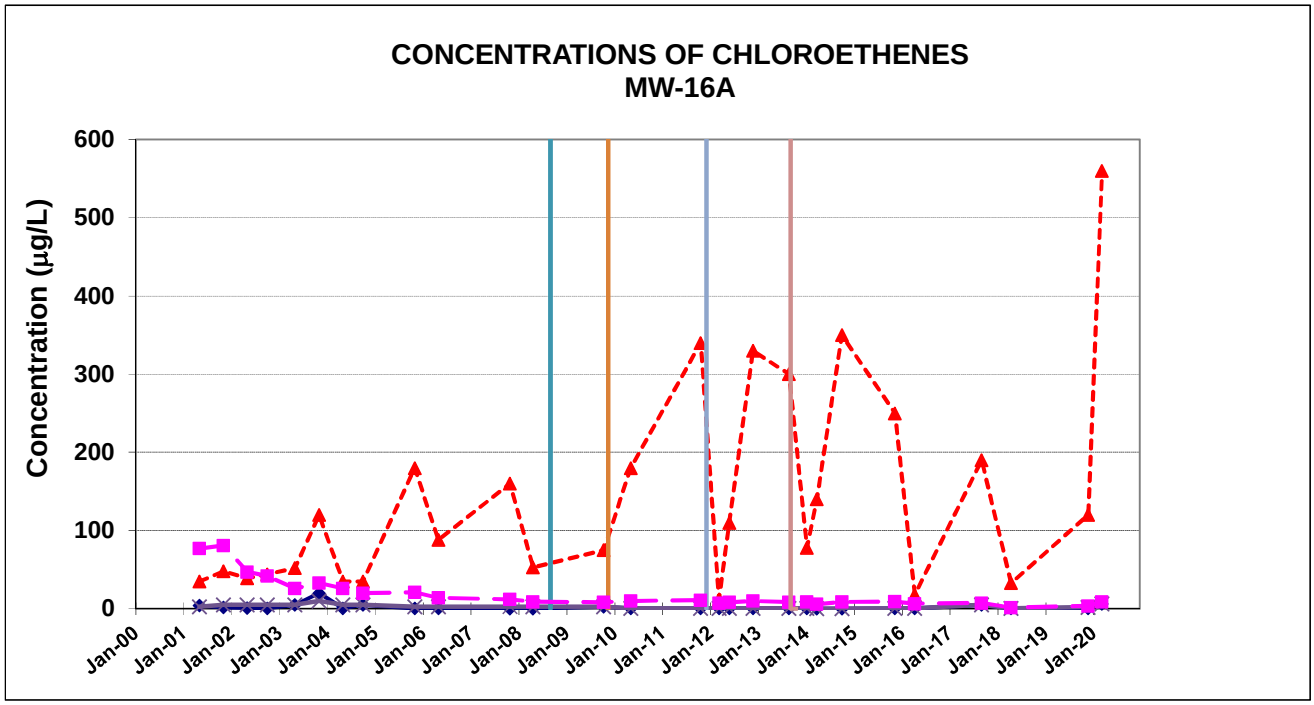
FIGURE 13

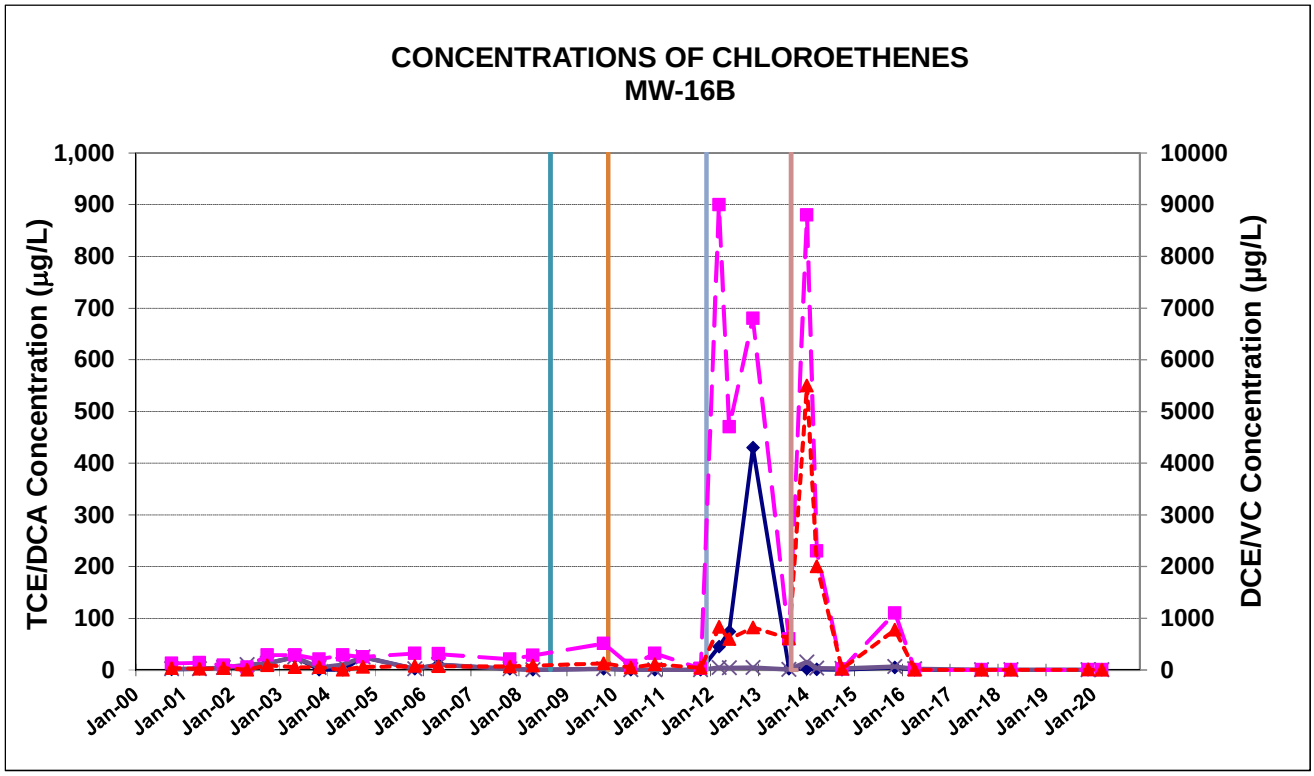
FORMER CARBORUNDUM COMPANY

LONG TERM TRENDS OF CHLORINATED ETHENES IN WELLS MW-13B AND MW-14B

AECOM

257 West Genesee Street, Buffalo, NY 14202





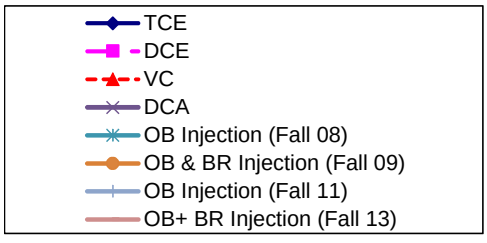


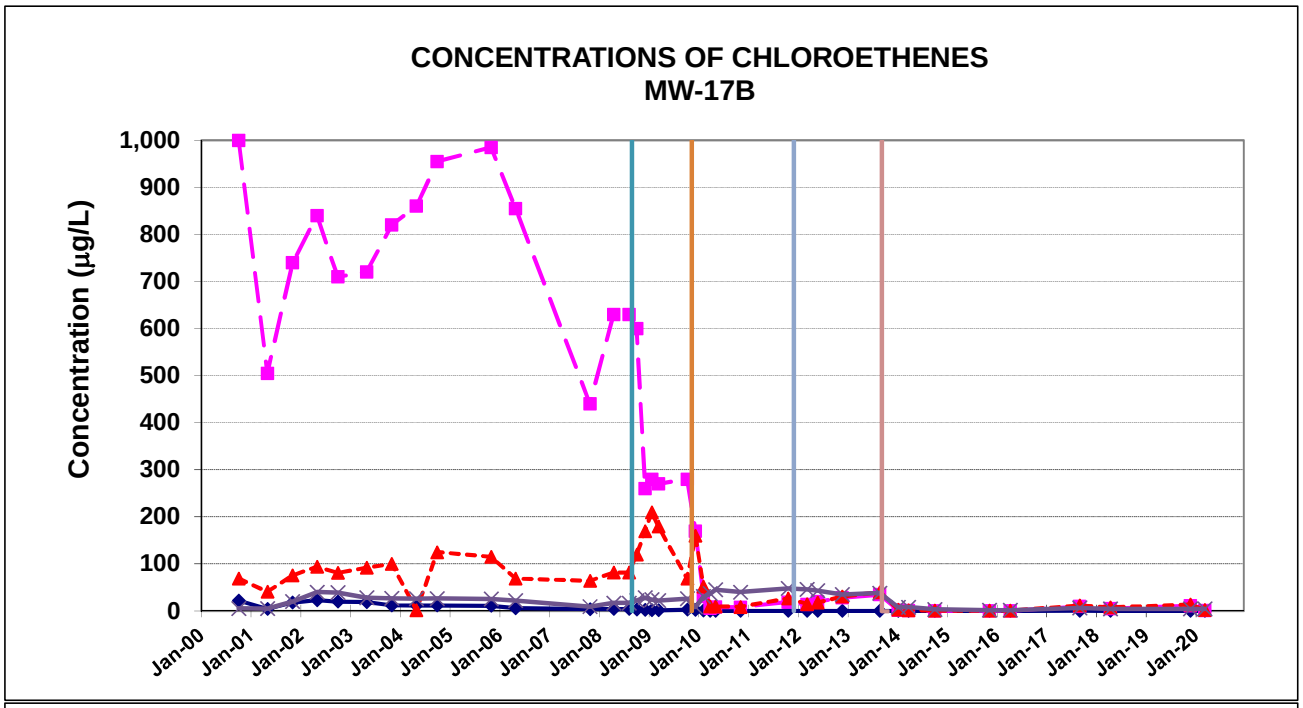
FIGURE 14

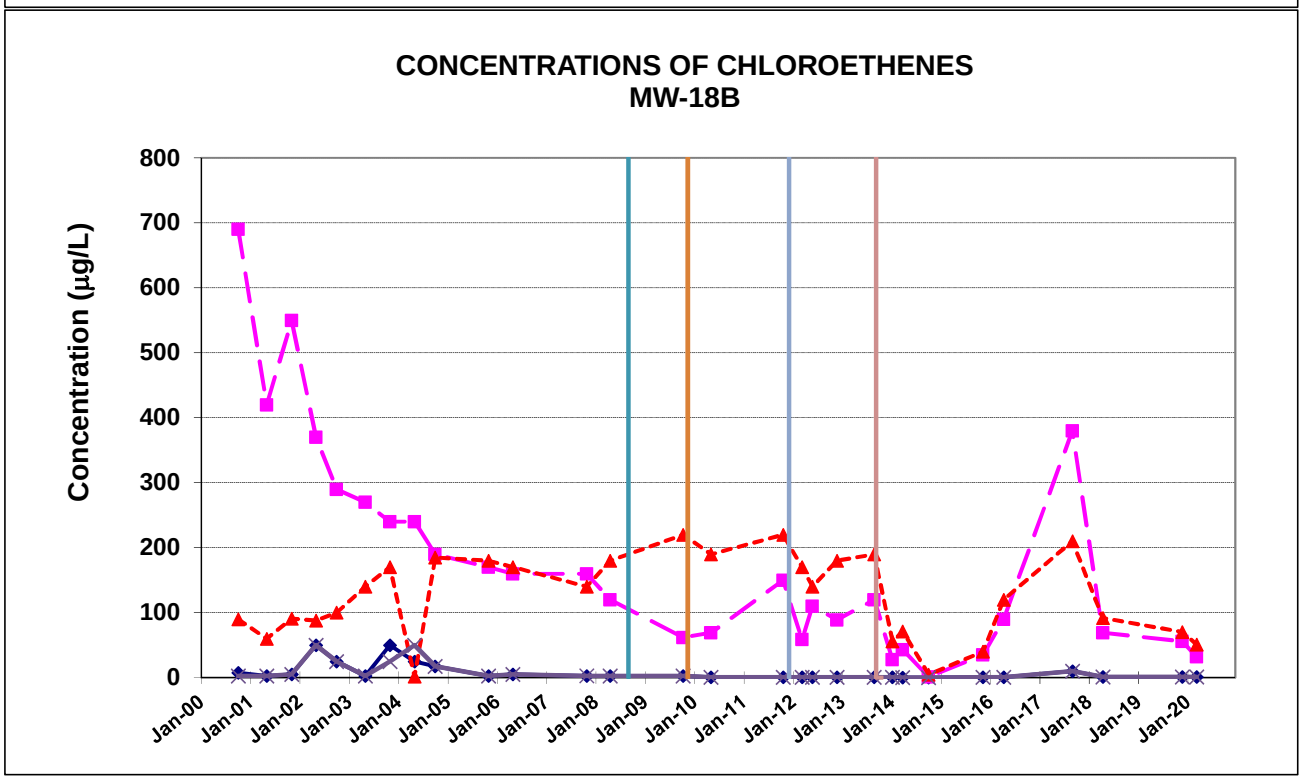
FORMER CARBORUNDUM COMPANY

LONG TERM TRENDS OF CHLORINATED ETHENES IN WELLS MW-16A AND MW-16B

AECOM

257 West Genesee Street, Buffalo, NY 14202





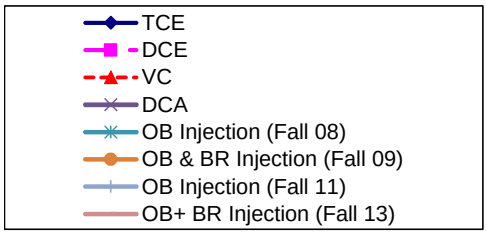


FIGURE 15

FORMER CARBORUNDUM COMPANY

LONG TERM TRENDS OF CHLORINATED ETHENES IN WELLS MW-17B AND MW-18B

AECOM

257 West Genesee Street, Buffalo, NY 14202

Appendix A

Groundwater Sampling Logs

AECOM

GROUNDWATER SAMPLING LOG

Low Flow Sampling Record

bp

Site Name:	Well ID:	Well Diameter:
IP-BP Hyde Park	MW-5A	2"

Samplers:
S. Connelly
C. Bourne

Weather:
45F, Cloudy

Water Volume Calculation

1 inch= 0.041	6 inch= 1.4
1.5 inch= 0.092	8 inch= 2.5
2 inch= 0.163	10 inch= 4
4 inch= 0.64	

= (Total Depth of Well - Depth to Water) × Casing volume per foot

Acceptance Criteria:

Temp	3%
pH	± 0.1 unit
Sp. Cond.	3%
ORP	± 10mV
DO	10%
Turbidity	<50 NTU
Drawdown	<0.3'

Purging Data:

Method: Low Flow

Date: 3/18/20

Time: 1410 (hhmm)

Initial Depth to Water: 8.67 feet below top of PVC

Depth to Bottom: 21.5

Time (hhmm)	DTW (ft)	Pump Rate (ml/min)	Volume (gal.)	Temp (C°)	Sp. Cond (ms/cm)	DO (mg/L)	pH	ORP (mV)	Turb (NTU)	Comments:
1412	9.11	200	0.0	9.69	0.936	3.59	7.77	65.6	7.10	
1417	9.11	200	0.3	9.81	0.939	2.33	7.59	66.2	5.86	
1422	9.12	200	0.5	10.25	0.940	1.70	7.45	66.7	3.50	
1427	9.13	200	0.8	10.45	0.948	1.12	7.40	67.7	1.82	
1437	9.13	200	1.1	10.48	0.965	1.67	7.35	60.3	2.88	
1442	9.13	200	1.3	10.53	0.966	1.68	7.34	59.9	3.40	
1447	9.13	200	1.6	10.56	0.969	1.65	7.34	58.9	1.74	

Sample Collection Method: Peristaltic Pump

Date: 3/18/20

Time: 1447

Total Volume of Water Purged: 2.5 gallons

Hach Test Kits

Alkalinity (mg/L)	220
Carbon Dioxide (mg/L)	20
Ferrous Iron (mg/L)	0.04
Hydrogen Sulfide (mg/L)	0.1
DTW	9.13

Sample Set

Parameter		Bottle	Pres.	Method
VOCs	☑	3-40 mL glass vial	HCL	EPA 8260C
Dissolved Iron	☑	1-250 mL plastic (field filtered)	HNO3	6010C
TOC	☑	2-40mL glass vial	H2SO4	5310C
M.E.E.P.	☑	3-40 mL glass vial	HCL	RSK-175 mod
Nitrate/Nitrite/ Chloride/Sulfate	☑	1-500mL plastic	unpreserved	300, 353.2 300.0_28D
BOD	☑	1-1000 mL plastic	unpreserved	5210B
COD	☑	1-250 mL plastic	H2SO4	410.4
Sulfide	☑	1-500mL plastic	NaOH/Zn Acetate	4500-S2-F

AECOM

GROUNDWATER SAMPLING LOG

Low Flow Sampling Record

bp

Site Name:	Well ID:	Well Diameter:
IP-BP Hyde Park	MW-5B	2"

Samplers:
C. Bourne
S. Connelly

Weather:
45F, Cloudy

Water Volume Calculation

1 inch= 0.041	6 inch= 1.4
1.5 inch= 0.092	8 inch= 2.5
2 inch= 0.163	10 inch= 4
4 inch= 0.64	

= (Total Depth of Well - Depth to Water) × Casing volume per foot

Acceptance Criteria:

Temp	3%
pH	± 0.1 unit
Sp. Cond.	3%
ORP	± 10mV
DO	10%
Turbidity	<50 NTU
Drawdown	<0.3'

Purging Data:

Method: Low Flow | Date: 3/18/20 | Time: 1400 (hhmm)

feet below top of PVC

Initial Depth to Water	Depth to Bottom
8.36	39.5

Time (hhmm)	DTW (ft)	Pump Rate (ml/min)	Volume (gal.)	Temp (C°)	Sp. Cond (ms/cm)	DO (mg/L)	pH	ORP (mV)	Turb (NTU)	Comments:
1415	8.39	200	0.0	9.94	1.444	8.92	9.39	42.9	10.15	
1420	8.41	200	0.3	10.47	1.694	4.65	11.38	-0.7	5.15	
1425	8.41	200	0.5	10.67	1.581	4.18	10.92	-4.2	8.07	
1430	8.41	200	0.8	10.80	1.367	3.88	10.20	-3.2	25.4	
1435	8.41	200	1.1	10.76	1.312	3.86	9.81	-6.7	19.4	
1440	8.41	200	1.3	10.78	1.315	3.69	9.56	-6.4	17.8	
1445	8.41	200	1.6	10.84	1.319	3.61	9.47	-2.9	15.0	
1450	8.41	200	1.8	10.77	1.317	3.59	9.39	-11.9	13.5	
1455	8.41	200	2.1	10.74	1.317	3.49	9.18	-11.7	9.59	
1500	8.41	200	2.4	10.70	1.279	2.62	8.73	-5.6	2.78	
1505	8.41	200	2.6	10.67	1.275	2.28	8.45	-1.0	1.14	
1510	8.41	200	2.9	10.63	1.282	2.17	8.38	-10.0	1.10	
1515	8.41	200	3.2	10.59	1.288	2.11	8.35	-9.0	0.70	

Sample Collection Method: Peristaltic Pump | **Date:** 3/18/20 | **Time:** 1515 | **Total Volume of Water Purged:** 5 gallons

Hach Test Kits

Alkalinity (mg/L)	280
Carbon Dioxide (mg/L)	40
Ferrous Iron (mg/L)	0.30
Hydrogen Sulfide (mg/L)	0.1
DTW	8.41

Sample Set

Parameter		Bottle	Pres.	Method
VOCs	☑	3-40 mL glass vial	HCL	EPA 8260C
Dissolved Iron	☑	1-250 mL plastic (field filtered)	HNO3	6010C
TOC	☑	2-40mL glass vial	H2SO4	5310C
M.E.E.P.	☑	3-40 mL glass vial	HCL	RSK-175 mod
Nitrate/Nitrite/ Chloride/Sulfate	☑	1-500mL plastic	unpreserved	300, 353.2 300.0_28D
BOD	☑	1-1000 mL plastic	unpreserved	5210B
COD	☑	1-250 mL plastic	H2SO4	410.4
Sulfide	☑	1-500mL plastic	NaOH/Zn Acetate	4500-S2-F

AECOM

GROUNDWATER SAMPLING LOG

Low Flow Sampling Record

bp

Site Name:	Well ID:	Well Diameter:
IP-BP Hyde Park	MW-6	2"

Samplers: T. Urban

Weather:

Water Volume Calculation

1 inch= 0.041	6 inch= 1.4
1.5 inch= 0.092	8 inch= 2.5
2 inch= 0.163	10 inch= 4
4 inch= 0.64	

= (Total Depth of Well - Depth to Water) × Casing volume per foot

Acceptance Criteria:

Temp	3%
pH	± 0.1 unit
Sp. Cond.	3%
ORP	± 10mV
DO	10%
Turbidity	<50 NTU
Drawdown	<0.3'

Purging Data:

Method: Low Flow | Date: 3/19/20 | Time: 1325

feet below top of PVC

Initial Depth to Water	Depth to Bottom
6.00	43.00

Time hhmm	DTW (ft)	Pump Rate (ml/min)	Volume (gal.)	Temp (C°)	Sp. Cond (ms/cm)	DO (mg/L)	pH	ORP (mV)	Turb (NTU)	Comments:
1325	6.00	330	0.0	10.25	1.333	7.97	8.02	-167.6	2.79	
1330	6.06	330	0.4	10.61	1.320	4.01	7.91	-169.9	1.29	
1335	6.06	330	0.9	10.70	1.328	2.54	7.82	-201.2	1.02	
1340	6.06	330	1.3	10.76	1.333	1.86	7.69	-234.9	0.64	
1345	6.06	330	1.7	10.77	1.335	1.72	7.65	-233.3	0.58	
1350	6.06	330	2.2	10.79	1.338	1.57	7.62	-231.2	0.43	
1355	6.06	330	2.6	10.82	1.340	1.27	7.60	-241.3	0.75	
1400	6.06	350	3.1	10.87	1.342	1.30	7.58	-241.7	0.52	
1405	6.06	350	3.5	10.86	1.343	1.11	7.57	-241.7	0.82	
1410	6.06	350	4.0	10.91	1.344	1.04	7.56	-241.1	0.67	
1415	6.06	350	4.5	10.94	1.345	1.00	7,55	-241.3	0.55	
1420	6.06	350	4.9	10.96	1.347	1.01	7,54	-241.2	0.46	
1425	6.06	350	5.4	10.92	1.347	1.04	7.53	-238.8	0.52	

Sample Collection Method: Peristaltic Pump | **Date:** 3/19/20 | **Time:** 1425 | **Total Volume of Water Purged:** 6 gallons

Hach Test Kits

Alkalinity (mg/L)	300
Carbon Dioxide (mg/L)	35
Ferrous Iron (mg/L)	0.05
Hydrogen Sulfide (mg/L)	1
DTW	6.06

VOCs only

Sample Set

Parameter		Bottle	Pres.	Method
VOCs	☑	3-40 mL glass vial	HCL	EPA 8260C
Dissolved Iron	☐	1-250 mL plastic (field filtered)	HNO3	6010C
TOC	☐	2-40mL glass vial	H2SO4	5310C
M.E.E.P.	☐	3-40 mL glass vial	HCL	RSK-175 mod
Nitrate/Nitrite/ Chloride/Sulfate	☐	1-500mL plastic	unpreserved	300, 353.2 300.0_28D
BOD	☐	1-1000 mL plastic	unpreserved	5210B
COD	☐	1-250 mL plastic	H2SO4	410.4
Sulfide	☐	1-500mL plastic	NaOH/Zn Acetate	4500-S2-F

AECOM

GROUNDWATER SAMPLING LOG

Low Flow Sampling Record

bp

Site Name: IP-BP Hyde Park	**Well ID:** MW-7A	**Well Diameter:** 2"

Samplers:
C. Bourne
S. Connelly

Weather:
52F, Cloudy

Water Volume Calculation

1 inch= 0.041	6 inch= 1.4
1.5 inch= 0.092	8 inch= 2.5
2 inch= 0.163	10 inch= 4
4 inch= 0.64	

= (Total Depth of Well - Depth to Water) × Casing volume per foot

Acceptance Criteria:

Temp	3%
pH	± 0.1 unit
Sp. Cond.	3%
ORP	± 10mV
DO	10%
Turbidity	<50 NTU
Drawdown	<0.3'

Purging Data:

Method: Low Flow | **Date:** 3/19/20 | **Time:** 1417

feet below top of PVC

Initial Depth to Water	Depth to Bottom
6.7	21.85

Time (hhmm)	DTW (ft)	Pump Rate (ml/min)	Volume (gal.)	Temp (C°)	Sp. Cond (ms/cm)	DO (mg/L)	pH	ORP (mV)	Turb (NTU)	Comments:
1418	6.78	450	0.0	10.30	1.222	4.48	7.28	-161.7	16.3	
1423	9.91	450	0.6	10.28	1.194	0.35	7.16	-171.9	17.8	
1428	10.83	300	1.0	10.36	1.186	0.57	7.14	-171.4	12.55	
1433	11.17	250	1.3	10.50	1.173	0.98	7.14	-152.5	12	
1438	11.49	250	1.7	10.63	1.145	0.80	7.09	-161.3	6	
1443	11.63	250	2.0	10.57	1.139	0.85	7.07	-188.0	5.52	
1448	11.79	250	2.3	10.61	1.127	0.92	7.05	-192.5	6.49	
1453	11.95	250	2.6	10.67	1.122	0.98	7.02	-213.3	6.19	
1458	12.06	250	3.0	10.71	1.122	1.03	6.99	-221.0	6.52	
1503	12.18	250	3.3	10.70	1.123	1.06	6.97	-223.1	6.33	

Sample Collection Method: Peristaltic Pump | **Date:** 3/19/20 | **Time:** 1503 | **Total Volume of Water Purged:** 3.5 gallons

Hach Test Kits

Alkalinity (mg/L)	580
Carbon Dioxide (mg/L)	95
Ferrous Iron (mg/L)	0.54
Hydrogen Sulfide (mg/L)	5.0
DTW	12.18

Sample Set

Parameter		Bottle	Pres.	Method
VOCs	☑	3-40 mL glass vial	HCL	EPA 8260C
Dissolved Iron	☑	1-250 mL plastic (field filtered)	HNO3	6010C
TOC	☑	2-40mL glass vial	H2SO4	5310C
M.E.E.P.	☑	3-40 mL glass vial	HCL	RSK-175 mod
Nitrate/Nitrite/ Chloride/Sulfate	☑	1-500mL plastic	unpreserved	300, 353.2 300.0_28D
BOD	☑	1-1000 mL plastic	unpreserved	5210B
COD	☑	1-250 mL plastic	H2SO4	410.4
Sulfide	☑	1-500mL plastic	NaOH/Zn Acetate	4500-S2-F

AECOM

GROUNDWATER SAMPLING LOG

Low Flow Sampling Record

bp

Site Name: IP-BP Hyde Park	**Well ID:** MW-7B	**Well Diameter:** 2"

Samplers:
C. Bourne
S. Connelly

Weather:
50F, Cloudy

Water Volume Calculation

1 inch= 0.041	6 inch= 1.4
1.5 inch= 0.092	8 inch= 2.5
2 inch= 0.163	10 inch= 4
4 inch= 0.64	

= (Total Depth of Well - Depth to Water) × Casing volume per foot

Acceptance Criteria:

Temp	3%
pH	± 0.1 unit
Sp. Cond.	3%
ORP	± 10mV
DO	10%
Turbidity	<50 NTU
Drawdown	<0.3'

Purging Data:

Method: Low Flow | **Date:** 3/19/20 | **Time:** 1304 (hhmm)

feet below top of PVC

Initial Depth to Water	Depth to Bottom
6.45	43.43

Time (hhmm)	DTW (ft)	Pump Rate (ml/min)	Volume (gal.)	Temp (C°)	Sp. Cond (ms/cm)	DO (mg/L)	pH	ORP (mV)	Turb (NTU)	Comments:
1310	7.03	300	0.0	10,98	1.366	2.46	7.18	-182.0	11.15	
1315	7.04	300	0.4	11.34	1.358	0.91	7.12	-175.0	6.45	
1320	7.05	275	0.8	11.43	1.363	0.43	7.18	-156.6	2.65	
1325	7.05	275	1.1	11.44	1.368	0.51	7.19	-145.9	2.81	
1330	7.09	275	1.5	11.55	1.368	0.79	7.15	-141.3	2.38	
1335	7.05	275	1.8	11.52	1.368	0.63	7.13	-135.5	1.83	
1340	7.05	275	2.2	11.63	1.363	0.62	7.12	-134.2	2.04	
1345	7.05	275	2.6	11.64	1.361	0.61	7.10	-128.0	1.78	

Sample Collection Method: Peristaltic Pump | **Date:** 3/19/20 | **Time:** 1345 | **Total Volume of Water Purged:** 2.5 Gallons

Hach Test Kits

Alkalinity (mg/L)	300
Carbon Dioxide (mg/L)	30
Ferrous Iron (mg/L)	0.00
Hydrogen Sulfide (mg/L)	2.0
DTW	7.05

Sample Set

Parameter		Bottle	Pres.	Method
VOCs	☑	3-40 mL glass vial	HCL	EPA 8260C
Dissolved Iron	☑	1-250 mL plastic (field filtered)	HNO3	6010C
TOC	☑	2-40mL glass vial	H2SO4	5310C
M.E.E.P.	☑	3-40 mL glass vial	HCL	RSK-175 mod
Nitrate/Nitrite/ Chloride/Sulfate	☑	1-500mL plastic	unpreserved	300, 353.2 300.0_28D
BOD	☑	1-1000 mL plastic	unpreserved	5210B
COD	☑	1-250 mL plastic	H2SO4	410.4
Sulfide	☑	1-500mL plastic	NaOH/Zn Acetate	4500-S2-F

AECOM

GROUNDWATER SAMPLING LOG

Low Flow Sampling Record

bp

Site Name:	Well ID:	Well Diameter:
IP-BP Hyde Park	MW-10A	2"

Samplers:
C. Bourne
S. Connelly

Weather:

Water Volume Calculation

1 inch= 0.041	6 inch= 1.4
1.5 inch= 0.092	8 inch= 2.5
2 inch= 0.163	10 inch= 4
4 inch= 0.64	

= (Total Depth of Well - Depth to Water) × Casing volume per foot

Acceptance Criteria:

Temp	3%
pH	± 0.1 unit
Sp. Cond.	3%
ORP	± 10mV
DO	10%
Turbidity	<50 NTU
Drawdown	<0.3'

Purging Data:

Method: Low Flow

Date: 3/18/20

Time: 1150 (hhmm)

feet below top of PVC

Initial Depth to Water	Depth to Bottom
7.73	20.82

Time (hhmm)	DTW (ft)	Pump Rate (ml/min)	Volume (gal.)	Temp (C°)	Sp. Cond (ms/cm)	DO (mg/L)	pH	ORP (mV)	Turb (NTU)	Comments:
1155	8.04	190	0.0	8.99	1.327	4.24	7.78	-47.6	19.4	
1200	8.05	190	0.3	9.34	1.320	2.90	7.65	-29.6	9.7	
1205	8.08	190	0.5	9.52	1.313	2.50	7.59	-24.6	5.49	
1210	8.09	190	0.8	9.57	1.307	3.53	7.56	-29.5	4.42	
1215	8.09	190	1.0	9.67	1.299	2.86	7.54	-34.6	2.74	
1220	8.09	190	1.3	9.71	1.293	9.40	7.52	-36.4	1.98	
1225	8.09	190	1.5	9.72	1.289	10.15	7.51	-38.2	0.97	
1230	8.09	190	1.8	9.78	1.285	10.40	7.49	-39.5	1.12	
1235	8.09	190	2.0	9.81	1.281	9.82	7.49	-40.2	0.64	
1240	8.09	190	2.3	9.84	1.281	9.70	7.48	-40.9	0.79	

Sample Collection Method: Peristaltic Pump

Date: 3/18/20

Time: 1240

Total Volume of Water Purged: 2.5 gallons

Hach Test Kits

Alkalinity (mg/L)	280
Carbon Dioxide (mg/L)	20
Ferrous Iron (mg/L)	0.61
Hydrogen Sulfide (mg/L)	0.1
DTW	8.09

Sample Set

Parameter		Bottle	Pres.	Method
VOCs	☑	3-40 mL glass vial	HCL	EPA 8260C
Dissolved Iron	☑	1-250 mL plastic (field filtered)	HNO3	6010C
TOC	☑	2-40mL glass vial	H2SO4	5310C
M.E.E.P.	☑	3-40 mL glass vial	HCL	RSK-175 mod
Nitrate/Nitrite/ Chloride/Sulfate	☑	1-500mL plastic	unpreserved	300, 353.2 300.0_28D
BOD	☑	1-1000 mL plastic	unpreserved	5210B
COD	☑	1-250 mL plastic	H2SO4	410.4
Sulfide	☑	1-500mL plastic	NaOH/Zn Acetate	4500-S2-F

AECOM

GROUNDWATER SAMPLING LOG

Low Flow Sampling Record

bp

Site Name:	Well ID:	Well Diameter:
IP-BP Hyde Park	MW-10B	4"

Samplers:
C. Bourne
S. Connelly

Weather:
35F, Sunny

Water Volume Calculation

1 inch= 0.041	6 inch= 1.4
1.5 inch= 0.092	8 inch= 2.5
2 inch= 0.163	10 inch= 4
4 inch= 0.64	

= (Total Depth of Well - Depth to Water) × Casing volume per foot

Acceptance Criteria:

Temp	3%
pH	± 0.1 unit
Sp. Cond.	3%
ORP	± 10mV
DO	10%
Turbidity	<50 NTU
Drawdown	<0.3'

Purging Data:

Method: Low Flow

Date: 3/18/20

Time: 0930 (hhmm)

feet below top of PVC

Initial Depth to Water: 7.31

Depth to Bottom: 38.8

Time (hhmm)	DTW (ft)	Pump Rate (ml/min)	Volume (gal.)	Temp (C°)	Sp. Cond (ms/cm)	DO (mg/L)	pH	ORP (mV)	Turb (NTU)	Comments:
0951	7.35	200	0.0	9.65	1.471	3.55	7.23			
0956	7.36	200	0.3	10.14	1.438	2.11	7.30	75.6	60.7	
1001	7.57	200	0.5	10.21	1.435	1.69	7.32	61.5	1649	
1006	7.37	200	0.8	10.24	1.429	1.53	7.32	57.2	0.64	
1011	7.37	200	1.1	10.14	1.423	1.38	7.32	52.2	0.25	
1016	7.37	200	1.3	10.17	1.418	1.30	7.32	49.8	0	
1021	7.37	200	1.6	10.45	1.412	1.29	7.32	47.6	0.07	
1026	7.37	200	1.8	10.41	1.415	1.14	7.33	46.2	0.04	
1036	7.37	200	2.1	10.33	1.411	1.05	7.31	39.8	0.45	
1045	7.37	200	2.4	10.43	1.405	1.09	7.31	37.7	0.01	

Sample Collection Method: Peristaltic Pump

Date: 3/18/20

Time: 1045

Total Volume of Water Purged: 4.5 Gallons

Hach Test Kits

Alkalinity (mg/L)	320
Carbon Dioxide (mg/L)	30
Ferrous Iron (mg/L)	0.00
Hydrogen Sulfide (mg/L)	0.0
DTW	7.37

Sample Set

Parameter		Bottle	Pres.	Method
VOCs	☑	3-40 mL glass vial	HCL	EPA 8260C
Dissolved Iron	☑	1-250 mL plastic (field filtered)	HNO3	6010C
TOC	☑	2-40mL glass vial	H2SO4	5310C
M.E.E.P.	☑	3-40 mL glass vial	HCL	RSK-175 mod
Nitrate/Nitrite/ Chloride/Sulfate	☑	1-500mL plastic	unpreserved	300, 353.2 300.0_28D
BOD	☑	1-1000 mL plastic	unpreserved	5210B
COD	☑	1-250 mL plastic	H2SO4	410.4
Sulfide	☑	1-500mL plastic	NaOH/Zn Acetate	4500-S2-F

AECOM

GROUNDWATER SAMPLING LOG

Low Flow Sampling Record

bp

Site Name:	Well ID:	Well Diameter:
IP-BP Hyde Park	MW-12B	4"

Samplers: T. Urban

Weather:

Water Volume Calculation

1 inch= 0.041	6 inch= 1.4
1.5 inch= 0.092	8 inch= 2.5
2 inch= 0.163	10 inch= 4
4 inch= 0.64	

= (Total Depth of Well - Depth to Water) × Casing volume per foot

Acceptance Criteria:

Temp	3%
pH	± 0.1 unit
Sp. Cond.	3%
ORP	± 10mV
DO	10%
Turbidity	<50 NTU
Drawdown	<0.3'

Purging Data:

Method: Low Flow

Date: 3/19/20 Time: 0820 (hhmm)

Initial Depth to Water (feet below top of PVC): 1.40

Depth to Bottom (feet below top of PVC): 30.40

Time (hhmm)	DTW (ft)	Pump Rate (ml/min)	Volume (gal.)	Temp (C°)	Sp. Cond (ms/cm)	DO (mg/L)	pH	ORP (mV)	Turb (NTU)	Comments:
0820	1.42	550	0.0	9.03	0.536	14.64	8.66	20.8	2.54	
0825	1.42	550	0.7	9.56	0.513	12.33	8.38	28.9	2.07	
0830	1.42	550	1.5	9.98	0.717	11.02	8.02	34.7	3.28	
0835	1.42	550	2.2	10.23	0.863	8.54	7.77	43.0	4.07	
0840	1.42	550	2.9	10.54	1.215	3.50	7.67	37.2	1.72	
0845	1.42	550	3.6	10.56	1.240	2.53	7.54	28.9	1.4	
0850	1.42	550	4.4	10.57	1.249	1.98	7.39	22.0	1.37	
0855	1.42	550	5.1	10.60	1.263	1.56	7.53	-32.2	1.33	
0900	1.42	550	5.8	10.65	1.281	1.27	7.53	-58.3	1	
0905	1.42	550	6.5	10.67	1.294	1.14	7.50	-66.8	0.60	
0910	1.42	550	7.3	10.69	1.308	1.15	7.50	-71.2	0.35	
0915	1.42	550	8.0	10.68	1.305	1.15	7.46	-69.8	0.28	
0920	1.42	550	8.7	10.68	1.315	1.08	7.44	-67.9	0.64	
0925	1.42	550	9.4	10.70	1.320	1.03	7.45	-67.8	0.48	
0930	1.42	550	10.2	10.73	1.325	1.01	7.46	-67.5	0.34	

Sample Collection Method: Peristaltic Pump

Date: 3/19/20 Time: 0930

Total Volume of Water Purged: 10 gallons

Hach Test Kits

Alkalinity (mg/L)	280
Carbon Dioxide (mg/L)	25
Ferrous Iron (mg/L)	0.00
Hydrogen Sulfide (mg/L)	0.3
DTW	1.42

Sample Set

Parameter		Bottle	Pres.	Method
VOCs	☑	3-40 mL glass vial	HCL	EPA 8260C
Dissolved Iron	☑	1-250 mL plastic (field filtered)	HNO3	6010C
TOC	☑	2-40mL glass vial	H2SO4	5310C
M.E.E.P.	☑	3-40 mL glass vial	HCL	RSK-175 mod
Nitrate/Nitrite/ Chloride/Sulfate	☑	1-500mL plastic	unpreserved	300, 353.2 300.0_28D
BOD	☑	1-1000 mL plastic	unpreserved	5210B
COD	☑	1-250 mL plastic	H2SO4	410.4
Sulfide	☑	1-500mL plastic	NaOH/Zn Acetate	4500-S2-F

AECOM

GROUNDWATER SAMPLING LOG

Low Flow Sampling Record

bp

Site Name: IP-BP Hyde Park	**Well ID:** MW-13B	**Well Diameter:** 2"

Samplers:
C. Bourne
S. Connelly

Weather:
39F, Cloudy

Water Volume Calculation

1 inch= 0.041	6 inch= 1.4
1.5 inch= 0.092	8 inch= 2.5
2 inch= 0.163	10 inch= 4
4 inch= 0.64	

= (Total Depth of Well - Depth to Water) × Casing volume per foot

Acceptance Criteria:

Temp	3%
pH	± 0.1 unit
Sp. Cond.	3%
ORP	± 10mV
DO	10%
Turbidity	<50 NTU
Drawdown	<0.3'

Purging Data: feet below top of PVC

Method: Low Flow | **Date:** 3/19/20 | **Time:** 0845 (hhmm)

Initial Depth to Water: 5.78 | **Depth to Bottom:** 36.55

Time (hhmm)	DTW (ft)	Pump Rate (ml/min)	Volume (gal.)	Temp (C°)	Sp. Cond (ms/cm)	DO (mg/L)	pH	ORP (mV)	Turb (NTU)	Comments:
0848	6.18	200	0.0	10.16	4.118	3.05	7.80	-25.0		
0855	6.00	200	0.3	9.98	4.445	1.19	7.52	-28.1	33.4	
0900	6.01	200	0.5	10.58	4.426	0.92	7.43	-12.6	22.9	
0905	6.02	200	0.8	10.61	4.470	0.82	7.38	2.4	19.1	
0910	6.01	200	1.1	10.41	4.524	0.77	7.35	15.0	22.9	
0915	6.01	200	1.3	10.38	4.546	0.80	7.34	18.2	18.2	
0920	6.01	200	1.6	10.39	4.557	0.90	7.34	13.7	12.6	
0925	6.01	200	1.8	10.45	4.567	0.94	7.34	5.5	11.8	
0930	6.01	200	2.1	10.41	4.566	0.94	7.33	6.7	12.69	

Sample Collection Method: Peristaltic Pump | **Date:** 3/19/20 | **Time:** 0930 | **Total Volume of Water Purged:** 2 Gallons

Hach Test Kits

Alkalinity (mg/L)	160
Carbon Dioxide (mg/L)	20
Ferrous Iron (mg/L)	0.22
Hydrogen Sulfide (mg/L)	0.0
DTW	6.01

VOCs only.

Sample Set

Parameter		Bottle	Pres.	Method
VOCs	☑	3-40 mL glass vial	HCL	EPA 8260C
Dissolved Iron	☐	1-250 mL plastic (field filtered)	HNO3	6010C
TOC	☐	2-40mL glass vial	H2SO4	5310C
M.E.E.P.	☐	3-40 mL glass vial	HCL	RSK-175 mod
Nitrate/Nitrite/ Chloride/Sulfate	☐	1-500mL plastic	unpreserved	300, 353.2 300.0_28D
BOD	☐	1-1000 mL plastic	unpreserved	5210B
COD	☐	1-250 mL plastic	H2SO4	410.4
Sulfide	☐	1-500mL plastic	NaOH/Zn Acetate	4500-S2-F

AECOM

GROUNDWATER SAMPLING LOG

Low Flow Sampling Record

bp

Site Name: IP-BP Hyde Park	**Well ID:** MW-14B	**Well Diameter:** 2"

Samplers:
C. Bourne
S. Connelly

Weather:
37F, Partly Cloudy

Water Volume Calculation

1 inch= 0.041	6 inch= 1.4
1.5 inch= 0.092	8 inch= 2.5
2 inch= 0.163	10 inch= 4
4 inch= 0.64	

= (Total Depth of Well - Depth to Water) × Casing volume per foot

Acceptance Criteria:

Temp	3%
pH	± 0.1 unit
Sp. Cond.	3%
ORP	± 10mV
DO	10%
Turbidity	<50 NTU
Drawdown	<0.3'

Purging Data:

Method: Low Flow | **Date:** 3/15/20 | **Time:** 1025 (hhmm)

feet below top of PVC

Initial Depth to Water	Depth to Bottom
3.65	31.10

Time (hhmm)	DTW (ft)	Pump Rate (ml/min)	Volume (gal.)	Temp (C°)	Sp. Cond (ms/cm)	DO (mg/L)	pH	ORP (mV)	Turb (NTU)	Comments:
1025	3.78	200	0.0	10.37	2.715	8.26	7.71	3.6	308	
1030	4.05	200	0.3	10.49	2.736	6.55	7.70	-1.8	294	
1035	4.28	200	0.5	10.55	2.881	5.91	7.69	-3.5	163	
1040	4.35	200	0.8	10.53	2.898	3.85	7.55	-10.1	100	
1045	4.49	200	1.1	10.61	2.907	2.72	7.48	-17.3	67.4	
1050	4.52	200	1.3	10.62	3.011	1.63	7.44	-19.8	22.7	
1055	4.59	200	1.6	10.71	3.192	1.65	7.31	-20.5	9.11	
1100	4.59	200	1.8	10.68	3.198	1.71	7.37	-22.7	8.02	
1105	4.59	200	2.1	10.72	3.205	1.73	7.37	-23.2	8.10	

Sample Collection Method: Peristaltic Pump | **Date:** 3/18/20 | **Time:** 1105 | **Total Volume of Water Purged:** 2.5 Gallons

Hach Test Kits

Alkalinity (mg/L)	220
Carbon Dioxide (mg/L)	25
Ferrous Iron (mg/L)	0
Hydrogen Sulfide (mg/L)	0
DTW	4.59

VOCs only

Sample Set

Parameter		Bottle	Pres.	Method
VOCs	☑	3-40 mL glass vial	HCL	EPA 8260C
Dissolved Iron	☐	1-250 mL plastic (field filtered)	HNO3	6010C
TOC	☐	2-40mL glass vial	H2SO4	5310C
M.E.E.P.	☐	3-40 mL glass vial	HCL	RSK-175 mod
Nitrate/Nitrite/ Chloride/Sulfate	☐	1-500mL plastic	unpreserved	300, 353.2 300.0_28D
BOD	☐	1-1000 mL plastic	unpreserved	5210B
COD	☐	1-250 mL plastic	H2SO4	410.4
Sulfide	☐	1-500mL plastic	NaOH/Zn Acetate	4500-S2-F

AECOM

GROUNDWATER SAMPLING LOG

Low Flow Sampling Record

bp

Site Name: IP-BP Hyde Park	**Well ID:** MW-16A	**Well Diameter:** 2"

Samplers:
C. Bourne
S. Connelly

Weather:

Water Volume Calculation

1 inch= 0.041	6 inch= 1.4
1.5 inch= 0.092	8 inch= 2.5
2 inch= 0.163	10 inch= 4
4 inch= 0.64	

= (Total Depth of Well - Depth to Water) × Casing volume per foot

Acceptance Criteria:

Temp	3%
pH	± 0.1 unit
Sp. Cond.	3%
ORP	± 10mV
DO	10%
Turbidity	<50 NTU
Drawdown	<0.3'

Purging Data:

Method: Low Flow | **Date:** 3/20/20 | **Time:** 0945 (hhmm)

feet below top of PVC

Initial Depth to Water	Depth to Bottom
2.45	19.25

Time (hhmm)	DTW (ft)	Pump Rate (ml/min)	Volume (gal.)	Temp (C°)	Sp. Cond (ms/cm)	DO (mg/L)	pH	ORP (mV)	Turb (NTU)	Comments:
952	3.90	300	0.0	10.35	1.690	8.80	8.04	233.0	2.75	
1000	7.14	300	0.4	9.52	1.149	9.37	8.45	173.0	2.08	
1005	8.65	250	0.7	9.57	1.147	9.27	8.44	119.7	1.16	
1010	9.77	250	1.1	9.49	1.168	8.88	8.45	159.6	1.48	
1015	11.56	250	1.4	9.94	1.238	8.38	8.29	83.7	1.82	
1020	12.85	250	1.7	9.99	1.228	8.34	8.28	60.9	2.01	
1025	14.03	200	2.0	10.20	1.228	8.15	8.23	47.7	2.35	
1030	14.61	200	2.2	11.08	1.292	8.97	8.02	47.4	4.05	
1038	15.03	200	2.5	11.43	2.667	1.83	7.75	18.0	1.56	
1043	15.48	200	2.8	11.58	2.721	2.40	7.69	-10.5	1.63	
1048	15.78	200	3.0	11.61	2.701	1.65	7.71	-24.3	1.41	
1053	16.12	200	3.3	11.50	2.681	1.54	7.73	-35.0	1.13	
1058	16.47	150	3.5	11.72	2.687	1.50	7.72	-38.7	1.16	

Sample Collection Method: Peristaltic Pump | **Date:** 3/20/20 | **Time:** 1058 | **Total Volume of Water Purged:** 4.5 Gallons

Hach Test Kits

Alkalinity (mg/L)	500
Carbon Dioxide (mg/L)	35
Ferrous Iron (mg/L)	0.2
Hydrogen Sulfide (mg/L)	0.1
DTW	16.47

Sample Set

Parameter		Bottle	Pres.	Method
VOCs	☑	3-40 mL glass vial	HCL	EPA 8260C
Dissolved Iron	☑	1-250 mL plastic (field filtered)	HNO3	6010C
TOC	☑	2-40mL glass vial	H2SO4	5310C
M.E.E.P.	☑	3-40 mL glass vial	HCL	RSK-175 mod
Nitrate/Nitrite/ Chloride/Sulfate	☑	1-500mL plastic	unpreserved	300, 353.2 300.0_28D
BOD	☑	1-1000 mL plastic	unpreserved	5210B
COD	☑	1-250 mL plastic	H2SO4	410.4
Sulfide	☑	1-500mL plastic	NaOH/Zn Acetate	4500-S2-F

AECOM

GROUNDWATER SAMPLING LOG

Low Flow Sampling Record

bp

Site Name:	Well ID:	Well Diameter:
IP-BP Hyde Park	MW-16B	2"

Samplers:
C. Bourne
S. Connelly

Weather:

Water Volume Calculation

1 inch= 0.041	6 inch= 1.4
1.5 inch= 0.092	8 inch= 2.5
2 inch= 0.163	10 inch= 4
4 inch= 0.64	

= (Total Depth of Well - Depth to Water) × Casing volume per foot

Acceptance Criteria:

Temp	3%
pH	± 0.1 unit
Sp. Cond.	3%
ORP	± 10mV
DO	10%
Turbidity	<50 NTU
Drawdown	<0.3'

Purging Data:

Method: Low Flow

Date: 3/20/20 Time: 1135 (hhmm)

feet below top of PVC

Initial Depth to Water	Depth to Bottom
1.97	39.12

Time (hhmm)	DTW (ft)	Pump Rate (ml/min)	Volume (gal.)	Temp (C°)	Sp. Cond (ms/cm)	DO (mg/L)	pH	ORP (mV)	Turb (NTU)	Comments:
1138	2.06	250	0.0	11.62	1.384	1.50	7.51	-148.0	3.77	
1143	2.10	250	0.3	12.12	1.408	0.29	7.52	-216.9	1.55	
1148	2.10	250	0.7	12.24	1.414	0.29	7.55	-238.8	4.15	
1153	2.10	250	1.0	12.39	1.417	1.06	7.58	-255.0	3.73	
1158	2.11	250	1.3	12.24	1.400	0.74	7.57	-258.0	3.04	
1203	2.11	250	1.7	12.23	1.394	0.65	7.49	-252.9	5.14	
1208	2.11	250	2.0	12.31	1.396	0.63	7.43	-260.1	8.87	
1213	2.13	250	2.3	12.33	1.398	0.64	7.39	-261.4	8.00	

Sample Collection Method: Peristaltic Pump

Date: 3/20/20 Time: 1213

Total Volume of Water Purged: 2.5 Gallons

Hach Test Kits

Alkalinity (mg/L)	400
Carbon Dioxide (mg/L)	45
Ferrous Iron (mg/L)	0.13
Hydrogen Sulfide (mg/L)	2.0
DTW	2.13

Sample Set

Parameter		Bottle	Pres.	Method
VOCs	☑	3-40 mL glass vial	HCL	EPA 8260C
Dissolved Iron	☑	1-250 mL plastic (field filtered)	HNO3	6010C
TOC	☑	2-40mL glass vial	H2SO4	5310C
M.E.E.P.	☑	3-40 mL glass vial	HCL	RSK-175 mod
Nitrate/Nitrite/ Chloride/Sulfate	☑	1-500mL plastic	unpreserved	300, 353.2 300.0_28D
BOD	☑	1-1000 mL plastic	unpreserved	5210B
COD	☑	1-250 mL plastic	H2SO4	410.4
Sulfide	☑	1-500mL plastic	NaOH/Zn Acetate	4500-S2-F

AECOM

GROUNDWATER SAMPLING LOG

Low Flow Sampling Record

Site Name: IP-BP Hyde Park

Well ID: MW-17A

Well Diameter: 2"

Samplers:
C. Bourne
S. Connelly

Weather: 44F, Cloudy

Water Volume Calculation

1 inch= 0.041	6 inch= 1.4
1.5 inch= 0.092	8 inch= 2.5
2 inch= 0.163	10 inch= 4
4 inch= 0.64	

= (Total Depth of Well - Depth to Water) × Casing volume per foot

Acceptance Criteria:

Temp	3%
pH	± 0.1 unit
Sp. Cond.	3%
ORP	± 10mV
DO	10%
Turbidity	<50 NTU
Drawdown	<0.3'

Purging Data: feet below top of PVC

Method: Low Flow

Date: 3/19/20 **Time:** 1140 (hhmm)

Initial Depth to Water: 2.76

Depth to Bottom: 16.15

Time (hhmm)	DTW (ft)	Pump Rate (ml/min)	Volume (gal.)	Temp (C°)	Sp. Cond (ms/cm)	DO (mg/L)	pH	ORP (mV)	Turb (NTU)	Comments:
1145	3.05	300	0.0	10.00	1.048	3.50	7.50	-92.5	24.2	
1150	3.20	300	0.4	10.40	1.048	0.38	7.46	-96.5	16.9	
1155	3.25	300	0.8	10.42	1.059	0.30	7.42	-88.5	10.76	
1200	3.25	300	1.2	10.48	1.058	0.48	7.40	-70.2	7.46	
1205	3.25	300	1.6	10.52	1.057	0.67	7.38	-50.5	8.18	
1210	3.27	300	2.0	10.55	1.059	0.64	7.37	-52.3	8.73	
1215	3.31	300	2.4	10.57	1.061	0.60	7.37	-50.8	8.21	

Sample Collection Method: Peristaltic Pump **Date:** 3/19/20 **Time:** 1215 **Total Volume of Water Purged:** 2.5 Gallons

Hach Test Kits

Alkalinity (mg/L)	480
Carbon Dioxide (mg/L)	25
Ferrous Iron (mg/L)	0.71
Hydrogen Sulfide (mg/L)	0.1
DTW	3.31

Sample Set

Parameter		Bottle	Pres.	Method
VOCs	☑	3-40 mL glass vial	HCL	EPA 8260C
Dissolved Iron	☑	1-250 mL plastic (field filtered)	HNO3	6010C
TOC	☑	2-40mL glass vial	H2SO4	5310C
M.E.E.P.	☑	3-40 mL glass vial	HCL	RSK-175 mod
Nitrate/Nitrite/ Chloride/Sulfate	☑	1-500mL plastic	unpreserved	300, 353.2 300.0_28D
BOD	☑	1-1000 mL plastic	unpreserved	5210B
COD	☑	1-250 mL plastic	H2SO4	410.4
Sulfide	☑	1-500mL plastic	NaOH/Zn Acetate	4500-S2-F

AECOM

GROUNDWATER SAMPLING LOG

Low Flow Sampling Record

bp

Site Name:	Well ID:	Well Diameter:
IP-BP Hyde Park	MW-17B	2"

Samplers:
C. Bourne
S. Connelly

Weather:
44F, Cloudy

Water Volume Calculation

1 inch= 0.041	6 inch= 1.4
1.5 inch= 0.092	8 inch= 2.5
2 inch= 0.163	10 inch= 4
4 inch= 0.64	

= (Total Depth of Well - Depth to Water) × Casing volume per foot

Acceptance Criteria:

Temp	3%
pH	± 0.1 unit
Sp. Cond.	3%
ORP	± 10mV
DO	10%
Turbidity	<50 NTU
Drawdown	<0.3'

Purging Data:

Method: Low Flow

Date: 3/19/20 Time: 1020 (hhmm)

Initial Depth to Water (feet below top of PVC): 3.42

Depth to Bottom (feet below top of PVC): 30.92

Time (hhmm)	DTW (ft)	Pump Rate (ml/min)	Volume (gal.)	Temp (C°)	Sp. Cond (ms/cm)	DO (mg/L)	pH	ORP (mV)	Turb (NTU)	Comments:
1030	3.52	200	0.0	10.11	1.502	1.55	6.63	-60.2	3.97	
1035	3.55	200	0.3	10.43	1.430	3.81	6.62	-62.6	11.51	
1040	3.42	200	0.5	10.83	1.415	4.34	6.56	-89.0	6.66	
1045	3.52	200	0.8	10.90	1.406	4.60	6.54	-111.9	18.5	
1050	3.52	200	1.1	11.16	1.394	4.23	6.53	-126.2	4.9	
1055	3.52	200	1.3	11.07	1.401	3.88	6.54	-148.7	4.52	
1100	3.52	200	1.6	11.31	1.398	3.54	6.54	-160.7	11.1	
1105	3.52	200	1.8	11.24	1.403	3.42	6.54	-161.4	3.55	
1110	3.53	200	2.1	11.36	1.402	3.18	6.53	-168.1	3.88	

Sample Collection Method: Peristaltic Pump

Date: 3/19/20 Time: 1120

Total Volume of Water Purged: 4 gallons

Hach Test Kits

Alkalinity (mg/L)	580
Carbon Dioxide (mg/L)	225
Ferrous Iron (mg/L)	1.67
Hydrogen Sulfide (mg/L)	3.0
DTW	3.52

Effervescence - throws off DO

Sample Set

Parameter		Bottle	Pres.	Method
VOCs	☑	3-40 mL glass vial	HCL	EPA 8260C
Dissolved Iron	☑	1-250 mL plastic (field filtered)	HNO3	6010C
TOC	☑	2-40mL glass vial	H2SO4	5310C
M.E.E.P.	☑	3-40 mL glass vial	HCL	RSK-175 mod
Nitrate/Nitrite/ Chloride/Sulfate	☑	1-500mL plastic	unpreserved	300, 353.2 300.0_28D
BOD	☑	1-1000 mL plastic	unpreserved	5210B
COD	☑	1-250 mL plastic	H2SO4	410.4
Sulfide	☑	1-500mL plastic	NaOH/Zn Acetate	4500-S2-F

AECOM

GROUNDWATER SAMPLING LOG

Low Flow Sampling Record

bp

Site Name:	Well ID:	Well Diameter:
IP-BP Hyde Park	MW-18A	2"

Samplers: T. Urban

Weather: 44F, Cloudy

Water Volume Calculation

1 inch= 0.041	6 inch= 1.4
1.5 inch= 0.092	8 inch= 2.5
2 inch= 0.163	10 inch= 4
4 inch= 0.64	

= (Total Depth of Well - Depth to Water) × Casing volume per foot

Acceptance Criteria:

Temp	3%
pH	± 0.1 unit
Sp. Cond.	3%
ORP	± 10mV
DO	10%
Turbidity	<50 NTU
Drawdown	<0.3'

Purging Data:

Method: Low Flow

Date: 3/19/20 Time: 1020 (hhmm)

feet below top of PVC

Initial Depth to Water: 3.70

Depth to Bottom: 17.76

Time (hhmm)	DTW (ft)	Pump Rate (ml/min)	Volume (gal.)	Temp (C°)	Sp. Cond (ms/cm)	DO (mg/L)	pH	ORP (mV)	Turb (NTU)	Comments:
1020	3.70	250	0.0	9.37	0.992	7.84	7.86	10.0	2.48	
1025	4.24	250	0.3	9.54	0.998	5.70	7.77	17.8	1.7	
1030	4.55	250	0.7	9.62	0.988	5.12	7.69	23.9	1.55	
1035	4.67	250	1.0	9.68	0.989	4.34	7.66	9.8	1.24	
1040	4.82	250	1.3	9.71	0.990	3.54	7.64	-2.7	0.93	
1045	4.96	250	1.7	9.76	0.994	2.85	7.60	-11.6	0.79	
1050	5.01	250	2.0	9.82	0.995	2.54	7.57	-17.7	2.63	
1055	5.11	250	2.3	9.84	0.996	2.13	7.57	-21.0	0.41	
1100	5.16	250	2.6	9.83	0.996	1.96	7.55	-22.9	1.03	
1105	5.18	250	3.0	9.86	0.996	1.83	7.55	-24.3	6.60	
1110	5.25	250	3.3	9.90	0.995	1.67	7.54	-26.6	0.48	
1115	5.25	250	3.6	9.95	0.995	1.61	7.54	-27.2	0.59	
1120	5.30	250	4.0	10.00	0.995	1.60	7.51	-29.3	0.67	

Sample Collection Method: Peristaltic Pump

Date: 3/19/20 Time: 1120

Total Volume of Water Purged: 4 Gallons

Hach Test Kits

Alkalinity (mg/L)	360
Carbon Dioxide (mg/L)	40
Ferrous Iron (mg/L)	0.79
Hydrogen Sulfide (mg/L)	0.1
DTW	5.3

Sample Set

Parameter		Bottle	Pres.	Method
VOCs	☑	3-40 mL glass vial	HCL	EPA 8260C
Dissolved Iron	☑	1-250 mL plastic (field filtered)	HNO3	6010C
TOC	☑	2-40mL glass vial	H2SO4	5310C
M.E.E.P.	☑	3-40 mL glass vial	HCL	RSK-175 mod
Nitrate/Nitrite/ Chloride/Sulfate	☑	1-500mL plastic	unpreserved	300, 353.2 300.0_28D
BOD	☑	1-1000 mL plastic	unpreserved	5210B
COD	☑	1-250 mL plastic	H2SO4	410.4
Sulfide	☑	1-500mL plastic	NaOH/Zn Acetate	4500-S2-F

AECOM

GROUNDWATER SAMPLING LOG

Low Flow Sampling Record

bp

Site Name:	Well ID:	Well Diameter:
IP-BP Hyde Park	MW-18B	2"

Samplers: T. Urban

Weather: 44F, Cloudy

Water Volume Calculation

1 inch= 0.041	6 inch= 1.4
1.5 inch= 0.092	8 inch= 2.5
2 inch= 0.163	10 inch= 4
4 inch= 0.64	

= (Total Depth of Well - Depth to Water) × Casing volume per foot

Acceptance Criteria:

Temp	3%
pH	± 0.1 unit
Sp. Cond.	3%
ORP	± 10mV
DO	10%
Turbidity	<50 NTU
Drawdown	<0.3'

Purging Data:

Method: Low Flow | Date: 3/19/20 | Time: (hhmm) 1145

feet below top of PVC

Initial Depth to Water: 3.90 | Depth to Bottom: 37.73

Time (hhmm)	DTW (ft)	Pump Rate (ml/min)	Volume (gal.)	Temp (C°)	Sp. Cond (ms/cm)	DO (mg/L)	pH	ORP (mV)	Turb (NTU)	Comments:
1145	3.90	330	0.0	10.34	0.598	4.81	7.71	-123.4	3.45	
1150	4.27	330	0.4	10.91	0.681	1.63	7.28	-187.0	5.25	
1155	4.20	330	0.9	11.16	1.014	0.90	7.09	-289.8	4.74	
1200	4.20	330	1.3	11.13	1.076	0.91	7.08	-298.8	4.61	
1205	4.33	330	1.7	11.08	1.019	0.85	7.02	-302.1	4.04	
1210	4.33	330	2.2	11.23	1.072	0.78	7.02	-302.9	3.63	
1215	4.33	350	2.6	11.33	1.173	0.68	7.01	-311.0	4.24	
1220	4.33	350	3.1	11.40	1.209	0.64	7.02	-311.1	3.58	
1225	4.33	350	3.6	11.47	1.263	0.60	7.03	-310.0	2.8	
1230	4.33	350	4.0	11.59	1.340	0.58	7.04	-314.8	3.15	
1235	4.33	350	4.5	11.64	1.343	0.55	7.06	-316.2	4.04	
1240	4.33	350	5.0	11.66	1.352	0.54	7.07	-316.8	1.96	

Sample Collection Method: Peristaltic Pump | Date: 3/19/20 | Time: 1240 | Total Volume of Water Purged: 6 gallons

Hach Test Kits

Alkalinity (mg/L)	440
Carbon Dioxide (mg/L)	95
Ferrous Iron (mg/L)	0.19
Hydrogen Sulfide (mg/L)	4.0
DTW	4.33

effervescent, black flakes, sulfur odor

Sample Set

Parameter		Bottle	Pres.	Method
VOCs	☑	3-40 mL glass vial	HCL	EPA 8260C
Dissolved Iron	☑	1-250 mL plastic (field filtered)	HNO3	6010C
TOC	☑	2-40mL glass vial	H2SO4	5310C
M.E.E.P.	☑	3-40 mL glass vial	HCL	RSK-175 mod
Nitrate/Nitrite/ Chloride/Sulfate	☑	1-500mL plastic	unpreserved	300, 353.2 300.0_28D
BOD	☑	1-1000 mL plastic	unpreserved	5210B
COD	☑	1-250 mL plastic	H2SO4	410.4
Sulfide	☑	1-500mL plastic	NaOH/Zn Acetate	4500-S2-F

AECOM

GROUNDWATER SAMPLING LOG

Low Flow Sampling Record

bp

Site Nam IP-BP Hyde Park	**Well ID:** MW-19B	**Well Diameter:** 2"

Samplers: T. Urban

Weather:

Water Volume Calculation

1 inch= 0.041	6 inch= 1.4
1.5 inch= 0.092	8 inch= 2.5
2 inch= 0.163	10 inch= 4
4 inch= 0.64	

= (Total Depth of Well - Depth to Water) × Casing volume per foot

Acceptance Criteria:

Temp	3%
pH	± 0.1 unit
Sp. Cond.	3%
ORP	± 10mV
DO	10%
Turbidity	<50 NTU
Drawdown	<0.3'

Purging Data: feet below top of PVC

Method: Low Flow | **Date:** 3/20/20 | **Time:** 0955 (hhmm) | **Initial Depth to Water** 4.05 | **Depth to Bottom** 37.65

Time (hhmm)	DTW (ft)	Pump Rate (ml/min)	Volume (gal.)	Temp (C°)	Sp. Cond (ms/cm)	DO (mg/L)	pH	ORP (mV)	Turb (NTU)	Comments:
955	4.05	300	0.0	11.04	0.395	10.81	7.48	30.4	2.64	
1000	4.15	300	0.4	11.05	0.376	10.03	7.50	51.4	4.61	
1005	4.15	340	0.8	11.06	0.360	9.63	7.57	52.3	1.66	
1010	4.15	340	1.3	11.25	0.364	9.06	7.60	51.3	2.22	
1015	4.15	340	1.7	11.42	0.378	8.44	7.64	49.6	2.23	
1020	4.15	340	2.2	11.51	0.390	8.00	7.62	48.9	3.48	
1025	4.15	340	2.6	11.50	0.416	7.90	7.61	47.8	2.66	
1030	4.17	380	3.1	11.56	0.451	7.41	7.58	43.7	4.2	
1035	4.17	380	3.6	11.62	0.478	6.46	7.54	34.9	3.12	
1040	4.17	380	4.1	11.70	0.555	5.58	7.53	29.1	2.26	
1045	4.17	380	4.6	11.89	0.635	4.45	7.51	14.0	1.24	
1050	4.17	380	5.2	11.91	0.689	3.74	7.49	7.4	1.26	
1055	4.17	380	5.7	12.00	0.714	3.45	7.49	3.5	1.01	
1100	4.17	380	6.2	12.08	0.745	3.05	7.48	-3.9	0.7	
1105	4.17	380	6.7	12.18	0.775	2.78	7.47	-6.3	0.66	

Sample Collection Method: Peristaltic Pump | **Date:** 3/20/20 | **Time:** 1155 | **Total Volume of Water Purged:** 11.5 gallons

Hach Test Kits

Alkalinity (mg/L)	260
Carbon Dioxide (mg/L)	3.5
Ferrous Iron (mg/L)	0.14
Hydrogen Sulfide (mg/L)	0.3
DTW	

Sample Set

Parameter		Bottle	Pres.	Method
VOCs	☑	3-40 mL glass vial	HCL	EPA 8260C
Dissolved Iron	☐	1-250 mL plastic (field filtered)	HNO3	6010C
TOC	☐	2-40mL glass vial	H2SO4	5310C
M.E.E.P.	☐	3-40 mL glass vial	HCL	RSK-175 mod
Nitrate/Nitrite/ Chloride/Sulfate	☐	1-500mL plastic	unpreserved	300, 353.2 300.0_28D
BOD	☐	1-1000 mL plastic	unpreserved	5210B
COD	☐	1-250 mL plastic	H2SO4	410.4
Sulfide	☐	1-500mL plastic	NaOH/Zn Acetate	4500-S2-F

AECOM

GROUNDWATER SAMPLING LOG

Low Flow Sampling Record

bp

Site Nam IP-BP Hyde Park	**Well ID:** MW-19B	**Well Diameter:** 2"

Samplers: T. Urban

Weather:

Water Volume Calculation

1 inch= 0.041	6 inch= 1.4
1.5 inch= 0.092	8 inch= 2.5
2 inch= 0.163	10 inch= 4
4 inch= 0.64	

= (Total Depth of Well - Depth to Water) × Casing volume per foot

Acceptance Criteria:

Temp	3%
pH	± 0.1 unit
Sp. Cond.	3%
ORP	± 10mV
DO	10%
Turbidity	<50 NTU
Drawdown	<0.3'

Purging Data: feet below top of PVC

Method: Low Flow | **Date:** 3/20/20 | **Time:** 0955 (hhmm) | **Initial Depth to Water** 4.05 | **Depth to Bottom** 37.65

Time (hhmm)	DTW (ft)	Pump Rate (ml/min)	Volume (gal.)	Temp (C°)	Sp. Cond (ms/cm)	DO (mg/L)	pH	ORP (mV)	Turb (NTU)	Comments:
1110	4.17	380	7.2	12.16	0.800	2.47	7.47	-10.5	3.63	
1115	4.17	380	7.7	12.16	0.826	2.20	7.46	-17.2	1.46	
1120	4.17	380	8.2	12.14	0.846	2.00	7.45	-23.6	0.58	
1125	4.17	380	8.7	12.07	0.868	1.86	7.44	-27.1	0.71	
1130	4.17	380	9.2	12.11	0.888	1.73	7.44	-27.9	0.66	
1135	4.17	380	9.7	12.13	0.905	1.67	7.44	-31.2	0.86	
1140	4.17	380	10.2	12.22	0.921	1.53	7.44	-34.3	1.07	
1145	4.17	380	10.7	12.35	0.946	1.46	7.44	-36.2	0.85	
1150	4.17	380	11.2	12.40	0.955	1.42	7.44	-39.1	0.72	
1155	4.17	380	11.7	12.41	0.965	1.40	7.44	-39.8	0.43	

Sample Collection Method: Peristaltic Pump | **Date:** 3/20/20 | **Time:** 1155 | **Total Volume of Water Purged:** 11.5 gallons

Hach Test Kits

Alkalinity (mg/L)	260
Carbon Dioxide (mg/L)	35
Ferrous Iron (mg/L)	0.14
Hydrogen Sulfide (mg/L)	0.3
DTW	4.17

Sample Set

Parameter		Bottle	Pres.	Method
VOCs	☑	3-40 mL glass vial	HCL	EPA 8260C
Dissolved Iron	☐	1-250 mL plastic (field filtered)	HNO3	6010C
TOC	☐	2-40mL glass vial	H2SO4	5310C
M.E.E.P.	☐	3-40 mL glass vial	HCL	RSK-175 mod
Nitrate/Nitrite/ Chloride/Sulfate	☐	1-500mL plastic	unpreserved	300, 353.2 300.0_28D
BOD	☐	1-1000 mL plastic	unpreserved	5210B
COD	☐	1-250 mL plastic	H2SO4	410.4
Sulfide	☐	1-500mL plastic	NaOH/Zn Acetate	4500-S2-F

Appendix B

Data Usability Summary Report

DATA USABILITY SUMMARY REPORT

FORMER CARBORUNDUM COMPANY
HYDE PARK FACILITY
TOWN OF NIAGARA, NIAGARA COUNTY, NY
SITE ID 932036

Analyses Performed by:

EUROFINS TESTAMERICA
CANTON, OHIO

Prepared for:

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF ENVIRONMENTAL REMEDIATION

Prepared by:

AECOM
257 WEST GENESEE STREET, SUITE 400
BUFFALO, NY 14202-2657

APRIL 2020

TABLE OF CONTENTS

TABLES
(Following Text)

ATTACHMENTS

I. INTRODUCTION

This Data Usability Summary Report (DUSR) has been prepared following the guidelines provided in New York State Department of Environmental Conservation (NYSDEC) Division of Environmental Remediation *DER-10, Technical Guidance for Site Investigation and Remediation, Appendix 2B - Guidance for Data Deliverables and the Development of Data Usability Summary Reports*, May 2010. Discussed in this DUSR are the analytical data for seventeen (17) groundwater samples, one (1) field duplicate, one (1) matrix spike/matrix spike duplicate (MS/MSD pair), and three (3) trip blanks collected on March 18-20, 2020.

The samples were collected at the former Carborundum Company, Hyde Park Facility site (Site ID Number 932036), located in the Town of Niagara, Niagara County, NY and sent to Eurofins TestAmerica (TA) for analysis. TA is a New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) certified laboratory.

II. ANALYTICAL METHODOLOGIES AND DATA VALIDATION PROCEDURES

The groundwater samples were analyzed for the following parameters (not all samples were analyzed for all parameters/analytes):

Parameter	**Method Number**
Select Chlorinated Volatile Organic Compounds (CVOCs)*	SW8260C
Dissolved Gases (methane, ethane, ethene, and propane)	RSK SOP-175
Dissolved Iron	6010C
Anions (Chloride, Nitrate, Nitrite, and Sulfate)	EPA 300.0
Nirate-Nitrite	EPA 353.2
Biochemical Oxygen Demand (BOD_5)	SM 5210B
Chemical Oxygen Demand	EPA 410.4
Sulfide	SM 4500-S2E
Total Organic Carbon	SM 5310C

Notes:

* 1,1,1-Trichloroethane, 1,1-dichloroethane, 1,1-dichloroethene, cis-1,2-dichloroethene, trans-1,2-dichloroethene, chloroethane, tetrachloroethene, trichloroethene, and vinyl chloride.

A limited data validation was performed on the samples in accordance with the guidelines in the following USEPA Region II documents:

- *Validating Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry SW-846 Method 8260B & 8260C*, SOP HW-24, Revision 4, October 2014;
- *ICP-AES Data Validation*, SOP HW-3a, Rev. 1, September 2016; and
- *Mercury and Cyanide Data Validation*, SOP HW-3c, Rev. 1, September 2016.

The limited data review included a review of: completeness of all required deliverables; holding times; QC results [blanks, instrument tunes, calibration standards, MS/MSD recoveries, duplicate precision, and laboratory control sample (LCS) recoveries] to determine if the data are within the protocol-required QC limits and specifications; a determination that all samples were analyzed using established and agreed upon analytical protocols; an evaluation of the raw data to confirm the results provided in the data summary sheets; and a review of laboratory data qualifiers.

Qualifications applied to the data during the limited data validation include 'UJ' (estimated quantitation limit), and 'U' (non-detect). Definitions of USEPA data qualifiers are presented at the end of this text. The validated analytical results are presented on Table 1 and Table 2. Documentation supporting the qualification of data is presented in Attachment A. Only analytical deviations affecting data usability are discussed in this report. Note, the field parameter results are presented in Table 1 for informational purposes only, thus, did not undergo data validation.

III. DATA DELIVERABLE COMPLETENESS

Full deliverable data packages (i.e., NYSDEC ASP Category B or equivalent) were provided by the laboratory (where applicable) and included all reporting forms and raw data necessary to fully evaluate and verify the reported analytical results.

IV. SAMPLE RECEIPT/PRESERVATION/HOLDING TIMES

All samples were received by the laboratory intact, properly preserved, and under proper chain-of-custody (COC). All samples were analyzed within the required holding times (HT) with the following exception:

The samples in WO# 240-128064-1 (collected 3/19/20) were received at the laboratory on 3/23/20. This was after the holding time (HT) (i.e., 48 hrs) had expired for nitrate and nitrite. The results for nitrate

and nitrite in these samples have been qualified 'UJ' due to the HT exceedance. The BOD_5 analysis originally requested on these samples was cancelled by AECOM due to the HT exceedance.

V. NON-CONFORMANCES

Method Blanks

The method blanks associated with samples MW-5B, MW-7B, MW-10B, MW-12B, and MW-18A exhibited contamination above the method detection limit (MDL), but below the quantitation limit (QL) for ethane. The ethane for the above referenced samples were qualified 'U' at the QL. Those samples that were greater than the QL for ethane had the 'B' qualifier removed.

The trip blank (sample date 3/18/20) exhibited a detection for cis-1,2-dichloroethene above the mdl but less than the QL (i.e., 'J' value). The result for this compound in associated sample MW-14B has been qualified 'U' at the QL.

VI. SAMPLE RESULTS AND REPORTING

A field duplicate was collected at location MW-5A, the FD exhibited good field and analytical precision.

All sample results were reported in accordance with method requirements and were adjusted for sample volume (where applicable). Results reported below the QL, but greater than the MDL, are qualified 'J' by the laboratory. Those results being reported from a secondary dilution have been qualified 'D'.

VII. SUMMARY

All sample analyses were found to be compliant with the method criteria, except where previously noted. Those results qualified 'UJ' (estimated QL), or 'U' (non-detect) during the data review are considered conditionally usable. All other sample results are usable as reported. AECOM does not recommend the re-collection of any samples at this time.

Prepared By: Ann Marie Kropovitch, Chemist **Date: 4/24/20**

Reviewed By: Peter R. Fairbanks, Senior Chemist **Date: 4/24/20**

DEFINITIONS OF USEPA REGION II/ DATA QUALIFIERS

U – The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

J – The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

J- – The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample, but biased low.

UJ – The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

R – The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

D – The sample results are reported from a secondary dilution.

TABLE 1
VALIDATED GROUNDWATER SAMPLE ANALYTICAL RESULTS
HYDE PARK FACILITY

Location ID		MW- 5A	MW- 5A	MW- 5B	MW- 6	MW- 7A
Sample ID		FD-20200318-1	MW-5A	MW-5B	MW-6	MW-7A
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		03/18/20	03/18/20	03/18/20	03/19/20	03/19/20
Parameter	**Units**	Field Duplicate (1-1)				
Volatile Organic Compounds						
1,1,1-Trichloroethane	UG/L	5.0 U	5.0 U	2.0 U	1.0 U	2.0 U
1,1-Dichloroethane	UG/L	2.4 J	2.5 J	2.0 U	1.0 U	59
1,1-Dichloroethene	UG/L	5.0 U	5.0 U	2.0 U	1.0 U	2.0 U
1,2-Dichloroethene (cis)	UG/L	120	130	26	11	50
1,2-Dichloroethene (trans)	UG/L	1.2 J	1.2 J	2.0 U	1.0 U	2.0 U
Chloroethane	UG/L	5.0 U	5.0 U	2.0 U	1.0 U	23
Tetrachloroethene	UG/L	5.0 U	5.0 U	2.0 U	1.0 U	2.0 U
Trichloroethene	UG/L	0.52 J	0.52 J	2.0 U	1.0 U	2.0 U
Vinyl chloride	UG/L	180	180	68	72	45
Dissolved Gases						
Ethane	UG/L	43	38	1.0 U	NA	80
Ethene	UG/L	53	47	2.9	NA	20
Methane	UG/L	2,800	2,600	160	NA	16,000 D
Propane	UG/L	0.86 J	0.80 J	0.65 J	NA	1.0 U
Dissolved Metals						
Iron, Dissolved	UG/L	200 U	200 U	370	NA	910
Miscellaneous Parameters						
Biochemical Oxygen Demand (BOD)	MG/L	2.0 U	1.3 J	2.0 U	NA	NA
Chemical Oxygen Demand (COD)	MG/L	8.0 J	12	10	NA	36
Chloride	MG/L	130	130	140	NA	8.0
Nitrate-Nitrite	MG/L	NA	NA	NA	NA	0.050 U
Nitrate-Nitrogen	MG/L	0.10	0.098 J	0.50 U	NA	0.50 UJ
Nitrate-Nitrogen	MG/L	0.10	0.098 J	0.50 U	NA	0.50 UJ

Flags assigned during chemistry validation are shown.

Made By: AMK 4/16/20
Checked By: PRF 4/24/20

Detection Limits shown are PQL

TABLE 1
VALIDATED GROUNDWATER SAMPLE ANALYTICAL RESULTS
HYDE PARK FACILITY

Location ID		MW- 5A	MW- 5A	MW- 5B	MW- 6	MW- 7A
Sample ID		FD-20200318-1	MW-5A	MW-5B	MW-6	MW-7A
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		03/18/20	03/18/20	03/18/20	03/19/20	03/19/20
Parameter	Units	Field Duplicate (1-1)				
Miscellaneous Parameters						
Nitrite-Nitrogen	MG/L	0.10 U	0.10 U	0.10 U	NA	0.10 UJ
Sulfate (as SO4)	MG/L	67	67	220	NA	82
Sulfide	MG/L	1.0 U	1.0 U	1.0 U	NA	2.1
Total Organic Carbon (TOC)	MG/L	1.2	1.2	3.2	NA	12

Flags assigned during chemistry validation are shown.

Made By: AMK 4/16/20
Checked By: PRF 4/24/20

Detection Limits shown are PQL

TABLE 1
VALIDATED GROUNDWATER SAMPLE ANALYTICAL RESULTS
HYDE PARK FACILITY

Location ID		MW- 7B	MW-10A	MW-10B	MW-12B	MW-13B
Sample ID		MW-7B	MW-10A	MW-10B	MW-12B	MW-13B
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		03/19/20	03/18/20	03/18/20	03/19/20	03/19/20
Parameter	**Units**					
Volatile Organic Compounds						
1,1,1-Trichloroethane	UG/L	1.0 U	20 U	5.0 U	2.0 U	1.0 U
1,1-Dichloroethane	UG/L	1.0 U	20 U	5.0 U	0.41 J	1.0 U
1,1-Dichloroethene	UG/L	1.0 U	20 U	5.0 U	2.0 U	1.0 U
1,2-Dichloroethene (cis)	UG/L	5.4	570	210	51	1.6
1,2-Dichloroethene (trans)	UG/L	1.0 U	4.4 J	5.0 U	2.0 U	1.0 U
Chloroethane	UG/L	1.0 U	20 U	5.0 U	2.0 U	1.0 U
Tetrachloroethene	UG/L	1.0 U	20 U	5.0 U	2.0 U	1.0 U
Trichloroethene	UG/L	1.0 U	7.6 J	5.0 U	2.0 U	1.0 U
Vinyl chloride	UG/L	18	130	23	85	2.0
Dissolved Gases						
Ethane	UG/L	1.0 U	2.7	1.0 U	1.0 U	NA
Ethene	UG/L	6.4	34	1.9	5.9	NA
Methane	UG/L	230	2,400	78	410	NA
Propane	UG/L	1.0 U	1.0 U	0.55 J	0.81 J	NA
Dissolved Metals						
Iron, Dissolved	UG/L	200 U	880	86 J	200 U	NA
Miscellaneous Parameters						
Biochemical Oxygen Demand (BOD)	MG/L	NA	2.0 U	2.0 U	NA	NA
Chemical Oxygen Demand (COD)	MG/L	11	8.3 J	12	7.3 J	NA
Chloride	MG/L	130	190	140	150	NA
Nitrate-Nitrite	MG/L	0.050 U	NA	NA	0.050 U	NA
Nitrate-Nitrogen	MG/L	0.50 UJ	0.50 U	0.50 U	0.50 UJ	NA
Nitrate-Nitrogen	MG/L	0.50 UJ	0.50 U	0.50 U	0.50 UJ	NA

Flags assigned during chemistry validation are shown.

Made By: AMK 4/16/20
Checked By: PRF 4/24/20

Advanced Selection: amk-tem
C:\Users\ann.marie.kropovitch\Desktop\Hyde Park DB local\EDMS.m
Printed: 4/27/2020 3:56:38 PM
[LOGDATE] > #3/1/2020# AND [LOCID] <> 'FIELDQC

Detection Limits shown are PQL

TABLE 1
VALIDATED GROUNDWATER SAMPLE ANALYTICAL RESULTS
HYDE PARK FACILITY

Location ID		MW- 7B	MW-10A	MW-10B	MW-12B	MW-13B
Sample ID		MW-7B	MW-10A	MW-10B	MW-12B	MW-13B
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		03/19/20	03/18/20	03/18/20	03/19/20	03/19/20
Parameter	**Units**					
Miscellaneous Parameters						
Nitrite-Nitrogen	MG/L	0.10 UJ	0.10 U	0.10 U	0.10 UJ	NA
Sulfate (as SO4)	MG/L	260	120	230	220	NA
Sulfide	MG/L	1.7	1.0 U	1.0 U	0.67 J	NA
Total Organic Carbon (TOC)	MG/L	3.2	1.4	3.2	3.1	NA

Flags assigned during chemistry validation are shown.

Made By: AMK 4/16/20
Checked By: PRF 4/24/20

Detection Limits shown are PQL

TABLE 1
VALIDATED GROUNDWATER SAMPLE ANALYTICAL RESULTS
HYDE PARK FACILITY

Location ID		MW-14B	MW-16A	MW-16B	MW-17A	MW-17B
Sample ID		MW-14B	MW-16A	MW-16B	MW-17A	MW-17B
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		03/18/20	03/20/20	03/20/20	03/19/20	03/19/20
Parameter	**Units**					
Volatile Organic Compounds						
1,1,1-Trichloroethane	UG/L	1.0 U	13 U	1.0 U	2.0 U	1.0 U
1,1-Dichloroethane	UG/L	0.24 J	13 U	1.0 U	12	4.5
1,1-Dichloroethene	UG/L	1.0 U	13 U	1.0 U	2.0 U	1.0 U
1,2-Dichloroethene (cis)	UG/L	1.0 U	8.7 J	0.60 J	38	1.4
1,2-Dichloroethene (trans)	UG/L	1.0 U	13 U	1.0 U	2.0 U	1.0 U
Chloroethane	UG/L	1.0 U	13 U	1.0 U	2.0 U	8.9
Tetrachloroethene	UG/L	1.0 U	13 U	1.0 U	2.0 U	1.0 U
Trichloroethene	UG/L	1.0 U	13 U	1.0 U	2.0 U	1.0 U
Vinyl chloride	UG/L	1.0	560	2.9	78	2.6
Dissolved Gases						
Ethane	UG/L	NA	3.1	1.5	17	23
Ethene	UG/L	NA	270	1.1	21	6.5
Methane	UG/L	NA	290	14,000 D	17,000 D	33,000 D
Propane	UG/L	NA	0.43 J	1.0 U	1.0 U	1.0 U
Dissolved Metals						
Iron, Dissolved	UG/L	NA	430	48 J	700	4,100
Miscellaneous Parameters						
Biochemical Oxygen Demand (BOD)	MG/L	NA	2.0 U	17	NA	NA
Chemical Oxygen Demand (COD)	MG/L	NA	17	32	7.6 J	21
Chloride	MG/L	NA	210	120	53	110
Nitrate-Nitrite	MG/L	NA	NA	NA	0.050 U	0.050 U
Nitrate-Nitrogen	MG/L	NA	0.050 U	0.050 U	0.50 UJ	0.50 UJ
Nitrate-Nitrogen	MG/L	NA	0.050 U	0.050 U	0.50 UJ	0.50 UJ

Flags assigned during chemistry validation are shown.

Made By: AMK 4/16/20
Checked By: PRF 4/24/20

Detection Limits shown are PQL

TABLE 1
VALIDATED GROUNDWATER SAMPLE ANALYTICAL RESULTS
HYDE PARK FACILITY

Location ID		MW-14B	MW-16A	MW-16B	MW-17A	MW-17B
Sample ID		MW-14B	MW-16A	MW-16B	MW-17A	MW-17B
Matrix		Groundwater	Groundwater	Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-	-	-
Date Sampled		03/18/20	03/20/20	03/20/20	03/19/20	03/19/20
Parameter	**Units**					
Miscellaneous Parameters						
Nitrite-Nitrogen	MG/L	NA	0.10 U	0.10 U	0.10 UJ	0.10 UJ
Sulfate (as SO4)	MG/L	NA	1,000	250	70	39
Sulfide	MG/L	NA	1.0 U	13	1.0 U	2.9
Total Organic Carbon (TOC)	MG/L	NA	6.7	3.4	2.7	5.4

Flags assigned during chemistry validation are shown.

Made By: AMK 4/16/20
Checked By: PRF 4/24/20

Detection Limits shown are PQL

TABLE 1
VALIDATED GROUNDWATER SAMPLE ANALYTICAL RESULTS
HYDE PARK FACILITY

Location ID		MW-18A	MW-18B	MW-19B
Sample ID		MW-18A	MW-18B	MW-19B
Matrix		Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-
Date Sampled		03/19/20	03/19/20	03/20/20
Parameter	**Units**			
Volatile Organic Compounds				
1,1,1-Trichloroethane	UG/L	2.0 U	2.0 U	1.0 U
1,1-Dichloroethane	UG/L	3.7	2.0 U	1.0 U
1,1-Dichloroethene	UG/L	0.87 J	2.0 U	1.0 U
1,2-Dichloroethene (cis)	UG/L	46	32	11
1,2-Dichloroethene (trans)	UG/L	0.81 J	2.0 U	1.0 U
Chloroethane	UG/L	2.0 U	2.0 U	1.0 U
Tetrachloroethene	UG/L	2.0 U	2.0 U	1.0 U
Trichloroethene	UG/L	34	2.0 U	1.0 U
Vinyl chloride	UG/L	1.1 J	51	2.3
Dissolved Gases				
Ethane	UG/L	1.0 U	2.5	NA
Ethene	UG/L	1.0 U	29	NA
Methane	UG/L	17	24,000 D	NA
Propane	UG/L	1.0 U	1.0 U	NA
Dissolved Metals				
Iron, Dissolved	UG/L	990	230	NA
Miscellaneous Parameters				
Biochemical Oxygen Demand (BOD)	MG/L	NA	NA	NA
Chemical Oxygen Demand (COD)	MG/L	4.1 J	53	NA
Chloride	MG/L	65	100	NA
Nitrate-Nitrite	MG/L	0.050 U	0.090	NA
Nitrate-Nitrogen	MG/L	0.50 UJ	0.50 UJ	NA
Nitrate-Nitrogen	MG/L	0.50 UJ	0.50 UJ	NA

Flags assigned during chemistry validation are shown.

Made By: AMK 4/16/20
Checked By: PRF 4/24/20

Detection Limits shown are PQL

TABLE 1
VALIDATED GROUNDWATER SAMPLE ANALYTICAL RESULTS
HYDE PARK FACILITY

Location ID		MW-18A	MW-18B	MW-19B
Sample ID		MW-18A	MW-18B	MW-19B
Matrix		Groundwater	Groundwater	Groundwater
Depth Interval (ft)		-	-	-
Date Sampled		03/19/20	03/19/20	03/20/20
Parameter	**Units**			
Miscellaneous Parameters				
Nitrite-Nitrogen	MG/L	0.10 UJ	0.10 UJ	NA
Sulfate (as SO4)	MG/L	130	170	NA
Sulfide	MG/L	1.0 U	16	NA
Total Organic Carbon (TOC)	MG/L	1.3	7.2	NA

Flags assigned during chemistry validation are shown.

Made By: AMK 4/16/20
Checked By: PRF 4/24/20

Detection Limits shown are PQL

TABLE 2
VALIDATED fFIELDQC SAMPLE ANALYTICAL RESULTS
HYDE PARK FACILITY

Location ID		FIELDQC	FIELDQC	FIELDQC
Sample ID		TRIP BLANK	TRIP BLANK	TRIP BLANK
Matrix		Water Quality	Water Quality	Water Quality
Depth Interval (ft)		-	-	-
Date Sampled		03/18/20	03/19/20	03/20/20
Parameter	**Units**	Trip Blank (1-1)	Trip Blank (1-1)	Trip Blank (1-1)
Volatile Organic Compounds				
1,1,1-Trichloroethane	UG/L	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	UG/L	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	UG/L	1.0 U	1.0 U	1.0 U
1,2-Dichloroethene (cis)	UG/L	0.25 J	1.0 U	1.0 U
1,2-Dichloroethene (trans)	UG/L	1.0 U	1.0 U	1.0 U
Chloroethane	UG/L	1.0 U	1.0 U	1.0 U
Tetrachloroethene	UG/L	1.0 U	1.0 U	1.0 U
Trichloroethene	UG/L	1.0 U	1.0 U	1.0 U
Vinyl chloride	UG/L	0.21 J	1.0 U	1.0 U
Dissolved Gases				
Ethane	UG/L	1.0 U	1.0 U	1.0 U
Ethene	UG/L	1.0 U	1.0 U	1.0 U
Methane	UG/L	1.0 U	0.86 J	0.63 J
Propane	UG/L	1.0 U	1.0 U	1.0 U

Flags assigned during chemistry validation are shown.

Made By: AMK 4/16/20
Checked By: PRF 4/24/20

Detection Limits shown are PQL

ATTACHMENT A

SUPPORT DOCUMENTATION

32/39 46/53

Laboratory Management Program LaMP Chain of Custody Record

Page ____ of ____

BP/ARC Project Name: BP IPO **Req Due Date (mm/dd/yy):** ____ **Rush TAT:** Yes ___ No X

BP/ARC Facility No: BP Hyde Park **Lab Work Order Number:** ____

Lab Name:	Test America (Canton, OH)	BP/ARC Facility Address:	3425 Hyde Park Blvd	Consultant/Contractor:	AECOM
Lab Address:	4101 Shuffel Street NW, North Canton, OH 44720	City, State, ZIP Code:	Niagara, NY 14305	Consultant/Contractor Project No:	60481767.17.14
Lab PM:	Lab Contact: Opal Johnson	Lead Regulatory Agency:	NYSDEC	Address:	257 West Genesee St., Suite 400 Buffalo, NY 14202
Lab Phone:	330-497-9396 / 330-497-0772	California Global ID No.:		Consultant/Contractor PM:	James Kaczor
Lab Shipping Accnt:		Enfos Proposal No:		Phone:	716-923-1300
Lab Bottle Order No:		Accounting Mode:	Provision ___ OOC-BU ___ OOC-RM ___	Email EDD To:	James.Kaczor@aecom.com
Other Info:		Stage:	Activity:	Invoice To:	BP/ARC ___ Contractor X
BP/ARC EBM:					
EBM Phone:					
EBM Email:					

Lab No.	Sample Description	Date	Time	Soil / Solid	Water / Liquid	Air / Vapor		Total Number of Containers	Unpreserved	HNO3	HCl	NaoH/Zn-acetate	H3PO4		8260C -VOCs	SM-4500_S2_F -Sulfide	410.4 - COD	RSK 175 - Dissolved Gases	5310 C - TOC	5210-BOD (TA-Buffalo)	300, 353.2, nitrate-nitrite 300.0_28D chloride, sulfate (TA - Buffalo)	6010C - Dissloved Iron (field filtered)			
	MW-14B	3/18/20	1105		X			3			3				3									
	MW-10B	3/18/20	1045		X			13	2	1	6	1	3		3	1	1	3	2	1	1	1			
	MW-10A	3/18/20	1240		X			13	2	1	6	1	3		3	1	1	3	2	1	1	1			
	MW-5A	3/18/20	1447		X			13	2	1	6	1	3		3	1	1	3	2	1	1	1			
	MW-5B	3/18/20	1515		X			13	2	1	6	1	3		3	1	1	3	2	1	1	1			
	FD-20200318-1	3/18/20	1430		X			13	2	1	6	1	3		3	1	1	3	2	1	1	1			
	MW-5B MS	3/18/20	1515		X			13	2	1	6	1	3		3	1	1	3	2	1	1	1			
	MW-5B MSD	3/18/20	1515		X			13	2	1	6	1	3		3	1	1	3	2	1	1	1			
	Trip Blank	3/18/20	—		X			4			4				2			2							

Matrix | No. Containers / Preservative | Requested Analyses

Report Type & QC Level

Standard ____

Full Data Package ____

Comments

Note: If sample not collected, indicate "No Sample" in comments and single-strike out and initial any preprinted sample description.

Sampler's Name:	Sean Connolly / Chris Bound	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Company:	AECOM		3/18/20	1700			
Shipment Method:	Dropoff at TA Buffalo, NY	Ship Date:	03/18/20	1730	ETA Canton	03/19/20	0940
Shipment Tracking No:							

Special Instructions: PO #93607 Line 2: TA Buffalo to ship to TA Canton except short hold bottles 5210-BOD, 300, 353.2, 300.0_28D :

THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: _____ °F/C | Trip Blank: Yes / No | MS/MSD Sample Submitted: Yes / No

240-127850 Chain of Custody

CASE NARRATIVE

Client: AECOM

Project: BP Hyde Park

Report Number: 240-127850-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Eurofins TestAmerica, Canton attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

RECEIPT

The samples were received on 3/19/2020 9:40 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 3.9º C and 5.3º C.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples MW-14B (240-127850-1), MW-10B (240-127850-2), MW-10A (240-127850-3), MW-5A (240-127850-4), MW-5B (240-127850-5), FD-20200318-1 (240-127850-6) and TRIP BLANK (240-127850-7) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260C. The samples were analyzed on 03/20/2020, 03/21/2020 and 03/23/2020.

Samples MW-10B (240-127850-2)[5X], MW-10A (240-127850-3)[20X], MW-5A (240-127850-4)[5X], MW-5B (240-127850-5)[2X] and FD-20200318-1 (240-127850-6)[5X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

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

DISSOLVED GASES

Samples MW-10B (240-127850-2), MW-10A (240-127850-3), MW-5A (240-127850-4), MW-5B (240-127850-5), FD-20200318-1 (240-127850-6) and TRIP BLANK (240-127850-7) were analyzed for dissolved gases in accordance with RSK_175. The samples were analyzed on 03/23/2020 and 03/24/2020.

Ethane was detected in method blank MB 240-427875/3 and MB 240-428028/3 at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged.

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

DISSOLVED METALS (ICP)

Samples MW-10B (240-127850-2), MW-10A (240-127850-3), MW-5A (240-127850-4), MW-5B (240-127850-5) and FD-20200318-1 (240-127850-6) were analyzed for dissolved metals (ICP) in accordance with EPA SW-846 Method 6010C. The samples were prepared on 03/20/2020 and analyzed on 03/24/2020.

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

ANIONS

Samples MW-10B (240-127850-2), MW-10A (240-127850-3), MW-5A (240-127850-4), MW-5B (240-127850-5) and FD-20200318-1

(240-127850-6) were analyzed for anions in accordance with EPA Method 300.0. The samples were analyzed on 03/19/2020 and 03/20/2020.

Samples MW-10B (240-127850-2)[5X], MW-10A (240-127850-3)[5X] and MW-5B (240-127850-5)[5X] required dilution prior to analysis due to the nature of the sample matrix. The reporting limits have been adjusted accordingly.

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

ANIONS

Samples MW-10B (240-127850-2), MW-10A (240-127850-3), MW-5A (240-127850-4), MW-5B (240-127850-5) and FD-20200318-1 (240-127850-6) were analyzed for anions in accordance with EPA Method 300.0. The samples were analyzed on 03/19/2020 and 03/20/2020.

Samples MW-10B (240-127850-2)[5X] and MW-5B (240-127850-5)[5X] required dilution prior to analysis due to the nature of the sample matrix. The reporting limits have been adjusted accordingly.

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

CHEMICAL OXYGEN DEMAND

Samples MW-10B (240-127850-2), MW-10A (240-127850-3), MW-5A (240-127850-4), MW-5B (240-127850-5) and FD-20200318-1 (240-127850-6) were analyzed for chemical oxygen demand in accordance with EPA Method 410.4. The samples were analyzed on 03/26/2020.

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

BIOCHEMICAL OXYGEN DEMAND

Samples MW-10B (240-127850-2), MW-10A (240-127850-3), MW-5A (240-127850-4), MW-5B (240-127850-5) and FD-20200318-1 (240-127850-6) were analyzed for Biochemical oxygen demand in accordance with SM 5210B. The samples were analyzed on 03/19/2020.

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

TOTAL ORGANIC CARBON

Samples MW-10B (240-127850-2), MW-10A (240-127850-3), MW-5A (240-127850-4), MW-5B (240-127850-5) and FD-20200318-1 (240-127850-6) were analyzed for total organic carbon in accordance with SM 5310. The samples were analyzed on 03/20/2020 and 03/21/2020.

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

SULFIDE

Samples MW-10B (240-127850-2), MW-10A (240-127850-3), MW-5A (240-127850-4), MW-5B (240-127850-5) and FD-20200318-1 (240-127850-6) were analyzed for sulfide in accordance with SM 4500 S2 E. The samples were analyzed on 03/25/2020.

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

FORM IV
GC VOA METHOD BLANK SUMMARY

Lab Name: Eurofins TestAmerica, Canton Job No.: 240-127850-1

SDG No.:

Lab Sample ID: MB 240-427875/3

Matrix: Water Date Extracted:

Lab File ID:(1) Z032303.D Lab File ID:(2)

Date Analyzed:(1) 03/23/2020 11:23 Date Analyzed:(2)

Instrument ID:(1) ZPID Instrument ID:(2)

GC Column:(1) HP-PLOT/Q ID: 0.53(mm) GC Column:(2) ID:

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
	LCS 240-427875/4	03/23/2020 11:40	
MW-10B	240-127850-2	03/23/2020 16:14	
MW-10A	240-127850-3	03/23/2020 16:31	
MW-5A	240-127850-4	03/23/2020 16:48	
MW-5B	240-127850-5	03/23/2020 17:05	
MW-5B MS	240-127850-5 MS	03/23/2020 17:22	
MW-5B MSD	240-127850-5 MSD	03/23/2020 17:40	

FORM IV
GC VOA METHOD BLANK SUMMARY

Lab Name: Eurofins TestAmerica, Canton Job No.: 240-127850-1

SDG No.:

Lab Sample ID: MB 240-428028/3

Matrix: Water Date Extracted:

Lab File ID:(1) Z032403.D Lab File ID:(2)

Date Analyzed:(1) 03/24/2020 09:15 Date Analyzed:(2)

Instrument ID:(1) ZPID Instrument ID:(2)

GC Column:(1) HP-PLOT/Q ID: 0.53(mm) GC Column:(2) ID:

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
	LCS 240-428028/4	03/24/2020 09:32	
FD-20200318-1	240-127850-6	03/24/2020 11:49	
TRIP BLANK	240-127850-7	03/24/2020 12:06	

FORM I
GC VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Canton Job No.: 240-127850-1

SDG No.:

Client Sample ID: Lab Sample ID: MB 240-427875/3

Matrix: Water Lab File ID: Z032303.D

Analysis Method: RSK-175 Date Collected:

Sample wt/vol: 23(mL) Date Analyzed: 03/23/2020 11:23

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: HP-PLOT/Q ID: 0.53(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 427875 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
74-82-8	Methane	ND		1.0	0.17
74-84-0	Ethane	0.302	J	1.0	0.29
74-85-1	Ethylene	ND		1.0	0.27
74-98-6	Propane	ND		1.0	0.38

CAS NO.	SURROGATE	%REC	Q	LIMITS
420-46-2	1,1,1-Trifluoroethane	113		60-140

FORM I
GC VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Canton Job No.: 240-127850-1

SDG No.:

Client Sample ID: Lab Sample ID: MB 240-428028/3

Matrix: Water Lab File ID: Z032403.D

Analysis Method: RSK-175 Date Collected:

Sample wt/vol: 23(mL) Date Analyzed: 03/24/2020 09:15

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: HP-PLOT/Q ID: 0.53(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 428028 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
74-82-8	Methane	ND		1.0	0.17
74-84-0	Ethane	0.307	J	1.0	0.29
74-85-1	Ethylene	ND		1.0	0.27
74-98-6	Propane	ND		1.0	0.38

CAS NO.	SURROGATE	%REC	Q	LIMITS
420-46-2	1,1,1-Trifluoroethane	115		60-140

4.3/5.0

Laboratory Management Program LaMP Chain of Custody Record

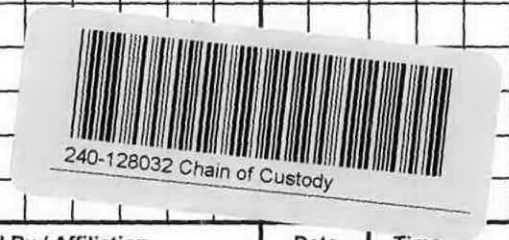
Page ____ of ____

BP/ARC Project Name: BP IPO **Req Due Date (mm/dd/yy):** ____ **Rush TAT:** Yes ___ No X

BP/ARC Facility No: BP Hyde Park **Lab Work Order Number:** ____

Lab Name:	Test America (Canton, OH)	BP/ARC Facility Address:	3425 Hyde Park Blvd	Consultant/Contractor:	AECOM
Lab Address:	4101 Shuffel Street NW, North Canton, OH 44720	City, State, ZIP Code:	Niagara, NY 14305	Consultant/Contractor Project No:	60481767.17.14
Lab PM:	Lab Contact: Opal Johnson	Lead Regulatory Agency:	NYSDEC	Address:	257 West Genesee St., Suite 400 Buffalo, NY 14202
Lab Phone:	330-497-9396 / 330-497-0772	California Global ID No.:		Consultant/Contractor PM:	James Kaczor
Lab Shipping Accnt:		Enfos Proposal No:		Phone:	716-923-1300
Lab Bottle Order No:		Accounting Mode:	Provision ___ OOC-BU ___ OOC-RM ___	Email EDD To:	James.Kaczor@aecom.com
Other Info:		Stage:	Activity:	Invoice To:	BP/ARC ___ Contractor X
BP/ARC EBM:					
EBM Phone:					
EBM Email:					

Lab No.	Sample Description	Date	Time	Matrix: Soil / Solid	Matrix: Water / Liquid	Matrix: Air / Vapor	No. Containers / Preservative: Total Number of Containers	Unpreserved	HNO3	HCl	NaoH/Zn-acetate	H3PO4	Requested Analyses: 8260C -VOCs	SM-4500_S2_F -Sulfide	410.4 - COD	RSK 175 - Dissolved Gases	5310 C - TOC	5210-EOD (TA-Buffalo)	300, 353.2, nitrate-nitrite 300.0_28D chloride, sulfate (TA - Buffalo)	6010C - Dissloved Iron (field filtered)			Report Type & QC Level / Comments
	MW-17A	3/12/20	1058		X		13	2	1	6	1	3	3	1	1	3	2	1	1	1			Standard ___ Full Data Package ___
	MW-17B	↓	1213		X		13	2	1	6	1	3	3	1	1	3	2	1	1	1			Comments: Note: If sample not collected, indicate "No Sample" in comments and single-strike out and initial any preprinted sample description.
	MW-19B		1155		X		3			3			3										
	Trip Blank		-		X		4			4			2			2							



Sampler's Name: T. Urban, C. Bourne, S. Connolly	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Company: AECOM	S. Connolly / Aecom	3/20/20	1415	[illegible]	3/20/20	1420
Shipment Method: Dropoff at TA Buffalo, NY Ship Date:	[illegible]	3/21/20	1700	Adam Connett	3-21-20	1005
Shipment Tracking No:						

Special Instructions: PO #93607 Line 2: TA Buffalo to ship to TA Canton except short hold bottles 5210-BOD, 300, 353.2, 300.0_28D :

THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: ____ °F/C | Trip Blank: Yes / No | MS/MSD Sample Submitted: Yes / No

CASE NARRATIVE

Client: AECOM

Project: BP Hyde Park

Report Number: 240-128032-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Eurofins TestAmerica, Canton attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

RECEIPT
The samples were received on 3/21/2020 10:05 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 5.0° C.

VOLATILE ORGANIC COMPOUNDS (GCMS)
Samples MW-17A (240-128032-1), MW-17B (240-128032-2), MW-19B (240-128032-3) and TRIP BLANK (240-128032-4) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260C. The samples were analyzed on 03/24/2020.

Sample MW-17A (240-128032-1)[12.5X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

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

DISSOLVED GASES
Samples MW-17A (240-128032-1), MW-17B (240-128032-2) and TRIP BLANK (240-128032-4) were analyzed for dissolved gases in accordance with RSK_175. The samples were analyzed on 03/24/2020 and 03/25/2020.

Sample MW-17B (240-128032-2)[10X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

Ethane was detected in method blank MB 240-428028/3 and method blank MB 240-428219/3 at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged.

The presence of the '4' qualifier indicates analytes where the concentration in the unspiked sample exceeded four times the spiking amount.

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

DISSOLVED METALS (ICP)
Samples MW-17A (240-128032-1) and MW-17B (240-128032-2) were analyzed for dissolved metals (ICP) in accordance with EPA SW-846 Method 6010C. The samples were prepared on 03/23/2020 and analyzed on 03/24/2020.

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

ANIONS
Samples MW-17A (240-128032-1) and MW-17B (240-128032-2) were analyzed for anions in accordance with EPA Method 300.0. The samples were analyzed on 03/21/2020.

Samples MW-17A (240-128032-1)[10X] and MW-17B (240-128032-2)[5X] required dilution prior to analysis due to the nature of the sample matrix. The reporting limits have been adjusted accordingly.

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

ANIONS
Samples MW-17A (240-128032-1) and MW-17B (240-128032-2) were analyzed for anions in accordance with EPA Method 300.0. The samples were analyzed on 03/21/2020.

Samples MW-17A (240-128032-1)[10X] and MW-17B (240-128032-2)[5X] required dilution prior to analysis due to the nature of the sample matrix. The reporting limits have been adjusted accordingly.

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

NITRATE-NITRITE AS NITROGEN
Samples MW-17A (240-128032-1) and MW-17B (240-128032-2) were analyzed for nitrate-nitrite as nitrogen in accordance with EPA Method 353.2. The samples were analyzed on 03/31/2020.

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

CHEMICAL OXYGEN DEMAND
Samples MW-17A (240-128032-1) and MW-17B (240-128032-2) were analyzed for chemical oxygen demand in accordance with EPA Method 410.4. The samples were analyzed on 04/01/2020 and 04/02/2020.

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

BIOCHEMICAL OXYGEN DEMAND
Samples MW-17A (240-128032-1) and MW-17B (240-128032-2) were analyzed for Biochemical oxygen demand in accordance with SM 5210B. The samples were analyzed on 03/21/2020.

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

TOTAL ORGANIC CARBON
Samples MW-17A (240-128032-1) and MW-17B (240-128032-2) were analyzed for total organic carbon in accordance with SM 5310. The samples were analyzed on 03/24/2020.

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

SULFIDE
Samples MW-17A (240-128032-1) and MW-17B (240-128032-2) were analyzed for sulfide in accordance with SM 4500 S2 E. The samples were analyzed on 03/26/2020.

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

FORM IV
GC VOA METHOD BLANK SUMMARY

Lab Name: Eurofins TestAmerica, Canton Job No.: 240-128032-1

SDG No.:

Lab Sample ID: MB 240-428028/3

Matrix: Water Date Extracted:

Lab File ID:(1) Z032403.D Lab File ID:(2)

Date Analyzed:(1) 03/24/2020 09:15 Date Analyzed:(2)

Instrument ID:(1) ZPID Instrument ID:(2)

GC Column:(1) HP-PLOT/Q ID: 0.53(mm) GC Column:(2) ID:

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
	LCS 240-428028/4	03/24/2020 09:32	
MW-17A	240-128032-1	03/24/2020 14:24	
MW-17B	240-128032-2	03/24/2020 14:41	
TRIP BLANK	240-128032-4	03/24/2020 14:58	

FORM IV
GC VOA METHOD BLANK SUMMARY

Lab Name: Eurofins TestAmerica, Canton Job No.: 240-128032-1

SDG No.:

Lab Sample ID: MB 240-428219/3

Matrix: Water Date Extracted:

Lab File ID:(1) Z032503.D Lab File ID:(2)

Date Analyzed:(1) 03/25/2020 09:34 Date Analyzed:(2)

Instrument ID:(1) ZPID Instrument ID:(2)

GC Column:(1) HP-PLOT/Q ID: 0.53(mm) GC Column:(2) ID:

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
	LCS 240-428219/4	03/25/2020 09:51	
	LCS 240-428219/5	03/25/2020 10:08	
MW-17B	240-128032-2	03/25/2020 11:34	

FORM I
GC VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Canton Job No.: 240-128032-1

SDG No.:

Client Sample ID: Lab Sample ID: MB 240-428028/3

Matrix: Water Lab File ID: Z032403.D

Analysis Method: RSK-175 Date Collected:

Sample wt/vol: 23(mL) Date Analyzed: 03/24/2020 09:15

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: HP-PLOT/Q ID: 0.53(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 428028 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
74-82-8	Methane	ND		1.0	0.17
74-84-0	Ethane	0.307	J	1.0	0.29
74-85-1	Ethylene	ND		1.0	0.27
74-98-6	Propane	ND		1.0	0.38

CAS NO.	SURROGATE	%REC	Q	LIMITS
420-46-2	1,1,1-Trifluoroethane	115		60-140

FORM I
GC VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Canton Job No.: 240-128032-1

SDG No.:

Client Sample ID: Lab Sample ID: MB 240-428219/3

Matrix: Water Lab File ID: Z032503.D

Analysis Method: RSK-175 Date Collected:

Sample wt/vol: 23(mL) Date Analyzed: 03/25/2020 09:34

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: HP-PLOT/Q ID: 0.53(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 428219 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
74-82-8	Methane	ND		1.0	0.17
74-84-0	Ethane	0.316	J	1.0	0.29
74-85-1	Ethylene	ND		1.0	0.27
74-98-6	Propane	ND		1.0	0.38

CAS NO.	SURROGATE	%REC	Q	LIMITS
420-46-2	1,1,1-Trifluoroethane	115		60-140

5.3 / 6.0 / 5.4 / 6.1

Laboratory Management Program LaMP Chain of Custody Record

Page ____ of ____

BP/ARC Project Name: BP IPO | **Req Due Date (mm/dd/yy):** ______ | **Rush TAT:** Yes ___ No X

BP/ARC Facility No: BP Hyde Park | **Lab Work Order Number:** ______

Lab Name:	Test America (Canton, OH)	BP/ARC Facility Address:	3425 Hyde Park Blvd	Consultant/Contractor:	AECOM
Lab Address:	4101 Shuffel Street NW, North Canton, OH 44720	City, State, ZIP Code:	Niagara, NY 14305	Consultant/Contractor Project No:	60481767.17.14
Lab PM:	Lab Contact: Opal Johnson	Lead Regulatory Agency:	NYSDEC	Address:	257 West Genesee St., Suite 400 Buffalo, NY 14202
Lab Phone:	330-497-9396 / 330-497-0772	California Global ID No.:		Consultant/Contractor PM:	James Kaczor
Lab Shipping Accnt:		Enfos Proposal No:			716-923-1300
Lab Bottle Order No:		Accounting Mode:	Provision ___ OOC-BU		James.Kaczor@aecom.com
Other Info:		Stage:	Activity:	ARC ___	Contractor X
BP/ARC EBM:					
EBM Phone:					
EBM Email:					

240-128064 Chain of Custody

Report Type & QC Level: Standard ___ Full Data Package ___

Lab No.	Sample Description	Date	Time	Soil / Solid	Water / Liquid	Air / Vapor		Total Number of Containers	Unpreserved	HNO3	HCl	NaoH/Zn-acetate	H3PO4		8260C -VOCs	SM-4500_S2_F -Sulfide	410.4 - COD	RSK 175 - Dissolved Gases	5310 C - TOC	5210-BOD (TA-Buffalo)	300, 353.2, nitrate-nitrite 300.0_28D chloride, sulfate (TA - Buffalo)	6010C - Dissloved Iron (field filtered)			Comments (Note: If sample not collected, indicate "No Sample" in comments and single-strike out and initial any preprinted sample description.)
	MW-13B	3/19/20	0925 ~~0930~~ SPC		X			3			3				3										
	MW-12B	3/19/20	0930		X			13	2	1	6	1	3		3	1	1	3	2	1	1	1			
	MW-17A	3/19/20	1215		X			13	2	1	6	1	3		3	1	1	3	2	1	1	1			
	MW-17B	3/19/20	1110		X			13	2	1	6	1	3		3	1	1	3	2	1	1	1			
	MW-18A	3/19/20	1120		X			13	2	1	6	1	3		3	1	1	3	2	1	1	1			
	MW-18B	3/19/20	1240		X			13	2	1	6	1	3		3	1	1	3	2	1	1	1			
	MW-7B	3/19/20	1345		X			13	2	1	6	1	3		3	1	1	3	2	1	1	1			
	Trip Blank	3/19/20	—		X			4			4				2			2							
	MW-6	3/19/20	1425		X			3			3				3										
	MW-7A	3/19/20	1503		X			13	2	1	6	1	3		3	1	1	3	2	1	1	1			

		Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Name:	T. Urban; C. Brown; S. Connelly	S. P. Connelly / Aecom	3/19/20	1620 ~~1503~~	[signature]	3/19/20	1620
Sampler's Company:	AECOM	[signature]	03/19/20	1700	[signature]	3-23-20	840
Shipment Method:	Dropoff at TA Buffalo, NY — Ship Date:						
Shipment Tracking No:							

Special Instructions: PO #93607 Line 2: TA Buffalo to ship to TA Canton except short hold bottles 5210-BOD, 300, 353.2, 300.0_28D :

THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: ______ °F/C | Trip Blank: Yes / No | MS/MSD Sample Submitted: Yes / No

BP/ARC LaMP COC Rev. 6 01/01/2009

CASE NARRATIVE

Client: AECOM

Project: BP Hyde Park

Report Number: 240-128064-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Eurofins TestAmerica, Canton attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

RECEIPT

The samples were received on 3/23/2020 8:40 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 6.0° C and 6.1° C. The cooler at 6.1° C was received with indication of cooling by melted ice (water) in the cooler.

Receipt Exceptions

All of the samples for BOD analysis were received outside of holding time: MW-13B (240-128064-1), MW-12B (240-128064-2), MW-17A (240-128064-3), MW-17B (240-128064-4), MW-18A (240-128064-5), MW-18B (240-128064-6), MW-7B (240-128064-7), TRIP BLANK (240-128064-8), MW-6 (240-128064-9) and MW-7A (240-128064-10). Client was contacted and the test was deleted from all associated samples.

VOLATILE ORGANIC COMPOUNDS (GCMS)

Samples MW-13B (240-128064-1), MW-12B (240-128064-2), MW-17A (240-128064-3), MW-17B (240-128064-4), MW-18A (240-128064-5), MW-18B (240-128064-6), MW-7B (240-128064-7), TRIP BLANK (240-128064-8), MW-6 (240-128064-9) and MW-7A (240-128064-10) were analyzed for volatile organic compounds (GCMS) in accordance with EPA SW-846 Method 8260C. The samples were analyzed on 03/26/2020 and 03/27/2020.

Samples MW-12B (240-128064-2)[2X], MW-17A (240-128064-3)[2X], MW-18A (240-128064-5)[2X], MW-18B (240-128064-6)[2X] and MW-7A (240-128064-10)[2X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

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

DISSOLVED GASES

Samples MW-12B (240-128064-2), MW-17A (240-128064-3), MW-17B (240-128064-4), MW-18A (240-128064-5), MW-18B (240-128064-6), MW-7B (240-128064-7), TRIP BLANK (240-128064-8) and MW-7A (240-128064-10) were analyzed for dissolved gases in accordance with RSK_175. The samples were analyzed on 03/24/2020, 03/25/2020 and 03/27/2020.

Samples MW-17A (240-128064-3)[10X], MW-17B (240-128064-4)[20X], MW-18B (240-128064-6)[20X] and MW-7A (240-128064-10) [20X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

Ethane was detected in method blank MB 240-428028/3, method blank MB 240-428219/3 and MB 240-428554/3 at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged.

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

DISSOLVED METALS (ICP)
Samples MW-12B (240-128064-2), MW-17A (240-128064-3), MW-17B (240-128064-4), MW-18A (240-128064-5), MW-18B (240-128064-6), MW-7B (240-128064-7) and MW-7A (240-128064-10) were analyzed for dissolved metals (ICP) in accordance with EPA SW-846 Method 6010C. The samples were prepared on 03/24/2020 and analyzed on 03/26/2020.

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

ANIONS
Samples MW-12B (240-128064-2), MW-17A (240-128064-3), MW-17B (240-128064-4), MW-18A (240-128064-5), MW-18B (240-128064-6), MW-7B (240-128064-7) and MW-7A (240-128064-10) were analyzed for anions in accordance with EPA Method 300.0. The samples were analyzed on 03/23/2020 and 03/24/2020.

Samples MW-12B (240-128064-2)[5X], MW-17A (240-128064-3)[5X], MW-17B (240-128064-4)[5X], MW-18A (240-128064-5)[5X], MW-18B (240-128064-6)[5X], MW-7B (240-128064-7)[5X] and MW-7A (240-128064-10)[5X] required dilution prior to analysis due to the nature of the sample matirx. The reporting limits have been adjusted accordingly.

The following samples were received outside of holding time: MW-12B (240-128064-2), MW-17A (240-128064-3), MW-17B (240-128064-4), MW-18A (240-128064-5), MW-18B (240-128064-6), MW-7B (240-128064-7) and MW-7A (240-128064-10).

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

ANIONS
Samples MW-12B (240-128064-2), MW-17A (240-128064-3), MW-17B (240-128064-4), MW-18A (240-128064-5), MW-18B (240-128064-6), MW-7B (240-128064-7) and MW-7A (240-128064-10) were analyzed for anions in accordance with EPA Method 300.0. The samples were analyzed on 03/23/2020 and 03/24/2020.

Samples MW-12B (240-128064-2)[5X] and MW-7B (240-128064-7)[5X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

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

NITRATE-NITRITE AS NITROGEN
Samples MW-12B (240-128064-2), MW-17A (240-128064-3), MW-17B (240-128064-4), MW-18A (240-128064-5), MW-18B (240-128064-6), MW-7B (240-128064-7) and MW-7A (240-128064-10) were analyzed for nitrate-nitrite as nitrogen in accordance with EPA Method 353.2. The samples were analyzed on 03/25/2020 and 03/31/2020.

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

CHEMICAL OXYGEN DEMAND
Samples MW-12B (240-128064-2), MW-17A (240-128064-3), MW-17B (240-128064-4), MW-18A (240-128064-5), MW-18B (240-128064-6), MW-7B (240-128064-7) and MW-7A (240-128064-10) were analyzed for chemical oxygen demand in accordance with EPA Method 410.4. The samples were analyzed on 04/01/2020.

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

TOTAL ORGANIC CARBON
Samples MW-12B (240-128064-2), MW-17A (240-128064-3), MW-17B (240-128064-4), MW-18A (240-128064-5), MW-18B (240-128064-6), MW-7B (240-128064-7) and MW-7A (240-128064-10) were analyzed for total organic carbon in accordance with SM 5310. The samples were analyzed on 03/26/2020.

Sample MW-7A (240-128064-10)[2X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

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

SULFIDE
Samples MW-12B (240-128064-2), MW-17A (240-128064-3), MW-17B (240-128064-4), MW-18A (240-128064-5), MW-18B (240-128064-6), MW-7B (240-128064-7) and MW-7A (240-128064-10) were analyzed for sulfide in accordance with SM 4500 S2 E. The samples were analyzed on 03/26/2020.

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

Appendix C

Monitoring Well Analytical Data Summary, 2007 to 2020

MONITORING WELL GROUNDWATER ANALYTICAL RESULT SUMMARY
HYDE PARK FACILITY
NIAGARA, NEW YORK

Well ID: MW- 1A

Date	PCE (µg/L)	TCE (µg/L)	Cis-1,2-DCE (µg/L)	Trans-1,2-DCE (µg/L)	1,1-DCE (µg/L)	Vinyl Chloride (µg/L)	Ethane (µg/L)	Ethene (µg/L)	Methane (µg/L)	1,1,1-Trichloroethane (µg/L)	1,1-Dichloroethane (µg/L)	Chloroethane (µg/L)	Dissolved Iron (mg/L)	BOD (mg/L)	COD (mg/L)	TOC (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)
10/31/2007	5 U	5 U	5 U	5 U	5 U	2 U				5 U	5 U	5 U									
4/23/2008	5 U	5 U	5 U	5 U	5 U	2 U	1 U	1 U	2.6	5 U	5 U	5 U		2 U	6.02	1.53	112	109	1 U	0.05 U	0.05 U
10/27/2009	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	30	5 U	5 U	5 U		1.7 U	16.5 J	2	140 J	141	0.16 U	0 R	0.05 U

J Indicates an estimated value.
U Analyte was not detected above the reporting limit.
UJ The analyte was not detected. The reporting limit is an approximate value.
J- Indicates estimated value, biased low.
J+ Indicates estimated value, biased high.
D Result reported from a secondary dilution analysis.
R The sample results are rejected.

MONITORING WELL GROUNDWATER ANALYTICAL RESULT SUMMARY
HYDE PARK FACILITY
NIAGARA, NEW YORK

Well ID: MW- 1B

Date	PCE (µg/L)	TCE (µg/L)	Cis-1,2-DCE (µg/L)	Trans-1,2-DCE (µg/L)	1,1-DCE (µg/L)	Vinyl Chloride (µg/L)	Ethane (µg/L)	Ethene (µg/L)	Methane (µg/L)	1,1,1-Trichloroethane (µg/L)	1,1-Dichloroethane (µg/L)	Chloroethane (µg/L)	Dissolved Iron (mg/L)	BOD (mg/L)	COD (mg/L)	TOC (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)
10/30/2007	5 U	5 U	11	5 U	5 U	16	0.36 J	0.97 J	160	5 U	5 U	5 U		2 U	5 UJ	4.23	97.6	301	1 U		
4/23/2008	5 U	5 U	1.2 J	5 U	5 U	1.9 J	1 U	1 U	64	5 U	0.71 J	5 U		2 U	13	4.06	70	181	1 U	0.05 U	0.05 U
10/27/2009	5 U	5 U	1.3 J	5 U	5 U	1.7 J	5 U	5 U	59	5 U	5 U	5 U		1.6 U	32.5 J	4.5	71.8 J	218	0.16 U	0 R	0.05 U

J Indicates an estimated value.
U Analyte was not detected above the reporting limit.
UJ The analyte was not detected. The reporting limit is an approximate value.
J- Indicates estimated value, biased low.
J+ Indicates estimated value, biased high.
D Result reported from a secondary dilution analysis.
R The sample results are rejected.

MONITORING WELL GROUNDWATER ANALYTICAL RESULT SUMMARY
HYDE PARK FACILITY
NIAGARA, NEW YORK

Well ID: MW- 2A

Date	PCE (µg/L)	TCE (µg/L)	Cis-1,2-DCE (µg/L)	Trans-1,2-DCE (µg/L)	1,1-DCE (µg/L)	Vinyl Chloride (µg/L)	Ethane (µg/L)	Ethene (µg/L)	Methane (µg/L)	1,1,1-Trichloroethane (µg/L)	1,1-Dichloroethane (µg/L)	Chloroethane (µg/L)	Dissolved Iron (mg/L)	BOD (mg/L)	COD (mg/L)	TOC (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)
11/1/2007	5 U	0.91 J	9.8	5 U	5 U	1.9 J				5 U	7.1	4.9 J									
4/28/2008	5 U	5 U	0.38 J	5 U	2.4 J	2 U				2 J	14	1.2 J									
10/28/2009	5 U	5 U	5 U	5 U	6	1.3 J				7.6	26	1.2 J									
5/11/2010	5 U	5 U	5 U	5 U	4.3 J	1.2 J	5 U	5 U	30	4.9 J	18	1.7 J									

J Indicates an estimated value.
U Analyte was not detected above the reporting limit.
UJ The analyte was not detected. The reporting limit is an approximate value.
J- Indicates estimated value, biased low.
J+ Indicates estimated value, biased high.
D Result reported from a secondary dilution analysis.
R The sample results are rejected.

MONITORING WELL GROUNDWATER ANALYTICAL RESULT SUMMARY
HYDE PARK FACILITY
NIAGARA, NEW YORK

Well ID: MW- 2B

Date	PCE (µg/L)	TCE (µg/L)	Cis-1,2-DCE (µg/L)	Trans-1,2-DCE (µg/L)	1,1-DCE (µg/L)	Vinyl Chloride (µg/L)	Ethane (µg/L)	Ethene (µg/L)	Methane (µg/L)	1,1,1-Trichloroethane (µg/L)	1,1-Dichloroethane (µg/L)	Chloroethane (µg/L)	Dissolved Iron (mg/L)	BOD (mg/L)	COD (mg/L)	TOC (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)
11/1/2007	5 U	5 U	48	5 U	5 U	59				5 U	5 U	5 U									
4/28/2008	5 U	5 U	41	5 U	5 U	62				5 U	5 U	5 U									
10/28/2009	5 U	5 U	9.1	5 U	5 U	16				5 U	5 U	5 U									
5/11/2010	5 U	5 U	3.7 J	5 U	5 U	7.6	1.9 J	55	2300	5 U	5 U	5 U									
10/20/2011	5 U	5 U	1.8 J	5 U	5 U	2.6 J				5 U	5 U	5 U									
6/13/2012	5 U	5 U	2.7 J	5 U	5 U	8.6				5 U	5 U	5 U									
8/30/2013	5 U	5 U	2.3 J	5 U	5 U	4 J				5 U	5 U	5 U									
4/3/2014	1 U	1 U	1	0.72 J	1 U	2.2				1 UJ	0.92 J	1 U									
11/20/2015	1 U	1 U	0.87 J	0.56 J	1 U	3.4				1 U	0.65 J	1 U									
4/19/2016	1.0 U	1.0 U	0.95 J	1.0 U	1.0 U	2.2				1.0 U	0.96 J	1.0 U									
9/12/2017	1.0 U	1.0 U	0.77 J	1.0 U	1.0 U	1.8				1.0 U	0.5 J	1.0 U									
4/25/2018	1.0 U	1.0 U	1.3	1.0 U	1.0 U	2.6				1.0 U	1.0 U	1.0 U									

J Indicates an estimated value.
U Analyte was not detected above the reporting limit.
UJ The analyte was not detected. The reporting limit is an approximate value.
J- Indicates estimated value, biased low.
J+ Indicates estimated value, biased high.
D Result reported from a secondary dilution analysis.
R The sample results are rejected.

MONITORING WELL GROUNDWATER ANALYTICAL RESULT SUMMARY
HYDE PARK FACILITY
NIAGARA, NEW YORK

Well ID: MW- 3A

Date	PCE (µg/L)	TCE (µg/L)	Cis-1,2-DCE (µg/L)	Trans-1,2-DCE (µg/L)	1,1-DCE (µg/L)	Vinyl Chloride (µg/L)	Ethane (µg/L)	Ethene (µg/L)	Methane (µg/L)	1,1,1-Trichloroethane (µg/L)	1,1-Dichloroethane (µg/L)	Chloroethane (µg/L)	Dissolved Iron (mg/L)	BOD (mg/L)	COD (mg/L)	TOC (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)
10/31/2007	5 U	5 U	0.9 J	5 U	5 U	2 U	0.54 J	1 U	6	5 U	5 U	5 U		2 U	19 J	3.21	16.4	319	3.64		
4/24/2008	5 U	0.21 J	0.71 J	5 U	5 U	2 U	1 U	1 U	12	5 U	5 U	5 U		2 U	6.92	2.89	0.2 U	292	1 U	0.05 U	0.05 U
8/12/2008	5 U	5 U	0.89 J	5 U	5 U	5 U	5 U	5 U	25	5 U	5 U					2.6	17.6	318			
10/6/2008	5 U	1.9 J	11	5 U	5 U	5 U	5 U	5 U	19 J	5 U	5 U	5 U				2.3	19.4 J	347			
12/8/2008	5 U	1.4 J	5 U	5 U	5 U	5 U	5 U	5 U	7.7 J	5 U	5 U	5 U				4.9	23.3	444			
1/26/2009	5 U	5 U	1 J	5 U	5 U	5 U	5 U	5 U	7.3 J	5 U	5 U	5 U									
3/16/2009	5 U	5 U	0.99 J	5 U	5 U	5 U	5 U	5 U	5 J	5 U	5 U	5 U				3.7	27.3	334			
10/27/2009	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	14 J	5 U	5 U	5 U		1.9 U	25.6 J	2.2	15.9 J	250	0.16 U	0 R	0.05 U

J Indicates an estimated value.
U Analyte was not detected above the reporting limit.
UJ The analyte was not detected. The reporting limit is an approximate value.
J- Indicates estimated value, biased low.
J+ Indicates estimated value, biased high.
D Result reported from a secondary dilution analysis.
R The sample results are rejected.

MONITORING WELL GROUNDWATER ANALYTICAL RESULT SUMMARY
HYDE PARK FACILITY
NIAGARA, NEW YORK

Well ID: MW- 3B

Date	PCE (µg/L)	TCE (µg/L)	Cis-1,2-DCE (µg/L)	Trans-1,2-DCE (µg/L)	1,1-DCE (µg/L)	Vinyl Chloride (µg/L)	Ethane (µg/L)	Ethene (µg/L)	Methane (µg/L)	1,1,1-Trichloroethane (µg/L)	1,1-Dichloroethane (µg/L)	Chloroethane (µg/L)	Dissolved Iron (mg/L)	BOD (mg/L)	COD (mg/L)	TOC (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)
10/31/2007	5 U	5 U	1.9 J	5 U	5 U	2.2	1 U	1 U	220	5 U	5 U	5 U		2 U	5 UJ	3.19	134	395	1 U		
4/25/2008	5 U	5 U	2.1 J	5 U	5 U	2.2	0.6 J	1 U	180	5 U	5 U	5 U		4.17	14.1	3.64	132	333	1 U	0.05 U	0.05 U
10/27/2009	5 U	5 U	1.5 J	5 U	5 U	2.9 J	5 U	5 U	170	5 U	5 U	5 U		2.2 U	16.5 J	3.8	121 J	254	0.9	0 R	0.05 U

J Indicates an estimated value.
U Analyte was not detected above the reporting limit.
UJ The analyte was not detected. The reporting limit is an approximate value.
J- Indicates estimated value, biased low.
J+ Indicates estimated value, biased high.
D Result reported from a secondary dilution analysis.
R The sample results are rejected.

MONITORING WELL GROUNDWATER ANALYTICAL RESULT SUMMARY
HYDE PARK FACILITY
NIAGARA, NEW YORK

Well ID: MW- 4A

Date	PCE (µg/L)	TCE (µg/L)	Cis-1,2-DCE (µg/L)	Trans-1,2-DCE (µg/L)	1,1-DCE (µg/L)	Vinyl Chloride (µg/L)	Ethane (µg/L)	Ethene (µg/L)	Methane (µg/L)	1,1,1-Trichloroethane (µg/L)	1,1-Dichloroethane (µg/L)	Chloroethane (µg/L)	Dissolved Iron (mg/L)	BOD (mg/L)	COD (mg/L)	TOC (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)
10/31/2007	5 U	34	200	3.2 J	1.8 J	56	0.55 J	5.6	130	5 U	12	5 U		2 U	5 UJ	1.87	106	242	1 U		
4/29/2008	5 U	34	200	3.1 J	1.6 J	53	0.55 J	5.6	130	5 U	15	5 U		2 U	6.62	1.52	117	231	1 U	0.05 U	0.05 U
11/3/2009	5 U	130	110	5.7	2.5 J	41	5 U	4.6 J	83	5 U	17	5 U		2.6 U	50 U	1.7 J	97.1	244	0.16 U	0.1 U	0.05 U
5/14/2010	5 U	94	250	4.9 J	2.6 J	45	5 U	5.7	110	5 U	21	5 U		2.1 U	50 U	1.8	109	249	0.16 U	0.1 U	0.05 U
10/25/2011	5 U	160	150	8.1	3.8 J	73	5 U	12	170	5 U	18	5 U	0.0146 J	3.1 U	50 U	2.1	95.9 J	263 J	0.16 U	0.1 U	0.05 U
3/14/2012																					
3/15/2012	50 UJ	65 J	97 J	9.5 J	50 UJ	14 J	5.7	20	1200	50 UJ	18 J	50 UJ	0.0523 J			999	160	46.3			
6/12/2012	5 U	7.5	140	2.9 J	0.81 J	20	5 U	3.9 J	3700	5 U	5.4	7.8	3.22		1350	434	89.8	5 U		0.1 U	0.05 U
6/13/2012																			0.34		
6/25/2012														796							
11/29/2012	5 U	5.5	120	4.2 J	0.92 J	39	5 U	48	7900	5 U	3.6 J	21	4.85			397	37.8	5 U			
9/3/2013	5 U	4.2 J	31	3.5 J	5 U	11	1.4 J	60 J	11000	5 U	1.3 J	17		551 J	1040 J	251	82.9	1.6 J	0.074 J	0.1 UJ	0.05 U
1/22/2014	5 U	1.1 J	7.5	2.4 J	5 U	7.2	5 U	65	22000	5 U	5 U	12	39.4			362	87.3	5 U	0.16 U		
4/3/2014	1 U	1.2	3.7	2.1	1 U	4.1	4.2 J	47	25000	1 U	1 U	12	36.2	342	640	205	99	5 U	0.17	0.1 UJ	0.018 J
10/14/2014	1 U	0.57 J	5.3	2.2	1 U	5.8	3.5 J	56	19000 J	1 UJ	1.1	9.1	57.6			159	83.8	2.5 J	0.16 U		
11/18/2015	1 U	1.2	1.3	1 U	1 U	1.1	5.2	18	17000	1 U	1	3	14.5	70.6	443	36.6	123	5.6	0.085 J	0.1 U	0.05 U
4/21/2016	1.0 U	3.4	2.8	1.0 U	1.0 U	1.1	4.3 J	8.6	26000 D	1.0 U	1.4	3	9.67	34.3	181	20.4	179	7.6	0.069 J	0.10 U	0.050 U
9/11/2017	1.0 U	1.3	0.68 J	1.0 U	1.0 UJ	2.6	3.9	5.5	5400 D	1.0 U	1.4	2.7	11	27	48	17	26	2.1 J	1.0 U	0.25 U	0.050 UJ
4/23/2018	1.0 U	0.44 J	1.1	0.51 J	1.0 U	0.96 J	10 U	10 U	21000	1.0 U	1.8	2.5	14	7.6	23	7.2	110	3.7 J	1.0 U	0.25 U	0.050 UJ

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UJ The analyte was not detected. The reporting limit is an approximate value.
J- Indicates estimated value, biased low.
J+ Indicates estimated value, biased high.
D Result reported from a secondary dilution analysis.
R The sample results are rejected.

MONITORING WELL GROUNDWATER ANALYTICAL RESULT SUMMARY
HYDE PARK FACILITY
NIAGARA, NEW YORK

Well ID: MW- 4B

Date	PCE (µg/L)	TCE (µg/L)	Cis-1,2-DCE (µg/L)	Trans-1,2-DCE (µg/L)	1,1-DCE (µg/L)	Vinyl Chloride (µg/L)	Ethane (µg/L)	Ethene (µg/L)	Methane (µg/L)	1,1,1-Trichloroethane (µg/L)	1,1-Dichloroethane (µg/L)	Chloroethane (µg/L)	Dissolved Iron (mg/L)	BOD (mg/L)	COD (mg/L)	TOC (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)
10/31/2007	5 U	5 U	23	5 U	5 U	11	0.39 J	0.39 J	200	5 U	1.4 J	5 U		2 U	5.52 J	3.15	152	316	2.59		
4/29/2008	5 U	5 U	12	5 U	5 U	13	0.43 J	0.66 J	260	5 U	5 U	5 U		2 U	8.98	3.29	152	247	1 U	0.05 U	0.05 U
11/3/2009	5 U	5 U	9.7	5 U	5 U	9.5	5 U	5 U	140	5 U	5 U	5 U		3 U	25.6 J	2.9 J	190	267	0.16 J	0.1 U	0.05 U
5/14/2010	5 U	5 U	2.8 J	5 U	5 U	12	5 U	5 U	160	5 U	5 U	5 U		2.7 U	13.3 J	3.4	165	305	0.16 U	0.1 U	0.05 U
1/16/2014	5 U	5 U	11	5 U	5 U	15	5 U	2.8 J	150	5 U	1.1 J	5 U	0.459			3.9	142	298 J+	0.16 U		

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D Result reported from a secondary dilution analysis.
R The sample results are rejected.

MONITORING WELL GROUNDWATER ANALYTICAL RESULT SUMMARY
HYDE PARK FACILITY
NIAGARA, NEW YORK

Well ID: MW- 5A

Date	PCE (µg/L)	TCE (µg/L)	Cis-1,2-DCE (µg/L)	Trans-1,2-DCE (µg/L)	1,1-DCE (µg/L)	Vinyl Chloride (µg/L)	Ethane (µg/L)	Ethene (µg/L)	Methane (µg/L)	1,1,1-Trichloroethane (µg/L)	1,1-Dichloroethane (µg/L)	Chloroethane (µg/L)	Dissolved Iron (mg/L)	BOD (mg/L)	COD (mg/L)	TOC (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)
10/29/2007															5 UJ						
10/30/2007	5 U	0.59 J	2.6 J	5 U	5 U	2 U	1 U	1 U	0.74 J	5 U	5 U	5 U		2 U		1.14	569	172	1 U		
4/22/2008	5 U	0.47 J	37	0.35 J	5 U	16	2	4.7	22	5 U	5 U	5 U		2 U	12.2	1.44	542	164	1 U	0.613	0.05 U
10/29/2009	5 U	5 U	5.9	5 U	5 U	1.8 J	5 U	5 U	5.5 J	5 U	5 U	5 U		1.7 U	23.3 J	1.1	263	148 J	0.16 U	0.85	0.05 U
5/13/2010	5 U	5 U	110	0.97 J	5 U	84	1.8 J	45	100	5 U	5 U	5 U		1.6 U	15.6 J	1.3	188	126	0.16 U	0.7	0.05 U
10/21/2011	5 U	5 U	5.7	5 U	5 U	3.3 J	5 U	1.5 J	9.6 J	5 U	5 U	5 U	0.0265 J	3.1 U	50 U	1.5	204	164	0.16 U	0.75	0.05 U
6/12/2012	5 U	5 U	88	1 J	5 U	82	2.8 J	34	130	5 U	5 U	1 J	0.2 U	3.2 U	50 U	0.98 J	120	116	0.16 U	0.57	0.05 U
8/28/2013	5 U	5 U	110	1.4 J	5 U	190	9.5	100	460	5 U	1.3 J	5 U		4.3 U	50 U	1.2	106 J	91.7	0.16 U	0.35	0.05 U
4/2/2014	1 U	1 U	240	2.3	1 U	300	16	110	1100	1 UJ	3.3	2.1	0.4 U	4.1 U	50 U	2.3	128 J-	63.3 J+	0.16 U	0.13	0.05 U
11/17/2015	1 U	1 U	150	1.6	1 U	140	5.4	39	2000	1 U	1.4	1.5	0.4 U		50 U	1 U	102	102	0.16 U	0.61	0.05 U
11/20/2015														6 U							
4/19/2016	1.0 U	1.0 U	340 D	5.4	1.0 U	340 D	12	87	7500	1.0 U	4.2	1.0 U	0.400 U	7.3	24.4 J	1.2	151	70.2	0.10 U	0.56	0.050 U
9/13/2017	2.0 U	2.0 U	61	0.74 J	2.0 U	68	2.1	9.8	460	2.0 U	0.88 J	2.0 U	0.100 U	2.0 U	12	0.76 J	69	99	1.0 U	0.25 U	0.050 U
4/24/2018	13 U	13 U	250	13 U	13 U	310	18	69	4200	13 U	3.3 J	13 U	0.200 U	4	4.2 J	1.5	120	60	1.0 U	0.13 J	0.050 UJ
12/3/2019	1.0 U	0.47 J	9.5	1.0 U	1.0 U	11	2.1	3.7	140	1.0 U	1.0 U	1.0 U	0.20 U	2.0 U	4.1 J	0.68 J	89	97	1.0 U	0.59	
3/18/2020	5.0 U	0.52 J	130	1.2 J	5.0 U	180	38	47	2600	5.0 U	2.5 J	5.0 U	0.2 U	1.3 J	12	1.2	130	67	1.0 U	0.098 J	0.10 U

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J+ Indicates estimated value, biased high.
D Result reported from a secondary dilution analysis.
R The sample results are rejected.

MONITORING WELL GROUNDWATER ANALYTICAL RESULT SUMMARY
HYDE PARK FACILITY
NIAGARA, NEW YORK

Well ID: MW- 5B

Date	PCE (µg/L)	TCE (µg/L)	Cis-1,2-DCE (µg/L)	Trans-1,2-DCE (µg/L)	1,1-DCE (µg/L)	Vinyl Chloride (µg/L)	Ethane (µg/L)	Ethene (µg/L)	Methane (µg/L)	1,1,1-Trichloroethane (µg/L)	1,1-Dichloroethane (µg/L)	Chloroethane (µg/L)	Dissolved Iron (mg/L)	BOD (mg/L)	COD (mg/L)	TOC (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)
10/29/2007	5 U	0.76 J	61	0.66 J	5 U	49	1 U	0.6 J	86	5 U	0.38 J	5 U		2 U	5 UJ	4.26	83.2	230	1 U		
4/22/2008	5 U	0.51 J	58	0.5 J	5 U	57	0.37 J	0.76 J	80	5 U	5 U	5 U		2 U	9.57	4.49	81	223	1.94	0.05 U	0.05 U
10/29/2009	5 U	5 U	39	5 U	5 U	37	5 U	5 U	50	5 U	5 U	5 U		1.7 U	14.2 J	4.9	112	229 J	0.16 U	0.1 U	0.05 U
5/13/2010	5 U	1.1 J	36	5 U	5 U	39	5 U	5 U	63	5 U	5 U	5 U		1.2 U	15.6 J	4.7	98.5	234	0.16 U	0.1 U	0.05 U
11/9/2010	5 U	5 U	43	5 U	5 U	45	5 U	1.1 J	81	5 U	5 U	5 U				4.1	111	254			
10/21/2011	5 U	5 U	48	5 U	5 U	63	5 U	5 U	72	5 U	5 U	5 U	0.0196 J	2.5 U	17.9 J	4.9	130	358	0.16 U	0.1 U	0.05 U
6/13/2012	5 U	5 U	33	5 U	5 U	34	5 U	5 U	50	5 U	5 U	5 U	0.2 U	3.7 U	33.3 J	3.4	187	255	0.16 U	0.1 U	0.05 U
11/30/2012	5 U	5 U	39	5 U	5 U	44	5 U	5 U	66	5 U	5 U	5 U				3	166	267			
8/28/2013	5 U	5 U	32	5 U	5 U	44	5 U	5 U	41	5 U	5 U	5 U		2.8 U	15.6 J	4.5	119 J	299	0.16 U	0.1 U	0.05 U
4/3/2014	1 U	1	16	1 U	1 U	29	5 U	5 U	63	1 UJ	1 U	1 U	0.379 J	4.4 U	50 U	5.3	100	240	0.16 U	0.1 UJ	0.05 U
11/17/2015	1 U	0.58 J	34	1 U	1 U	65	5 U	2.3 J	120	1 U	1 U	1 U	0.502	5.1 U	17.5 J	3.1	117	251	0.16 U	0.1 U	0.05 U
4/19/2016	1.0 U	1.0 U	32	1.0 U	1.0 U	71	5.0 U	1.6 J	86	1.0 U	1.0 U	1.0 U	0.332 J	3.3 U	24.4 J	3	166	259	0.10 U	0.10 U	0.050 U
9/13/2017	5.0 U	5.0 U	36	5.0 U	5.0 U	91	0.50 U	2.2	110	5.0 U	5.0 U	5.0 U	0.54	2.0 U	17	3.4	110	240	1.0 U	0.50 U	0.050 U
4/24/2018	1.0 U	1.0 U	32	1.0 U	1.0 U	78	1.0 U	3.3	160	1.0 U	0.3 J	1.0 U	0.4	2.0 U	8.3 J	3.6	110	240	1.0 U	0.25 UJ	0.050 UJ
12/3/2019	2.0 U	2.0 U	32	2.0 U	2.0 U	90	0.66 J	4.8	270	2.0 U	2.0 U	2.0 U	0.41	2.0 U	9.4 J	3.3	110	240	1.1	0.25 U	
3/18/2020	2.0 U	2.0 U	26	2.0 U	2.0 U	68	1.0 U	2.9	160	2.0 U	2.0 U	2.0 U	0.37	2.0 U	10	3.2	140	220	1.0 U	0.50 U	0.10 U

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J- Indicates estimated value, biased low.
J+ Indicates estimated value, biased high.
D Result reported from a secondary dilution analysis.
R The sample results are rejected.

MONITORING WELL GROUNDWATER ANALYTICAL RESULT SUMMARY
HYDE PARK FACILITY
NIAGARA, NEW YORK

Well ID: MW- 6

Date	PCE (µg/L)	TCE (µg/L)	Cis-1,2-DCE (µg/L)	Trans-1,2-DCE (µg/L)	1,1-DCE (µg/L)	Vinyl Chloride (µg/L)	Ethane (µg/L)	Ethene (µg/L)	Methane (µg/L)	1,1,1-Trichloroethane (µg/L)	1,1-Dichloroethane (µg/L)	Chloroethane (µg/L)	Dissolved Iron (mg/L)	BOD (mg/L)	COD (mg/L)	TOC (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)
11/1/2007	5 U	5 U	130	0.52 J	5 U	82				5 U	5 U	5 U									
4/29/2008	5 U	5 U	150	0.39 J	5 U	100				5 U	5 U	5 U									
10/30/2009	5 U	5 U	85	5 U	5 U	69				5 U	5 U	5 U									
5/12/2010	5 U	5 U	39	5 U	5 U	48	5 U	23	310	5 U	5 U	5 U		3.6 U	22.4 J	3.9	140 J	217	3.4	0.1 U	0.05 U
10/20/2011	5 U	5 U	33	5 U	5 U	57				5 U	5 U	5 U									
6/13/2012	5 U	5 U	30	5 U	5 U	47				5 U	5 U	5 U									
8/30/2013	5 U	5 U	24	5 U	5 U	42				5 U	5 U	5 U									
4/3/2014	1 U	1 U	18	1 U	1 U	39				1 U	1 U	1 U									
11/20/2015	1 U	1 U	20	1 U	1 U	57				1 U	1 U	1 U									
4/21/2016	1.0 U	1.0 U	18	1.0 U	1.0 U	59				1.0 U	1.0 U	1.0 U									
9/12/2017	5.0 U	5.0 U	16	5.0 U	5.0 U	79				5.0 U	5.0 U	5.0 U									
4/26/2018	1.0 U	1.0 U	12	1.0 U	1.0 U	48				1.0 U	1.0 U	1.0 U									
12/4/2019	1.0 U	1.0 U	10	1.0 U	1.0 U	78				1.0 U	1.0 U	1.0 U									
3/19/2020	1.0 U	1.0 U	11	1.0 U	1.0 U	72				1.0 U	1.0 U	1.0 U									

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J+ Indicates estimated value, biased high.
D Result reported from a secondary dilution analysis.
R The sample results are rejected.

MONITORING WELL GROUNDWATER ANALYTICAL RESULT SUMMARY
HYDE PARK FACILITY
NIAGARA, NEW YORK

Well ID: MW- 7A

Date	PCE (µg/L)	TCE (µg/L)	Cis-1,2-DCE (µg/L)	Trans-1,2-DCE (µg/L)	1,1-DCE (µg/L)	Vinyl Chloride (µg/L)	Ethane (µg/L)	Ethene (µg/L)	Methane (µg/L)	1,1,1-Trichloroethane (µg/L)	1,1-Dichloroethane (µg/L)	Chloroethane (µg/L)	Dissolved Iron (mg/L)	BOD (mg/L)	COD (mg/L)	TOC (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)
11/1/2007	25 U	36	580	25 U	9 J	60	0.95 J	8.5	10	25 U	80	25 U		2 U	7.97 J	2.74	21	250	1 U		
4/28/2008	5 U	210	1700	6.1 J	24	130	0.44 J	5.3	8.6	1.3 J	220	5 U		2 U	5.42	2.23	17.3	210	1 U	0.05 U	0.24
8/13/2008	13 U	270	1800	5.9 J	34	130	5 U	7.2	21	4.1 J	280					3.2	22.3	282			
10/8/2008	5 U	58	1800	3.5 J	25	210	5 U	12	21 J	5 U	250	5 U				143	21.3 J	60.4			
12/9/2008	10 U	4.3 J	1100	1.7 J	9.6 J	180	5 U	27	24	10 U	150	10 U				25.1	24.1	295			
1/27/2009	5 U	3.2 J	840	2.4 J	7.6	390	5 U	51	110	5 U	230	5 U									
3/17/2009	5 U	2.9 J	620	1.5 J	3.6 J	250	5 U	69	210	5 U	140	5 U				8.8	25	253			
10/15/2009	5 U	2.7 J	120	5 U	5 U	240	5 U	110	760	5 U	56	5 U				4.7	21.1	228			
10/30/2009	5 U	1.8 J	210	5 U	5 U	150	5 U	51	260	5 U	49	5 U		4.2 U	23.3 J	3.2	21.8	233 J	2.2	0.1 U	0.05 U
11/18/2009																1150					
12/14/2009	5 U	5 U	140	5 U	5 U	100	5.1	100	1900	5 U	47	5 U				207	23.3 J	56.2 J			
2/9/2010	5 U	5 U	77	5 U	5 U	84	1.1 J	92	1200	5 U	48	5 U				40.1 J	24.1	87.6			
4/1/2010	5 U	5 U	22	5 U	5 U	49				5 UJ	39	5 U									
5/6/2010	5 U	5 U	65	5 U	5 U	50	5 U	5 U	15 U	5 U	33	5 U				95.5	20.9 J	52.2 J			
11/10/2010	5 U	5 U	44	5 U	5 U	18	43 J	65 J	16000	5 U	15	23				261	26.7	31.8			
10/27/2011	5 U	5 U	20	5 U	5 U	19	57	25	20000	5 U	22	13	0.115 J			25.1	28.7	57.1			
3/14/2012	25 U	25 U	11 J	25 U	25 U	25 U	20	8	6700	25 U	18 J	15 J	4.09			1380	34.3	5			
6/14/2012	5 U	1.2 J	3.8 J	5 U	5 U	5 U	5.8	3.3 J	6300	5 U	9.1	22	3.6			573	24.3	5 U			
11/28/2012	5 U	5 U	2.7 J	5 U	5 U	1.3 J	10	1.1 J	16000	5 U	13	16	0.691			204	26.2	5.7			
8/30/2013	5 U	5 U	3.9 J	5 U	5 U	2.2 J	11	3.5 J	13000	5 U	15	7.8		277 J	576	151	26	8.7	0.16 J	0.1 U	0.05 U
1/15/2014	5 U	5 U	4 J	5 U	5 U	1.8 J	8.4	2.7 J	17000	5 U	16	13	39.4			1340	50.4 J+	5 U	0.34		
4/2/2014	1 U	1 U	3	1 U	1 U	1	6.3	1.2 J	20000	1 U	12	16	22.9	589	1250	453	25.5	2.3 J	0.067 J	0.1 U	0.05 U
10/9/2014	1 U	1 U	0.92 J	1 U	1 U	0.94 J	4.7 J	5 U	16000	1 U	8.1	11	14.1			132	27.9	4 J	0.11 J		
11/19/2015	1 U	1 U	1.5	1 U	1 U	3.1	2.8 J	1.1 J	5900	1 U	11	4.8	7.85	99.3	293 J-	84.3	24.6	20.2	0.22	0.1 U	0.05 U
4/20/2016	1.0 U	1.0 U	1.9	1.0 U	1.0 U	3.7	4 J	1.3 J	16000 D	1.0 U	12	4.2	2.18	62	217	50.1	27.4	5.1	0.5	0.10 U	0.050 U
9/12/2017	2.0 U	2.0 U	26	2.0 U	2.0 U	33	2.9	4.1	3400 D	2.0 U	61 J	19	1.7	61	170	52	25	93	1.0 U	0.25 U	0.050 UJ
4/25/2018	5.0 U	5.0 U	46	5.0 U	5.0 U	42	61	63	14000	5.0 U	140	23	0.55	9.2 J	97	32	25	56	1.1	0.25 U	0.027 J
12/4/2019	2.5 U	2.5 U	21 J	2.5 U	2.5 U	35 J	95	25	13000 D	2.5 U	69	44	1.5	14 J-	42	17	12	70	1.0 U	0.25 U	
3/19/2020	2.0 U	2.0 U	50	2.0 U	2.0 U	45	80	20	16000 D	2.0 U	59	23	0.91		36	12	8	82	2.1	0.50 UJ	0.10 UJ

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R The sample results are rejected.

MONITORING WELL GROUNDWATER ANALYTICAL RESULT SUMMARY
HYDE PARK FACILITY
NIAGARA, NEW YORK

Well ID: MW- 7B

Date	PCE (µg/L)	TCE (µg/L)	Cis-1,2-DCE (µg/L)	Trans-1,2-DCE (µg/L)	1,1-DCE (µg/L)	Vinyl Chloride (µg/L)	Ethane (µg/L)	Ethene (µg/L)	Methane (µg/L)	1,1,1-Trichloroethane (µg/L)	1,1-Dichloroethane (µg/L)	Chloroethane (µg/L)	Dissolved Iron (mg/L)	BOD (mg/L)	COD (mg/L)	TOC (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)
11/1/2007	5 U	5 U	11	5 U	5 U	31	0.31 J	1.9	220	5 U	5 U	5 U		2 U	6.58 J	3.41	157	298	1 U		
4/28/2008	5 U	5 U	10	5 U	5 U	45	0.44 J	2.8	230	5 U	5 U	5 U		2 U	11.6	3.45	130	278	1 U	0.05 U	0.05 U
10/7/2008	5 UJ	5 UJ	19 J	5 UJ	5 UJ	29 J	5 U	3.1 J	220 J	5 UJ	5 UJ	5 UJ				5	164 J	271			
12/9/2008	5 U	5 U	21	5 U	5 U	33	5 U	4.1 J	250	5 U	5 U	5 U				9	153	384			
1/27/2009	5 U	5 U	13	5 U	5 U	29	5 U	3.3 J	220	5 U	5 U	5 U									
3/17/2009	5 U	5 U	20	5 U	5 U	30	5 U	2.1 J	150	5 U	5 U	5 U				5.3	179	296			
10/15/2009	5 U	5 U	7.1	5 U	5 U	39	5 U	3.3 J	340	5 U	5 U	5 U				6.4	146	250			
10/30/2009	5 U	5 U	7.3	5 U	5 U	24				5 U	5 U	5 U									
12/14/2009	5 U	5 U	7.7	5 U	5 U	24	5 U	3.6 J	260	5 U	5 U	5 U				26.8	171 J	220 J			
2/9/2010	5 U	5 U	3.2 J	5 U	5 U	21	5 U	6.1	650	5 U	5 U	5 U				13.9 J	157	248			
3/31/2010	5 U	5 U	3.8 J	5 U	5 U	29				5 U	5 U	5 U									
5/6/2010	5 U	5 U	4.5 J	5 U	5 U	31	5 U	5 U	15 U	5 U	5 U	5 U				60.6	130 J	244 J			
11/11/2010	5 U	5 U	6.7	5 U	5 U	24	5 U	4.2 J	1200	5 U	5 U	5 U				17.5	168	239			
10/26/2011	5 U	5 U	6	5 U	5 U	25	5 U	3.6 J	3400	5 U	5 U	5 U	0.0747 J			8.4	168	218 J			
3/15/2012	50 U	50 U	50 U	50 U	50 U	11 J	5 U	9.3	4500	50 U	50 U	50 U	0.0443 J			68.1	153	122			
6/14/2012	5 U	5 U	1.6 J	5 U	5 U	9.2	5 U	7.9	2400	5 U	5 U	5 U	0.2 U			19.3	150	143			
11/27/2012	5 U	5 U	1.5 J	5 U	5 U	9.5	5 U	11	3300	5 U	5 U	5 U	0.2 U			8.7	173	178			
9/3/2013	5 U	5 U	1.2 J	5 U	5 U	7.5	5 U	11	6400	5 U	5 U	5 U		17.4	95 J	11.5	146 J	139	10.3	0.1 UJ	0.05 U
1/13/2014	5 U	5 U	5 U	5 U	5 U	2 J	5 U	9.4	18000	5 U	5 U	5 U	0.4 U			70.1	145	61.7	47.9		
4/2/2014	1 U	1 U	1 U	1 U	1 U	5.5	5 U	11	19000	1 U	1 U	1 U	0.4 U	366	772	132	136	117	33.3	1 U	0.026 J
10/10/2014	1 U	1 U	1.5	1 U	1 U	8	5 U	7	13000	1 U	1 U	1 U	0.4 U			22.2	164	129	22.6		
11/23/2015	1 U	1 U	1.2	1 U	1 U	6.1	5 U	4.3 J	11000	1 U	1 U	1 U	0.4 U	22.2	97.8	10.8	189	146	20.4	0.1 U	0.05 U
4/20/2016	1.0 U	1.0 U	0.82 J	1.0 U	1.0 U	10	5.0 U	5.6	5000 D	1.0 U	1.0 U	1.0 U	0.400 U	27.1	142	6.9	172	162	16.5	0.10 U	0.050 U
9/12/2017	1.0 U	1.0 U	2.2	1.0 U	1.0 U	18	0.50 U	1.9	370	1.0 U	1.0 U	1.0 U	0.100 U	9.6	41	4.8	170	180	1.1	0.25 U	0.050 UJ
4/25/2018	1.0 U	1.0 U	2.2	1.0 U	1.0 U	17	1.0 U	6.4	240	1.0 U	1.0 U	1.0 U	0.200 U	2	29	4.7	140	260	1.0 U	0.25 U	0.050 U
12/3/2019	1.0 U	1.0 U	1.3	1.0 U	1.0 U	10	0.58 J	3.3	290	1.0 U	1.0 U	1.0 U	0.20 U	2.0 U	12	3.3	180	190	7.1	0.25 U	
3/19/2020	1.0 U	1.0 U	5.4	1.0 U	1.0 U	18	1.0 U	6.4	230	1.0 U	1.0 U	1.0 U	0.2 U		11	3.2	130	260	1.7	0.50 UJ	0.10 UJ

J Indicates an estimated value.
U Analyte was not detected above the reporting limit.
UJ The analyte was not detected. The reporting limit is an approximate value.
J- Indicates estimated value, biased low.
J+ Indicates estimated value, biased high.
D Result reported from a secondary dilution analysis.
R The sample results are rejected.

MONITORING WELL GROUNDWATER ANALYTICAL RESULT SUMMARY
HYDE PARK FACILITY
NIAGARA, NEW YORK

Well ID: MW- 8

Date	PCE (µg/L)	TCE (µg/L)	Cis-1,2-DCE (µg/L)	Trans-1,2-DCE (µg/L)	1,1-DCE (µg/L)	Vinyl Chloride (µg/L)	Ethane (µg/L)	Ethene (µg/L)	Methane (µg/L)	1,1,1-Trichloroethane (µg/L)	1,1-Dichloroethane (µg/L)	Chloroethane (µg/L)	Dissolved Iron (mg/L)	BOD (mg/L)	COD (mg/L)	TOC (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)
10/31/2007	5 U	5 U	2.2 J	5 U	5 U	1.8 J				5 U	5 U	5 U									
4/25/2008	5 U	5 U	2.5 J	5 U	5 U	2.6				5 U	5 U	5 U									
11/2/2009	5 U	5 U	2.1 J	5 U	5 U	2.6 J				5 U	5 U	5 U									
5/12/2010	5 U	5 U	2.3 J	5 U	5 U	2.2 J	5 U	5 U	140	5 U	5 U	5 U									
10/24/2011	5 U	5 U	1.9 J	5 U	5 U	2.1 J				5 U	5 U	5 U									
6/12/2012	5 U	5 U	1.6 J	5 U	5 U	1.1 J				5 U	5 U	5 U									
8/30/2013	5 U	5 U	1.7 J	5 U	5 U	1.8 J				5 U	5 U	5 U									
4/3/2014	1 U	1 U	1.6	1 U	1 U	1.5				1 U	1 U	1 U									
11/23/2015	1 U	1 U	1.7	1 U	1 U	1.9				1 U	1 U	1 U									
4/22/2016	1.0 U	1.0 U	1.9	1.0 U	1.0 U	1.8				1.0 U	1.0 U	1.0 U									
9/13/2017	1.0 U	1.0 U	1.7	1.0 U	1.0 U	1.4				1.0 U	1.0 U	1.0 U									
4/23/2018	1.0 U	1.0 U	1.9	1.0 U	1.0 U	1.6				1.0 U	1.0 U	1.0 U									

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UJ The analyte was not detected. The reporting limit is an approximate value.
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J+ Indicates estimated value, biased high.
D Result reported from a secondary dilution analysis.
R The sample results are rejected.

MONITORING WELL GROUNDWATER ANALYTICAL RESULT SUMMARY
HYDE PARK FACILITY
NIAGARA, NEW YORK

Well ID: MW-10A

Date	PCE (µg/L)	TCE (µg/L)	Cis-1,2-DCE (µg/L)	Trans-1,2-DCE (µg/L)	1,1-DCE (µg/L)	Vinyl Chloride (µg/L)	Ethane (µg/L)	Ethene (µg/L)	Methane (µg/L)	1,1,1-Trichloroethane (µg/L)	1,1-Dichloroethane (µg/L)	Chloroethane (µg/L)	Dissolved Iron (mg/L)	BOD (mg/L)	COD (mg/L)	TOC (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)
10/29/2007	5 U	5 U	300	12	0.68 J	67	0.52 J	4.6	19	5 U	4.5 J	5 U		2 U	8.32 J	1.93	815	332	1 U		
4/22/2008	5 U	5 U	390	10	1.6 J	97	4.4	11	60	5 U	5.8	5 U		2 U	10.1	2.99	884	294	1 U	0.05 U	0.05 U
10/29/2009	5 U	5 U	400	9.4	1.5 J	140	5 U	10	38	5 U	6.4	5 U		1.8 U	46.2 J	1.6	903	279 J	0.16 U	0.1 U	0.05 U
5/11/2010	5 U	5 U	390	7.6	1.3 J	140	5 U	17	71	5 U	5.7	5 U		1.7 U	38.4 J	1.5	784	250	0.16 U	0.1 U	0.05 U
10/25/2011	5 U	5 U	630	11	1.2 J	250	5 U	29	66	5 U	7.7	5 U	0.0808 J	2.8 U	27 J	1.9	770 J	254 J	0.16 U	0.1 U	0.05 U
6/13/2012	5 U	5 U	620	13	1 J	170	1.5 J	43	120	5 U	7	5 U	0.2 U	3.2 U	31 J	0.98 J	621	264	0.16 U	0.1 U	0.05 U
8/29/2013	5 U	5 U	570	9.9	5 U	130	5 U	28	130	5 U	5.6	5 U		2.9 UJ	27 J	1.8	481	193	0.16 U	0.1 U	0.05 U
4/2/2014	1 U	1 U	560	8	0.6 J	95	5 U	24	170	1 UJ	4.4	1 U	0.719	3.9 U	17.2 J	2	438 J-	228 J+	0.16 U	0.1 U	0.05 U
11/18/2015	1 U	1 U	710	9.1	0.52 J	130	5 U	17	220	1 U	5.3	1 U	1.81	2.9 U	22.1 J	0.87 J	434	170	0.16 U	0.1 U	0.05 U
4/19/2016	1.0 U	0.57 J	960 D	12	0.71 J	83	5.0 U	6.4	88	1.0 U	5.4	1.0 U	0.831	3.4 U	33.6 J	0.9 J	523	216	0.10 U	0.10 U	0.050 U
9/13/2017	20 U	20 U	590	6.8 J	20 U	130	0.38 J	11	400	20 U	20 UJ	20 U	1.4	2.0 U	13	1.1	310	170	1.0 U	0.50 U	0.050 U
4/25/2018	20 U	20 U	540	20 U	20 U	94	1.0 U	12	640	20 U	20 U	20 U	1.2	2.0 U	10	1.4	260	160	1.0 U	0.25 U	0.050 U
12/4/2019	25 U	5 J	500	25 U	25 U	130	2.4	36	2000	25 U	25 U	25 U	1.1	2.0 UJ	4.2 J	1.4	200	150	1.0 U	0.25 U	
3/18/2020	20 U	7.6 J	570	4.4 J	20 U	130	2.7	34	2400	20 U	20 U	20 U	0.88	2.0 U	8.3 J	1.4	190	120	1.0 U	0.50 U	0.10 U

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UJ The analyte was not detected. The reporting limit is an approximate value.
J- Indicates estimated value, biased low.
J+ Indicates estimated value, biased high.
D Result reported from a secondary dilution analysis.
R The sample results are rejected.

MONITORING WELL GROUNDWATER ANALYTICAL RESULT SUMMARY
HYDE PARK FACILITY
NIAGARA, NEW YORK

Well ID: MW-10B

Date	PCE (µg/L)	TCE (µg/L)	Cis-1,2-DCE (µg/L)	Trans-1,2-DCE (µg/L)	1,1-DCE (µg/L)	Vinyl Chloride (µg/L)	Ethane (µg/L)	Ethene (µg/L)	Methane (µg/L)	1,1,1-Trichloroethane (µg/L)	1,1-Dichloroethane (µg/L)	Chloroethane (µg/L)	Dissolved Iron (mg/L)	BOD (mg/L)	COD (mg/L)	TOC (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)
10/29/2007	5 U	0.7 J	220	1.9 J	0.38 J	130	0.43 J	1.5	100	5 U	0.69 J	5 U		2 U	5 UJ	3.81	226	236	1 U		
4/22/2008	5 U	0.46 J	180	1.3 J	5 U	76	0.48 J	1 J	96	5 U	0.54 J	5 U		2 U	12.7	4.22	87.4	198	1 U	0.05 U	0.05 U
4/23/2008																					
10/16/2009	5 U	5 U	420	3.1 J	5 U	120	5 U	2.7 J	110	5 U	5 U	5 U				3.8	121	239			
10/29/2009	5 U	5 U	370	3.8 J	5 U	150	5 U	2.2 J	94	5 U	5 U	5 U		2.1 U	16.5 J	4.6	107	245 J	0.16 U	0.1 U	0.05 U
12/16/2009	5 U	5 U	750	9	5 U	260	5 U	12	110	5 U	5 U	5 U				4.2	123 J	268 J			
2/10/2010	5 U	5 U	300	4 J	5 U	120	5 U	3.7 J	92	5 U	5 U	5 U				4.2 J	87.5	253			
3/30/2010	5 U	5 U	270	3.1 J	5 U	90				5 U	5 U	5 U									
5/6/2010	5 U	5 U	220	2 J	5 U	83	5 U	5 U	15 U	5 U	5 U	5 U		3.5 U	50 U	4.9	89.5 J	244 J	0.071 J	0.1 U	0.05 U
11/9/2010	5 U	5 U	1100	13	1.9 J	200	1.8 J	13	130	5 U	5 U	5 U				3.2	272	225			
10/26/2011	10 U	10 U	960	11	1.8 J	180	2.7 J	24	300	10 U	10 U	10 U	0.0459 J	3.5 U	13.4 J	3.4	189	259 J	0.16 U	0.1 U	0.05 U
3/12/2012	5 U	5 U	260	3 J	5 U	49	5 U	1.2 J	53	5 U	5 U	5 U	0.2 U			3.8	104	245			
6/14/2012	5 U	5 U	280	1.7 J	5 U	110	5 U	5.7	120	5 U	5 U	5 U	0.2 U	3.3 U	12.9 J	3.8	141	261	0.16 U	0.1 U	0.05 U
11/27/2012	5 U	5 U	630	5.8	5 U	130	5 U	11	160	5 U	5 U	5 U	0.2 U			3	194	265			
8/29/2013	5 U	5 U	230	1.5 J	5 U	120	5 U	9.2	220	5 U	5 U	5 U		3.1 UJ	24.7 J	2	156	246	0.16 U	0.1 U	0.05 U
1/17/2014	5 U	5 U	150	5 U	5 U	27	5 U	2 J	38	5 U	5 U	5 U	0.0884 J			7.9	128	250	0.16 U		
4/2/2014	1 U	1 U	190	0.7 J	1 U	22	5 U	2.3 J	38	1 U	1 U	1 U	0.076 J	3.2 U	50 U	4.8	133	256	0.16 U	0.1 U	0.05 U
10/14/2014	1 U	1 U	160	1 U	1 U	89	1.1 J	210	1100	1 UJ	1 U	1 U	0.05 J			5	137	215	1.3		
11/16/2015	1 U	1 U	190	0.68 J	1 U	190	2.1 J	190	2900	1 U	0.9 J	1 U	0.4 U	6 U	17.5 J	3	145	207	0.71	0.1 U	0.05 U
4/19/2016	1.0 U	1.0 U	220	1.1	1.0 U	6.1	5.0 U	5.0 U	9.1	1.0 U	1.0 U	1.0 U	0.400 U	3.6 U	26.7 J	2.9	160	272	0.10 U	0.087 J	0.050 U
9/13/2017	10 U	10 U	360	10 U	10 U	270	4.5	130	3900	10 U	10 UJ	10 U	0.24	2.0 U	17	3.2	150	230	1.0 U	0.50 U	0.050 U
4/25/2018	8.0 U	8.0 U	210	8.0 U	8.0 U	12	1.0 U	1.0 U	25	8.0 U	8.0 U	8.0 U	0.14 J	2.4 UJ	10 U	3.6	130	240	1.0 U	0.25 U	0.050 U
12/4/2019	20 U	20 U	420	4 J	20 U	180	1.8	27	1500	20 U	20 U	20 U	0.68	2.0 U	10 U	3	220	260	1.0 U	0.25 U	
3/18/2020	5.0 U	5.0 U	210	5.0 U	5.0 U	23	1.0 U	1.9	78	5.0 U	5.0 U	5.0 U	0.086 J	2.0 U	12	3.2	140	230	1.0 U	0.50 U	0.10 U

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J- Indicates estimated value, biased low.
J+ Indicates estimated value, biased high.
D Result reported from a secondary dilution analysis.
R The sample results are rejected.

MONITORING WELL GROUNDWATER ANALYTICAL RESULT SUMMARY
HYDE PARK FACILITY
NIAGARA, NEW YORK

Well ID: MW-11A

Date	PCE (µg/L)	TCE (µg/L)	Cis-1,2-DCE (µg/L)	Trans-1,2-DCE (µg/L)	1,1-DCE (µg/L)	Vinyl Chloride (µg/L)	Ethane (µg/L)	Ethene (µg/L)	Methane (µg/L)	1,1,1-Trichloroethane (µg/L)	1,1-Dichloroethane (µg/L)	Chloroethane (µg/L)	Dissolved Iron (mg/L)	BOD (mg/L)	COD (mg/L)	TOC (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)
10/29/2007	5 U	5 U	5 U	5 U	5 U	2 U				5 U	5 U	5 U									
4/22/2008	5 U	5 U	5 U	5 U	5 U	0.7 J				5 U	5 U	5 U									
10/30/2009	5 U	5 U	5 U	5 U	5 U	5 U				5 U	5 U	5 U									
5/11/2010	5 U	5 U	5 U	5 U	5 U	3.2 J	5 U	5 U	51	5 U	5 U	5 U									

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UJ The analyte was not detected. The reporting limit is an approximate value.
J- Indicates estimated value, biased low.
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D Result reported from a secondary dilution analysis.
R The sample results are rejected.

MONITORING WELL GROUNDWATER ANALYTICAL RESULT SUMMARY
HYDE PARK FACILITY
NIAGARA, NEW YORK

Well ID: MW-11B

Date	PCE (µg/L)	TCE (µg/L)	Cis-1,2-DCE (µg/L)	Trans-1,2-DCE (µg/L)	1,1-DCE (µg/L)	Vinyl Chloride (µg/L)	Ethane (µg/L)	Ethene (µg/L)	Methane (µg/L)	1,1,1-Trichloroethane (µg/L)	1,1-Dichloroethane (µg/L)	Chloroethane (µg/L)	Dissolved Iron (mg/L)	BOD (mg/L)	COD (mg/L)	TOC (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)
10/29/2007	5 U	5 U	140	1 J	5 U	80				5 U	0.39 J	5 U									
4/22/2008	5 U	5 U	100	0.77 J	5 U	64				5 U	5 U	5 U									
3/18/2009																3.8					
10/16/2009	5 U	5 U	64	5 U	5 U	73	5 U	14	170	5 U	5 U	5 U				3.4	172	221			
10/30/2009	5 U	5 U	56	5 U	5 U	48	5 U	15	150	5 U	5 U	5 U		1.8 U	21 J	3.4	165	207 J	0.3	0.1 U	0.05 U
12/16/2009	5 U	5 U	5.3	5 U	5 U	17	5 U	81	190	5 U	5 U	5 U				7.4	148 J	221 J			
2/10/2010	5 U	5 U	2.3 J	5 U	5 U	11	5 U	130	760	5 U	5 U	5 U				11.7 J	146	50.2			
3/30/2010	5 U	5 U	2.1 J	5 U	5 U	7.1				5 U	5 U	5 U									
5/6/2010	5 U	5 U	1.9 J	5 U	5 U	7.4	5 U	5 U	15 U	5 U	1.3 J	5 U		64.7 J	132	14.1	114 J	101 J	48.3	0.1 U	0.05 U
11/9/2010	5 U	5 U	1.4 J	5 U	5 U	4.3 J	5 U	57	1100	5 U	1.2 J	5 U				3.9	125	208			
10/26/2011	5 U	5 U	2.2 J	5 U	5 U	4.6 J	5 U	90	1500	5 U	1.8 J	5 U	0.0859 J	8.9	31.5 J	3.8	157	245 J	8.5	0.043 J	0.05 U
3/12/2012	5 U	5 U	1.4 J	5 U	5 U	6.7	1.3 J	72	5200	5 U	1.5 J	5 U	0.0711 J			9.5	117	118			
6/14/2012	5 U	5 U	1.8 J	5 U	5 U	6.1	2.6 J	110	7400	5 U	1.4 J	5 U	0.2 U	32	76.5	4.3	121	135	44.4	0.1 U	0.05 U
11/27/2012	5 U	5 U	0.83 J	5 U	5 U	2.5 J	3.9 J	130	6800	5 U	1.4 J	5 U	0.2 U			3.9	143	164			
8/29/2013	5 U	5 U	5 U	5 U	5 U	1.4 J				5 U	1.9 J	5 U									
1/14/2014	5 U	5 U	5 U	1.1 J	5 U	1.2 J	4 J	260	10000	5 U	2.5 J	5 U	0.4 U			8	141	120	23.8		
4/2/2014	1 U	1 U	1 U	0.92 J	1 U	1.2	3.5 J	280	8300	1 U	2	1 U	0.4 U			5.2	141	158	27.8		
10/14/2014	1 U	1 U	1 U	0.66 J	1 U	2.5	1.4 J	86	4200	1 UJ	1.2	1 U	0.4 U			5.3	143	160	11.1		
11/17/2015	1 U	1 U	0.56 J	0.57 J	1 U	1.7				1 U	1	1 U									
4/22/2016	1.0 U	1.0 U	0.54 J	0.76 J	1.0 U	9.7				1.0 U	1.7	1.0 U									
9/14/2017	1.0 U	1.0 U	1.1	1.0 U	1.0 U	6.5				1.0 U	0.95 J	1.0 U									
4/24/2018	1.0 U	1.0 U	0.65 J	0.74 J	1.0 U	1.9				1.0 U	1.9	1.0 U									

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UJ The analyte was not detected. The reporting limit is an approximate value.
J- Indicates estimated value, biased low.
J+ Indicates estimated value, biased high.
D Result reported from a secondary dilution analysis.
R The sample results are rejected.

MONITORING WELL GROUNDWATER ANALYTICAL RESULT SUMMARY
HYDE PARK FACILITY
NIAGARA, NEW YORK

Well ID: MW-12A

Date	PCE (µg/L)	TCE (µg/L)	Cis-1,2-DCE (µg/L)	Trans-1,2-DCE (µg/L)	1,1-DCE (µg/L)	Vinyl Chloride (µg/L)	Ethane (µg/L)	Ethene (µg/L)	Methane (µg/L)	1,1,1-Trichloroethane (µg/L)	1,1-Dichloroethane (µg/L)	Chloroethane (µg/L)	Dissolved Iron (mg/L)	BOD (mg/L)	COD (mg/L)	TOC (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)
10/29/2007	5 U	5 U	150	1.3 J	0.49 J	39				5 U	3.2 J	5 U									
4/22/2008	5 U	5 U	130	1 J	0.32 J	23				5 U	2 J	5 U									
11/2/2009	5 U	5 U	64	5 U	5 U	38				5 U	2.7 J	5 U									
5/11/2010	5 U	5 U	16	5 U	5 U	16	5 U	14	140	5 U	1.6 J	5 U									
10/20/2011	5 U	5 U	19	5 U	5 U	16				5 U	1.8 J	5 U									
6/13/2012	5 U	5 U	19	5 U	5 U	13				5 U	1.8 J	5 U									
8/29/2013	5 U	5 U	22	5 U	5 U	14	5.6	7.2	210	5 U	1.9 J	5 U		4.4 U	311	5.5	80.7	204	0.16 U	0.1 U	0.05 U
4/3/2014	1 U	1 U	8.9	1 U	1 U	6.8	5 U	2.4 J	140	1 U	0.89 J	1 U	0.962	4.7 U	15 J	5.6	69	179	0.16 U	0.14 J-	0.05 U
11/17/2015	1 U	1 U	1.6	1 U	1 U	9.6	5 U	5 U	140	1 U	0.7 J	1 U	2.27	3.8 U	26.7 J	7.7	63.6	119	0.079 J	0.1 U	0.05 U
4/22/2016	1.0 U	1.0 U	9.5	1.0 U	1.0 U	8.8	5.0 U	1.8 J	170	1.0 U	1.1	1.0 U	0.847	3.4 UJ	19.8 J	3.4	96	192	0.10 U	0.10 U	0.050 U
9/14/2017	1.0 U	1.0 U	21	0.34 J	1.0 U	13	0.31 J	2.7	210	1.0 U	1.6	1.0 U	1.5	2.0 U	49	4.2	330	650	1.0 U	1.0 U	0.050 U
4/24/2018	1.0 U	1.0 U	16	1.0 U	1.0 U	9.2	1.0 U	2	200	1.0 U	0.91 J	1.0 U	0.6	2.0 U	11	3.9	82	190	1.0 U	0.25 UJ	0.050 UJ

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UJ The analyte was not detected. The reporting limit is an approximate value.
J- Indicates estimated value, biased low.
J+ Indicates estimated value, biased high.
D Result reported from a secondary dilution analysis.
R The sample results are rejected.

MONITORING WELL GROUNDWATER ANALYTICAL RESULT SUMMARY
HYDE PARK FACILITY
NIAGARA, NEW YORK

Well ID: MW-12B

Date	PCE (µg/L)	TCE (µg/L)	Cis-1,2-DCE (µg/L)	Trans-1,2-DCE (µg/L)	1,1-DCE (µg/L)	Vinyl Chloride (µg/L)	Ethane (µg/L)	Ethene (µg/L)	Methane (µg/L)	1,1,1-Trichloroethane (µg/L)	1,1-Dichloroethane (µg/L)	Chloroethane (µg/L)	Dissolved Iron (mg/L)	BOD (mg/L)	COD (mg/L)	TOC (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)
10/29/2007	5 U	5 U	110	1 J	5 U	76				5 U	1.8 J	5 U									
4/21/2008	5 U	5 U	140	1.6 J	0.31 J	70				5 U	1.6 J	5 U									
11/2/2009	5 U	5 U	2.6 J	5 U	5 U	5 U				5 U	5 U	5 U									
5/11/2010	5 U	5 U	11	5 U	5 U	5 U	5 U	5 U	15 U	5 U	5 U	5 U									
11/9/2010	5 U	5 U	59	5 U	5 U	71	1.2 J	3.3 J	120	5 U	5 U	5 U				3.2	149	312			
10/20/2011	5 U	5 U	0.98 J	5 U	5 U	5 U				5 U	5 U	5 U									
6/13/2012	5 U	5 U	5.6	5 U	5 U	10				5 U	5 U	5 U									
8/29/2013	5 U	5 U	45	5 U	5 U	73	5 U	15	160	5 U	5 U	5 U		4.2 U	17.9 J	4.1	143	230	0.093 J	0.1 U	0.05 U
4/3/2014	1 U	1 U	57	1 U	1 U	75	5 U	9.7	190	1 U	1 U	1 U	0.4 U	4.1 U	50 U	5.4	149	201	0.16 U	0.1 UJ	0.05 U
11/16/2015	1 U	1 U	13	1 U	1 U	9.1	5 U	5 U	25	1 U	1 U	1 U	0.111 J	4.7 U	22.1 J	9.2	148	244	0.16 U	0.2 J+	0.039 J
4/22/2016	1.0 U	1.0 U	73	1.0 U	1.0 U	59	5.0 U	2.6 J	200	1.0 U	1.0 U	1.0 U	0.0618 J	3.5 UJ	19.8 J	3	177	204	0.10 U	0.10 U	0.050 U
9/14/2017	2.0 U	2.0 U	52	2.0 U	2.0 U	110	0.45 J	3.9	140	2.0 U	0.66 J	2.0 U	0.032 J	2.0 U	17	2.7	280	530	1.0 U	0.50 U	0.050 U
4/25/2018	2.5 U	2.5 U	62	2.5 U	2.5 U	73	1.0 U	4.4	340	2.5 U	2.5 U	2.5 U	0.027 J	2.0 U	12	3.5	150	190	1.0 U	0.25 U	0.050 U
12/5/2019	2.5 U	2.5 U	65	2.5 U	2.5 U	94	0.89 J	5.3	210	2.5 U	2.5 U	2.5 U	0.20 U	2.0 U	10 U	2.8	150	240	1.0 U	0.25 U	
3/19/2020	2.0 U	2.0 U	51	2.0 U	2.0 U	85	1.0 U	5.9	410	2.0 U	0.41 J	2.0 U	0.2 U		7.3 J	3.1	150	220	0.67 J	0.50 UJ	0.10 UJ

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J- Indicates estimated value, biased low.
J+ Indicates estimated value, biased high.
D Result reported from a secondary dilution analysis.
R The sample results are rejected.

MONITORING WELL GROUNDWATER ANALYTICAL RESULT SUMMARY
HYDE PARK FACILITY
NIAGARA, NEW YORK

Well ID: MW-13A

Date	PCE (µg/L)	TCE (µg/L)	Cis-1,2-DCE (µg/L)	Trans-1,2-DCE (µg/L)	1,1-DCE (µg/L)	Vinyl Chloride (µg/L)	Ethane (µg/L)	Ethene (µg/L)	Methane (µg/L)	1,1,1-Trichloroethane (µg/L)	1,1-Dichloroethane (µg/L)	Chloroethane (µg/L)	Dissolved Iron (mg/L)	BOD (mg/L)	COD (mg/L)	TOC (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)
10/30/2007	5 U	5 U	5 U	5 U	5 U	2 U				5 U	5 U	5 U									
4/29/2008																					
10/29/2009	5 U	5 U	5 U	5 U	5 U	5 U				5 U	5 U	5 U									

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R The sample results are rejected.

MONITORING WELL GROUNDWATER ANALYTICAL RESULT SUMMARY
HYDE PARK FACILITY
NIAGARA, NEW YORK

Well ID: MW-13B

Date	PCE (µg/L)	TCE (µg/L)	Cis-1,2-DCE (µg/L)	Trans-1,2-DCE (µg/L)	1,1-DCE (µg/L)	Vinyl Chloride (µg/L)	Ethane (µg/L)	Ethene (µg/L)	Methane (µg/L)	1,1,1-Trichloroethane (µg/L)	1,1-Dichloroethane (µg/L)	Chloroethane (µg/L)	Dissolved Iron (mg/L)	BOD (mg/L)	COD (mg/L)	TOC (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)
10/30/2007	5 U	0.78 J	82	1.1 J	5 U	59				5 U	0.61 J	5 U									
4/24/2008	5 U	0.65 J	65	0.51 J	5 U	56				5 U	0.48 J	5 U									
10/29/2009	5 U	5 U	88	5 U	5 U	68				5 U	5 U	5 U									
5/13/2010	5 U	5 U	46	5 U	5 U	47	5 U	1 J	65	5 U	5 U	5 U									
10/21/2011	5 U	5 U	17	5 U	5 U	24				5 U	5 U	5 U									
6/13/2012	5 U	5 U	27	5 U	5 U	57				5 U	5 U	5 U									
8/30/2013	5 U	5 U	8.6	5 U	5 U	48				5 U	5 U	5 U									
4/3/2014	1 U	1 U	19	1 U	1 U	15				1 UJ	1 U	1 U									
11/17/2015	1 U	1 U	18	1 U	1 U	21				1 U	1 U	1 U									
4/21/2016	1.0 U	1.0 U	9.9	1.0 U	1.0 U	12				1.0 U	1.0 U	1.0 U									
9/13/2017	1.0 U	1.0 U	22	1.0 U	1.0 U	38				1.0 U	1.0 UJ	1.0 U									
4/24/2018	1.0 U	1.0 U	7.8	1.0 U	1.0 U	9.7				1.0 U	1.0 U	1.0 U									
12/3/2019	1.0 U	0.19 J	16	1.0 U	1.0 U	21				1.0 U	0.17 J	1.0 U									
3/19/2020	1.0 U	1.0 U	1.6	1.0 U	1.0 U	2				1.0 U	1.0 U	1.0 U									

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UJ The analyte was not detected. The reporting limit is an approximate value.
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J+ Indicates estimated value, biased high.
D Result reported from a secondary dilution analysis.
R The sample results are rejected.

MONITORING WELL GROUNDWATER ANALYTICAL RESULT SUMMARY
HYDE PARK FACILITY
NIAGARA, NEW YORK

Well ID: MW-14A

Date	PCE (µg/L)	TCE (µg/L)	Cis-1,2-DCE (µg/L)	Trans-1,2-DCE (µg/L)	1,1-DCE (µg/L)	Vinyl Chloride (µg/L)	Ethane (µg/L)	Ethene (µg/L)	Methane (µg/L)	1,1,1-Trichloroethane (µg/L)	1,1-Dichloroethane (µg/L)	Chloroethane (µg/L)	Dissolved Iron (mg/L)	BOD (mg/L)	COD (mg/L)	TOC (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)
10/30/2007	5 U	5 U	1.6 J	5 U	5 U	2.4				5 U	5 U	5 U									
4/24/2008	5 U	5 U	1.5 J	5 U	5 U	1.6 J	0.64 J	1 U	15	5 U	5 U	5 U		2 U	18.8	5.38	68	118	1 U	0.05 U	0.05 U
10/29/2009	5 U	5 U	1.4 J	5 U	5 U	2.7 J	5 U	5 U	17	5 U	5 U	5 U		1.4 U	21 J	4.2	63.9	150 J	0.16 U	0.28	0.05 U

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J+ Indicates estimated value, biased high.
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MONITORING WELL GROUNDWATER ANALYTICAL RESULT SUMMARY
HYDE PARK FACILITY
NIAGARA, NEW YORK

Well ID: MW-14B

Date	PCE (µg/L)	TCE (µg/L)	Cis-1,2-DCE (µg/L)	Trans-1,2-DCE (µg/L)	1,1-DCE (µg/L)	Vinyl Chloride (µg/L)	Ethane (µg/L)	Ethene (µg/L)	Methane (µg/L)	1,1,1-Trichloroethane (µg/L)	1,1-Dichloroethane (µg/L)	Chloroethane (µg/L)	Dissolved Iron (mg/L)	BOD (mg/L)	COD (mg/L)	TOC (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)
10/30/2007	5 U	5 U	56	0.42 J	5 U	49	2 U	2 U	110	5 U	0.6 J	5 U		2 U	6.58 J	4.07	119	263	1 U		
4/24/2008	5 U	5 U	120	0.81 J	5 U	90	1 U	1.5 J	170	5 U	0.41 J	5 U		2 U	10.1	2.95	136	222	1 U	0.05 U	0.05 U
10/29/2009	5 U	5 U	64	5 U	5 U	86	5 U	2.2 J	130	5 U	5 U	5 U		2.1 U	23.3 J	3.5	133	310 J	0.5	0.1 U	0.05 U
5/13/2010	5 U	5 U	16	5 U	5 U	33	100 U	170	3400	5 U	5 U	5 U		53.6	137	14.6	143	103	46.9	0.1 U	0.05 U
10/24/2011	5 U	5 U	4.1 J	5 U	5 U	5.4	5 U	66	690	5 U	5 U	5 U	0.0264 J	5.2 U	36 J	7	260	274	3	0.1 U	0.05 U
6/13/2012	5 U	5 U	1.5 J	5 U	5 U	5.4	2.2 J	91	9100	5 U	5 U	5 U	0.027 J	33	117	10.2	241	126	48.2	0.1 U	0.05 U
8/29/2013	5 U	5 U	5 U	5 U	5 U	1.5 J				5 U	5 U	5 U									
4/3/2014	1 U	1 U	0.67 J	1 U	1 U	1.2				1 UJ	1 U	1 U									
11/18/2015	1 U	1 U	0.95 J	1 U	1 U	1.5				1 U	0.53 J	1 U									
4/21/2016	1.0 U	1.0 U	0.94 J	1.0 U	1.0 U	1.2				1.0 U	1.0 U	1.0 U									
9/14/2017	1.0 U	1.0 U	0.92 J	1.0 U	1.0 U	2.9				1.0 U	0.43 J	1.0 U									
4/24/2018	1.0 U	1.0 U	0.72 J	1.0 U	1.0 U	1.3				1.0 U	0.34 J	1.0 U									
12/5/2019	1.0 U	1.0 U	0.37 J	1.0 U	1.0 U	0.7 J				1.0 U	0.19 J	1.0 U									
3/18/2020	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1				1.0 U	0.24 J	1.0 U									

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J- Indicates estimated value, biased low.
J+ Indicates estimated value, biased high.
D Result reported from a secondary dilution analysis.
R The sample results are rejected.

MONITORING WELL GROUNDWATER ANALYTICAL RESULT SUMMARY
HYDE PARK FACILITY
NIAGARA, NEW YORK

Well ID: MW-15

Date	PCE (µg/L)	TCE (µg/L)	Cis-1,2-DCE (µg/L)	Trans-1,2-DCE (µg/L)	1,1-DCE (µg/L)	Vinyl Chloride (µg/L)	Ethane (µg/L)	Ethene (µg/L)	Methane (µg/L)	1,1,1-Trichloroethane (µg/L)	1,1-Dichloroethane (µg/L)	Chloroethane (µg/L)	Dissolved Iron (mg/L)	BOD (mg/L)	COD (mg/L)	TOC (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)
10/30/2007	5 U	5 U	170	1.7 J	5 U	86				5 U	0.66 J	5 U									
4/23/2008	5 U	5 U	190	1.5 J	5 U	93				5 U	0.58 J	0.38 J									
11/3/2009	5 U	5 U	56	1.1 J	5 U	82				5 U	2 J	5 U									
5/12/2010	5 U	5 U	5.9	5 U	5 U	17	1.1 J	140	1300	5 U	1.3 J	5 U									
10/21/2011	5 U	5 U	32	1.3 J	5 U	52				5 U	1.4 J	5 U									
6/14/2012	5 U	5 U	5 U	5 U	5 U	1.8 J				5 U	1.2 J	5 U									
8/29/2013	5 U	5 U	5 U	5 U	5 U	2 J				5 U	5 U	5 U									
6/14/2018	1.0 U	1.0 UJ	5.2	0.62 J	1.0 U	16				1.0 U	1.1	1.0 U									

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J- Indicates estimated value, biased low.
J+ Indicates estimated value, biased high.
D Result reported from a secondary dilution analysis.
R The sample results are rejected.

MONITORING WELL GROUNDWATER ANALYTICAL RESULT SUMMARY
HYDE PARK FACILITY
NIAGARA, NEW YORK

Well ID: MW-16A

Date	PCE (µg/L)	TCE (µg/L)	Cis-1,2-DCE (µg/L)	Trans-1,2-DCE (µg/L)	1,1-DCE (µg/L)	Vinyl Chloride (µg/L)	Ethane (µg/L)	Ethene (µg/L)	Methane (µg/L)	1,1,1-Trichloroethane (µg/L)	1,1-Dichloroethane (µg/L)	Chloroethane (µg/L)	Dissolved Iron (mg/L)	BOD (mg/L)	COD (mg/L)	TOC (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)
10/31/2007	5 U	0.39 J	12	5 U	5 U	160	0.87 J	15	18	5 U	5 U	5 U		2 U	23.2 J	6.93	278	981	1.2		
4/25/2008	5 U	0.39 J	9	5 U	5 U	53	1 U	0.62 J	4.5	5 U	5 U	5 U		2 U	20.4	6.5	209	1020	1 U	0.05 U	0.05 U
10/27/2009	5 U	5 U	8.2	5 U	5 U	75	5 U	4.7 J	11 J	5 U	5 U	5 U		1.7 U	41.6 J	7.2	247 J	1060	0.16 U	0 R	0.05 U
5/11/2010	5 U	5 U	10	5 U	5 U	180	5 U	20	20	5 U	5 U	5 U		2 U	40.7 J	7	260	1040	0.16 U	0.1 U	0.05 U
10/27/2011	5 U	5 U	11	5 U	5 U	340	5 U	44	33	5 U	5 U	5 U	0.0424 J		31.5 J	6.9	266	1130	0.16 U	0.1 U	0.05 UJ
3/14/2012																					
3/15/2012	5 U	5 U	7.2	5 U	5 U	12	5 U	1.3 J	15 U	5 U	5 U	5 U	0.044 J			8.1	245	1110			
6/14/2012	5 U	5 U	8.4	5 U	5 U	110	5 U	11	8.7 J	5 U	5 U	5 U	0.2 U	5.4	26.5 J	9.5	237	1100			
11/29/2012	5 U	5 U	10	5 U	5 U	330	1.2 J	79	40	5 U	5 U	5 U	0.2 U			7.7	255	1100			
8/29/2013	5 U	5 U	8.5	5 U	5 U	300	1.1 J	72	29	5 U	5 U	5 U		3.8 U	31.5 J	8.2	252	1080	0.16 U	0.1 U	0.05 U
1/15/2014	5 U	5 U	9	5 U	5 U	78	5 U	6.4	5 U	5 U	5 U	5 U	0.4 U			9.5	190 J+	812 J+	0.16 U		
4/2/2014	1 U	1 U	5.9	1 U	1 U	140	5 U	20	5 U	1 U	1 U	1 U	0.4 U	4.4 U	24.1 J	7.3	214	898	0.16 U	0.1 U	0.14
10/14/2014	1 U	1 U	8.6	1 U	1 U	350	5 U	52	9.5	1 UJ	1 U	1 U	0.491			9.1	221	958	0.16 U		
11/20/2015	1 U	1 U	9.1	1 U	1 U	250	1.2 J	95	49	1 U	1 U	1 U	0.4 U	5.2 U	33.6 J	6.5	290	1080	0.16 U	0.1 U	0.05 U
4/20/2016	1.0 U	1.0 U	6.5	1.0 U	1.0 U	18	5.0 U	1.1 J	5.0 U	1.0 U	1.0 U	1.0 U	0.400 U	2.9 U	33.6 J	6.2	907	1140	0.10 U	0.14	0.050 U
9/12/2017	10 U	10 U	7.3 J	10 U	10 U	190	0.47 J	33	28	10 U	10 U	10 U	0.100 U	2.0 U	28	6.4	250	1000	1.0 U	0.50 U	0.050 UJ
4/26/2018	1.0 U	1.0 U	1.4	1.0 U	1.0 U	33	1.0 U	13	12	1.0 U	1.0 U	1.0 U	0.026 J	2.0 U	17 J	5.8	48	190	1.0 U	0.21 J	0.050 U
12/3/2019	4.0 U	0.6 J	3.6 J	4.0 U	4.0 U	120	1	49	77	4.0 U	4.0 U	4.0 U	0.20 U	2.0 U	18	6.1	170	810	1.0 U	0.50 U	
3/20/2020	13 U	13 U	8.7 J	13 U	13 U	560	3.1	270	290	13 U	13 U	13 U	0.43	2.0 U	17	6.7	210	1000	1.0 U	1.0 U	0.10 U

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U Analyte was not detected above the reporting limit.
UJ The analyte was not detected. The reporting limit is an approximate value.
J- Indicates estimated value, biased low.
J+ Indicates estimated value, biased high.
D Result reported from a secondary dilution analysis.
R The sample results are rejected.

MONITORING WELL GROUNDWATER ANALYTICAL RESULT SUMMARY
HYDE PARK FACILITY
NIAGARA, NEW YORK

Well ID: MW-16B

Date	PCE (µg/L)	TCE (µg/L)	Cis-1,2-DCE (µg/L)	Trans-1,2-DCE (µg/L)	1,1-DCE (µg/L)	Vinyl Chloride (µg/L)	Ethane (µg/L)	Ethene (µg/L)	Methane (µg/L)	1,1,1-Trichloroethane (µg/L)	1,1-Dichloroethane (µg/L)	Chloroethane (µg/L)	Dissolved Iron (mg/L)	BOD (mg/L)	COD (mg/L)	TOC (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)
10/31/2007	5 U	5 U	210	0.88 J	5 U	63	1 U	3.7	190	5 U	5 U	5 U		2 U	5 UJ	3.7	114	269			
11/29/2007																			1 U		
4/25/2008	5 U	0.25 J	280	1.4 J	0.33 J	86	0.7 J	3.1	220	5 U	0.22 J	5 U		2 U	10.1	3.81	106	264	1.1	0.05 U	0.05 U
10/27/2009	5 U	5 U	510	1.8 J	5 U	130	5 U	3.2 J	150	5 U	5 U	5 U		1.8 U	18.8 J	3.7	120 J	286	0.22	0 R	0.05 U
5/11/2010	5 U	5 U	81	5 U	5 U	48	5 U	2.3 J	150	5 U	5 U	5 U		2.1 U	15.6 J	3.8	105	247	0.3	0.1 U	0.05 U
11/8/2010	5 U	5 U	320	1.4 J	5 U	110	5 U	5 U	120	5 U	5 U	5 U				3.7	114	264			
10/25/2011	5 U	5 U	27	5 U	5 U	43	5 U	3.8 J	140	5 U	5 U	5 U	0.2 U	2.6 U	50 U	3.5	134 J	303 J	0.38	0.1 U	0.05 U
3/15/2012	50 U	45 J	9000	36 J	23 J	830	3.1 J	73	2400	50 U	50 U	50 U	0.0585 J			17.5	78.4	96.6			
6/13/2012	10 U	74	4700	19	15	600	2.5 J	74	2600	10 U	4 J	2.6 J	0.2 U	24.6	65.1	4.1	81.5	165	33.1	0.1 U	0.05 U
11/27/2012	50 U	430	6800	24 J	29 J	820	5.6	190	3600	50 U	50 U	50 U	0.0908 J			3.5	82.8	191			
8/28/2013	5 U	2.2 J	600	5.2	2.4 J	610	5 U	75	670	5 U	1 J	5 U		5.1 U	15.6 J	3.8	90.1 J	219	1.1	0.1 U	0.05 U
1/14/2014	25 U	25 U	8800	53	17 J	5500	15	1500	18000	25 U	15 J	25 U	0.214 J			194	44.8	5 U	50.9		
4/3/2014	5 U	5 U	2300	16	5.5	2000	11	700	16000	5 U	3.4 J	5 U	0.0956 J	140	253	69.2	26.9	17.7	38.3	0.1 UJ	0.05 U
10/13/2014	1 U	1 U	17	8.8	1 U	22	13	610	21000	1 U	2.9	1 U	0.372 J			211	43.3	21.6	17.2		
11/20/2015	1 U	4.8	1100	22	2.2	780	40	920	24000	1 U	6.6	1 U	0.4 U	105	215	47.3	70.6	4.2	36.5	0.1 U	0.05 UJ
4/20/2016	1.0 U	1.0 U	1.0 U	6.8	1.0 U	4.3	17	300	31000 D	1.0 U	2	1.0 U	0.400 U	62.4	201	26.5	73.8	8.2	50.5	0.10 U	0.050 U
9/12/2017	1.0 U	1.0 U	1.0 U	0.44 J	1.0 U	2.6	15	34	8200 D	1.0 U	0.39 J	1.0 U	0.100 U	39	99	6.8	120	120	29	0.25 U	0.050 UJ
4/26/2018	1.0 U	1.0 U	0.63 J	1.0 U	1.0 U	4.6	1.0 U	2.8	9900 D	1.0 U	1.0 U	1.0 U	0.200 U	13	49	5.7	120	230	6.9	0.25 U	0.050 U
12/3/2019	1.0 U	1.0 U	1	1.0 U	1.0 U	6.7	4.2	17	9300 D	1.0 U	1.0 U	1.0 U	0.20 U	14	25	4	110	220	9.5	0.25 U	
3/20/2020	1.0 U	1.0 U	0.6 J	1.0 U	1.0 U	2.9	1.5	1.1	14000 D	1.0 U	1.0 U	1.0 U	0.048 J	17	32	3.4	120	250	13	0.50 U	0.10 U

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UJ The analyte was not detected. The reporting limit is an approximate value.
J- Indicates estimated value, biased low.
J+ Indicates estimated value, biased high.
D Result reported from a secondary dilution analysis.
R The sample results are rejected.

MONITORING WELL GROUNDWATER ANALYTICAL RESULT SUMMARY
HYDE PARK FACILITY
NIAGARA, NEW YORK

Well ID: MW-17A

Date	PCE (µg/L)	TCE (µg/L)	Cis-1,2-DCE (µg/L)	Trans-1,2-DCE (µg/L)	1,1-DCE (µg/L)	Vinyl Chloride (µg/L)	Ethane (µg/L)	Ethene (µg/L)	Methane (µg/L)	1,1,1-Trichloroethane (µg/L)	1,1-Dichloroethane (µg/L)	Chloroethane (µg/L)	Dissolved Iron (mg/L)	BOD (mg/L)	COD (mg/L)	TOC (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)
11/1/2007	5 U	38	160	1.9 J	10	12	1 U	0.42 J	60	5 U	19	5 U		2 U	11.4 J	2.51	1400	134	1 U		
4/28/2008	5 U	29	200	1.5 J	9.1	28	1 U	1.5	77	5 U	20	5 U		2 U	11	2.2	1120	153	1 U	0.05 U	0.05 U
8/12/2008	5 U	40	190	2.5 J	11	24	5 U	1.5 J	120	5 U	21					2.4	1250	168			
10/7/2008	5 U	43	200	3.5 J	13	23	5 U	1.3 J	120 J	5 U	23	5 U				2.2	1270 J	165			
12/10/2008	5 U	39	210	2.2 J	12	27	5 U	1.1 J	65	5 U	25	5 U				2.2	1070	161			
1/26/2009	5 U	32	210	2.1 J	11	29	5 U	1.4 J	88	5 U	23	5 U									
3/16/2009	5 U	29	210	2.5 J	12	28	5 U	1.4 J	78	5 U	20	5 U				2.3	1220	170			
10/20/2009	5 U	24	200	2.2 J	14	24	5 U	5 U	120	5 U	29	5 U				3.1	1080 J	198 J			
10/28/2009	5 U	22	180	1.6 J	14	25	5 U	5 U	97	5 U	30	5 U		1.9 U	59.9 J	2.9	1130 J	192	0.16 U	0 R	0.05 U
12/11/2009	5 U	11	200	1.4 J	13	29	5 U	5 U	100	5 U	28	5 U				3.1	1060 J	217 J			
2/9/2010	5 U	14	210	1.3 J	11	34	5 U	5 U	110	5 U	24	5 U				3.7 J	962	194			
3/30/2010	5 U	11	180	1.7 J	10	24				5 U	20	5 U									
5/6/2010	5 U	15	210	1.4 J	11	27	5 U	5 U	15 U	5 U	20	5 U		3.6 U	29.3 J	2.9	729 J	196 J	0.16 U	0.1 U	0.05 U
11/11/2010	5 U	16	200	1.9 J	13	28	1.5 J	8.5	2100	5 U	27	5 U				3.1	661	195			
10/24/2011	5 U	11	160	1.2 J	12	30	11	3.2 J	4900	5 U	26	5 U	0.2 U	5.1	33.8 J	3.9	1010	189	0.16 U	0.1 U	0.05 U
6/12/2012	5 U	5.3	140	1.2 J	8.1	25	12	3.1 J	8500	5 U	21	5 U	0.2 U	5.9	28.8 J	4.4	484	172	0.16 U	0.1 U	0.05 U
8/28/2013	5 U	3.1 J	180	5 U	6.3	45	11	8.8	12000	5 U	22	5 U		9.8	27 J	3.8	318 J	151	0.16 U	0.1 U	0.05 U
4/3/2014	1 U	0.62 J	150	1 U	3.6	49	14	17	18000	1 UJ	16	1 U	2.14	8.5	49.3 J	5.1	277	145	0.16 U	0.1 UJ	0.05 U
11/18/2015	1 U	1 U	160	1 U	1 U	86	12	11	15000	1 U	18	1 U	1.45	7.3	15.2 J	3	167	114	0.16 U	0.1 U	0.05 U
4/20/2016	1.0 U	1.0 U	110	1.0 U	1.0 U	89	7.4	11	15000 D	1.0 U	15	1.0 U	0.955	7.8	26.7 J	3.2	161	131	0.10 U	0.10 U	0.050 U
9/12/2017	5.0 U	5.0 U	120	5.0 U	5.0 U	120	5.5	8.4	3700 D	5.0 U	17	5.0 U	0.92	3.4	17	3	82	97	1.0 U	0.25 U	0.050 UJ
4/25/2018	5.0 U	5.0 U	59	5.0 U	5.0 U	91	10 U	10 U	13000	5.0 U	11	5.0 U	1	4.8 J	19	3.7	92	100	1.0 U	0.25 U	0.050 U
12/5/2019	2.0 U	2.0 U	50	2.0 U	2.0 U	83	11	17	9400 D	2.0 U	13	2.0 U	0.55	4.2	10 U	2.8	57	67	1.0 U	0.25 U	
3/19/2020	2.0 U	2.0 U	38	2.0 U	2.0 U	78	17	21	17000 D	2.0 U	12	2.0 U	0.7		7.6 J	2.7	53	70	1.0 U	0.50 UJ	0.10 UJ

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UJ The analyte was not detected. The reporting limit is an approximate value.
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J+ Indicates estimated value, biased high.
D Result reported from a secondary dilution analysis.
R The sample results are rejected.

MONITORING WELL GROUNDWATER ANALYTICAL RESULT SUMMARY
HYDE PARK FACILITY
NIAGARA, NEW YORK

Well ID: MW-17B

Date	PCE (µg/L)	TCE (µg/L)	Cis-1,2-DCE (µg/L)	Trans-1,2-DCE (µg/L)	1,1-DCE (µg/L)	Vinyl Chloride (µg/L)	Ethane (µg/L)	Ethene (µg/L)	Methane (µg/L)	1,1,1-Trichloroethane (µg/L)	1,1-Dichloroethane (µg/L)	Chloroethane (µg/L)	Dissolved Iron (mg/L)	BOD (mg/L)	COD (mg/L)	TOC (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)
11/1/2007	5 U	4 J	440	3.4 J	3.4 J	64	0.66 J	2.8	180	5 U	9.3	5 U		2 U	9.7 J	3.31	431	209	1 U		
4/28/2008	5 U	4.6 J	630	8.5	5.5	82	0.53 J	4	160	5 U	17	5 U		2 U	10.4	3.06	475	211	1 U	0.05 U	0.05 U
10/8/2008	5 U	3.3 J	600	5.9	4.4 J	120	5 U	6.6	170 J	5 U	22	5 U				55.7	561 J	169			
12/10/2008	5 U	2.6 J	260	3.1 J	2.9 J	170	5 U	33	120	5 U	28	5 U				3	802	180			
1/26/2009	5 U	2.1 J	280	4.2 J	3.1 J	210	5 U	61	130	5 U	24	5 U									
3/17/2009	5 U	1.6 J	270	3.6 J	3.2 J	180	5 U	71	180	5 U	22	5 U				3.5	631	275			
10/20/2009	5 U	4.2 J	280 J	2.4 J	4.5 J	73	3 J	22	120	5 U	29	5 U				3	768 J	204 J			
10/28/2009	5 U	3.1 J	280	2.2 J	3.1 J	69	2 J	14	89	5 U	26	5 U		2.2 U	53.1 J	3.1	720 J	195	0.1 J	0 R	0.05 U
12/11/2009	5 U	2.2 J	170	2.4 J	5 U	160	2.4 J	130	300	5 U	8.4	5 U				264	171 J	18.3 J			
2/9/2010	5 U	1.2 J	31	1.8 J	5 U	52	4.2 J	190	4400	5 U	31	5 U				122 J	727	32.2			
3/30/2010	5 U	5 U	5.9	1.7 J	5 U	10				5 U	37	5 U									
5/6/2010	5 U	5 U	8.5	1.4 J	5 U	9.6	5 U	5 U	15 U	5 U	45	5 U		157 J	219	12.7	883 J	49.7 J	14.3	0.1 U	0.05 U
11/10/2010	5 U	5 U	8.1	0.86 J	5 U	8.8	16	110	4200	5 U	40	5 U				4.5	981	118			
10/26/2011	5 U	5 U	19	0.82 J	5 U	27	70	81	15000	5 U	48	1.4 J	0.102 J	5.7	45.1 J	3.2	966	154 J	4.5	0.1 U	0.05 U
3/13/2012	5 U	5 U	14	1.1 J	5 U	15	44	83	18000	5 U	46	1.3 J	0.0442 J			10.9	682	118			
6/12/2012	5 U	5 U	20	0.82 J	5 U	18	45	72	23000	5 U	43	1.5 J	0.19 J	9.6	49.2 J	3.8	739	116	11.6	0.1 U	0.05 U
11/27/2012	5 U	5 U	28 J	5 U	5 U	31	41	79	19000	5 U	35 J	5 U	0.172 J			3.2	669	130			
8/28/2013	5 U	5 U	35	5 U	5 U	40	29	56	19000	5 U	38	5 U		12.7	40.6 J	3.6	521 J	138	1.2	0.1 U	0.05 U
1/15/2014	5 U	5 U	1.8 J	1.5 J	5 U	2.9 J	7.2	52	19000	5 U	7.9	11	54.8			454	351 J+	5 U	6.3		
4/1/2014	1 U	1 U	1.3	0.73 J	1 U	2.1	13	34	20000	1 U	8.2	7.4	16.6	139	228	55.1	288	6.9	8.2 J-	0.1 U	0.016 J
10/14/2014	1 U	1 U	0.52 J	0.71 J	1 U	1.1	8.3	17	16000	1 UJ	3.3	8.2	15.5			38.4	386	5 U	4.1		
11/18/2015	1 U	1 U	1 U	1 U	1 U	0.8 J	8.5	8.9	14000	1 U	1.5	7.9	13.4	17.6	102	18.8	374	2.5 J	1.4	0.1 U	0.05 U
4/21/2016	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.88 J	8	7	18000 D	1.0 U	1.7	6.7	17.3	20.4	103	25	327	7.2	1	0.10 U	0.050 U
9/12/2017	1.0 U	0.68 J	10	0.45 J	1.0 U	12	3.5	4.6	6800	1.0 U	6.3 J	7.6	5.3	6.2	78	17	210	47	0.73 J	0.50 U	0.050 UJ
4/25/2018	1.0 U	1.0 U	4.9	0.39 J	1.0 U	7.9	19	27	22000	1.0 U	4.5	3.7	4.7	6.8	89	20	170	45	2.1	0.25 U	0.039 J
12/5/2019	1.0 U	1.0 U	11	0.28 J	1.0 U	14	24	17	27000 D	1.0 U	4.3	6.6	3.1	9.7 J-	19	5.9	140	67	2.3	0.25 U	
3/19/2020	1.0 U	1.0 U	1.4	1.0 U	1.0 U	2.6	23	6.5	33000 D	1.0 U	4.5	8.9	4.1		21	5.4	110	39	2.9	0.50 UJ	0.10 UJ

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U Analyte was not detected above the reporting limit.
UJ The analyte was not detected. The reporting limit is an approximate value.
J- Indicates estimated value, biased low.
J+ Indicates estimated value, biased high.
D Result reported from a secondary dilution analysis.
R The sample results are rejected.

MONITORING WELL GROUNDWATER ANALYTICAL RESULT SUMMARY
HYDE PARK FACILITY
NIAGARA, NEW YORK

Well ID: MW-18A

Date	PCE (µg/L)	TCE (µg/L)	Cis-1,2-DCE (µg/L)	Trans-1,2-DCE (µg/L)	1,1-DCE (µg/L)	Vinyl Chloride (µg/L)	Ethane (µg/L)	Ethene (µg/L)	Methane (µg/L)	1,1,1-Trichloroethane (µg/L)	1,1-Dichloroethane (µg/L)	Chloroethane (µg/L)	Dissolved Iron (mg/L)	BOD (mg/L)	COD (mg/L)	TOC (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)
11/1/2007	5 U	22	25	0.46 J	0.58 J	6.7	0.38 J	1 U	17	5 U	4.1 J	5 U		2 U	5 UJ	1.79	74.2	125	1 U		
4/28/2008	5 U	25	31	0.44 J	0.8 J	2.1 J	1 U	1 U	16	5 U	3.8 J	5 U		2 U	5 U	1.56	79.6	133	1 U	0.05 U	0.05 U
10/27/2009	5 U	25	43	5 U	0.93 J	7	5 U	5 U	23	5 U	4.7 J	5 U		1.4 U	14.2 J	1.5	90.2 J	130	0.16 U	0 R	0.05 U
5/12/2010	5 U	25	51	5 U	1.1 J	2.6 J	5 U	5 U	13 J	5 U	4.2 J	5 U		1.6 U	50 U	2.1	104 J	132	0.16 U	0.1 U	0.05 U
10/24/2011	5 U	23	42	5 U	0.9 J	8.4	5 U	5 U	19	5 U	4.7 J	5 U	0.0478 J	2.1 U	50 U	1.8	293	156	0.16 U	0.1 U	0.05 U
6/12/2012	5 U	21	56	0.94 J	1.1 J	2.4 J	5 U	5 U	11 J	5 U	4.2 J	5 U	0.2 U	3.1 U	50 U	1	108	129	0.16 U	0.1 U	0.05 U
8/27/2013	5 U	25	58	0.87 J	0.98 J	3.4 J	5 U	5 U	10	5 UJ	4.9 J	5 U		6.2	50 U	2.1	118	138	0.16 U	0.1 U	0.05 U
4/2/2014	1 U	27	43	0.76 J	0.9 J	0.86 J	5 U	5 U	3.4 J	1 UJ	3.6	1 U	0.89	3.3 U	50 U	2.4	106 J-	124 J+	0.16 U	0.1 U	0.05 U
11/18/2015	1 U	38	51	0.73 J	1.1	2.3	5 U	5 U	11 J	1 U	4.5	1 U	1.5	2.8 U	50 U	1.2	113	118	0.16 U	0.1 U	0.05 U
4/20/2016	1.0 U	37	51	0.83 J	0.99 J	0.62 J	5.0 U	5.0 U	5.2	1.0 U	4.3	1.0 U	0.463	4.2 U	19.8 J	1.4	233	144	0.10 U	0.10 U	0.050 U
9/13/2017	2.0 U	29	58	0.8 J	1 J	1.8 J	0.50 U	0.50 U	5.3	2.0 U	5	2.0 U	1.2	2.0 U	12	1.3	86	120	1.0 U	0.25 U	0.050 U
4/26/2018	1.0 U	36	42	0.61 J	0.88 J	1.1	1.0 U	1.0 U	13	1.0 U	3.7	1.0 U	0.99	2.0 U	12	1.5	81	130	1.0 U	0.25 U	0.050 U
12/4/2019	2.0 U	32	43	0.66 J	0.93 J	0.97 J	0.36 J	1.0 U	9.2	2.0 U	3.6	2.0 U	0.9	2.0 U	10 U	1.3	67	130	1.0 U	0.25 U	
3/19/2020	2.0 U	34	46	0.81 J	0.87 J	1.1 J	1.0 U	1.0 U	17	2.0 U	3.7	2.0 U	0.99		4.1 J	1.3	65	130	1.0 U	0.50 UJ	0.10 UJ

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J+ Indicates estimated value, biased high.
D Result reported from a secondary dilution analysis.
R The sample results are rejected.

MONITORING WELL GROUNDWATER ANALYTICAL RESULT SUMMARY
HYDE PARK FACILITY
NIAGARA, NEW YORK

Well ID: MW-18B

Date	PCE (µg/L)	TCE (µg/L)	Cis-1,2-DCE (µg/L)	Trans-1,2-DCE (µg/L)	1,1-DCE (µg/L)	Vinyl Chloride (µg/L)	Ethane (µg/L)	Ethene (µg/L)	Methane (µg/L)	1,1,1-Trichloroethane (µg/L)	1,1-Dichloroethane (µg/L)	Chloroethane (µg/L)	Dissolved Iron (mg/L)	BOD (mg/L)	COD (mg/L)	TOC (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)
11/1/2007	5 U	5 U	160	0.9 J	5 U	140		2.1	120	5 U	5 U	5 U		2 U	5 UJ	4.09	80.9	261			
11/29/2007																			1 U		
4/28/2008	5 U	5 U	120	0.73 J	5 U	180	0.74 J	2.4	150	5 U	5 U	5 U		2 U	9.86	3.74	88.1	270	1 U	0.05 U	0.05 U
10/27/2009	5 U	5 U	62	5 U	5 U	220	5 U	2.3 J	120	5 U	5 U	5 U		1.7 U	23.3 J	4.1	93.8 J	296	0.16 U	0 R	0.05 U
5/12/2010	5 U	5 U	69	5 U	5 U	190	5 U	2.4 J	130	5 U	5 U	5 U									
10/25/2011	5 U	5 U	150	0.9 J	5 U	220	5 U	4 J	120	5 U	5 U	5 U	0.0657 J	2.4 U	50 U	3.9	114 J	305 J	0.16 U	0.1 U	0.05 U
3/14/2012	5 U	5 U	59	5 U	5 U	170	5 U	2.3 J	96	5 U	5 U	5 U	0.0423 J			3.5	102	281			
6/12/2012	5 U	5 U	110	5 U	5 U	140	5 U	3.6 J	110	5 U	5 U	5 U	0.2 U	3.5 U	50 U	4	102	268	0.16 U	0.1 U	0.05 U
11/28/2012	5 U	5 U	89	5 U	5 U	180	5 U	5.2	150	5 U	5 U	5 U	0.2 U			4.2	106	284			
8/15/2013	0.96 J	5 U	120	5 U	5 U	190				5 U	5 U	5 U							0.16 U		
8/27/2013	5 U	5 U	110	5 U	5 U	190	5 U	5.3	170	5 UJ	5 U	5 U		2.8 U	17.9 J	4.9	106	284	0.16 U	0.1 U	0.05 U
1/17/2014	5 U	5 U	28	5 U	5 U	56	3.2 J	41	5000	5 U	5 U	5 U	5.97			941	91.1	55.1	17.3		
1/21/2014																					
4/2/2014	1 U	1 U	43	1 U	1 U	71	3.8 J	33	13000	1 UJ	1 U	1 U	2.91	889 J	1340	427	79.3 J-	86.1 J+	7.7	0.1 U	0.05 U
10/13/2014	1 U	1 U	1.1	1 U	1 U	4.6	4 J	11	18000	1 U	1 U	1 U	8.37			166	34.9	3.8 J	2.8		
11/18/2015	1 U	1 U	35	1 U	1 U	40	3.5 J	15	18000	1 U	1 U	1 U	2.54	35.7	167	41.5	62.2	70.9	1.5	0.1 U	0.05 U
4/21/2016	1.0 U	1.0 U	90	1.0 U	1.0 U	120	2.8 J	16	19000 D	1.0 U	1.0 U	1.0 U	0.893	22.1	88.7	21.7	122	189	4.8	0.10 U	0.050 U
9/13/2017	20 U	20 U	380	20 U	20 U	210	6.8	38	5000 D	20 U	20 UJ	20 U	0.52	23	99	11	110	140	7.3	0.50 U	0.050 U
4/26/2018	2.5 U	2.5 U	69	2.5 U	2.5 U	92	2	12	17000 D	2.5 U	2.5 U	2.5 U	0.41	17	71	12	97	130	10	0.25 U	0.050 U
12/4/2019	2.0 U	2.0 U	56	2.0 U	2.0 U	70	2.3	9.9	24000 D	2.0 U	2.0 U	2.0 U	0.35	35 J-	49	8.8	96	130	13	0.25 U	
3/19/2020	2.0 U	2.0 U	32	2.0 U	2.0 U	51	2.5	29	24000 D	2.0 U	2.0 U	2.0 U	0.23		53	7.2	100	170	16	0.50 UJ	0.10 UJ

J Indicates an estimated value.
U Analyte was not detected above the reporting limit.
UJ The analyte was not detected. The reporting limit is an approximate value.
J- Indicates estimated value, biased low.
J+ Indicates estimated value, biased high.
D Result reported from a secondary dilution analysis.
R The sample results are rejected.

MONITORING WELL GROUNDWATER ANALYTICAL RESULT SUMMARY
HYDE PARK FACILITY
NIAGARA, NEW YORK

Well ID: MW-19A

Date	PCE (µg/L)	TCE (µg/L)	Cis-1,2-DCE (µg/L)	Trans-1,2-DCE (µg/L)	1,1-DCE (µg/L)	Vinyl Chloride (µg/L)	Ethane (µg/L)	Ethene (µg/L)	Methane (µg/L)	1,1,1-Trichloroethane (µg/L)	1,1-Dichloroethane (µg/L)	Chloroethane (µg/L)	Dissolved Iron (mg/L)	BOD (mg/L)	COD (mg/L)	TOC (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)
10/31/2007	5 U	5 U	4.2 J	5 U	5 U	4				5 U	5 U	5 U									
4/24/2008	5 U	5 U	3.2 J	5 U	5 U	1.2 J				5 U	5 U	5 U									
11/2/2009	5 U	5 U	3.7 J	5 U	5 U	2.8 J				5 U	5 U	5 U									

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UJ The analyte was not detected. The reporting limit is an approximate value.
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J+ Indicates estimated value, biased high.
D Result reported from a secondary dilution analysis.
R The sample results are rejected.

MONITORING WELL GROUNDWATER ANALYTICAL RESULT SUMMARY
HYDE PARK FACILITY
NIAGARA, NEW YORK

Well ID: MW-19B

Date	PCE (µg/L)	TCE (µg/L)	Cis-1,2-DCE (µg/L)	Trans-1,2-DCE (µg/L)	1,1-DCE (µg/L)	Vinyl Chloride (µg/L)	Ethane (µg/L)	Ethene (µg/L)	Methane (µg/L)	1,1,1-Trichloroethane (µg/L)	1,1-Dichloroethane (µg/L)	Chloroethane (µg/L)	Dissolved Iron (mg/L)	BOD (mg/L)	COD (mg/L)	TOC (mg/L)	Chloride (mg/L)	Sulfate (mg/L)	Sulfide (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)
10/31/2007	5 U	5 U	12	5 U	5 U	3.4				5 U	5 U	5 U									
4/24/2008	5 U	5 U	24	5 U	5 U	5.8				5 U	5 U	5 U									
11/2/2009	5 U	5 U	68	5 U	5 U	7.2				5 U	5 U	5 U									
5/12/2010	5 U	5 U	2.1 J	5 U	5 U	2.1 J	5 U	5 U	160	5 U	5 U	5 U									
10/20/2011	5 U	5 U	8.7	5 U	5 U	3.3 J				5 U	5 U	5 U									
6/12/2012	5 U	5 U	2.3 J	5 U	5 U	1.6 J				5 U	5 U	5 U									
8/28/2013	5 U	5 U	2.1 J	5 U	5 U	1.2 J				5 U	5 U	5 U									
4/2/2014	1 U	1 U	2.9	1 U	1 U	0.65 J				1 U	1 U	1 U									
11/17/2015	1 U	1 U	1.8	1 U	1 U	1				1 U	1 U	1 U									
4/19/2016	1.0 U	1.0 U	1.1	1.0 U	1.0 U	1.1				1.0 U	1.0 U	1.0 U									
9/13/2017	1.0 U	1.0 U	1.6	1.0 U	1.0 U	1.5				1.0 U	1.0 UJ	1.0 U									
4/23/2018	1.0 U	1.0 U	24	1.0 U	1.0 U	5				1.0 U	1.0 U	1.0 U									
12/4/2019	1.0 U	1.0 U	1.4	1.0 U	1.0 U	1.2				1.0 U	1.0 U	1.0 U									
3/20/2020	1.0 U	1.0 U	11	1.0 U	1.0 U	2.3				1.0 U	1.0 U	1.0 U									

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D Result reported from a secondary dilution analysis.
R The sample results are rejected.