ARCADIS Design & Consultancy for natural and built assets

NYSEG

ANNUAL PERIODIC REVIEW REPORT (Q17 THROUGH Q20)

Madison Avenue Former MGP Site
Elmira, New York
NYSDEC Site Number: 808018

April 27, 2018

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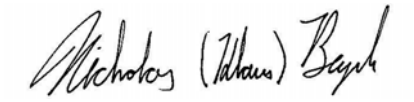

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ACRONYMS AND ABBREVIATIONS

AW	Application Well
BDL	below detection limits
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, xylene
COC	Compound of Concern
cy	cubic yard
DO	dissolved oxygen
DNAPL	dense non-aqueous phase liquid
DUSR	data usability summary report
GV	guidance value
ISS	in-situ soil stabilization
MGP	manufactured gas plant
O&M	operation and maintenance
NAPL	non-aqueous phase liquid
NYSDEC	New York State Department of Environmental Conservation
PAH	polycyclic aromatic hydrocarbon
PMW	performance monitoring well
ppm	parts per million
PRR	Periodic Review Report
ROD	Record of Decision
sf	square feet
SMP	Site Management Plan
SUs	Standard Units (for pH)
USEPA	United States Environmental Protection Agency
VOCs	volatile organic compounds

1 INTRODUCTION

This *Annual Periodic Review Report (Q17 through Q20)* (Annual PRR) summarizes monitoring results collected and operation and maintenance (O&M) activities conducted during the fifth year of operation of the New York State Department of Environmental Conservation- (NYSDEC-) selected remedy for the Madison Avenue former manufactured gas plant (MGP) site. The former MGP site is located in the City of Elmira, Chemung County, New York (**Figure 1**). The site is approximately 6 acres in size and occupies most of the city block bounded by East Clinton Street, Madison Avenue and East Fifth Street (**Figure 2**). This report covers the monitoring period from May 2017 (Q17 Quarterly Visit) through February 2018 (Q20 Annual Visit).

Recommendations based on evaluation of data collected during the reporting period are also included. Verification from NYSEG that site controls were in place and effective, and that no changes have occurred at the site that would impair the ability of the controls to protect public health and the environment, is included as an appendix.

1.1 Background

The NYSDEC-selected soil and groundwater remedies for the site are presented in the *Record of Decision* (NYSDEC, 2008) (ROD). The soil remedy for the site was completed in January 2012; remedial components associated with the groundwater treatment and non-aqueous phase liquid (NAPL) recovery systems were subsequently installed in October 2012.

In general, the soil remedy consisted of:

- Excavation of approximately 9,820 tons of soil/fill containing visual evidence of heavy MGP-related impacts from three areas of the site at depths up to 15 feet below ground surface (bgs).
- In-situ soil stabilization (ISS) of approximately 7,811 cubic yards (cy) of soil exhibiting visual evidence of heavy MGP-related impacts at depths up to 28 feet bgs in 10 discrete areas of the site.
- Excavation and removal of an oil/tar separator.

In addition, the following were encountered during implementation of the site remedy and were removed for off-site disposal:

- A shallow area (approximately 6,250 square feet [sf]) containing purifier waste that was observed on the eastern portion of the site during excavation of a test pit.
- An abandoned electrical line encased in concrete.
- An abandoned section of railroad.

The groundwater remedy consists of increasing the oxygen content of groundwater in the southwest corner of the site to enhance natural biodegradation to mitigate migration of MGP-related compounds of concern (COCs) beyond the site boundary. The ROD identifies the following COCs for groundwater:

- Four (4) volatile organic compounds (VOCs) that includes benzene, toluene, ethylbenzene, and xylene (BTEX).

- Six (6) polycyclic aromatic hydrocarbons (PAHs), including benzo(a)anthracene, benzo(b) fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, benzo(k)fluoranthene, and chrysene.

The technology of enhancing the population of naturally occurring indigenous bacteria is targeted at the single-ringed, less complex, more mobile BTEX compounds rather than the multi-ringed, complex PAH compounds. While some reduction in dissolved levels of PAHs associated with source removal/ISS may be anticipated, monitoring concentrations of BTEX compounds is most appropriate for evaluating the effectiveness of the groundwater remedy. However, PAHs (particularly the six identified as COCs) are also considered when evaluating the groundwater remedy.

Oxygen-enhancement of groundwater is accomplished through application of oxygen releasing compounds (i.e., Provectus [formerly Adventus] oxygen-releasing socks) in site Application Wells (AWs). The objective of the groundwater treatment system is to mitigate BTEX migration beyond the southwest property boundary. The in-situ groundwater remedy consists of:

- Nineteen (19) 4-inch diameter AWs (AW-1 through AW-19); each AW contains a stainless-steel canister containing ORS oxygen-releasing material.
- Six Performance Monitoring Wells (PMW-1 through PMW-6); three PMWs are located hydraulically upgradient from the AWs, three are located hydraulically downgradient.

NAPL monitoring and removal is also a component of the site remedy. The NAPL collection network consists of five NAPL collection wells for passive removal of MGP-related NAPL:

- NRW-1 through NRW-4 (installed during site remedial actions in 2012).
- NAPL Monitoring Well NMW-0402S (previously existing well installed in 2004).

Locations of the groundwater treatment and monitoring wells, and NAPL collection wells are shown on **Figure 2**. Soil boring and well construction logs are included in the *Site Management Plan* (ARCADIS, 2014) (SMP). The SMP also includes an *Engineering and Institutional Control Plan*, a *Monitoring Plan*, an *Operation and Maintenance Plan*, and inspection and reporting requirements.

1.2 Objectives

As stated in the SMP, the objectives of this Annual PRR are to:

- Present and evaluate site-wide data collected during the monitoring period (i.e., Q17 through Q20).
- Present conclusions indicating whether the treatment system objectives, as defined in the ROD and SMP, and presented herein, are being achieved.
- Present recommendations for modifications to the treatment system and/or monitoring requirements based on the evaluation of treatment system data.

As required by the SMP, during this reporting period:

- Performance monitoring, effectiveness monitoring, and oxygen-releasing sock replacement were conducted semi-annually.
- NAPL was gauged, and removed as required, on a quarterly basis.

- Well inspection and site inspection were conducted annually.

A summary of monitoring and O&M tasks completed, along with associated dates tasks were conducted, is presented in **Table 1**.

2 PERFORMANCE MONITORING

The Monitoring Plan included in the SMP describes performance and effectiveness monitoring requirements for evaluating the site remedy. Performance monitoring is the assessment of physical and chemical parameters of the treatment system to determine if the remedy is performing as designed. The performance monitoring program presented in the SMP was developed to document that the groundwater treatment system is delivering oxygen to the groundwater within the AWs (i.e., treatment area). Enhancement of oxygen could stimulate growth of indigenous biological populations and thereby enhance biodegradation of COCs within the treatment area.

As stated above, the technology of enhancing biodegradation targets BTEX compounds rather than PAH compounds; therefore, monitoring concentrations of BTEX compounds is most appropriate for evaluating effectiveness of the treatment system. However, some reduction in dissolved levels of PAHs associated with source removal/ISS may be anticipated; therefore, PAHs are also considered during the evaluation of the remedy.

As required by the SMP, performance monitoring was conducted semi-annually during the fifth year of treatment system operation (August 2017 [Q18] and February 2018 [Q20]).

Performance monitoring consisted of:

- Measuring and recording dissolved oxygen (DO) concentrations from each of the 19 AWs to verify the oxygen-releasing socks were contributing oxygen to groundwater.
- Measuring and recording DO concentrations and depth to bottom at each of the 6 PMWs.
- Collecting field measurements of pH from each of the 6 PMWs and 19 AWs.

Measurements of DO concentrations were collected using two field methods:

- Flow-through cell equipped with optical DO sensor (YSI, Inc.).
- Colorimetric testing using CHEMet ampoules.

Two different CHEMet ampoules were used to measure DO. For DO concentrations greater than 1 part per million (ppm), CHEMet kit #K-7512 was used; for concentrations less than or equal to 1 ppm, kit #K-7501 was used.

DO and pH measurements were collected from the AWs and PMWs prior to change out of the oxygen-releasing socks during both the Q18 and Q20 visits. Tabulated concentrations of DO and pH collected prior to change out of the socks are presented in **Table 2** and **Table 3**, respectively. While not required as part of the performance monitoring, pH and DO measurements within the AWs were also collected on successive days after change-out of the socks during both events. pH and DO data within the AWs over time are presented in **Table 4** and **Table 5**, respectively.

2.1 Comparison of DO Measurement Methods

Comparisons of DO data obtained using the two field methods for each of the six PMWs during the Baseline Event through Q20 are presented on **Graphs 1 through 3**. Including the baseline data, 13 data

sets exist for comparing the two field methods. Based on data collected to date, the two methods generally exhibit similar trends except for PMW-2 during the Q6 (August 2014) and Q8 (February 2015) sampling events, and PMW-3 and PMW-4 during the Q8 sampling event. In general, there appears to be an improvement in correlation between the two measurement methods in more recent monitoring events (i.e., since Q10).

Experience using both measuring devices (i.e., YSI meter and CHEMets) at similar sites have identified benefits and deficiencies of each method. Additionally, studies performed by White, et al. (1990), Walton-Day, et al. (1990) and Wilkin, et al. (2001), indicate that CHEMets colorimetric methods were found to be accurate and reproducible, particularly at low DO concentrations (<1 ppm). However, despite being observed to be relatively accurate and reproducible, colorimetric methods can be subject to interferences that may affect the accuracy of readings. Because colorimetric reagents involve oxidation-reduction reactions to indicate concentration of DO, redox species in groundwater other than DO can influence results (Wilkin et al. 2001). DO electrodes (i.e., as used in the YSI meter) were found to be generally less reliable and prone to problems such as membrane fouling that compromise electrode performance (hydrogen sulfide, thio-organic, and other organic compounds were found to be the most problematic compounds responsible for membrane fouling and subsequent inaccurate readings).

Regression analysis was used to calculate correlation between YSI readings and CHEMet readings (from the Baseline event through the Q20 sampling event); the analysis indicates a correlation factor (R^2) of 0.92. This correlation factor indicates that the two DO measurement techniques have moderate correlation; however, as stated above, there appears to be an improvement in correlation between the methods in more recent monitoring events.

2.2 DO Concentration Results

This section summarizes DO data collected prior to replacing the oxygen-releasing socks, followed by a discussion of the DO data collected within AWs at several time intervals after the oxygen-releasing socks were replaced. Discussions include DO data collected from both AWs and PMWs. DO data are presented in **Table 2** and **Table 5**.

General observations based on data provided in **Table 2** for the Q18 and Q20 events include:

- When comparing DO concentrations in groundwater from PMW upgradient/downgradient “pairs” over the reporting period:
  - PMW-1/PMW-2: DO concentrations in groundwater increased in the downgradient well during both the Q18 and Q20 site visits when using both methods.
  - PMW-3/PMW-4: DO concentrations in groundwater increased in the downgradient well during both the Q18 and Q20 site visits using both methods
  - PMW-5/PMW-6: DO concentrations in groundwater increased in the downgradient well during the Q18 event and decreased during the Q20 event using both methods,
  - The average DO concentration for the three downgradient PMWs during the monitoring period (3.52 mg/l) was higher than the average DO concentration from the three upgradient PMWs (1.26 mg/l) using the CHEMets, and when using the YSI meter (2.72 mg/l and 0.87 mg/l).

Comparisons of DO data over time (Baseline Sampling through Q20) for each of the upgradient and downgradient PMW "pairs" are provided in **Graph 1** through **Graph 3**. Key dates, including initial installation and subsequent replacement of oxygen-releasing material, are included on the graphs. While some trends of increasing DO concentrations appear to exist, several variables make the data difficult to interpret, including:

- Variations between field analytical methods.
- Potential variations in localized groundwater flow patterns in the immediate area of the PMWs (described in Section 3.1).
- The presence of dissolved BTEX appears to influence/interfere with the CHEMets' DO measurements when DO data over time are compared with dissolved BTEX data over time.
- The presence of dense non-aqueous phase liquid (DNAPL) in NRW-2, NMW-0402S, and AW-17 (Section 4) confirms problematic compounds/redox species that affect DO readings are dissolved in groundwater near the PMWs.

2.3 pH

Groundwater samples were collected from AWs and PMWs during the Q18 and Q20 sampling events and field analyzed for pH. AW-3 could not be accessed safely to record field measurements due to the presence of an active bee's nest. The pH values were measured prior to change out of the oxygen-releasing socks. Results from the pH measurements are presented in **Table 3**.

The average pH value for the three upgradient PMWs measured during the Q18 (August 2017) visit was 7.17 Standard Units (SUs), and the average pH for the three downgradient PMWs was 6.49 SUs (approximately 9.5% decrease). The average pH of groundwater within the 19 AWs prior to change out of the socks was 7.53 SUs (higher compared to the upgradient average).

The average pH value for the three upgradient PMWs measured during the Q20 visit was 7.12 SUs (similar to Q18 results), and the average pH for the three downgradient PMWs was 7.15 SUs (no significant difference). However, the average pH of groundwater within the AWs prior to change out of the socks was 8.30 SUs (approximate 15% higher than upgradient average).

The pH results from both Q18 and Q20 are consistent with results from previous monitoring periods. A potential connection may exist between higher DO concentrations and higher pH readings within AWs. Higher pH values could be an indicator that DO is being released by the oxygen-releasing socks deployed in the AWs because hydroxide in the form of $Ca(OH)_2$ is a byproduct of the oxygen producing reaction associated with the socks, which can therefore create high pH/alkaline conditions.

In general, when comparing pH values of groundwater collected during Q1 though Q20 events, pH values of water from within AW-1, AW-5, AW-6, AW-7, MW-8 and AW-9 are consistently more alkaline (i.e., higher pH values) than groundwater collected from the other 13 AWs. Each of these 6 AWs are located in the western side of the treatment area. These 6 AWs have a 12 to 15-foot-long screen length with the bottoms of the screened intervals located from 17 to 20 feet bgs. The wells located on the eastern side of the treatment area (AW-10 through AW-19) have longer screen lengths (ranging from 17 to 31 feet in length) with the bottoms of the screened intervals located at deeper depths (from 23 to 36 feet bgs).

Average pH values were higher during the Q20 (i.e., spring) sampling event compared to the Q18 (i.e., summer) sampling event; these results are also consistent with previous results.

2.4 DO and pH Values After New Sock Deployment

During both the Q18 and Q20 site visits, DO and pH parameters were recorded prior to sock changeout and two times after replacement to evaluate variations early in the change-out cycle at each AW. Parameters were recorded before sock replacement and approximately 24- and 48-hours after the new socks were installed. Results from pH and DO measurements over time are presented in **Table 4** and **Table 5**, respectively.

2.4.1 pH Values in AWs After Changeout

Results of groundwater pH measurements from AWs subsequent to replacement of the oxygen-releasing socks for the Q18 and Q20 sampling events are presented below.

- **Q18 Sampling Event**
  - Prior to change out of the oxygen-releasing socks the average pH of groundwater across the 19 AWs was approximately 7.77 SUs.
    - the average pH at AW-1 through AW-10 (i.e., western side) was 8.43 SUs
    - the average pH at AW-11 through AW-19 (i.e., eastern side) was 7.10 SUs.
  - 24-hours after installation of new oxygen-releasing socks the average pH of groundwater across the 19 AWs was approximately 9.92 SUs (pH increased significantly after changeout).
    - the average pH at AW-1 through AW-10 was 10.99 SUs
    - the average pH at AW-11 through AW-19 was 8.85 SUs
  - 48-hours after installation of new oxygen-releasing socks the average pH of groundwater across the 19 AWs as approximately 9.84 SUs (still significantly elevated compared to pre-changeout pH value).
    - the average pH at AW-1 through AW-10 was 11.12 SUs
    - the average pH at AW-11 through AW-19 was 8.57 SUs
  - The highest groundwater pH values were measured at the western end of the row of AWs (AW-1 through AW-10).
  - Average groundwater pH concentrations within AWs increased within 24-hours after change-out; this is consistent with historical results.
- **Q20 Sampling Event:**
  - Prior to change out of the oxygen-releasing socks, the average pH of groundwater across the 19 AWs was approximately 8.67 SUs (same as the 2017 Q16 sampling event).
    - The average pH at AW-1 through AW-10 (i.e., western side) was 9.84 SUs

  - The average pH at AW-11 through AW-19 (i.e., eastern side) was 7.36 SUs
- 24-hours after installation of new oxygen-releasing socks the average pH of groundwater across the 19 AWs material was 9.97 SUs (pH significantly increased after changeout).
  - The average pH at AW-1 through AW-10 was 11.28 SUs
  - The average pH at AW-11 through AW-19 was 8.52 SUs
- 48-hours after installation of new oxygen-releasing socks the average pH of groundwater across the 19 AWs was approximately 9.87 SUs (pH significantly higher than prior to changeout).
  - The average pH at AW-1 through AW-9 was 11.18 SUs
  - The average pH at AW-11 through AW-19 was 8.42 SUs
- The highest groundwater pH values were measured at the western end of the row of AWs (AW-1 through AW-10).
- Average groundwater pH concentrations in the AWs increased within 24-hours after change-out; this is consistent with historical results.

2.4.2 DO Concentrations in AWs After Changeout

Results of groundwater DO measurements in AWs subsequent to replacement of the oxygen-releasing socks are presented below.

- **Q18 Sampling Event**
  - Prior to change out of the oxygen-releasing socks, average DO concentration of groundwater across the 19 AWs was 7.25 mg/l as measured with the CHEMet ampoules (note that at five locations the DO was >12 mg/l; a value of 12 mg/l was used for calculating the average) and 9.87 mg/l measured with the YSI meter.
  - 24-hours after changing out of the socks, average DO concentrations were 11.03 mg/l as measured with the CHEMet ampoules and 26.95 mg/l as measured with the YSI.
  - 48-hours after changing out of the socks, average DO concentrations were 10.94 mg/l as measured with the CHEMet ampoules and 22.11 mg/l as measured with the YSI meter.
  - The highest groundwater DO values prior to changeout of the oxygen-releasing socks were recorded at AWs located at the western end of the row of AWs; however, after change-out, the distribution of DO was more evenly located across the line of AWs.
- **Q20 Sampling Event**
  - Prior to change out of the oxygen-releasing socks, average DO concentration of groundwater across the 19 AWs was 8.30 mg/l as measured with the CHEMet ampoules (note that at eleven locations the DO was >12 mg/l; as stated above, a value of 12 mg/l was used for calculating average) and 15.17 mg/l measured with the YSI meter.
  - 24-hours after changing out of the socks, average DO concentrations were 11.37 mg/l as measured with the CHEMet ampoules and 25.02 mg/l as measured with the YSI.

- 48-hours after changing out of the socks, average DO concentrations were 11.26 mg/l as measured with the CHEMet ampoules and 20.20 mg/l as measured with the YSI meter.
- Consistent with the results using the CHEMets, the highest groundwater DO values prior to change-out of the oxygen-releasing socks were recorded at AWs located at the western end of the row of AWs; however, after change-out, the distribution of DO was more evenly located across the line of AWs.

DO results collected during the Q18 and Q20 sampling events confirm that socks are liberating oxygen and increasing DO in groundwater within the AWs (i.e., consistent with historical results).

3 EFFECTIVENESS MONITORING

Effectiveness monitoring is the periodic chemical and physical analysis of a media (e.g., groundwater) to determine if the remedial action objectives are being achieved.

As presented in the SMP, the objectives of effectiveness monitoring are to:

- Assess groundwater movement patterns at the site using water-level data.
- Document concentrations of dissolved BTEX downgradient from AWs.
- Document dissolved COC (BTEX and six PAHs) concentration trends across the site.

Effectiveness monitoring for the fifth year of system operation consisted of:

- Semi-annual (Q18 and Q20) gauging of 6 PMWs, 17 MWs, and 19 AWs (gauging of AWs not required by the SMP).
- Semi-annual (Q18 and Q20) sampling of groundwater from 10 monitoring wells for laboratory analysis of BTEX and PAHs.

The results from the effectiveness monitoring are presented below.

3.1 Groundwater Movement

Groundwater movement beneath the site was assessed in two ways:

- Preparation of site-wide water table maps.
- Review of groundwater elevation data collected from PMWs.

Water-level data were collected during the Q18 and Q20 visits from the following locations:

- 6 PMWs (PMW-1 through PMW-6)
- 19 AWs (AW-1 through AW-19)
- 17 site monitoring wells (MW-1S, MW-1D, MW-2S, MW-2D, MW-4S, MW-6S, MW-7, MW-8S, MW-8D, MW-9S, MW-9D, MW-0304D, MW-0402S, MW-0403S, MW-0404S, MW-0404D, and MW-0405S)

Table 6 presents water elevation data collected from the Baseline through Q20 sampling events.

Figures 3 and **4** present water table maps developed from the Q18 and Q20 gauging events, respectively. As shown on the figures, the general groundwater flow direction at the site is to the south during both gauging events. When comparing water table maps between the two gauging events, no significant differences are observable, indicating that no significant changes to site-wide groundwater flow direction occurred during the reporting period. Additionally, site-wide groundwater flow directions during this reporting period were very similar to the previous reporting period (i.e., Baseline event through Q16).

In addition to site-wide evaluation of groundwater movement, water-level data collected from PMWs were also examined to evaluate localized groundwater flow at the AWs. Upgradient/downgradient PMW pairs

were gauged with the objective of confirming groundwater elevations in PMWs designated as "upgradient" were higher than their "downgradient" counterparts.

The results from gauging events indicate that:

- Groundwater elevations at up/downgradient well pair PMW-1 and PMW-2 were consistently higher in downgradient well PMW-2 during the Q18 and Q20 gauging events (1.15 feet and 1.27 feet higher, respectively). Higher groundwater elevations in downgradient PMW-2 are consistent with historic groundwater measurements.
- Groundwater elevations in upgradient well PMW-3 were higher than in downgradient PMW-4 during both Q18 and Q20 monitoring events.
- Groundwater elevations in upgradient well PMW-5 were higher than in downgradient PMW-6 during the Q18 monitoring event and lower in the Q20 monitoring event.

The apparent higher downgradient groundwater elevations measured at well pair PMW-1 and PMW-2 is consistent with historical gauging data.

3.2 Groundwater Quality

An ongoing program of groundwater monitoring was in place at the site since 1985. As reported in the *Supplemental Remedial Investigation Report* (ARCADIS, 2007), results from quantitative trend analysis using available data from 1985 to 2004 concluded that constituent plumes appeared to be shrinking over time due to a variety of naturally occurring processes.

Semi-annual (Q18) and annual (Q20) sampling of groundwater was conducted during this reporting period. During both events, groundwater from 10 monitoring wells identified in the SMP was collected for laboratory analysis of BTEX by United States Environmental Protection Agency (USEPA) SW-846 Method 8260 and PAHs by USEPA SW-846 Method 8270. Analytical results are summarized in **Table 7**. For comparison purposes, historical groundwater results collected in April 2004 and the Q1 through Q16 results are also included in the table.

Laboratory data packages from each of the sampling events during this period were reviewed by an individual approved to validate data in New York State, and *Data Usability Summary Reports* (DUSRs) were prepared. Data review indicated that overall laboratory performance was acceptable, and that overall data quality was within guidelines specified in the respective methods. A compact disc containing copies of the DUSRs is included as **Appendix A**.

Discussions of laboratory results for BTEX and PAHs are presented below.

3.2.1 Dissolved BTEX

Total BTEX concentrations in groundwater collected from the 10 MWs during both the Q18 and Q20 reporting period were all below detection limits (BDL). Results for dissolved BTEX from this fifth year of groundwater sampling are consistent with data reported since the 2004 sampling event.

Laboratory data for dissolved BTEX are presented in **Table 7**; dissolved total BTEX data are presented on **Figure 5**. The most recent historical sampling data (2004) and data collected during the five years of treatment system operation are also presented in **Table 7** and on **Figure 5**.

3.2.2 Dissolved PAH COCs

Laboratory data for dissolved PAHs are also presented in **Table 7**; data for the six PAH COCs are presented on **Figure 6**. The most recent historical COC sampling data (2004) and data collected during the first five years of treatment system operation are also presented in **Table 7** and shown on **Figure 6**. Total PAHs (tPAHs) are also presented on **Figure 6**.

Results from groundwater collected from the 10 MWs during the reporting period are summarized below.

- **Q18 Sampling:**
  - PAH COCs were not reported in groundwater from any of the 10 MWs sampled
  - Non-COC PAHs were only detected in groundwater from 1 of the 10 monitoring wells sampled; three non-COC PAHs (acenaphthene, fluoranthene, and fluorene) were detected at MW-8S. Each of these non-COC PAHs were detected at concentrations below their respective New York State (NYS) groundwater guidance values (GVs) and were reported with a “J” qualifier (i.e., estimated value).
  - Groundwater from MW-9S (located north/hydraulically upgradient of the Trayer Products building) did not have any detections of PAHs (consistent with previous sampling events).
  - Neither COC or non-COC PAHs were detected in any of the downgradient monitoring wells (MW-0402S, MW-0403S, MW-0404S, and MW-0405S) located south of the site.
- **Q20 Sampling:**
  - PAH COCs were not detected in groundwater from any of the 10 MWs sampled
  - Non-COC PAHs were only detected in groundwater from 1 of the 10 monitoring wells sampled; two non-COC PAHs (acenaphthene and fluorene) were detected at MW-8S. Each of these non-COC PAHs were detected at concentrations below their respective NYS groundwater GVs and were reported with a “J” qualifier (i.e., estimated value).
  - Groundwater from MW-9S (located north/hydraulically upgradient of the Trayer Products building) did not have any detections of PAHs (consistent with previous sampling events).
  - Similar to the Q18 sampling event, neither COC or non-COC PAHs were detected in any of the downgradient monitoring wells (MW-0402S, MW-0403S, MW-0404S, and MW-0405S) located south of the site.

4 NAPL MONITORING RESULTS

Consistent with the SMP, NAPL gauging was conducted quarterly during the fifth year of system operation. As described in the SMP, the NAPL monitoring network at the site includes five NAPL recovery wells (NRW-1, NRW-2, NRW-3, NRW-4, and NMW-0402S). In addition, based on the presence of trace amounts of NAPL observed during the Q10 (August 2015) gauging event on the sock canister suspended in AW-17, a recommendation was included in the second *Annual Periodic Review Report* (Arcadis 2015) to include AW-17 in the quarterly gauging schedule. The objectives of the NAPL monitoring task were to identify whether NAPL had accumulated within a well, and to remove it if present and recoverable. Locations of the wells are shown on **Figure 2**. A summary of the NAPL gauging data is included in **Table 6**.

DNAPL was present in NMW-0402S and NRW-2 during the reporting period. DNAPL was present during each of the gauging events in NMW-0402S ranging from a trace amount to 0.8 feet in apparent thickness. DNAPL was also measured in NRW-2 during three of the four gauging events ranging from 0.5 to 1.5 feet in apparent thickness.

As mentioned above, quarterly gauging of AW-17 was recommended in the second annual report; and subsequently implemented. Consistent with the previous 5 gauging events, only trace amounts (i.e., non-recoverable quantities) of NAPL were observed during this reporting period.

Since the Baseline event in 2013, a total of approximately 3.8 gallons of DNAPL has been manually removed using a bailer. The approximate amount of NAPL removed by year includes:

- Year 1 (Q1 – Q4): approximately 1.6 gallons
- Year 2 (Q5 – Q8): approximately 0.7 gallons
- Year 3 (Q9 – Q12): approximately 0.5 gallons
- Year 4 (Q13 – Q16): approximately 0.5 gallons
- Year 5 (Q17 – Q20): approximately 0.5 gallons

As shown on the summary table and graph in **Appendix B**, the quantity of DNAPL recovered each year has been consistent over the past 3 to 4 years.

Recovered DNAPL was containerized for disposal by NYSEG.

5 TREATMENT SYSTEM OPERATION AND MAINTENANCE

NYSEG is responsible for maintaining any aspect of the site that is associated with remediation activities for the former MGP facility.

Operation and maintenance activities during the reporting period included the following:

- Well maintenance (e.g., replacing missing or broken locks, repair/replacement of ground seals, protective casings, and/or locking caps, etc.).
- Replacement of the oxygen-releasing material.
- Annual site inspection.

No additional maintenance recommendations were included in the previous annual report (*Annual Periodic Review Report, Q13 through Q16*) that required actions during the Q17 and Q20 visit.

A summary of the operation and maintenance activities completed during the reporting period is presented below.

5.1 Treatment System Maintenance

The site remedy does not rely on any mechanical systems to protect public health or the environment. However, the SMP describes measures necessary to perform routine maintenance on the site cover materials, monitoring and treatment system components (i.e., well network), and replacement of oxygen-releasing material.

Visual inspection of the treatment system wells was conducted during the annual site visit (Q20). Only one deficiency was noted; the well road box lid was missing on monitoring well MW-0404S and requires replacement/repair.

In addition, to visual inspection of the integrity of each well, gauging data was reviewed to monitor accumulated sediments within each well. Accumulated sediments could impact the proper function of a well (e.g., application of oxygen releasing material, adequate connection with groundwater in the formation). A summary of the accumulated sediment results from the Q18 and Q20 visits are presented below.

5.1.1 Monitoring Wells

Comparison of depth to bottom measurements collected during the reporting period for each of the 17 MWs to their respective well construction logs was conducted to determine accumulation of material within each well.

- Based on gauging data from the Q18 event compared to well installation information, only one well (MW-2S) contained sediments that occluded 10% or greater of the well screen (approximately 17%).
- Based on gauging data from the Q20 event compared to well installation information, again only MW-2S contained sediments that occluded greater than 10% or greater of the well screen (approximately 17%).

Based on depth to bottom elevation information presented in the *Supplemental Investigation Report* (BBL, 2007), since February 2014 MW-2S consistently indicates the presence of approximately 1.7 to 1.8 feet of sediments after re-development. A potential explanation is that the measuring point elevation has changed since MW-2S was initially installed and surveyed (potentially due to well repairs, etc.) and the depth to bottom elevation was not correspondingly updated.

Based on visual inspections, no additional repairs to monitoring wells are required.

5.1.2 Application Wells

Comparison of depth to bottom measurements collected during the reporting period for each AW to their respective well construction logs was also conducted to determine accumulation of material within each well (note that each AW was constructed with a 2-foot-long collection sump).

Results from the gauging indicated:

- Gauging data from the Q18 event indicated that one of the AWs (AW-19) contained accumulation of sediments in excess it's sump length (3.3 feet of accumulated sediments). Accumulation of sediments in the remaining 18 AWs ranged from 0 (two AWs) to 1.89 feet (AW-12).
- Gauging data from the Q20 event indicated that four AWs (AW-9, AW-12, AW-18, and AW-19) contained accumulated sediments that exceeded their sump depths (2.4 feet, 2.6 feet, 2.6 feet, and 4.5 feet of accumulated sediments). Accumulation of sediments in the other 15 AWs ranged from 00.1 feet (AW14) to 1.7 feet (AW-11).
- Sediment appears to be accumulating in several of the wells over time.

Based on visual inspections, no additional repairs to AWs are required.

5.1.3 Performance Monitoring Wells

Comparison of depth to bottom measurements collected during the reporting period for each of the six PMW to their respective well construction log was also conducted to determine accumulation of material within each well (note that each PMW was constructed with a 2-foot-long collection sump).

Results from the gauging indicate:

- Gauging data from the Q18 event indicated that sediment accumulation within the PMWs were all less than 1-foot (accumulated thickness is between 0 to 0.9 feet).
- Gauging data from the Q20 event indicated that sediment accumulation exceeded the sump length at PMW-5 (2.37 feet) with sediment accumulation in the remaining PMWs less than 1-foot (accumulated thickness is between 0 to 0.9 feet).

Based on visual inspections, no additional repairs to PMWs are required.

5.1.4 NAPL Recovery Wells

Comparison of depth to bottom measurements collected during the reporting period for each of the four NRWs and NMW-0402S to their respective well construction logs was also conducted to determine accumulation of material within each well. Each NRW was constructed with a 5-foot long collection sump.

Results from both the Q18 and Q20 gauging events indicated that none of the NRWs or NMW-0402S contained quantities of accumulated material in the sumps greater than 0.5 feet (accumulated material ranged from 0.0 to 0.33 feet).

Based on visual inspections, no additional repairs to PMWs are required.

5.2 Replacement of Oxygen-Releasing Material

Replacement of Adventus EHC-O oxygen-releasing socks was conducted during the following site visits during this reporting period:

- Replacement #9: August 2017 (Q18 semi-annual site visit)
- Replacement #10: February 2018 (Q20 annual site visit)

During the Q18 semi-annual and Q20 annual replacement of the oxygen-releasing socks, the stainless-steel canisters that contain the socks were removed and brushed/scrubbed to remove accumulated material prior to re-deployment. Field measurements were used to set the oxygen releasing socks in the wells at a depth such that the middle of the stainless-steel canister containing the sock was in the middle of the saturated well screen.

After both change outs, spent socks were containerized for subsequent disposal by NYSEG.

5.3 Annual Site Inspection

As presented in the ROD, one of the remediation goals for the site is to maintain the surface cover materials that provide continued protection against potential human exposure to subsurface soil potentially containing MGP-related impacts. As required by the SMP, surface cover of the site (stone, gravel, vegetative, and/or asphalt cover) is visually evaluated annually and repaired as needed. Because potential MGP impacts can be encountered at depths as shallow as 2 feet bgs, the annual inspections focus on maintaining physical separation between site workers and the remaining MGP impacts.

The 2017 annual site inspection was conducted on February 15, 2018. No evidence of settling, obvious obstructions within drainage features (e.g., catch basins) or disturbance activities were observed. No deficiencies were observed. A Site Inspection Form associated with the inspection is included in **Appendix C.** A photographic log documenting site conditions at the time of the annual inspection is included as **Appendix D**. The location where each photograph was taken, and the direction that the photographer was facing, is shown on **Figure 7**.

In addition, photographic documentation of the condition of each well associated with the site, including protective covers, locking devices, and overall integrity of the wells is also provided as **Appendix E**. The only deficiency noted was that the road box lid was missing from MW-0404S and requires replacement.

6 DISTURBANCE ACTIVITIES IN POTENTIALLY IMPACTED AREAS

NYSEG is not aware of any intrusive activities that were conducted in potentially impacted areas during the reporting period.

7 CONCLUSIONS AND RECOMMENDATIONS

Conclusions and recommendations based on the fifth year of treatment system monitoring and operation are presented below.

7.1 Conclusions

A summary of pertinent conclusions based on the fifth year of treatment system operation are presented below.

7.1.1 Performance Monitoring

The performance monitoring program presented in the SMP was developed to document that the groundwater treatment system is delivering oxygen to the groundwater within the AWs. Semi-annual collection of DO and pH measurements from the AWs and PMWs indicated that:

- Concentrations of DO increased significantly within AWs after changeout of oxygen-releasing socks; results confirm that the socks are liberating oxygen and increasing DO in groundwater.
- A moderate correlation (0.92 factor) exits between the two DO monitoring techniques.
- Slightly higher pH values were reported for groundwater collected from downgradient PMWs from the spring (Q20) sampling event compared to the summer (Q1814) event.
- pH values of groundwater collected from the western half of the treatment system (AW-1 through AW-10) are more alkaline than groundwater collected from the eastern end (AW-11 though AW-19); the lengths and depths of the screened intervals may affect the pH results.
- Several variables between the analytical methods and the presence of MGP-related impacts make the pH and DO data difficult to interpret.

Results from the Q18 and Q20 monitoring events are consistent with results from previous monitoring events.

7.1.2 Effectiveness Monitoring

Results from the semi-annual (Q18) and annual (Q20) effectiveness monitoring indicated that:

- Site-wide groundwater flow direction was to the south; no significant differences in groundwater flow direction were observed between the two gauging events.
- Site-wide groundwater flow directions were very similar to historical reporting results.
- Total BTEX concentrations in groundwater collected from the 10 MWs located across the site were BDL during both the Q18 and Q20 sampling events.
- No PAH COCs in groundwater were detected from the 10 monitoring wells sampled across the site during either the Q18 or Q20 sampling events.

- Three non-COC PAHs were present at MW-8S at concentrations below guidance values during the Q18 sampling; two non-COC PAHs were present below guidance values during the Q20 sampling event. Concentrations of both PAH COCs and non-COCs at MW-8 have decreased during both spring and fall sampling events since Q14 (August 2016).
- Consistent with the objective of the groundwater treatment system, neither BTEX or PAH COCs were detected beyond the southwest property boundary; groundwater sampling results are similar to data reported from the first four years of groundwater sampling.

7.1.3 NAPL Monitoring

Quarterly NAPL monitoring indicated that:

- NAPL was detected at the same two NAPL recovery wells (NRW-2 and NMW-0402S) as previous monitoring periods.
- Trace amounts of NAPL was also detected at AW-17 during each of the four gauging events.
- The total volume of NAPL removed to date by manual bailing is approximately 3.8 gallons.
- The quantity of NAPL recovered each year has generally been consistent over the past three to four years.

7.1.4 Treatment System O&M

Gauging data collected from treatment system wells during the reporting period indicated:

- One monitoring well (MW-2S), four AWs (AW-9, AW-12, AW-18, and AW-19), and one PMW (PMW-5) appear to have sediment accumulation that occludes 10% or greater of the screened interval; however, the depth to bottom elevation at MW-2S may no longer be accurate and the cause for the consistent 1.7 to 1.8 feet of apparent sediments remaining after development.
- No issues were encountered during replacement of oxygen-releasing socks.
- No evidence of settling, obvious obstructions within drainage features, or disturbance activities were observed during the 2018 annual site inspection.

7.2 Recommendations

Recommendations based on the fifth year of treatment system operation are presented below.

7.2.1 Treatment System O&M

- Redevelop wells with greater than 1 foot of accumulated sediments, or that have accumulated a significant amount of sediments during the most recent gauging events, including:
  - MW-2D (contained 1 foot of sediments)
  - MW-7 (accumulated sediments steadily increased over the last 3 gauging events to 1.4 feet)

- No sediments were recovered during re-development of MW-2S in August 2014; however, the depth to bottom measurements consistently indicate a difference of approximately 1.7 feet between the reported installed depth and semi-annual gauging data. MW-2S should be inspected using a down-well Boroscope to determine if an obstruction exists. If an obstruction is not identified, the depth to bottom elevation should be verified/adjusted and the top measuring point elevation re-surveyed.
- Purchase and replace the missing road box lid at MW-0404S.
- Monitor the effect(s) of suspending oxygen-enhancement of groundwater for the next 5-year period. A significant amount of MGP-impacted soil was removed and/or stabilized during the soil remedy completed in January 2012. While the objectives of the groundwater treatment system and effectiveness monitoring were consistently achieved, no conclusive evidence exists that the groundwater polishing has had a net beneficial effect on groundwater quality. The concentrations of BTEX and PAH COCs (identified in the ROD, Table 1) in groundwater downgradient from the treatment zone and site have consistently been below detectable concentrations since 2004, with one exception of one PAH COC (benzo[b]fluoranthene) at an estimated value in 2015.

  To support this recommendation, the following task is presented:

  - During the August 2018 (Q22 semi-annual) site visit, remove the spent oxygen-releasing socks and discontinue replacement for a period of 5 years.
  - Continue with the semi-annual (Q22) and annual (Q24) O&M inspection and maintenance tasks as identified in the SMP.

7.2.2 Performance Monitoring

- Discontinue performance monitoring tasks identified in the SMP for the 5-year period during suspension of oxygen-enhancement of groundwater.

7.2.3 Effectiveness Monitoring

- Based on groundwater data collected during the first 5 years of effectiveness monitoring, eliminate semi-annual and annual sampling of four monitoring wells, including MW-2S, MW-7, MW-0402S, and MW-0403S. No PAH COCs or BTEX have been detected in groundwater collected from these wells since groundwater monitoring began in April 2004. These four monitoring wells will continue to be inspected and gauged during the semi-annual and annual site visits. Elimination of sampling these four wells will still achieve the objectives of the effectiveness monitoring program (assess groundwater movement patterns, document dissolved COC concentration trends across the site, and document concentrations of dissolved BTEX downgradient from the AWs).
- Continue with semi-annual and annual water-level gauging at 17 MWs and groundwater sampling from six monitoring wells (MW-4S, MW-6S, MW-8S, MW-99S, MW-0404S, and MW-0405S) as currently specified in the SMP.
- Discontinue semi-annual and annual water-level gauging at the 6 PMWs and 19 AWs (Note that these wells are not used for development of groundwater contours).

7.2.4 NAPL Monitoring

- The presence of NAPL has not been detected in NRW-1, NRW-3, or NRW-4 since the SMP was first implemented in April 2013 (Q1). Based on the lack of detectable NAPL over the 5-year monitoring period, eliminate quarterly gauging of these three wells. NRW-1, NRW-3, and NRW-4 will continue to be gauged during the semi-annual and annual site visits.
- Continue to gauge NRW-2, NMW-0402S, and AW-17 quarterly for the presence of NAPL, and if present, remove to the extent practicable.

NYSEG will continue to prepare and submit Annual PRRs as described in the existing current SMP dated 2014. The existing SMP will be amended to reflect the next 5 years of monitoring and reporting upon NYSDEC approval of the recommended modifications.

8 CERTIFICATION STATEMENT

A statement from NYSEG confirming that site controls were in place and effective and, based on information provided and site conditions to the extent that they could be observed, no changes occurred during the reporting period that would impair the ability of the controls to protect public health and the environment is included as **Appendix F**.

9 REFERENCES

ARCADIS, 2017. *Annual Periodic Review Report, Q13 through Q16*. Madison Avenue Former MGP Site, Elmira, New York (May 2017).

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TABLES

Table 1
Monitoring, Gauging, and Operation & Maintenance Schedule

Annual Periodic Review Report, Q17 through Q20
Madison Avenue Former MGP Site, Elmira, New York

Event	Date	Scheduled Activities					
		Performance Monitoring	Effectiveness Monitoring	NAPL Gauging	O&M		
					Site Inspection	Well Inspections	EHC-O Socks Replacement
Q17 (Quarterly) Monitoring	May 18, 2017			X			
Q18 (Semi-annual) Monitoring	August 21-25, 2017	X	X	X			X
Q19 (Quarterly) Monitoring	November 9, 2017			X			
Q20 (Annual) Monitoring	February 12-15, 2018	X	X	X	X	X	X

Notes:

- **Performance Monitoring** – Included measuring pH and DO concentrations at 6 PMWs and 19 AWs
- **Effectiveness Monitoring** – Included semi-annual gauging of 6 PMWs and 17 MWs and semi-annual sampling of 10 site MWs for BTEX and PAHs. Also included semi-annual change-out of EHC-O socks.
- **NAPL Gauging** – Included quarterly gauging of depth to water and depth to bottom at 4 NRWs, 1 NMW and AW-17, and removal of NAPL if present.
- **Site and Well Inspections** – Included visual inspections of the site cover materials and MWs, PMWs, NRWs, NMW, and AWs associated with the site

Table 2
Treatment System Dissolved Oxygen Data

Annual Periodic Review Report
Madison Avenue Former MGP Site, Elmira, New York

Well ID	Location (Upgradient, Downgradient, Internal)	Baseline Sampling		3-Month Sampling (Q1)		6-Month Sampling (Q2)		9-Month Sampling (Q3)		12-Month Sampling (Q4)		18-Month Sampling (Q6)		24-Month Sampling (Q8)		30-Month Sampling (Q10)	
		April 1-5, 2013		May 28-30, 2013		August 26-30, 2013		November 19, 2013		February 6, 2014		August 4-7, 2014		February 23-27, 2015		August 24-28, 2015	
		CHEMet (mg/l)	YSI (mg/l)	CHEMet (mg/l)	YSI (mg/l)	CHEMet (mg/l)	YSI (mg/l)	CHEMet (mg/l)	YSI (mg/l)	CHEMet (mg/l)	YSI (mg/l)	CHEMet (mg/l)	YSI (mg/l)	CHEMet (mg/l)	YSI (mg/l)	CHEMet (mg/l)	YSI (mg/l)
PMW-1	Upgradient	0.35	0.11	0.40	0.29	0.80	0.12	0.60	0.12	1.00	0.79	0.80	0.11	0.80	0.19	0.35	0.20
PMW-2	Downgradient	4.00	3.94	4.50	4.97	1.00	0.70	4.00	3.20	1.50	2.45	2.00	1.54	2.00	0.41	0.90	0.58
PMW-3	Upgradient	NA	0.13	0.80	0.27	NA	0.68	4.00	1.35	0.80	0.76	1.00	1.95	2.00	0.96	6.50	6.72
PMW-4	Downgradient	0.60	0.12	0.70	0.16	1.50	1.15	2.00	2.19	1.50	0.50	1.50	1.99	3.00	0.13	0.40	0.25
PMW-5	Upgradient	1.50	0.73	5.50	5.68	1.00	0.58	1.50	1.35	1.50	0.00	1.50	1.18	0.60	0.29	1.00	0.27
PMW-6	Downgradient	0.70	0.10	0.50	0.11	0.90	0.11	0.80	0.15	0.60	0.62	0.90	0.07	0.40	0.32	0.40	0.29
AW-1	Internal	0.35	0.08	>12*	19.16	8.00	10.26	6.00	8.09	>12*	23.56	>12*	28.67	0.60	0.21	2.00	1.86
AW-2	Internal	0.60	0.07	>12*	19.24	2.00	1.82	2.50	1.54	0.90	0.09	>12*	19.18	2.00	0.13	>12*	13.72
AW-3	Internal	1.00	0.15	5.00	4.49	1.50	1.79	0.95	0.24	1.00	0.84	0.80	0.37	0.60	0.29	1.50	1.06
AW-4	Internal	2.00	2.00	>12*	14.61	3.00	3.52	>12*	22.81	5.50	5.84	7.00	6.19	0.80	0.20	9.00	10.04
AW-5	Internal	0.80	0.10	>12*	21.08	>12*	21.79	>12*	25.19	>12*	24.70	>12*	21.48	0.40	0.11	7.00	6.67
AW-6	Internal	0.40	0.09	>12*	25.08	>12*	23.79	>12*	29.28	>12*	31.04	>12*	21.12	0.00	0.23	12.00	13.43
AW-7	Internal	0.80	0.08	>12*	19.93	>12*	14.68	>12*	20.15	>12*	23.58	>12*	22.77	0.10	0.11	11.00	12.52
AW-8	Internal	0.35	0.07	9.00	8.94	6.00	6.98	>12*	14.34	2.00	1.43	6.00	5.73	0.20	0.10	3.00	2.90
AW-9	Internal	0.70	0.33	>12*	24.32	>12*	22.09	>12*	31.34	>12*	31.59	>12*	35.23	0.00	0.77	>12*	18.74
AW-10	Internal	0.60	0.08	2.50	1.82	1.00	0.98	6.00	6.64	1.50	0.72	5.50	5.70	0.40	0.31	1.50	1.56
AW-11	Internal	0.35	0.08	1.50	1.64	0.40	0.06	2.50	2.56	1.00	0.48	1.50	0.60	0.40	0.18	1.50	1.67
AW-12	Internal	7.00	8.33	10.00	9.67	4.00	3.33	3.00	2.96	3.50	2.68	4.50	4.29	0.15	0.16	3.00	2.98
AW-13	Internal	0.70	0.12	1.50	0.74	0.80	0.34	1.00	1.01	1.50	0.50	1.00	0.38	0.40	0.17	1.00	0.57
AW-14	Internal	5.00	4.93	9.00	9.54	8.00	7.14	12.00	13.11	6.00	5.16	9.00	9.00	0.20	0.15	2.50	2.84
AW-15	Internal	0.70	0.11	4.00	7.27	3.00	2.99	5.00	5.13	4.50	3.84	1.00	0.44	0.50	0.20	0.60	0.42
AW-16	Internal	1.00	0.08	1.00	0.58	0.80	0.2	1.50	1.19	1.50	0.00	1.00	0.87	0.00	0.26	4.50	4.40
AW-17	Internal	0.90	0.06	3.00	2.99	0.80	0.12	0.90	0.39	1.00	0.15	1.50	0.58	0.50	0.15	0.70	0.42
AW-18	Internal	2.50	0.94	1.50	1.3	1.00	0.43	3.00	2.31	2.50	1.43	1.00	0.25	0.50	0.25	2.00	1.72
AW-19	Internal	1.50	0.50	1.50	1.7	1.50	0.87	1.50	2.22	2.50	1.56	2.00	2.11	0.40	0.30	2.50	2.91
MW-2S	(site monitoring well)	1.00	0.15	--	--	0.60	0.23	--	--	1.00	0.00	1.50	0.24	0.40	0.33	1.00	0.40
MW-4S	(site monitoring well)	1.50	0.30	--	--	0.80	0.05	--	--	1.00	0.00	0.90	0.23	0.50	0.16	1.50	0.34
MW-6S	(site monitoring well)	1.50	0.85	--	--	0.80	0.42	--	--	2.00	0.69	0.90	0.83	2.50	2.98	1.50	0.72
MW-7	(site monitoring well)	1.50	0.88	--	--	0.70	0.1	--	--	1.50	0.71	1.50	0.56	1.50	1.49	1.00	1.07
MW-8S	(site monitoring well)	1.00	0.41	--	--	0.80	0.09	--	--	0.80	0.00	1.00	0.06	0.80	0.32	0.70	0.16
MW-9S	(site monitoring well)	5.50	4.42	--	--	1.50	0.55	--	--	5.00	3.65	2.50	1.61	2.00	1.65	1.50	1.71
MW-0402S	(site monitoring well)	0.50	0.34	--	--	0.60	0.1	--	--	1.00	0.00	1.00	0.10	0.60	0.23	0.35	0.25
MW-0403S	(site monitoring well)	0.70	0.71	--	--	1.00	0.9	--	--	1.00	0.14	0.90	0.88	2.00	1.10	1.50	1.28
MW-0404S	(site monitoring well)	0.30	0.12	--	--	0.70	0.12	--	--	0.80	0.00	0.50	0.09	0.80	0.21	0.20	0.21
MW-0405S	(site monitoring well)	0.60	0.10	--	--	0.30	0.11	--	--	0.80	0.00	0.60	0.12	0.40	0.24	0.35	0.33
Average Conc. (all PMWs)		1.43	0.86	2.07	1.91	1.04	0.56	2.15	1.39	1.15	0.85	1.28	1.14	1.47	0.38	1.59	1.39
Average Conc. (Upgradient PMWs)		0.93	0.32	2.23	2.08	0.90	0.46	2.03	0.94	1.10	0.52	1.10	1.08	1.13	0.48	2.62	2.40
Average Conc. (Downgradient PMWs)		1.77	1.39	1.90	1.75	1.13	0.65	2.27	1.85	1.20	1.19	1.47	1.20	1.80	0.29	0.57	0.37

Notes:
mg/l = milligrams per liter
Upgradient = Indicates well is located hydraulically upgradient from the treatment system
Downgradient = Indicates well is located hydraulically downgradient from the treatment system
Internal = Indicates well is located within the treatment system
DO measurements collected prior to deployment / replacement of oxygen-releasing socks
* = DO concentration exceeded operating range of CHEMets
-- Indicates measurement not taken or not avaliable.

Table 2
Treatment System Dissolved Oxygen Data

Annual Periodic Review Report
Madison Avenue Former MGP Site, Elmira, New York

Well ID	Location (Upgradient, Downgradient, Internal)	36-Month Sampling (Q12)		42-Month Sampling (Q14)		48-Month Sampling (Q16)		54-Month Sampling (Q18)		60-Month Sampling (Q20)	
		February 8-12, 2016		August 22-24, 2016		February 20-24, 2017		August 21-August 25, 2017		February 13-15. 2018	
		CHEMet (mg/l)	YSI (mg/l)	CHEMet (mg/l)	YSI (mg/l)	CHEMet (mg/l)	YSI (mg/l)	CHEMet (mg/l)	YSI (mg/l)	CHEMet (mg/l)	YSI (mg/l)
PMW-1	Upgradient	0.60	0.33	0.60	0.35	1.50	0.75	1.00	0.07	1.50	0.15
PMW-2	Downgradient	4.00	3.99	1.00	0.59	3.50	2.84	2.50	0.29	7.00	6.10
PMW-3	Upgradient	5.00	2.75	1.50	1.54	2.50	3.77	0.15	0.18	0.25	0.22
PMW-4	Downgradient	5.50	6.27	1.00	0.48	7.00	7.75	2.00	1.00	8.00	7.80
PMW-5	Upgradient	0.40	0.37	2.50	0.00	0.25	0.22	0.15	0.09	4.50	4.50
PMW-6	Downgradient	0.40	0.25	3.50	0.00	0.35	0.21	1.50	1.00	0.10	0.10
AW-1	Internal	>12*	26.30	>12*	28.40	>12*	38.03	>12*	32.98	>12*	38.79
AW-2	Internal	1.50	2.29	7.00	7.31	9.00	11.17	10.00	9.87	>12*	16.66
AW-3	Internal	0.90	0.06	0.80	0.43	>12*	13.67	--	--	1.00	0.15
AW-4	Internal	11.00	11.11	3.50	3.71	9.00	10.62	12.00	12.30	4.50	4.26
AW-5	Internal	>12*	27.51	>12*	32.74	>12*	24.69	>12*	24.60	>12*	21.38
AW-6	Internal	>12*	26.20	>12*	28.40	>12*	24.61	>12*	18.09	>12*	25.92
AW-7	Internal	>12*	21.54	>12*	30.24	>12*	22.95	12.00	10.68	>12*	27.23
AW-8	Internal	>12*	15.94	>12*	19.04	9.00	8.75	7.00	7.25	>12*	15.67
AW-9	Internal	>12*	32.22	>12*	36.68	>12*	27.70	>12*	17.05	>12*	32.40
AW-10	Internal	>12*	24.32	>12*	23.82	>12*	17.35	>12*	16.38	>12*	32.00
AW-11	Internal	0.80	0.74	2.50	1.60	0.90	0.47	1.50	1.20	>12*	23.99
AW-12	Internal	6.00	5.33	3.50	1.83	11.00	10.88	3.50	4.54	6.50	6.88
AW-13	Internal	1.00	1.37	4.50	1.28	1.50	1.48	1.50	0.87	0.75	0.72
AW-14	Internal	7.00	8.35	9.00	14.06	>12*	12.91	2.50	2.85	>12*	12.25
AW-15	Internal	0.80	0.83	3.50	1.23	1.00	0.84	1.50	1.11	2.50	2.24
AW-16	Internal	>12*	25.12	>12*	30.51	>12*	31.14	10.50	10.14	>12*	17.64
AW-17	Internal	3.00	2.79	2.50	0.00	4.50	4.67	3.50	3.50	1.50	1.10
AW-18	Internal	3.00	2.99	3.50	2.70	2.50	2.05	1.50	1.31	4.50	4.90
AW-19	Internal	3.50	3.45	4.50	3.67	2.50	1.73	3.50	2.87	4.50	4.04
MW-2S	(site monitoring well)	0.80	0.16	0.35	0.35	2.50	3.13	0.15	0.22	1.00	0.23
MW-4S	(site monitoring well)	1.00	0.13	1.00	0.36	2.00	1.06	0.25	0.27	6.00	6.01
MW-6S	(site monitoring well)	1.50	1.10	2.50	2.82	4.00	2.06	2.50	2.86	1.50	0.58
MW-7	(site monitoring well)	1.00	0.76	1.50	0.89	2.00	1.28	0.25	0.28	1.50	0.92
MW-8S	(site monitoring well)	0.30	0.25	1.50	0.00	0.15	0.12	0.80	0.04	0.10	0.09
MW-9S	(site monitoring well)	5.00	5.00	1.50	1.62	7.00	7.37	0.35	0.39	9.00	9.23
MW-0402S	(site monitoring well)	0.50	0.49	1.00	0.00	0.25	0.26	1.00	0.10	0.35	0.30
MW-0403S	(site monitoring well)	2.00	1.50	2.50	1.15	7.00	1.85	1.50	0.81	0.85	0.94
MW-0404S	(site monitoring well)	0.30	0.26	1.00	0.00	0.15	0.17	1.00	0.08	0.15	0.13
MW-0405S	(site monitoring well)	0.30	0.31	2.50	0.00	0.25	0.19	1.50	0.32	0.15	0.18
Average Conc. (all PMWs)		2.65	2.33	1.68	0.49	2.52	2.59	1.22	0.44	3.56	3.15
Average Conc. (Upgradient PMWs)		2.00	1.15	1.53	0.63	1.42	1.58	0.43	0.11	2.08	1.62
Average Conc. (Downgradient PMWs)		3.30	3.50	1.83	0.36	3.62	3.60	2.00	0.76	5.03	4.67

Notes:
mg/l = milligrams per liter
Upgradient = Indicates well is located hydraulically upgradient from the treatment system
Downgradient = Indicates well is located hydraulically downgradient from the treatment system
Internal = Indicates well is located within the treatment system
DO measurements collected prior to deployment / replacement of oxygen-releasing socks
* = DO concentration exceeded operating range of CHEMets
-- Indicates measurement not taken or not avaliable.

Table 3
pH Within AWs and PMWs

Annual Periodic Review Report
Madison Avenue Former MGP Site, Elmira, New York

Well ID	Location (Upgradient, Downgradient, Internal)	Baseline Sampling	3-Month Sampling	6-Month Sampling	9-Month Sampling	12-Month Sampling	18-Month Sampling	24-Month Sampling	30-Month Sampling	36-Month Sampling	42-Month Sampling	48-Month Sampling	54-Month Sampling	60-Month Sampling
		April 1-5, 2013	Q1 (May 28-30, 2013)	Q2 August 26-30, 2013	Q3 November 19, 2013	Q4 February 6, 2014	Q6 August 4-5, 2014	Q8 February 23-27, 2015	Q10 August 24-28, 2015	Q12 February 8-12, 2016	Q14 August 22-24, 2016	Q16 February 21-23, 2017	Q18 August 22-23, 2017	Q20 Febuary 13-15, 2018
		pH	pH	pH	pH	pH	pH	pH	pH	pH	pH	pH	pH	pH
PMW-1	Upgradient	7.09	7.08	7.00	6.86	7.10	7.05	7.19	6.93	7.01	7.05	6.95	7.14	7.04
PMW-2	Downgradient	7.06	7.05	6.67	6.59	6.95	6.92	6.87	6.47	6.97	6.49	6.9	5.34	7.05
PMW-3	Upgradient	7.23	7.10	7.09	7.28	7.39	7.19	7.45	7.42	7.39	7.09	7.58	7.24	7.27
PMW-4	Downgradient	7.24	7.18	7.04	7.32	7.09	6.96	7.24	6.89	7.29	7.14	7.45	6.95	7.3
PMW-5	Upgradient	7.05	7.08	6.87	6.98	6.91	6.89	7.04	5.33	6.76	6.75	7.05	7.12	7.04
PMW-6	Downgradient	7.10	6.95	6.97	6.87	7.06	6.96	6.92	5.38	6.88	6.68	7.05	7.18	7.1
AW-1	Internal	7.03	10.11	9.52	8.55	11.18	11.79	6.91	6.63	9.92	10.92	12.32	9.95	10.08
AW-2	Internal	7.21	10.18	7.13	7.33	7.17	9.86	7.33	8.10	7.05	6.91	7.8	7.42	8.84
AW-3	Internal	7.08	8.5	7.41	6.96	7.07	7.20	6.99	7.33	7.00	7.04	7.57	--	6.99
AW-4	Internal	7.31	7.78	7.05	7.7	7.36	7.14	7.41	7.23	7.39	6.86	7.68	5.51	7.2
AW-5	Internal	7.25	12.32	9.97	12.04	12.31	10.77	7.15	8.72	10.65	10.96	10.15	8.31	11.22
AW-6	Internal	7.34	12.17	10.32	11.66	11.21	10.64	7.08	9.84	11.41	10.30	11.2	8.25	11.64
AW-7	Internal	7.16	11.52	9.38	10.2	11.21	11.49	7.11	8.59	11.47	11.24	11.1	9.99	11.45
AW-8	Internal	7.39	9.22	8.03	9.12	7.97	7.93	6.67	8.16	10.30	9.11	8.76	7.61	9.95
AW-9	Internal	7.45	11.91	11.34	12.27	12.25	12.25	6.63	7.49	10.28	11.80	11.42	9.57	11.27
AW-10	Internal	7.29	7.33	7.28	7.47	7.27	7.40	7.23	5.36	8.87	8.26	9.56	9.27	9.76
AW-11	Internal	7.17	7.19	7.04	7.78	7.13	7.07	7.24	5.43	7.01	6.83	7.18	7.28	8.83
AW-12	Internal	7.92	8.57	7.32	7.78	7.33	7.42	7.31	5.53	7.56	7.15	7.74	7.29	7.7
AW-13	Internal	7.2	7.04	7.02	7.14	7.07	7.01	7.22	5.42	6.80	6.83	7.19	7.23	7.15
AW-14	Internal	7.21	7.33	7.22	7.67	7.14	7.19	7.27	5.43	7.15	7.57	7.71	7.12	7.9
AW-15	Internal	7.25	7.09	6.94	6.99	7.03	7.17	7.09	5.45	6.84	6.70	7.13	7.16	7.04
AW-16	Internal	7.08	6.84	6.73	6.68	6.74	6.76	6.97	5.34	6.74	6.83	8.56	7.23	6.94
AW-17	Internal	6.86	6.67	6.64	6.77	6.86	6.90	6.93	5.26	6.5	6.55	7.9	6.85	6.77
AW-18	Internal	7.07	6.83	6.69	6.73	6.93	6.84	7.05	5.29	6.65	6.53	6.89	6.9	7.1
AW-19	Internal	7.02	6.83	6.64	6.59	6.72	6.82	6.95	5.26	6.78	6.5	6.76	6.88	6.82
Average Conc. (all AWs)		7.23	8.71	7.88	8.29	8.31	8.06	7.09	6.57	7.95	7.84	8.30	7.53	8.30
Average Conc. (Upgradient PWMs)		7.12	7.09	6.99	7.04	7.13	7.04	7.23	6.56	7.05	6.96	7.19	7.17	7.12
Average Conc. (Downgradient PMWs)		7.13	7.06	6.89	6.93	7.03	6.95	7.01	6.25	7.05	6.77	7.13	6.49	7.15

Notes:
Upgradient = Indicates well is located hydraulically upgradient from the treatment system
Downgradient = Indicates well is located hydraulically downgradient from the treatment system
Internal = Indicates well is located within the line of Application Wells (i.e., treatment system)
-- Indicates measurement not taken or not avaliable.

Table 4
pH in Application Wells Over Time

Annual Periodic Review Report
Madison Avenue Former MGP Site, Elmira, New York

Well ID	Baseline Event		Q4 Sampling			Q6 Sampling			Q8 Sampling			Q10 Sampling		
	April 2-3, 2013	April 5, 2013	February 4-5, 2014	February 6, 2014	February 7, 2014	August 4-5, 2014	August 7, 2014	August 8, 2014	February 23-25, 2015	February 26, 2015	February 27, 2015	August 24-26, 2015	August 27, 2015	August 28, 2015
	Before Sock Deployment	24 Hours	Before Sock Replacement	24 Hours	48 Hours	Before Sock Replacement	24 Hours	48 Hours	Before Sock Replacement	24 Hours	48 Hours	Before Sock Replacement	24 Hours	48 Hours
	Standard Units	Standard Units	Standard Units	Standard Units	Standard Units	Standard Units	Standard Units	Standard Units	Standard Units	Standard Units	Standard Units	Standard Units	Standard Units	Standard Units
AW-1	7.03	12.07	11.18	12.85	12.97	11.79	9.70	9.49	9.61	6.93	8.54	6.63	5.85	7.00
AW-2	7.21	10.34	7.17	10.05	9.26	9.86	7.06	7.19	7.33	7.16	8.08	8.10	6.30	6.37
AW-3	7.08	8.98	7.07	8.39	8.34	7.20	7.03	7.05	6.99	7.43	7.81	7.33	6.94	6.86
AW-4	7.31	11.54	7.36	12.55	12.56	7.14	7.29	7.30	7.41	9.78	10.36	7.23	6.07	6.06
AW-5	7.25	11.70	12.31	12.51	12.62	10.77	9.24	9.02	7.15	8.81	9.73	8.72	7.90	7.91
AW-6	7.34	12.54	11.21	12.23	12.47	10.64	8.87	8.28	7.08	8.90	10.21	9.84	7.91	7.98
AW-7	7.16	10.67	11.21	12.12	12.37	11.49	8.49	8.17	7.11	7.94	9.41	8.59	8.06	8.08
AW-8	7.39	10.99	7.97	12.30	12.36	7.93	8.07	7.80	6.67	7.09	8.76	8.16	8.04	8.12
AW-9	7.45	12.70	12.25	12.74	12.94	12.25	10.07	9.67	6.63	7.14	9.42	7.49	8.01	8.11
AW-10	7.29	8.15	7.27	8.68	8.82	7.40	7.11	7.16	7.23	7.98	8.84	5.36	6.42	6.44
AW-11	7.17	8.01	7.13	9.07	7.80	7.07	6.98	7.00	7.24	8.12	8.52	5.43	6.08	6.06
AW-12	7.92	9.15	7.33	8.20	8.02	7.42	7.14	7.24	7.31	8.08	8.43	5.53	5.94	5.97
AW-13	7.20	8.25	7.07	7.90	7.44	7.01	6.90	6.93	7.22	7.61	7.93	5.42	5.63	5.64
AW-14	7.21	10.22	7.14	10.21	10.05	7.19	6.91	6.96	7.27	8.35	8.85	5.43	6.51	6.58
AW-15	7.25	9.40	7.03	10.13	9.99	7.17	6.83	6.89	7.09	8.06	7.71	5.45	6.85	6.57
AW-16	7.08	10.45	6.74	9.50	9.48	6.76	6.63	6.75	6.97	9.57	9.78	5.34	7.54	7.55
AW-17	6.86	10.60	6.86	9.64	9.43	6.90	6.55	6.68	6.93	9.48	9.64	5.26	5.51	5.45
AW-18	7.07	6.99	6.93	7.05	7.05	6.84	6.71	6.82	7.05	8.26	8.31	5.29	5.80	5.90
AW-19	7.02	6.89	6.72	7.16	6.95	6.82	6.58	6.96	6.95	7.93	7.90	5.26	5.55	5.50
Average pH Concentration	7.23	9.98	8.31	10.17	10.05	8.40	7.59	7.55	7.22	8.14	8.85	6.62	6.68	6.74

Notes:
'Before Sock Replacement" indicates readings collected prior to replacing the Adventus ECH-O socks
-- Indicates measurement not taken or not avaliable.

Table 4
pH in Application Wells Over Time

Annual Periodic Review Report
Madison Avenue Former MGP Site, Elmira, New York

Well ID	Q12 Sampling			Q14 Sampling			Q16 Sampling			Q18 Sampling			Q20 Sampling		
	February 8-10, 2016	February 11, 2016	February 12, 2016	August 22-24, 2016	August 25, 2016	August 26, 2016	February 20-22, 2017	February 23, 2017	February 24, 2017	August 22-23 ,2017	August 24, 2017	August 25, 2017	Febuary 13-15, 2017	February 15, 2018	February 16, 2018
	Before Sock Replacement	24 Hours	48 Hours	Before Sock Replacement	24 Hours	48 Hours	Before Sock Replacement	24 Hours	48 Hours	Before Sock Replacement	24 Hours	48 Hours	Before Sock Replacement	24 Hours	48 Hours
	Standard Units	Standard Units	Standard Units	Standard Units	Standard Units	Standard Units	Standard Units	Standard Units	Standard Units	Standard Units	Standard Units	Standard Units	Standard Units	Standard Units	Standard Units
AW-1	9.92	12.09	12.35	10.92	11.69	11.96	12.32	12.36	12.40	9.95	11.74	12.01	10.08	11.32	11.66
AW-2	7.05	9.42	8.79	6.91	9.20	9.20	7.80	11.38	11.30	7.42	10.99	10.70	8.84	11.38	10.91
AW-3	7.00	10.17	9.96	7.04	8.04	8.05	7.57	8.78	8.79	--	--	--	6.99	10.21	10.33
AW-4	7.39	10.28	10.37	6.86	7.56	7.34	7.68	8.92	8.48	5.51	8.14	7.46	7.20	9.40	8.63
AW-5	10.65	12.02	12.17	10.96	11.70	11.56	10.15	11.73	12.00	8.31	11.48	11.89	11.22	12.07	12.34
AW-6	11.41	11.97	12.30	10.30	11.61	11.20	11.20	11.57	11.97	8.25	11.68	11.99	11.64	11.85	12.17
AW-7	11.47	12.08	12.34	11.24	11.86	11.80	11.10	11.68	11.92	9.99	11.38	12.19	11.45	11.80	12.28
AW-8	10.30	12.24	12.34	9.11	11.34	11.67	8.76	11.09	11.63	7.61	11.11	11.27	9.95	11.83	12.28
AW-9	10.28	12.12	12.26	11.80	12.05	12.09	11.42	11.75	12.02	9.57	11.83	12.00	11.27	11.80	10.22
AW-10	8.87	9.67	9.79	8.26	9.74	9.67	9.56	9.88	10.43	9.27	10.59	10.57	9.76	11.09	10.96
AW-11	7.01	7.88	7.81	6.83	8.43	8.57	7.18	8.28	8.30	7.28	9.87	9.56	8.83	9.47	9.02
AW-12	7.56	8.09	7.97	7.15	7.82	7.99	7.74	8.10	8.28	7.29	7.98	7.46	7.70	8.61	8.69
AW-13	6.80	7.54	7.51	6.83	7.35	7.36	7.19	7.28	7.44	7.23	9.12	7.72	7.15	8.67	8.74
AW-14	7.15	8.05	8.15	7.57	7.76	7.67	7.71	7.48	7.67	7.12	9.76	9.67	7.90	8.42	8.42
AW-15	6.84	8.50	8.48	6.70	7.48	7.32	7.13	7.27	7.29	7.16	9.79	9.67	7.04	9.49	8.64
AW-16	6.74	10.26	10.34	6.83	7.66	7.86	8.56	9.52	9.72	7.23	9.82	9.87	6.94	8.88	9.05
AW-17	6.50	7.81	7.93	6.55	7.02	6.99	7.90	7.28	7.36	6.85	9.76	9.78	6.77	7.84	7.48
AW-18	6.65	6.94	7.95	6.53	7.08	6.98	6.89	7.35	7.82	6.90	6.73	6.65	7.10	7.80	7.95
AW-19	6.78	6.85	7.36	6.50	6.90	6.83	6.76	7.25	7.34	6.88	6.83	6.72	6.82	7.50	7.78
Average pH Concentration	8.23	9.68	9.80	8.15	9.07	9.06	8.66	9.42	9.59	7.77	9.92	9.84	8.67	9.97	9.87

Notes:
'Before Sock Replacement" indicates readings collected prior to replacing the Adventus ECH-O socks
-- Indicates measurement not taken or not avaliable.

Table 5
Dissolved Oxygen in Application Wells Over Time

Annual Periodic Review Report
Madison Avenue Former MGP Site, Elmira, New York

Well ID	Baseline Event				Q4 Sampling						Q6 Sampling						Q8 Sampling					
	April 2-3, 2013		April 5, 2013		February 4-5, 2013		February 6, 2014		February 7, 2014		August 4-5, 2013		August 7, 2014		August 8, 2014		February 23-25, 2015		February 26, 2015		February 27, 2015	
	Before Sock Replacement		24 Hours		Before Sock Replacement		24 Hours		48 Hours		Before Sock Replacement		24 Hours		48 Hours		Before Sock Replacement		24 Hours		48 Hours	
	CHEMet	YSI	CHEMet	YSI	CHEMet	YSI	CHEMet	YSI	CHEMet	YSI	CHEMet	YSI	CHEMet	YSI	CHEMet	YSI	CHEMet	YSI	CHEMet	YSI	CHEMet	YSI
	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)
AW-1	0.35	0.08	>12*	18.44	>12*	23.56	>12*	41.17	>12*	40.31	>12*	28.67	>12*	12.53	5.00	5.13	0.60	0.21	4.50	1.7	3.00	2.92
AW-2	0.60	0.07	>12*	15.15	0.90	0.09	>12*	24.40	>12*	19.24	>12*	19.18	3.50	3.14	4.50	4.23	2.00	0.13	4.50	3.95	3.50	3.30
AW-3	1.00	0.15	9.00	8.69	1.00	0.84	7.00	9.01	5.50	6.50	0.80	0.37	1.00	0.94	1.00	1.01	0.60	0.29	5.00	4.40	3.50	3.30
AW-4	2.00	2.00	>12*	17.33	5.50	5.84	>12*	31.79	>12*	27.79	7.00	6.19	2.00	2.32	1.50	2.33	0.80	0.20	>12*	5.27	12.00	6.50
AW-5	0.80	0.10	>12*	17.30	>12*	24.70	>12*	30.56	>12*	31.00	>12*	21.48	11.00	12.70	10.00	10.12	0.40	0.11	11.00	7.20	8.00	5.23
AW-6	0.40	0.09	>12*	16.79	>12*	31.04	>12*	28.16	>12*	31.40	>12*	21.12	>12*	12.84	9.00	9.90	0.00	0.23	6.00	5.99	4.50	4.60
AW-7	0.80	0.08	>12*	15.63	>12*	23.58	>12*	32.91	>12*	31.70	>12*	22.77	10.00	10.83	9.00	8.70	0.10	0.11	5.50	5.00	7.00	5.18
AW-8	0.35	0.07	>12*	13.40	2.00	1.43	>12*	25.64	>12*	22.38	6.00	5.73	4.00	4.46	1.50	2.34	0.20	0.10	4.00	3.06	3.50	3.35
AW-9	0.70	0.33	>12*	15.54	>12*	31.59	>12*	38.81	>12*	39.25	>12*	35.23	>12*	15.20	12.00	12.88	0.00	0.77	5.00	3.98	10.00	5.93
AW-10	0.60	0.08	11.00	10.42	1.50	0.72	>12*	19.88	>12*	18.79	5.50	5.70	1.00	0.93	1.00	1.27	0.40	0.31	12.00	8.04	10.00	7.45
AW-11	0.35	0.08	8.00	8.32	1.00	0.48	>12*	18.48	>12*	13.40	1.50	0.60	0.80	0.79	1.00	1.02	0.40	0.18	12.00	7.42	8.00	7.49
AW-12	7.00	8.33	11.00	11.02	3.50	2.68	>12*	19.02	>12*	15.00	4.50	4.29	4.50	4.59	2.50	3.06	0.15	0.16	8.00	8.00	10.00	6.84
AW-13	0.70	0.12	11.00	10.00	1.50	0.50	>12*	15.14	8.00	10.00	1.00	0.38	1.00	1.00	0.90	0.83	0.40	0.17	8.00	7.51	10.00	7.75
AW-14	5.00	4.93	11.00	11.96	6.00	5.16	>12*	32.67	>12*	31.40	9.00	9.00	5.00	5.47	4.00	4.30	0.20	0.15	12.00	10.05	12.00	9.14
AW-15	0.70	0.11	9.00	9.35	4.50	3.84	>12*	35.12	>12*	25.30	1.00	0.44	5.50	4.79	1.50	1.30	0.50	0.20	6.00	6.15	5.50	5.52
AW-16	1.00	0.08	9.00	9.15	1.50	0.00	>12*	35.90	>12*	32.52	1.00	0.87	1.50	0.59	0.20	0.85	0.00	0.26	>12*	11.36	12.00	11.24
AW-17	0.90	0.06	8.50	8.15	1.00	0.15	>12*	31.64	>12*	29.40	1.50	0.58	0.90	0.66	1.00	0.88	0.50	0.15	10.00	10.61	12.00	11.45
AW-18	2.50	0.94	4.00	3.47	2.50	1.43	4.50	4.84	3.50	4.00	1.00	0.25	0.80	0.83	1.00	0.96	0.50	0.25	10.00	10.26	9.00	8.69
AW-19	1.50	0.50	2.50	2.56	2.50	1.56	>12*	15.15	5.50	7.80	2.00	2.11	0.90	0.70	1.50	1.10	0.40	0.30	11.00	11.60	10.00	9.95
Average Conc. (all wells)	1.43	0.96	10.00	11.72	4.99	8.38	11.34	25.80	10.66	23.01	5.99	9.73	4.71	5.02	3.58	3.80	0.43	0.23	8.34	6.92	8.08	6.62

Notes:
'Before Sock Replacement' readings collected prior to replacing the Adventus ECH-O socks
mg/l = milligrams per liter
* = DO concentration exceeded operating range of CHEMets
-- Indicates measurement not taken or not avaliable.

Table 5
Dissolved Oxygen in Application Wells Over Time

Annual Periodic Review Report
Madison Avenue Former MGP Site, Elmira, New York

Well ID	Q10 Sampling						Q12 Sampling						Q14 Sampling					
	August 24-26, 2015		August 27, 2015		August 28, 2015		February 8-10, 2016		February 11, 2016		February 12, 2016		August 22-24, 2016		August 25, 2016		August 26, 2016	
	Before Sock Replacement		24 Hours		48 Hours		Before Sock Replacement		24 Hours		48 Hours		Before Sock Replacement		24 Hours		48 Hours	
	CHEMet	YSI	CHEMet	YSI	CHEMet	YSI	CHEMet	YSI	CHEMet	YSI	CHEMet	YSI	CHEMet	YSI	CHEMet	YSI	CHEMet	YSI
	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)
AW-1	2.00	1.86	>12*	28.07	>12*	26.50	>12*	26.30	>12*	33.03	>12*	33.84	>12*	28.40	>12*	28.22	>12*	32.33
AW-2	>12*	13.72	>12*	23.20	>12*	24.64	1.50	2.29	>12*	24.32	>12*	20.17	7.00	7.31	>12*	21.41	>12*	20.34
AW-3	1.50	1.06	>12*	24.38	>12*	20.04	0.90	0.06	>12*	21.81	>12*	20.55	0.80	0.43	>12*	15.40	9.00	9.83
AW-4	9.00	10.04	>12*	23.47	>12*	18.25	11.00	11.11	>12*	28.43	>12*	28.11	3.50	3.71	6.00	6.79	3.50	5.00
AW-5	7.00	6.67	>12*	34.00	>12*	27.71	>12*	27.51	>12*	31.50	>12*	31.42	>12*	32.74	>12*	33.60	>12*	26.27
AW-6	12.00	13.43	>12*	28.38	>12*	25.50	>12*	26.20	>12*	29.84	>12*	28.65	>12*	28.40	>12*	30.60	>12*	23.39
AW-7	11.00	12.52	>12*	31.56	>12*	27.81	>12*	21.54	>12*	29.39	>12*	26.99	>12*	30.24	>12*	29.07	>12*	20.61
AW-8	3.00	2.90	>12*	30.16	>12*	27.72	>12*	15.94	>12*	29.35	>12*	27.06	>12*	19.04	>12*	26.88	>12*	24.36
AW-9	>12*	18.74	>12*	35.43	>12*	33.39	>12*	32.22	>12*	31.85	>12*	31.82	>12*	36.68	>12*	38.21	>12*	34.57
AW-10	1.50	1.56	>12*	22.02	>12*	18.50	>12*	24.32	>12*	27.17	>12*	26.12	>12*	23.82	>12*	25.13	>12*	20.91
AW-11	1.50	1.67	>12*	18.92	>12*	16.54	0.80	0.74	>12*	19.50	>12*	16.64	2.50	1.60	11.00	10.50	10.00	10.43
AW-12	3.00	2.98	>12*	18.36	>12*	15.41	6.00	5.33	>12*	19.09	>12*	16.21	3.50	1.83	7.00	7.28	5.00	5.17
AW-13	1.00	0.57	>12*	15.10	11.00	10.95	1.00	1.37	>12*	15.20	>12*	12.95	4.50	1.28	6.50	6.52	5.00	6.07
AW-14	2.50	2.84	>12*	28.30	>12*	26.73	7.00	8.35	>12*	19.78	>12*	19.88	9.00	14.06	>12*	27.93	>12*	24.17
AW-15	0.60	0.42	>12*	22.18	>12*	22.87	0.80	0.83	>12*	19.80	>12*	18.82	3.50	1.23	>12*	21.08	>12*	16.44
AW-16	4.50	4.40	>12*	32.24	>12*	32.80	>12*	25.12	>12*	33.70	>12*	33.46	>12*	30.51	>12*	22.09	>12*	34.69
AW-17	0.70	0.42	>12*	22.25	>12*	21.20	3.00	2.79	>12*	23.07	>12*	29.14	2.50	0.00	>12*	24.70	>12*	23.10
AW-18	2.00	1.72	7.00	7.05	4.50	6.25	3.00	2.99	7.00	6.83	2.00	8.16	3.50	2.70	3.50	4.34	5.00	5.17
AW-19	2.50	2.91	12.00	12.18	7.00	7.07	3.50	3.45	7.00	6.95	2.50	6.44	4.50	3.67	4.00	3.78	3.00	3.17
Average Conc. (all wells)	4.70	5.29	11.74	24.07	11.29	21.57	7.08	12.55	11.47	23.72	10.97	22.97	7.41	14.09	10.21	20.19	9.71	18.21

Notes:
'Before Sock Replacement' readings collected prior to replacing the Adventus ECH-O socks
mg/l = milligrams per liter
* = DO concentration exceeded operating range of CHEMets
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Table 5
Dissolved Oxygen in Application Wells Over Time

Annual Periodic Review Report
Madison Avenue Former MGP Site, Elmira, New York

Well ID	Q16 Sampling						Q18 Sampling						Q20 Sampling					
	February 20-22, 2017		February 23, 2017		February 24, 2017		August 22-23. 2017		August 24, 2017		August 25, 2017		February 13-15, 2017		February 15, 2018		February 16, 2018	
	Before Sock Replacement		24 Hours		48 Hours		Before Sock Replacement		24 Hours		48 Hours		Before Sock Replacement		24 Hours		48 Hours	
	CHEMet	YSI	CHEMet	YSI	CHEMet	YSI	CHEMet	YSI	CHEMet	YSI	CHEMet	YSI	CHEMet	YSI	CHEMet	YSI	CHEMet	YSI
	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)
AW-1	>12*	38.03	>12*	43.51	>12*	40.95	>12*	32.98	>12*	55.55	>12*	35.17	>12*	38.79	>12*	45.15	>12*	39.00
AW-2	9.00	11.17	>12*	34.28	>12*	33.22	10.00	9.87	>12*	31.37	>12*	25.30	>12*	16.66	>12*	34.29	>12*	22.35
AW-3	>12*	13.67	>12*	29.17	>12*	25.89	--	--	--	--	--	--	1.00	0.15	>12*	23.44	>12*	20.19
AW-4	9.00	10.62	>12*	27.88	>12*	20.43	12.00	12.30	>12*	9.65	>12*	7.40	4.50	4.26	>12*	17.10	>12*	15.39
AW-5	>12*	24.69	>12*	40.53	>12*	40.10	>12*	24.60	>12*	36.35	>12*	34.12	>12*	21.38	>12*	39.45	>12*	34.77
AW-6	>12*	24.61	>12*	39.94	>12*	33.34	>12*	18.09	>12*	34.50	>12*	30.60	>12*	25.92	>12*	36.32	>12*	30.77
AW-7	>12*	22.95	>12*	40.75	>12*	35.70	12.00	10.68	>12*	37.60	>12*	34.65	>12*	27.23	>12*	39.01	>12*	35.12
AW-8	9.00	8.75	>12*	33.57	>12*	29.95	7.00	7.25	>12*	36.45	>12*	29.29	>12*	15.67	>12*	34.41	>12*	31.88
AW-9	>12*	27.70	>12*	41.39	>12*	38.39	>12*	17.05	>12*	34.52	>12*	31.24	>12*	32.40	>12*	38.93	>12*	17.50
AW-10	>12*	17.35	>12*	37.16	>12*	40.00	>12*	16.38	>12*	39.56	>12*	26.12	>12*	32.00	>12*	34.29	>12*	29.82
AW-11	0.90	0.47	>12*	16.88	11.00	12.90	1.50	1.20	>12*	19.41	>12*	13.85	>12*	23.99	>12*	17.54	>12*	12.00
AW-12	11.00	10.88	>12*	13.64	11.00	12.44	3.50	4.54	>12*	13.65	>12*	8.16	6.50	6.88	>12*	10.95	>12*	11.85
AW-13	1.50	1.48	11.00	10.33	5.50	7.70	1.50	0.87	>12*	16.62	>12*	9.37	0.75	0.72	>12*	17.25	>12*	10.80
AW-14	>12*	12.91	>12*	19.20	>12*	17.51	2.50	2.85	>12*	25.12	>12*	24.68	>12*	12.25	>12*	16.26	>12*	12.50
AW-15	1.00	0.84	11.00	11.27	11.00	10.19	1.50	1.11	>12*	25.71	>12*	25.08	2.50	2.24	9.00	16.10	>12*	12.00
AW-16	>12*	31.14	>12*	44.53	>12*	40.30	10.50	10.14	>12*	33.28	>12*	32.44	>12*	17.64	>12*	16.55	>12*	14.09
AW-17	4.50	4.67	>12*	25.80	>12*	24.33	3.50	3.50	>12*	30.72	>12*	25.22	1.50	1.10	>12*	22.52	>12*	18.39
AW-18	2.50	2.05	3.50	3.60	2.50	3.25	1.50	1.31	2.50	2.46	2.00	2.62	4.50	4.90	8.00	7.35	4.00	6.50
AW-19	2.50	1.73	2.00	3.02	2.50	2.94	3.50	2.87	4.00	2.64	3.00	2.63	4.50	4.04	7.00	8.50	6.00	8.89
Average Conc. (all wells)	8.36	13.98	10.92	27.18	10.50	24.71	7.25	9.87	11.03	26.95	10.94	22.11	8.30	15.17	11.37	25.02	11.26	20.20

Notes:
'Before Sock Replacement' readings collected prior to replacing the Adventus ECH-O socks
mg/l = milligrams per liter
* = DO concentration exceeded operating range of CHEMets
-- Indicates measurement not taken or not avaliable.

Table 6
Gauging Data

Annual Periodic Review Report
Madison Avenue Former MGP Site, Elmira, New York

Well ID	Measuring Point Elevation	Actual Depth to Bottom (feet TOC)	Date	Depth to Water (feet TOC)	Groundwater Elevation	Depth to Product (feet TOC)	Depth to Bottom (feet TOC)	Accumulated Thickness of Sediments (feet)
MW-1S	852.88	13.78	04/01/13	8.44	844.44	--	13.75	0.03
			05/28/13	8.55	844.33	--	13.75	0.03
			08/26/13	8.63	844.25	--	13.71	0.07
			11/18/13	8.60	844.28	--	13.69	0.09
			02/03/14	8.50	844.38	--	13.75	0.03
			08/04/14	8.35	844.53	--	13.74	0.04
			02/23/15	8.81	844.07	--	13.70	0.08
			08/24/15	8.37	844.51	--	13.71	0.07
			02/08/16	8.41	844.47	--	13.70	0.08
			08/22/16	8.55	844.33	--	13.72	0.06
			02/20/17	7.88	845.00	--	13.72	0.06
			08/21/17	8.56	844.32	--	13.71	0.07
			02/12/18	8.40	844.48	--	13.72	0.06
MW-1D	852.98	61.44	04/01/13	10.54	842.44	--	60.77	0.67
			05/28/13	10.75	842.23	--	60.76	0.68
			08/26/13	10.83	842.15	--	60.72	0.72
			11/18/13	10.87	842.11	--	60.67	0.77
			02/03/14	10.70	842.28	--	60.91	0.53
			08/04/14	11.01	841.97	--	60.92	0.52
			02/23/15	11.13	841.85	--	60.81	0.63
			08/24/15	10.85	842.13	--	60.85	0.59
			02/08/16	10.48	842.50	--	60.84	0.60
			08/22/16	10.96	842.02	--	60.89	0.55
			02/20/17	9.90	843.08	--	60.93	0.51
			08/21/17	11.71	841.27	--	60.90	0.54
			02/12/18	10.59	842.39	--	60.85	0.59
MW-2S	854.06	20.22	04/01/13	10.02	844.04	--	16.54	3.68
			05/28/13	10.06	844.00	--	16.20	4.02
			08/26/13	10.03	844.03	--	16.60	3.62
			11/18/13	10.03	844.03	--	17.00	3.22
			02/04/14	10.27	843.79	--	18.50	1.72
			08/04/14	9.79	844.27	--	18.56	1.66
			02/23/15	11.03	843.03	--	18.64	1.58
			08/24/15	9.82	844.24	--	18.49	1.73
			02/08/16	10.03	844.03	--	18.48	1.74
			08/22/16	10.14	843.92	--	18.45	1.77
			02/20/17	8.35	845.71	--	18.50	1.72
			08/21/17	10.23	843.83	--	18.50	1.72
			02/12/18	9.55	844.51	--	18.49	1.73
MW-2D	855.66	68.19	04/01/13	14.87	840.79	--	64.51	3.68
			05/28/13	15.16	840.50	--	64.54	3.65
			08/26/13	15.35	840.31	--	64.53	3.66
			11/18/13	15.43	840.23	--	64.44	3.75
			02/03/14	15.09	840.57	--	64.64	3.55
			08/04/14	15.43	840.23	--	67.25	0.94
			02/23/15	15.73	839.93	--	67.17	1.02
			08/24/15	15.32	840.34	--	67.18	1.01
			02/08/16	14.73	840.93	--	67.21	0.98
			08/22/16	15.58	840.08	--	67.21	0.98
			02/20/17	13.89	841.77	--	67.61	0.58
			08/21/17	16.42	839.24	--	67.20	0.99
			02/12/18	15.00	840.66	--	67.18	1.01
MW-4S	851.47	16.67	04/01/13	7.65	843.69	--	15.65	1.15
			05/28/13	7.80	843.54	--	15.56	1.24
			08/26/13	7.78	843.56	--	15.55	1.25
			11/18/13	7.98	843.36	--	15.30	1.50
			02/03/14	8.09	843.25	--	16.10	0.70
			08/04/14	7.64	843.70	--	15.96	0.75
			02/23/15	9.73	841.74	--	15.88	0.79
			08/24/15	6.97	844.50	--	15.91	0.76
			02/08/16	7.22	844.25	--	15.87	0.80
			08/22/16	7.72	843.75	--	15.90	0.77
			02/20/17	6.61	844.86	--	15.88	0.79
			08/21/17	7.78	843.69	--	15.58	1.09
			02/12/18	6.90	844.57	--	15.90	0.77

Table 6
Gauging Data

Annual Periodic Review Report
Madison Avenue Former MGP Site, Elmira, New York

Well ID	Measuring Point Elevation	Actual Depth to Bottom (feet TOC)	Date	Depth to Water (feet TOC)	Groundwater Elevation	Depth to Product (feet TOC)	Depth to Bottom (feet TOC)	Accumulated Thickness of Sediments (feet)
MW-6S	852.54	24.84	04/01/13	5.41	847.13	--	20.91	3.93
			05/28/13	5.70	846.84	--	20.90	3.94
			08/26/13	5.39	847.15	--	20.85	3.99
			11/18/13	5.68	846.86	--	20.72	4.12
			02/03/14	4.66	847.88	--	24.80	0.04
			08/04/14	5.75	846.79	--	24.80	0.04
			02/23/15	6.71	845.83	--	24.69	0.15
			08/24/15	5.43	847.11	--	24.80	0.04
			02/08/16	5.41	847.13	--	24.77	0.07
			08/22/16	8.56	843.98	--	24.79	0.05
			02/20/17	5.28	847.26	--	24.79	0.05
			08/21/17	8.10	844.44	--	24.99	-0.15
			02/12/18	6.05	846.49	--	24.75	0.09
MW-7	854.14	39.56	04/01/13	10.62	843.52	--	32.80	6.76
			05/28/13	10.71	843.43	--	32.76	6.80
			08/26/13	10.68	843.46	--	33.00	6.56
			11/18/13	10.69	843.45	--	33.07	6.49
			02/03/14	10.68	843.46	--	39.33	0.23
			08/04/14	10.51	843.63	--	39.17	0.39
			02/23/15	10.82	843.32	--	39.18	0.38
			08/24/15	10.62	843.52	--	39.22	0.34
			02/08/16	10.56	843.58	--	38.53	1.03
			08/22/16	10.69	843.45	--	39.04	0.52
			02/20/17	10.31	843.83	--	39.31	0.25
			08/21/17	10.50	843.64	--	38.55	1.01
			02/12/18	10.58	843.56	--	38.19	1.37
MW-8S	850.38	14.70	04/01/13	6.76	843.62	--	6.93	7.77
			05/28/13	6.89	843.49	--	6.94	7.76
			08/26/13	6.79	843.59	--	6.98	7.72
			11/18/13	6.85	843.53	--	7.02	7.68
			02/03/14	6.84	843.54	--	14.01	0.69
			08/04/14	6.68	843.70	--	14.02	0.68
			02/23/15	7.09	843.29	--	13.98	0.72
			08/24/15	6.80	843.58	--	14.00	0.70
			02/08/16	6.75	843.63	--	13.98	0.72
			08/22/16	6.85	843.53	--	14.00	0.70
			02/20/17	6.41	843.97	--	13.99	0.71
			08/21/17	6.80	843.58	--	14.00	0.70
			02/12/18	6.70	843.68	--	14.00	0.70
MW-8D	850.08	69.58	04/01/13	10.17	839.91	--	69.28	0.30
			05/28/13	10.57	839.51	--	69.24	0.34
			08/26/13	10.56	839.52	--	69.30	0.28
			11/18/13	10.73	839.35	--	70.43	-0.85
			02/03/14	10.42	839.66	--	69.36	0.22
			08/04/14	10.68	839.40	--	69.44	0.14
			02/23/15	11.19	838.89	--	70.30	-0.72
			08/24/15	10.61	839.47	--	69.30	0.28
			02/08/16	9.74	840.34	--	69.29	0.29
			08/22/16	11.23	838.85	--	69.31	0.27
			02/20/17	9.79	840.29	--	69.38	0.20
			08/21/17	10.78	839.30	--	69.41	0.17
			02/12/18	10.54	839.54	--	69.25	0.33
MW-9S	849.03	14.47	04/01/13	5.67	843.01	--	14.43	0.39
			05/28/13	5.91	842.77	--	14.41	0.41
			08/26/13	6.09	842.59	--	14.50	0.32
			11/18/13	6.32	842.36	--	14.47	0.35
			02/03/14	5.93	842.75	--	14.55	0.27
			08/04/14	5.03	843.65	--	14.40	0.42
			02/23/15	6.89	842.14	--	12.25	2.22
			08/24/15	5.16	843.87	--	14.27	0.20
			02/08/16	5.44	843.59	--	14.95	-0.48
			08/22/16	5.86	843.17	--	14.98	-0.51
			02/20/17	4.38	844.65	--	14.97	-0.50
			08/21/17	6.18	842.85	--	14.97	-0.50
			02/12/18	5.42	843.61	--	14.98	-0.51

Table 6
Gauging Data

Annual Periodic Review Report
Madison Avenue Former MGP Site, Elmira, New York

Well ID	Measuring Point Elevation	Actual Depth to Bottom (feet TOC)	Date	Depth to Water (feet TOC)	Groundwater Elevation	Depth to Product (feet TOC)	Depth to Bottom (feet TOC)	Accumulated Thickness of Sediments (feet)
MW-9D	849.06	71.44	04/01/13	8.05	840.67	--	67.96	3.82
			05/28/13	8.36	840.36	--	67.90	3.88
			08/26/13	8.39	840.33	--	67.93	3.85
			11/18/13	8.51	840.21	--	67.89	3.89
			02/03/14	8.20	840.52	--	67.95	3.83
			08/04/14	8.14	840.58	--	72.65	-0.87
			02/23/15	8.85	840.21	--	72.58	-1.14
			08/24/15	8.21	840.85	--	72.60	-1.16
			02/08/16	8.01	841.05	--	72.50	-1.06
			08/22/16	8.62	840.44	--	72.61	-1.17
			02/20/17	7.19	841.87	--	72.64	-1.20
			08/21/17	8.62	840.44	--	72.61	-1.17
			02/12/18	8.62	840.44		72.58	-1.14
MW-0304D	851.18	59.64	04/01/13	9.78	841.40	--	59.60	0.04
			05/28/13	9.89	841.29	--	59.55	0.09
			08/26/13	9.57	841.61	--	59.60	0.04
			11/18/13	9.78	841.40	--	59.58	0.06
			02/03/14	9.78	841.40	--	59.65	-0.01
			08/04/14	10.00	841.18	--	59.58	0.06
			02/23/15	10.35	840.83	--	59.56	0.08
			08/24/15	9.95	841.23	--	59.55	0.09
			02/08/16	9.51	841.67	--	59.50	0.14
			08/22/16	10.48	840.70	--	59.59	0.05
			02/20/17	8.81	842.37	--	59.50	0.14
			08/21/17	10.89	840.29	--	59.32	0.32
			02/12/18	9.70	841.48	--	59.42	0.22
MW-0402S	850.09	22.38	04/01/13	7.78	842.31	--	22.48	-0.10
			05/28/13	7.89	842.20	--	22.49	-0.11
			08/26/13	7.97	842.12	--	22.50	-0.12
			11/18/13	8.15	841.94	--	22.49	-0.11
			02/03/14	7.94	842.15	--	22.54	-0.16
			08/04/14	7.39	842.70	--	22.55	-0.17
			02/23/15	8.36	841.73	--	22.48	-0.10
			08/24/15	7.65	842.44	--	22.51	-0.13
			02/08/16	7.77	842.32	--	22.50	-0.12
			08/22/16	7.93	842.16	--	22.52	-0.14
			02/20/17	7.30	842.79	--	22.51	-0.13
			08/21/17	7.95	842.14	--	22.50	-0.12
			02/12/18	7.89	842.20	--	22.52	-0.14
MW-0403S	849.66	39.32	04/01/13	9.45	840.21	--	39.40	-0.08
			05/28/13	9.75	839.91	--	39.36	-0.04
			08/26/13	9.81	839.85	--	39.32	0.00
			11/18/13	9.97	839.69	--	39.34	-0.02
			02/03/14	9.54	840.12	--	39.38	-0.06
			08/04/14	9.49	840.17	--	39.39	-0.07
			02/23/15	10.05	839.61	--	39.30	0.02
			08/24/15	9.62	840.04	--	39.33	-0.01
			02/08/16	9.48	840.18	--	39.34	-0.02
			08/22/16	9.83	839.83	--	39.35	-0.03
			02/20/17	8.25	841.41	--	39.31	0.01
			08/21/17	9.92	839.74	--	39.33	-0.01
			02/12/18	9.41	840.25	--	39.30	0.02
MW-0404S	849.99	28.57	04/01/13	9.71	840.28	--	27.94	0.63
			05/28/13	10.02	839.97	--	27.89	0.68
			08/26/13	10.06	839.93	--	27.81	0.76
			11/18/13	10.19	839.80	--	27.85	0.72
			02/03/14	9.80	840.19	--	28.25	0.32
			08/04/14	9.71	840.28	--	28.20	0.37
			02/23/15	10.39	839.60	--	28.20	0.37
			08/24/15	9.82	840.17	--	28.22	0.35
			02/08/16	9.70	840.29	--	28.20	0.37
			08/22/16	10.13	839.86	--	28.22	0.35
			02/20/17	8.98	841.01	--	28.25	0.32
			08/21/17	10.19	839.80	--	28.18	0.39
			02/12/18	9.71	840.28	--	28.20	0.37

Table 6
Gauging Data

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Well ID	Measuring Point Elevation	Actual Depth to Bottom (feet TOC)	Date	Depth to Water (feet TOC)	Groundwater Elevation	Depth to Product (feet TOC)	Depth to Bottom (feet TOC)	Accumulated Thickness of Sediments (feet)
MW-0404D	849.55	59.77	04/01/13	9.45	840.10	--	59.43	0.34
			05/28/13	9.89	839.66	--	59.45	0.32
			08/26/13	9.94	839.61	--	59.38	0.39
			11/18/13	10.22	839.33	--	60.21	-0.44
			02/03/14	9.73	839.82	--	59.40	0.37
			08/04/14	9.67	839.88	--	59.40	0.37
			02/23/15	10.50	839.05	--	59.33	0.44
			08/24/15	9.74	839.81	--	59.40	0.37
			02/08/16	9.35	840.20	--	59.20	0.57
			08/22/16	10.26	839.29	--	59.30	0.47
			02/20/17	8.35	841.20	--	59.21	0.56
			08/21/17	10.28	839.27	--	59.88	-0.11
			02/12/18	9.71	839.84	--	59.25	0.52
MW-0405S	850.59	35.27	04/01/13	10.33	840.26	--	35.43	-0.16
			05/28/13	10.81	839.78	--	35.44	-0.17
			08/26/13	10.83	839.76	--	35.38	-0.11
			11/18/13	11.16	839.43	--	35.41	-0.14
			02/03/14	10.66	839.93	--	35.50	-0.23
			08/04/14	10.61	839.98	--	35.42	-0.15
			02/23/15	11.54	839.05	--	35.39	-0.12
			08/24/15	10.43	840.16	--	35.44	-0.17
			02/08/16	10.25	840.34	--	35.41	-0.14
			08/22/16	11.20	839.39	--	35.44	-0.17
			02/20/17	9.03	841.56	--	35.48	-0.21
			08/21/17	11.12	839.47	--	35.37	-0.10
			02/12/18	10.52	840.07	--	35.42	-0.15
AW-1	850.94	19.78	04/01/13	7.04	843.90	--	20.00	-0.22
			05/28/13	7.05	843.89	--	19.99	-0.21
			08/26/13	7.00	843.94	--	19.92	-0.14
			11/18/13	7.17	843.77	--	19.91	-0.13
			02/03/14	7.21	843.73	--	19.94	-0.16
			08/04/14	6.74	844.20	--	19.91	-0.13
			02/23/15	7.42	843.52	--	19.83	-0.05
			08/24/15	6.79	844.15	--	19.59	0.19
			02/08/16	6.85	844.09	--	19.68	0.10
			08/22/16	7.00	843.94	--	19.69	0.09
			02/20/17	6.16	844.78	--	19.55	0.23
			08/21/17	7.04	843.90	--	19.89	-0.11
			02/12/18	6.80	844.14	--	19.55	0.23
AW-2	851.23	20.04	04/01/13	7.51	843.44	--	20.17	0.15
			05/28/13	7.25	843.70	--	20.19	0.13
			08/26/13	7.61	843.34	--	20.18	0.14
			11/18/13	7.76	843.19	--	20.15	0.17
			02/03/14	7.75	843.20	--	20.13	0.19
			08/04/14	6.91	844.04	--	20.09	0.23
			02/23/15	8.43	842.80	--	20.10	-0.06
			08/24/15	6.91	844.32	--	19.96	0.08
			02/08/16	7.29	843.94	--	20.06	-0.02
			08/22/16	7.35	843.88	--	20.08	-0.04
			02/20/17	6.19	845.04	--	19.65	0.39
			08/21/17	7.03	844.20	--	20.12	-0.08
			02/12/18	6.85	844.38	--	19.50	0.54
AW-3	850.38	19.10	04/01/13	6.83	843.55	--	19.59	-0.49
			05/28/13	6.84	843.54	--	19.60	-0.50
			08/26/13	7.02	843.36	--	19.55	-0.45
			11/18/13	6.98	843.40	--	19.81	-0.71
			02/03/14	6.94	843.44	--	19.59	-0.49
			08/04/14	6.31	844.07	--	19.53	-0.43
			02/23/15	7.47	842.91	--	19.50	-0.40
			08/24/15	6.27	844.11	--	19.33	-0.23
			02/08/16	6.63	843.75	--	19.08	0.02
			08/22/16	6.68	843.70	--	18.62	0.48
			02/20/17	5.64	844.74	--	18.63	0.47
			08/21/17	--	--	--	--	--
			02/12/18	6.58	843.80	--	18.58	0.52

Table 6
Gauging Data

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Well ID	Measuring Point Elevation	Actual Depth to Bottom (feet TOC)	Date	Depth to Water (feet TOC)	Groundwater Elevation	Depth to Product (feet TOC)	Depth to Bottom (feet TOC)	Accumulated Thickness of Sediments (feet)
AW-4	850.62	19.77	04/01/13	6.30	844.08	--	20.01	-0.24
			05/28/13	6.22	844.16	--	19.83	-0.06
			08/26/13	6.91	843.71	--	19.96	-0.19
			11/18/13	7.74	842.88	--	19.97	-0.20
			02/03/14	7.50	843.12	--	19.98	-0.21
			08/04/14	5.49	845.13	--	19.75	0.02
			02/23/15	8.47	842.15	--	19.73	0.04
			08/24/15	5.91	844.71	--	19.78	-0.01
			02/08/16	6.57	844.05	--	19.56	0.21
			08/22/16	5.93	844.69	--	19.65	0.12
			02/20/17	5.49	845.13	--	19.45	0.32
			08/21/17	7.20	843.42	--	19.42	0.35
			02/12/18	6.09	844.53	--	19.58	0.19
AW-5	850.38	19.80	04/01/13	7.16	843.22	--	19.78	0.02
			05/28/13	7.24	843.14	--	19.73	0.07
			08/26/13	7.30	843.08	--	19.73	0.07
			11/18/13	7.71	842.67	--	19.70	0.10
			02/03/14	7.26	843.12	--	19.75	0.05
			08/04/14	6.81	843.57	--	19.75	0.05
			02/23/15	8.42	841.96	--	19.64	0.16
			08/24/15	6.83	843.55	--	19.71	0.09
			02/08/16	6.84	843.54	--	19.62	0.18
			08/22/16	7.37	843.01	--	19.21	0.59
			02/20/17	5.61	844.77	--	19.10	0.70
			08/21/17	7.22	843.16	--	19.33	0.47
			02/12/18	6.98	843.40	--	19.06	0.74
AW-6	849.85	19.28	04/01/13	7.72	842.13	--	19.04	0.24
			05/28/13	7.87	841.98	--	19.10	0.18
			08/26/13	7.87	841.98	--	19.03	0.25
			11/18/13	8.24	841.61	--	18.98	0.30
			02/03/14	7.77	842.08	--	19.02	0.26
			08/04/14	7.45	842.40	--	19.02	0.26
			02/23/15	8.64	841.21	--	18.79	0.49
			08/24/15	7.38	842.47	--	18.99	0.29
			02/08/16	7.11	842.74	--	18.72	0.56
			08/22/16	7.91	841.94	--	18.57	0.71
			02/20/17	6.15	843.70	--	18.43	0.85
			08/21/17	7.82	842.03	--	18.72	0.56
			02/12/18	7.04	842.81	--	18.55	0.73
AW-7	849.72	18.74	04/01/13	8.49	841.23	--	18.86	-0.12
			05/28/13	8.72	841.00	--	18.85	-0.11
			08/26/13	8.72	841.00	--	18.82	-0.08
			11/18/13	9.00	840.72	--	18.80	-0.06
			02/03/14	8.59	841.13	--	18.85	-0.11
			08/04/14	8.43	841.29	--	18.82	-0.08
			02/23/15	9.32	840.40	--	18.75	-0.01
			08/24/15	8.46	841.26	--	18.81	-0.07
			02/08/16	8.10	841.62	--	18.38	0.36
			08/22/16	9.02	840.70	--	18.41	0.33
			02/20/17	7.15	842.57	--	18.44	0.30
			08/21/17	8.73	840.99	--	18.40	0.34
			02/12/18	8.19	841.53	--	18.35	0.39
AW-8	849.78	19.32	04/01/13	8.86	840.92	--	19.35	-0.03
			05/28/13	9.07	840.71	--	19.34	-0.02
			08/26/13	9.13	840.65	--	19.31	0.01
			11/18/13	9.35	840.43	--	19.25	0.07
			02/03/14	8.90	840.88	--	19.22	0.10
			08/04/14	8.71	841.07	--	19.20	0.12
			02/23/15	9.55	840.23	--	18.85	0.47
			08/24/15	8.76	841.02	--	18.85	0.47
			02/08/16	8.41	841.37	--	18.88	0.44
			08/22/16	9.30	840.48	--	18.98	0.34
			02/20/17	7.45	842.33	--	18.84	0.48
			08/21/17	9.08	840.70	--	18.89	0.43
			02/12/18	8.52	841.26	--	18.82	0.50

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Well ID	Measuring Point Elevation	Actual Depth to Bottom (feet TOC)	Date	Depth to Water (feet TOC)	Groundwater Elevation	Depth to Product (feet TOC)	Depth to Bottom (feet TOC)	Accumulated Thickness of Sediments (feet)
AW-9	849.61	22.27	04/01/13	8.30	841.31	--	22.22	0.05
			05/28/13	9.00	840.61	--	21.88	0.39
			08/26/13	9.05	840.56	--	21.92	0.35
			11/18/13	9.21	840.40	--	22.11	0.16
			02/03/14	8.87	840.74	--	22.10	0.17
			08/04/14	8.73	840.88	--	21.92	0.35
			02/23/15	9.54	840.07	--	21.71	0.56
			08/24/15	8.89	840.72	--	21.78	0.49
			02/08/16	8.39	841.22	--	21.26	1.01
			08/22/16	9.32	840.29	--	21.30	0.97
			02/20/17	7.39	842.22	--	22.30	-0.03
			08/21/17	9.02	840.59	--	22.18	0.09
			02/12/18	8.50	841.11	--	19.92	2.35
AW-10	849.60	24.20	04/01/13	9.18	840.42	--	24.28	-0.08
			05/28/13	9.42	840.18	--	24.27	-0.07
			08/26/13	9.51	840.09	--	24.20	0.00
			11/18/13	9.91	839.69	--	24.20	0.00
			02/03/14	9.25	840.35	--	24.18	0.02
			08/04/14	9.45	840.15	--	24.19	0.01
			02/23/15	9.67	839.93	--	23.76	0.44
			08/24/15	9.06	840.54	--	24.10	0.10
			02/08/16	8.92	840.68	--	23.54	0.66
			08/22/16	9.50	840.10	--	23.65	0.55
			02/20/17	7.84	841.76	--	23.74	0.46
			08/21/17	9.04	840.56	--	24.12	0.08
			02/12/18	8.72	840.88	--	22.90	1.30
AW-11	849.49	24.27	04/01/13	8.99	840.50	--	24.14	0.13
			05/28/13	9.22	840.27	--	24.13	0.14
			08/26/13	9.34	840.15	--	24.02	0.25
			11/18/13	9.45	840.04	--	24.06	0.21
			02/03/14	9.01	840.48	--	24.10	0.17
			08/04/14	9.01	840.48	--	24.02	0.25
			02/23/15	9.71	839.78	--	23.50	0.77
			08/24/15	9.05	840.44	--	23.95	0.32
			02/08/16	8.76	840.73	--	23.48	0.79
			08/22/16	9.42	840.07	--	22.79	1.48
			02/20/17	7.45	842.04	--	23.28	0.99
			08/21/17	9.36	840.13	--	23.33	0.94
			02/12/18	8.92	840.57	--	22.57	1.70
AW-12	849.19	37.58	04/01/13	8.68	840.51	--	37.67	-0.09
			05/28/13	9.00	840.19	--	37.68	-0.10
			08/26/13	9.15	840.04	--	37.50	0.08
			11/18/13	9.29	839.90	--	37.50	0.08
			02/03/14	8.90	840.29	--	37.52	0.06
			08/04/14	8.78	840.41	--	37.15	0.43
			02/23/15	9.49	839.70	--	36.92	0.66
			08/24/15	8.93	840.26	--	37.10	0.48
			02/08/16	8.70	840.49	--	36.79	0.79
			08/22/16	9.30	839.89	--	35.74	1.84
			02/20/17	7.73	841.46	--	35.72	1.86
			08/21/17	9.26	839.93	--	35.69	1.89
			02/12/18	8.82	840.37	--	35.00	2.58
AW-13	849.07	27.46	04/01/13	8.59	840.48	--	27.40	0.06
			05/28/13	9.42	839.65	--	27.34	0.12
			08/26/13	8.98	840.09	--	27.24	0.22
			11/18/13	9.10	839.97	--	27.28	0.18
			02/03/14	8.72	840.35	--	27.32	0.14
			08/04/14	8.59	840.48	--	27.26	0.20
			02/23/15	9.32	839.75	--	26.97	0.49
			08/24/15	8.63	840.44	--	27.16	0.30
			02/08/16	8.42	840.65	--	25.85	1.61
			08/22/16	9.06	840.01	--	26.40	1.06
			02/20/17	7.65	841.42	--	27.40	0.06
			08/21/17	9.05	840.02	--	27.31	0.15
			02/12/18	8.59	840.48	--	26.95	0.51

Table 6
Gauging Data

Annual Periodic Review Report
Madison Avenue Former MGP Site, Elmira, New York

Well ID	Measuring Point Elevation	Actual Depth to Bottom (feet TOC)	Date	Depth to Water (feet TOC)	Groundwater Elevation	Depth to Product (feet TOC)	Depth to Bottom (feet TOC)	Accumulated Thickness of Sediments (feet)
AW-14	849.45	28.88	04/01/13	8.86	840.59	--	30.90	-2.02
			05/28/13	9.22	840.23	--	30.57	-1.69
			08/26/13	9.27	840.18	--	30.54	-1.66
			11/18/13	9.34	840.11	--	30.57	-1.69
			02/03/14	8.99	840.46	--	30.44	-1.56
			08/04/14	8.83	840.62	--	30.30	-1.42
			02/23/15	9.58	839.87	--	29.70	-0.82
			08/24/15	9.00	840.45	--	30.40	-1.52
			02/08/16	8.78	840.67	--	29.40	-0.52
			08/22/16	9.32	840.13	--	29.42	-0.54
			02/20/17	7.95	841.50	--	29.62	-0.74
			08/21/17	9.34	840.11	--	29.59	-0.71
			02/12/18	8.73	840.72	--	28.78	0.10
AW-15	849.11	34.68	04/01/13	8.67	840.44	--	34.57	0.11
			05/28/13	8.92	840.19	--	34.40	0.28
			08/26/13	9.02	840.09	--	34.20	0.48
			11/18/13	9.23	839.88	--	34.42	0.26
			02/03/14	8.75	840.36	--	33.85	0.83
			08/04/14	8.72	840.39	--	34.42	0.26
			02/23/15	9.40	839.71	--	33.89	0.79
			08/24/15	8.80	840.31	--	34.16	0.52
			02/08/16	8.59	840.52	--	33.62	1.06
			08/22/16	9.10	840.01	--	32.85	1.83
			02/20/17	7.76	841.35	--	34.49	0.19
			08/21/17	9.12	839.99	--	34.48	0.20
			02/12/18	8.70	840.41	--	34.20	0.48
AW-16	849.12	34.80	04/01/13	8.56	840.56	--	34.44	0.36
			05/28/13	8.72	840.40	--	34.31	0.49
			08/26/13	8.85	840.27	--	34.20	0.60
			11/18/13	8.97	840.15	--	34.25	0.55
			02/03/14	8.60	840.52	--	34.23	0.57
			08/04/14	8.44	840.68	--	34.45	0.35
			02/23/15	9.14	839.98	--	31.78	3.02
			08/24/15	8.60	840.52	--	34.46	0.34
			02/08/16	8.44	840.68	--	31.97	2.83
			08/22/16	8.98	840.14	--	31.03	3.77
			02/20/17	7.78	841.34	--	34.50	0.30
			08/21/17	8.93	840.19	--	34.16	0.64
			02/12/18	8.57	840.55	--	33.62	1.18
AW-17	849.08	31.84	04/01/13	8.53	840.55	--	34.56	-2.72
			05/28/13	8.75	840.33	--	31.34	0.50
			08/26/13	8.81	840.27	--	31.52	0.32
			11/18/13	8.99	840.09	--	31.43	0.41
			02/03/14	8.62	840.46	--	31.10	0.74
			08/04/14	8.45	840.63	--	31.27	0.57
			02/23/15	9.13	839.95	--	30.49	1.35
			08/24/15	8.67	840.41	31.02	31.22	0.62
			11/18/15	8.45	840.63	TR	31.04	0.80
			02/08/16	8.54	840.54	TR	31.10	0.74
			05/12/16	8.49	840.59	TR	28.48	3.36
			08/22/16	8.91	840.17	TR	30.57	1.27
			11/17/16	8.81	840.27	TR	27.70	4.14
			02/20/17	7.70	841.38	TR	31.25	0.59
			08/21/17	8.95	840.13	TR	31.25	0.59
			02/12/18	8.50	840.58	TR	30.52	1.32

Table 6
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Well ID	Measuring Point Elevation	Actual Depth to Bottom (feet TOC)	Date	Depth to Water (feet TOC)	Groundwater Elevation	Depth to Product (feet TOC)	Depth to Bottom (feet TOC)	Accumulated Thickness of Sediments (feet)
AW-18	848.81	33.51	04/01/13	7.94	840.87	--	33.75	-0.24
			05/28/13	7.49	841.32	--	33.75	-0.24
			08/26/13	8.36	840.45	--	33.69	-0.18
			11/18/13	8.62	840.19	--	33.67	-0.16
			02/03/14	8.10	840.71	--	33.40	0.11
			08/04/14	6.78	842.03	--	33.15	0.36
			02/23/15	8.73	840.08	--	32.95	0.56
			08/24/15	7.83	840.98	--	33.01	0.50
			02/08/16	7.05	841.76	--	32.10	1.41
			08/22/16	8.25	840.56	--	31.81	1.70
			02/20/17	6.99	841.82	--	33.80	-0.29
			08/21/17	8.50	840.31	--	32.20	1.31
			02/12/18	7.49	841.32	--	30.92	2.59
AW-19	849.01	34.33	04/01/13	7.99	841.02	--	33.91	0.42
			05/28/13	8.29	840.72	--	33.89	0.44
			08/26/13	8.59	840.42	--	33.87	0.46
			11/18/13	8.74	840.27	--	33.90	0.43
			02/03/14	8.27	840.74	--	33.15	1.18
			08/04/14	7.39	841.62	--	34.05	0.28
			02/23/15	8.85	840.16	--	32.74	1.59
			08/24/15	8.44	840.57	--	34.05	0.28
			02/08/16	8.22	840.79	--	33.55	0.78
			08/22/16	8.28	840.73	--	33.15	1.18
			02/20/17	7.20	841.81	--	31.58	2.75
			08/21/17	8.71	840.30	--	31.00	3.33
			02/12/18	8.05	840.96	--	29.82	4.51
PMW-1	851.19	18.81	04/01/13	7.78	843.41	--	19.24	-0.43
			05/28/13	7.89	843.30	--	19.35	-0.54
			08/26/13	8.02	843.17	--	19.29	-0.48
			11/18/13	8.35	842.84	--	19.41	-0.60
			02/03/14	7.97	843.22	--	19.38	-0.57
			08/04/14	7.50	843.69	--	19.32	-0.51
			02/23/15	9.21	841.98	--	19.29	-0.48
			08/24/15	7.53	843.66	--	19.36	-0.55
			02/08/16	7.56	843.63	--	19.34	-0.53
			08/22/16	8.05	843.14	--	19.40	-0.59
			02/20/17	6.33	844.86	--	19.30	-0.49
			08/21/17	7.99	843.20	--	19.35	-0.54
			02/12/18	7.64	843.55	--	19.92	-1.11
PMW-2	849.93	19.76	04/01/13	5.45	844.40	--	19.67	0.17
			05/28/13	5.01	844.84	--	19.65	0.19
			08/26/13	6.00	843.85	--	19.64	0.20
			11/18/13	5.68	844.17	--	19.62	0.22
			02/03/14	6.44	843.41	--	19.62	0.22
			08/04/14	4.96	844.89	--	19.53	0.31
			02/23/15	7.25	842.68	--	19.23	0.53
			08/24/15	4.98	844.95	--	19.24	0.52
			02/08/16	5.44	844.49	--	19.21	0.55
			08/22/16	5.00	844.93	--	19.18	0.58
			02/20/17	4.68	845.25	--	19.15	0.61
			08/21/17	5.58	844.35	--	19.21	0.55
			02/12/18	5.11	844.82	--	18.80	0.96

Table 6
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Well ID	Measuring Point Elevation	Actual Depth to Bottom (feet TOC)	Date	Depth to Water (feet TOC)	Groundwater Elevation	Depth to Product (feet TOC)	Depth to Bottom (feet TOC)	Accumulated Thickness of Sediments (feet)
PMW-3	849.64	19.29	04/01/13	8.45	841.19	--	14.60	4.69
			05/28/13	8.98	840.66	--	15.33	3.96
			08/26/13	8.73	840.91	--	15.41	3.88
			11/18/13	8.76	840.88	--	15.15	4.14
			02/03/14	8.37	841.27	--	18.19	1.10
			08/04/14	7.75	841.89	--	15.35	3.94
			02/23/15	9.36	840.28	--	14.29	5.00
			05/22/15	7.33	842.31	--	19.29	0.00
			08/24/15	8.35	841.29	--	14.26	5.03
			11/18/15	7.51	842.13	--	14.18	5.11
			02/08/16	7.76	841.88	--	14.10	5.19
			05/12/16	7.40	842.24	--	14.04	5.25
			08/22/16	9.31	840.33	--	14.12	5.17
			11/17/16	8.13	841.51	--	14.22	5.07
			02/20/17	5.84	843.80	--	18.95	0.34
			08/21/17	8.95	840.69	--	19.26	0.03
			02/12/18	8.25	841.39	--	18.50	0.79
PMW-4	850.02	19.78	04/01/13	9.20	840.82	--	19.85	-0.07
			05/28/13	9.45	840.57	--	19.85	-0.07
			08/26/13	9.51	840.51	--	19.85	-0.07
			11/18/13	9.73	840.29	--	19.81	-0.03
			02/03/14	9.26	840.76	--	19.82	-0.04
			08/04/14	9.13	840.89	--	19.86	-0.08
			02/23/15	9.70	840.32	--	19.81	-0.03
			08/24/15	9.19	840.83	--	19.80	-0.02
			02/08/16	8.83	841.19	--	19.80	-0.02
			08/22/16	9.71	840.31	--	19.81	-0.03
			02/20/17	7.70	842.32	--	19.80	-0.02
			08/21/17	9.40	840.62	--	19.82	-0.04
			02/12/18	8.89	841.13	--	19.81	-0.03
PMW-5	849.08	32.77	04/01/13	8.58	840.50	--	32.65	0.12
			05/28/13	8.77	840.31	--	32.36	0.41
			08/26/13	8.95	840.13	--	32.26	0.51
			11/18/13	9.11	839.97	--	32.20	0.57
			02/03/14	8.74	840.34	--	32.30	0.47
			08/04/14	8.60	840.48	--	32.69	0.08
			02/23/15	9.25	839.83	--	31.69	1.08
			08/24/15	8.70	840.38	--	33.65	-0.88
			02/08/16	8.57	840.51	--	32.50	0.27
			08/22/16	9.00	840.08	--	32.49	0.28
			02/20/17	7.75	841.33	--	32.34	0.43
			08/21/17	9.04	840.04	--	32.34	0.43
			02/12/18	8.58	840.50	--	30.40	2.37

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Well ID	Measuring Point Elevation	Actual Depth to Bottom (feet TOC)	Date	Depth to Water (feet TOC)	Groundwater Elevation	Depth to Product (feet TOC)	Depth to Bottom (feet TOC)	Accumulated Thickness of Sediments (feet)
PMW-6	849.59	38.81	04/01/13	9.19	840.40	--	37.97	0.84
			05/28/13	9.35	840.24	--	37.45	1.36
			08/26/13	9.50	840.09	--	37.35	1.46
			11/18/13	9.68	839.91	--	37.23	1.58
			02/03/14	9.23	840.36	--	37.25	1.56
			08/04/14	9.19	840.40	--	38.33	0.48
			02/23/15	9.90	839.69	--	38.06	0.75
			08/24/15	9.29	840.30	--	38.32	0.49
			02/08/16	9.09	840.50	--	38.10	0.71
			08/22/16	9.65	839.94	--	38.10	0.71
			02/20/17	8.28	841.31	--	38.10	0.71
			08/21/17	9.32	840.27	--	37.90	0.91
			02/12/18	9.20	840.39	--	37.90	0.91
NMW-0402S	849.77	31.29	04/01/13	9.24	840.53	29.87	31.07	0.22
			05/28/13	9.59	840.18	30.77	31.17	0.12
			08/26/13	9.89	839.88	29.25	31.25	0.04
			11/18/13	9.98	839.79	29.25	31.25	0.04
			02/03/14	5.42	844.35	30.08	31.28	0.01
			05/30/14	8.75	841.02	29.92	31.41	-0.12
			08/04/14	9.48	840.29	29.93	31.33	-0.04
			11/20/14	10.08	839.69	30.28	31.38	-0.09
			02/23/15	10.13	839.64	30.15	31.35	-0.06
			05/22/15	9.10	840.67	30.88	31.38	-0.09
			08/24/15	9.55	840.22	31.03	31.38	-0.09
			11/18/15	9.02	840.75	--	31.39	-0.10
			02/08/16	9.21	840.56	31.04	31.44	-0.15
			05/12/16	8.89	840.88	31.24	31.45	-0.16
			08/22/16	9.83	839.94	31.02	31.43	-0.14
			11/17/16	9.68	840.09	30.96	31.46	-0.17
			02/20/17	8.21	841.56	31.00	31.50	-0.21
			08/21/17	10.36	839.41	30.73	31.33	-0.04
			02/12/18	9.44	840.33	30.88	31.55	-0.26
NRW-1	852.45	33.74	04/01/13	11.21	841.15	--	33.82	0.01
			05/28/13	11.48	840.88	--	33.75	0.08
			08/26/13	11.42	840.94	--	33.70	0.13
			11/18/13	11.61	840.75	--	33.68	0.15
			02/03/14	11.29	841.07	--	33.75	0.08
			05/30/14	10.87	841.07	--	33.62	0.08
			08/04/14	11.11	841.25	--	33.65	0.18
			11/20/14	11.54	840.91	--	33.59	0.15
			02/23/15	11.62	840.83	--	33.46	0.28
			05/22/15	10.96	841.49	--	33.46	0.28
			08/24/15	11.06	841.39	--	33.45	0.29
			11/18/15	10.68	841.77	--	33.45	0.29
			02/08/16	10.80	841.65	--	33.46	0.28
			05/12/16	10.77	841.68	--	33.48	0.26
			08/22/16	11.34	841.11	--	33.45	0.29
			11/17/16	11.25	841.20	--	33.51	0.23
			02/20/17	9.05	843.40	--	33.41	0.33
			08/21/17	11.36	841.09	--	33.40	0.34
			02/12/18	10.37	842.08	--	33.41	0.33

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NRW-2	849.80	58.25	04/01/13	9.36	840.44	57.54	57.87	0.38
			05/28/13	9.62	840.18	--	57.31	0.94
			08/26/13	9.80	840.00	56.73	57.20	1.05
			11/18/13	9.98	839.82	56.93	57.63	0.62
			02/03/14	7.20	842.60	--	57.70	0.55
			05/30/14	8.94	840.86	--	57.92	0.33
			08/04/14	9.46	840.34	56.61	57.81	0.44
			11/20/14	10.05	839.75	57.44	57.83	0.42
			02/23/15	10.13	839.67	57.30	57.70	0.55
			05/22/15	9.23	840.57	--	57.80	0.45
			08/24/15	9.50	840.30	--	57.82	0.43
			11/18/15	9.12	840.68	--	57.82	0.43
			02/08/16	9.31	840.49	56.74	57.84	0.41
			05/12/16	9.17	840.63	56.92	57.92	0.33
			08/22/16	9.94	839.86	57.37	57.88	0.37
			11/17/16	9.71	840.09	57.42	57.92	0.33
			02/20/17	8.44	841.36	57.03	57.93	0.32
			08/21/17	10.85	838.95	57.39	58.09	0.16
			02/12/18	9.40	840.40	56.59	58.09	0.16
NRW-3	849.78	53.76	04/01/13	9.33	840.45	--	52.97	0.79
			05/28/13	9.59	840.19	--	52.49	1.27
			08/26/13	9.77	840.01	--	52.13	1.63
			11/18/13	9.93	839.85	--	52.34	1.42
			02/03/14	9.43	840.35	--	52.30	1.46
			05/30/14	8.93	840.85	--	52.24	1.52
			08/04/14	9.44	840.34	--	52.12	1.64
			11/20/14	10.02	839.76	--	52.23	1.53
			02/23/15	10.10	839.68	--	52.32	1.44
			05/22/15	9.22	840.56	--	52.09	1.67
			08/24/15	9.49	840.29	--	53.78	-0.02
			11/18/15	9.97	839.81	--	53.12	0.64
			02/08/16	9.25	840.53	--	52.90	0.86
			5//12/16	9.10	840.68	--	52.93	0.83
			08/22/16	9.88	839.90	--	53.00	0.76
			11/17/16	9.69	840.09	--	53.00	0.76
			02/20/17	8.35	841.43	--	53.90	-0.14
			08/21/17	10.92	838.86	--	53.88	-0.12
			02/12/18	9.32	840.46	--	53.03	0.73
NRW-4	849.52	56.68	04/01/13	9.06	840.46	--	57.40	-0.72
			05/28/13	9.35	840.17	--	57.34	-0.66
			08/26/13	9.53	839.99	--	56.57	0.11
			11/18/13	9.69	839.83	--	56.59	0.09
			02/03/14	9.21	840.31	--	56.99	-0.31
			05/30/14	8.66	840.86	--	56.64	0.04
			08/04/14	9.18	840.34	--	56.58	0.10
			11/20/14	9.76	839.76	--	56.62	0.06
			02/23/15	9.88	839.64	--	56.40	0.28
			05/22/15	8.83	840.69	--	56.48	0.20
			08/24/15	9.23	840.29	--	57.05	-0.37
			11/18/15	8.82	840.70	--	56.55	0.13
			02/08/16	8.98	840.54	--	56.55	0.13
			05/12/16	8.82	840.70	--	56.33	0.35
			08/22/16	9.64	839.88	--	56.69	-0.01
			11/17/16	9.42	840.10	--	56.40	0.28
			02/20/17	8.10	841.42	--	57.30	-0.62
			08/21/17	9.70	839.82	--	57.37	-0.69
			02/12/18	9.18	840.34	--	56.52	0.16

Notes:

All measurements from Top of Casing (TOC).

Elevations in feet above mean sea level (ft amsl), 1988 North American Vertical Datum (NAVD88).

-- Indicates measurement not taken or not avaliable.

Due to well repairs, MW-4S, MW-9S, MW-9D, AW-2, PMW-2 and NRW-1 were resurveyed during the August 2014 site visit but after the gauging dated 8/4/2014. *Measuring Point Elevations* and *Actual Depth to Bottom* values have been updated and used starting with the gauging dated 2/23/2015.

TR - Indicates DNAPL product observed but not in a quantifiable amount.

AW-03 was not safely accessible on February 12, 2018 due to a nearby nest of ground bees.

Table 7
Groundwater Analytical Data

Annual Periodic Review Report
Madison Avenue Former MGP Site, Elmira, New York

Location ID:	NYSDEC TOGS 1.1.1 Std. or Guidance Values	Units	MW-2S												MW-4S											
			Historical	Baseline	Q2	Q4	Q6	Q8	Q10	Q12	Q14	Q16	Q18	Q20	Historical	Historical	Baseline	Q2	Q4	Q6	Q8	Q10	Q12	Q14	Q16	Q18	Q20
Date Collected:			04/21/04	04/04/13	08/27/13	02/06/14	08/06/14	02/26/15	08/27/15	02/11/16	08/25/16	02/23/17	08/24/17	02/15/18	04/22/04	08/23/11	04/04/13	08/27/13	02/06/14	08/06/14	02/26/15	08/27/15	02/11/16	08/25/16	02/23/17	08/24/17	02/15/18
BTEX																											
Benzene	1	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	5	µg/L	4 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	4 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Toluene	5	µg/L	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Xylenes (total)	5	ug/L	5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	5 U	NA	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Total BTEX	- -	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PAHs																											
Acenaphthene	20 (GV)	µg/L	10 U	4.8 U	4.8 U	4.8 U	10 UJ	4.8 U	4.7 U	4.9 U	4.9 U	5 U	5 U	5 U	10 U	**0.07**	4.9 U	4.8 U	4.8 UJ	9.6 U	5 U	4.8 U	5 U	4.8 U	4.5 U	25 U	5 U
Acenaphthylene	- -	µg/L	10 U	4.8 U	4.8 U	4.8 U	10 U	4.8 U	4.7 U	4.9 U	4.9 U	5 UJ	5 U	5 U	10 U	**0.1**	4.9 U	4.8 U	4.8 UJ	9.6 U	5 U	4.8 U	5 U	4.8 U	4.5 U	25 U	5 U
Anthracene	50 (GV)	µg/L	10 U	4.8 U	4.8 UB	4.8 U	10 U	4.8 U	4.7 U	4.9 U	4.9 U	5 UJ	5 U	5 U	10 U	5 U	4.9 U	4.8 U	4.8 U	9.6 U	5 U	4.8 U	5 U	4.8 U	4.5 U	25 U	5 U
Benzo(a)anthracene*	0.002 (GV)	µg/L	1 U	4.8 U	4.8 U	4.8 U	10 U	4.8 U	4.7 U	4.9 U	4.9 U	5 UJ	5 U	5 U	1 U	**0.06**	4.9 U	4.8 U	4.8 U	9.6 U	5 U	4.8 U	5 U	4.8 U	4.5 U	25 U	5 U
Benzo(a)pyrene*	0	µg/L	1 U	4.8 U	4.8 U	4.8 U	10 U	4.8 U	4.7 U	4.9 U	4.9 UJ	5 UJ	5 U	5 U	1 U	0.05 U	**1.2 J**	4.8 U	4.8 U	9.6 U	5 U	4.8 U	5 U	4.8 U	4.5 U	25 U	5 U
Benzo(b)fluoranthene*	0.002 (GV)	µg/L	1 U	4.8 U	4.8 U	4.8 U	10 U	4.8 U	4.7 U	4.9 U	4.9 U	5 UJ	5 U	5 U	1 U	**0.07**	**1.2 J**	4.8 U	4.8 U	9.6 U	**0.48 J**	4.8 U	5 U	4.8 U	4.5 U	25 U	5 U
Benzo(g,h,i)perylene	- -	µg/L	10 U	4.8 U	4.8 U	4.8 U	10 U	4.8 U	4.7 U	4.9 U	4.9 UJ	5 UJ	5 U	5 U	10 U	3 U	4.9 U	4.8 U	4.8 U	9.6 U	5 U	4.8 U	5 U	4.8 U	4.5 U	25 U	5 U
Benzo(k)fluoranthene*	0.002 (GV)	µg/L	1 UJ	4.8 U	4.8 U	4.8 U	10 U	4.8 U	4.7 U	4.9 U	4.9 U	5 U	5 U	5 U	1 UJ	0.05 U	**0.75 J**	4.8 U	4.8 U	9.6 U	5 U	4.8 U	5 U	4.8 U	4.5 U	25 U	5 U
Chrysene*	0.002 (GV)	µg/L	10 U	4.8 U	4.8 U	4.8 U	10 U	4.8 U	4.7 U	4.9 U	4.9 U	5 UJ	5 U	5 U	10 U	0.05 U	4.9 U	4.8 U	4.8 U	9.6 U	5 U	4.8 U	5 U	4.8 U	4.5 U	25 U	5 U
Dibenzo(a,h)anthracene	- -	µg/L	1 U	4.8 U	4.8 U	4.8 U	10 U	4.8 U	4.7 U	4.9 U	4.9 UJ	5 UJ	5 U	5 U	1 U	**0.03**	4.9 U	4.8 U	4.8 U	9.6 U	5 U	4.8 U	5 U	4.8 U	4.5 U	25 U	5 U
Fluoranthene	50 (GV)	µg/L	10 U	4.8 U	4.8 U	4.8 U	10 U	4.8 U	4.7 U	4.9 U	4.9 U	5 UJ	5 U	5 U	10 U	5 U	4.9 U	4.8 U	4.8 U	9.6 U	5 U	4.8 U	5 U	4.8 U	4.5 U	25 U	5 U
Fluorene	50 (GV)	µg/L	10 U	4.8 U	4.8 U	4.8 U	10 UJ	4.8 U	4.7 U	4.9 U	4.9 U	5 UJ	5 U	5 U	10 U	5 U	4.9 U	4.8 U	4.8 UJ	9.6 U	5 U	4.8 U	5 U	4.8 U	4.5 U	25 U	5 U
Indeno(1,2,3-cd)pyrene*	0.002 (GV)	µg/L	1 U	4.8 U	4.8 U	4.8 U	10 U	4.8 U	4.7 U	4.9 U	4.9 UJ	5 UJ	5 U	5 U	1 U	0.05 U	**1.7 J**	4.8 U	4.8 U	9.6 U	5 U	4.8 U	5 U	4.8 U	4.5 U	25 U	5 U
Naphthalene	10 (GV)	µg/L	10 U	4.8 U	4.8 U	4.8 UJ	10 U	4.8 U	4.7 U	4.9 U	4.9 U	5 U	5 U	5 U	10 U	5 U	4.9 U	4.8 U	4.8 UJ	9.6 U	5 U	4.8 U	5 U	4.8 U	4.5 U	25 U	5 U
Phenanthrene	50 (GV)	µg/L	10 U	4.8 U	4.8 U	4.8 U	10 U	4.8 U	4.7 UB	4.9 U	4.9 U	5 UJ	5 U	5 U	10 U	**0.09**	4.9 U	4.8 U	4.8 U	9.6 U	5 U	4.8 UB	5 U	4.8 U	4.5 U	25 U	5 U
Pyrene	50 (GV)	µg/L	10 U	4.8 U	4.8 U	4.8 U	10 U	4.8 U	4.7 U	4.9 U	4.9 U	5 U	5 U	5 U	10 U	5 U	**0.42 J**	4.8 U	4.8 U	9.6 U	5 U	4.8 U	5 U	4.8 U	4.5 U	25 U	5 U
PAH COCs	- -	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.13**	**4.85 J**	ND	ND	ND	**0.48 J**	ND	ND	ND	ND	ND	ND
Total PAHs	- -	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.42**	**5.27 J**	ND	ND	ND	**0.48 J**	ND	ND	ND	ND	ND	ND
Oxygen Demand																											
Biochemical Oxygen Demand	- -	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbonaceous Biochemical Oxygen Demand	- -	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

* Indicates analytes is COC per Record of Decision (Table 1)

1. D - Compound quantitated using a secondary dilution.
2. J - Indicates that the analyte was detected at a concentration less than the practical quantitation limit (PQL).
3. U - Indicates the constituent was not detected at the PQL. The value preceding the U indicates the PQL.
4. UB - Indicates the constituent was not detected at a concentration less than the PQL due to associated blank contamination.
5. ND - not detected
6. NA - not analyzed
7. Sample results detected above the Method Detection Limit (MDL) are presented in bold font.
8. Shading indicates that the result exceeds the NYSDEC TOGS 1.1.1 Water Quality Standard or Guidance Value.
9. "GV" indicates value is a guidance value (i.e., not a standard)

Table 7
Groundwater Analytical Data

Annual Periodic Review Report
Madison Avenue Former MGP Site, Elmira, New York

Location ID:	NYSDEC TOGS 1.1.1 Std. or Guidance Values	Units	MW-6S												MW-7											
			Historical	Baseline	Q2	Q4	Q6	Q8	Q10	Q12	Q14	Q16	Q18	Q20	Historical	Baseline	Q2	Q4	Q6	Q8	Q10	Q12	Q14	Q16	Q18	Q20
Date Collected:			04/22/04	04/04/13	08/27/13	02/06/14	08/07/14	02/26/15	08/27/15	02/11/16	08/25/16	02/23/17	08/24/17	02/15/18	04/22/04	04/04/13	08/27/13	02/06/14	08/06/14	02/26/15	08/27/15	02/11/16	08/25/16	02/23/17	08/24/17	02/15/18
BTEX																										
Benzene	1	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**0.45 J**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	5	µg/L	4 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	4 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Toluene	5	µg/L	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Xylenes (total)	5	ug/L	5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Total BTEX	- -	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.45 J**	ND	ND	ND	ND	ND	ND	ND	ND
PAHs																										
Acenaphthene	20 (GV)	µg/L	10 U	4.8 U	4.7 U	4.8 UJ	9.8 U	5 U	4.8 U	5 U	5.1 U	4.9 U	5 U	5 U	10 U	4.9 U	4.9 U	4.9 UJ	9.9 U	4.7 U	4.9 U	4.8 U	5 U	4.9 U	5 U	5 U
Acenaphthylene	- -	µg/L	10 U	4.8 U	4.7 U	4.8 UJ	9.8 U	5 U	4.8 U	5 U	5.1 U	4.9 U	5 U	5 U	**1.1 J**	4.9 U	4.9 U	4.9 UJ	9.9 U	4.7 U	4.9 U	4.8 U	5 U	4.9 U	5 U	5 U
Anthracene	50 (GV)	µg/L	10 U	4.8 U	4.7 U	4.8 U	9.8 U	5 U	4.8 U	5 U	5.1 U	4.9 U	5 U	5 U	10 U	4.9 U	4.9 U	4.9 U	9.9 U	4.7 U	4.9 U	4.8 U	5 U	**0.28 J**	5 U	5 U
Benzo(a)anthracene*	0.002 (GV)	µg/L	1 U	4.8 U	4.7 U	4.8 UJ	9.8 U	5 UJ	4.8 U	5 U	5.1 U	4.9 U	5 U	5 U	1 U	4.9 U	4.9 U	4.9 U	9.9 U	4.7 U	4.9 U	4.8 U	5 U	4.9 U	5 U	5 U
Benzo(a)pyrene*	0	µg/L	1 U	4.8 U	4.7 U	4.8 U	9.8 U	5 UJ	4.8 U	5 U	5.1 U	4.9 U	5 U	5 U	1 U	4.9 U	4.9 U	4.9 U	9.9 U	4.7 U	4.9 U	4.8 U	5 U	4.9 U	5 U	5 U
Benzo(b)fluoranthene*	0.002 (GV)	µg/L	1 U	4.8 U	4.7 U	4.8 U	9.8 U	5 UJ	4.8 U	5 U	5.1 U	4.9 U	5 U	5 U	1 U	4.9 U	4.9 U	4.9 UJ	9.9 U	4.7 U	4.9 U	4.8 U	5 U	4.9 U	5 U	5 U
Benzo(g,h,i)perylene	- -	µg/L	10 U	4.8 U	4.7 U	4.8 U	9.8 U	5 UJ	4.8 U	5 U	5.1 U	4.9 U	5 U	5 U	10 U	4.9 U	4.9 U	4.9 UJ	9.9 U	4.7 U	4.9 U	4.8 U	5 U	4.9 U	5 U	5 U
Benzo(k)fluoranthene*	0.002 (GV)	µg/L	1 UJ	4.8 U	4.7 U	4.8 U	9.8 U	5 UJ	4.8 U	5 U	5.1 U	4.9 U	5 U	5 U	1 UJ	4.9 U	4.9 U	4.9 U	9.9 U	4.7 U	4.9 U	4.8 U	5 U	4.9 U	5 U	5 U
Chrysene*	0.002 (GV)	µg/L	10 U	4.8 U	4.7 U	4.8 UJ	9.8 U	5 UJ	4.8 U	5 U	5.1 U	4.9 U	5 U	5 U	10 U	4.9 U	4.9 U	4.9 UJ	9.9 U	4.7 U	4.9 U	4.8 U	5 U	4.9 U	5 U	5 U
Dibenzo(a,h)anthracene	- -	µg/L	1 U	4.8 U	4.7 U	4.8 U	9.8 U	5 UJ	4.8 U	5 U	5.1 U	4.9 U	5 U	5 U	1 U	4.9 U	4.9 U	4.9 UJ	9.9 U	4.7 U	4.9 U	4.8 U	5 U	4.9 U	5 U	5 U
Fluoranthene	50 (GV)	µg/L	10 U	4.8 U	4.7 U	4.8 U	9.8 U	5 U	4.8 U	5 U	5.1 U	4.9 U	5 U	5 U	10 U	4.9 U	4.9 U	4.9 U	9.9 U	4.7 U	4.9 U	4.8 U	5 U	4.9 U	5 U	5 U
Fluorene	50 (GV)	µg/L	10 U	4.8 U	4.7 U	4.8 UJ	9.8 U	5 U	4.8 U	5 U	5.1 U	4.9 U	5 U	5 U	10 U	4.9 U	4.9 U	4.9 UJ	9.9 U	4.7 U	4.9 U	4.8 U	5 U	4.9 U	5 U	5 U
Indeno(1,2,3-cd)pyrene*	0.002 (GV)	µg/L	1 U	4.8 U	4.7 U	4.8 U	9.8 U	5 U	4.8 U	5 U	5.1 U	4.9 U	5 U	5 U	1 U	4.9 U	4.9 U	4.9 UJ	9.9 U	4.7 U	4.9 U	4.8 U	5 U	4.9 U	5 U	5 U
Naphthalene	10 (GV)	µg/L	10 U	4.8 U	4.7 U	4.8 UJ	9.8 U	5 U	4.8 U	5 U	5.1 U	4.9 U	5 U	5 U	**17**	4.9 U	4.9 U	4.9 UJ	9.9 U	4.7 U	4.9 U	4.8 U	5 U	4.9 U	5 U	5 U
Phenanthrene	50 (GV)	µg/L	10 U	4.8 U	**0.45 J**	4.8 U	9.8 U	5 U	4.8 UB	5 U	5.1 U	4.9 U	5 U	5 U	10 U	4.9 U	4.9 U	4.9 U	9.9 U	4.7 U	4.9 UB	4.8 U	5 U	4.9 U	5 U	5 U
Pyrene	50 (GV)	µg/L	10 U	4.8 U	4.7 U	4.8 UJ	9.8 U	5 U	4.8 U	5 U	5.1 U	4.9 U	5 U	5 U	10 U	4.9 U	4.9 U	4.9 U	9.9 U	4.7 U	4.9 U	4.8 U	5 U	4.9 U	5 U	5 U
PAH COCs	- -	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total PAHs	- -	µg/L	ND	ND	**0.45 J**	ND	ND	ND	ND	ND	ND	ND	ND	ND	**18.1 J**	ND	ND	ND	ND	ND	ND	ND	ND	**0.28 J**	ND	ND
Oxygen Demand																										
Biochemical Oxygen Demand	- -	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbonaceous Biochemical Oxygen Demand	- -	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

* Indicates analytes is COC per Record of Decision (Table 1)

1. D - Compound quantitated using a secondary dilution.
2. J - Indicates that the analyte was detected at a concentration less than the practical quantitation limit (PQL).
3. U - Indicates the constituent was not detected at the PQL. The value preceding the U indicates the PQL.
4. UB - Indicates the constituent was not detected at a concentration less than the PQL due to associated blank contamination.
5. ND - not detected
6. NA - not analyzed
7. Sample results detected above the Method Detection Limit (MDL) are presented in bold font.
8. Shading indicates that the result exceeds the NYSDEC TOGS 1.1.1 Water Quality Standard or Guidance Value.
9. "GV" indicates value is a guidance value (i.e., not a standard)

Table 7
Groundwater Analytical Data

Annual Periodic Review Report
Madison Avenue Former MGP Site, Elmira, New York

Location ID:	NYSDEC TOGS 1.1.1 Std. or Guidance Values	Units	MW-8S												MW-9S										
			Historical	Baseline	Q2	Q4	Q6	Q8	Q10	Q12	Q14	Q16	Q18	Q20	Historical	Baseline	Q2	Q4	Q6	Q8	Q10	Q12	Q14	Q16	Q18	Q20
Date Collected:			04/22/04	04/05/13	08/27/13	02/07/14	08/07/14	02/26/15	08/27/15	02/11/16	08/25/16	02/23/17	08/24/17	02/15/18	04/27/04	04/05/13	08/27/13	02/07/14	08/06/14	02/26/15	08/27/15	02/11/16	08/25/16	02/23/17	08/24/17	02/15/18
BTEX																										
Benzene	1	µg/L	**0.5 J**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	4 U	4 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	5	µg/L	**1.3 J**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	4 U	4 U	4 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Toluene	5	µg/L	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2 U	2 U	4 U	4 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Xylenes (total)	5	ug/L	**6**	2 U	2 U	2 U	2 U	2 U	2 U	2 U	4 U	4 U	8 U	8 U	5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Total BTEX	- -	µg/L	**7.8 J**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PAHs																										
Acenaphthene	20 (GV)	µg/L	**2 J**	4.8 U	4.8 U	**6 J**	**6.8 J**	**8**	**7.5**	**7.5**	**6.6**	**9.4**	**7.9 J**	**4.7 J**	11 U	5.1 U	4.8 U	4.9 U	9.6 U	4.9 U	4.7 U	4.8 U	4.7 U	4.9 U	5 U	5 U
Acenaphthylene	- -	µg/L	10 U	4.8 U	4.8 U	23 UJ	9.6 U	**0.46 J**	4.7 U	**0.5 J**	4.7 U	**0.36 J**	25 U	25 U	11 U	5.1 U	4.8 U	4.9 U	9.6 U	4.9 U	4.7 U	4.8 U	4.7 U	4.9 U	5 U	5 U
Anthracene	50 (GV)	µg/L	10 U	4.8 U	4.8 U	23 UJ	9.6 U	**0.97 J**	**0.61 J**	**1 J**	**0.56 J**	**0.69 J**	25 U	25 U	11 U	5.1 U	4.8 U	4.9 U	9.6 U	4.9 U	4.7 U	4.8 U	4.7 U	4.9 U	5 U	5 U
Benzo(a)anthracene*	0.002 (GV)	µg/L	1 U	4.8 U	4.8 U	23 UJ	9.6 U	**1.2 J**	4.7 U	**1.2 J**	**0.52 J**	**0.38 J**	25 U	25 U	1.1 U	5.1 U	4.8 U	4.9 U	9.6 U	4.9 U	4.7 U	4.8 U	4.7 U	4.9 U	5 U	5 U
Benzo(a)pyrene*	0	µg/L	1 U	4.8 U	4.8 UJ	23 UJ	9.6 U	**1.2 J**	4.7 U	**1.2 J**	4.7 U	**0.43 J**	25 U	25 U	1.1 U	5.1 U	4.8 U	4.9 U	9.6 U	4.9 U	4.7 U	4.8 U	4.7 U	4.9 U	5 U	5 U
Benzo(b)fluoranthene*	0.002 (GV)	µg/L	1 U	4.8 U	4.8 UJ	23 UJ	9.6 U	**1.4 J**	4.7 U	**1.2 J**	**0.43 J**	**0.39 J**	25 U	25 U	1.1 U	5.1 U	4.8 U	4.9 U	9.6 U	4.9 U	4.7 U	4.8 U	4.7 U	4.9 U	5 U	5 U
Benzo(g,h,i)perylene	- -	µg/L	10 U	4.8 U	4.8 UJ	23 UJ	9.6 U	**0.49 J**	4.7 U	**0.53 J**	4.7 U	4.6 U	25 U	25 U	11 U	5.1 U	4.8 U	4.9 U	9.6 U	4.9 U	4.7 U	4.8 U	4.7 U	4.9 U	5 U	5 U
Benzo(k)fluoranthene*	0.002 (GV)	µg/L	1 UJ	4.8 U	4.8 UJ	23 UJ	9.6 U	4.9 U	4.7 U	5.3 U	4.7 U	4.6 U	25 U	25 U	1.1 U	5.1 U	4.8 U	4.9 U	9.6 U	4.9 U	4.7 U	4.8 U	4.7 U	4.9 U	5 U	5 U
Chrysene*	0.002 (GV)	µg/L	10 U	4.8 U	4.8 UJ	23 UJ	9.6 U	**0.97 J**	4.7 U	**1 J**	**0.31 J**	4.6 U	25 U	25 U	11 U	5.1 U	4.8 U	4.9 U	9.6 U	4.9 U	4.7 U	4.8 U	4.7 U	4.9 U	5 U	5 U
Dibenzo(a,h)anthracene	- -	µg/L	1 U	4.8 U	4.8 UJ	23 UJ	9.6 U	4.9 U	4.7 U	5.3 U	4.7 U	4.6 U	25 U	25 U	1.1 U	5.1 U	4.8 U	4.9 U	9.6 U	4.9 U	4.7 U	4.8 U	4.7 U	4.9 U	5 U	5 U
Fluoranthene	50 (GV)	µg/L	**0.4 J**	4.8 U	4.8 U	23 UJ	9.6 U	**3.4 J**	**2 J**	**3.6 J**	**2.4 J**	**2.7 J**	**2.7 J**	25 U	11 U	5.1 U	4.8 U	4.9 U	9.6 U	4.9 U	4.7 U	4.8 U	4.7 U	4.9 U	5 U	5 U
Fluorene	50 (GV)	µg/L	**1.7 J**	4.8 U	4.8 U	**3.5 J**	**5.1 J**	**4.8 J**	**5.4**	**5.5**	**5**	**6**	**5.2 J**	**4.2 J**	11 U	5.1 U	4.8 U	4.9 U	9.6 U	4.9 U	4.7 U	4.8 U	4.7 U	4.9 U	5 U	5 U
Indeno(1,2,3-cd)pyrene*	0.002 (GV)	µg/L	1 U	4.8 U	4.8 UJ	23 UJ	9.6 U	**0.55 J**	4.7 U	**0.7 J**	4.7 U	4.6 U	25 U	25 U	1.1 U	5.1 U	4.8 U	4.9 U	9.6 U	4.9 U	4.7 U	4.8 U	4.7 U	4.9 U	5 U	5 U
Naphthalene	10 (GV)	µg/L	**14**	4.8 U	4.8 U	23 UJ	9.6 U	**2.5 J**	4.7 U	5.3 U	4.7 U	4.6 U	25 U	25 U	11 U	5.1 U	4.8 U	4.9 U	9.6 U	4.9 U	4.7 U	4.8 U	4.7 U	4.9 U	5 U	5 U
Phenanthrene	50 (GV)	µg/L	**0.2 J**	4.8 U	**0.44 J**	23 UJ	9.6 U	**0.57 J**	4.7 UB	5.3 U	4.7 U	4.6 U	25 U	25 U	11 U	5.1 U	4.8 U	4.9 U	9.6 U	4.9 U	4.7 UB	4.8 U	4.7 U	4.9 U	5 U	5 U
Pyrene	50 (GV)	µg/L	**0.3 J**	4.8 U	4.8 U	23 UJ	9.6 U	**2.6 J**	**1.3 J**	**2.8 J**	**1.7 J**	**1.9 J**	25 U	25 U	11 U	5.1 U	4.8 U	4.9 U	9.6 U	4.9 U	4.7 U	4.8 U	4.7 U	4.9 U	5 U	5 U
PAH COCs	- -	µg/L	ND	ND	ND	ND	ND	**5.32 J**	ND	**5.3**	**1.26 J**	**1.2 J**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total PAHs	- -	µg/L	**18.6 J**	ND	**0.44 J**	**9.5 J**	**11.9 J**	**29.1 J**	**16.8J**	**26.7 J**	**17.5 J**	**22.3 J**	**15.8 J**	**8.9 J**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Oxygen Demand																										
Biochemical Oxygen Demand	- -	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbonaceous Biochemical Oxygen Demand	- -	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

* Indicates analytes is COC per Record of Decision (Table 1)

1. D - Compound quantitated using a secondary dilution.
2. J - Indicates that the analyte was detected at a concentration less than the practical quantitation limit (PQL).
3. U - Indicates the constituent was not detected at the PQL. The value preceding the U indicates the PQL.
4. UB - Indicates the constituent was not detected at a concentration less than the PQL due to associated blank contamination.
5. ND - not detected
6. NA - not analyzed
7. Sample results detected above the Method Detection Limit (MDL) are presented in bold font.
8. Shading indicates that the result exceeds the NYSDEC TOGS 1.1.1 Water Quality Standard or Guidance Value.
9. "GV" indicates value is a guidance value (i.e., not a standard)

Table 7
Groundwater Analytical Data

Annual Periodic Review Report
Madison Avenue Former MGP Site, Elmira, New York

Location ID:	NYSDEC TOGS 1.1.1 Std. or Guidance Values	Units	MW-0402S												MW-0403S										
			Historical	Baseline	Q2	Q4	Q6	Q8	Q10	Q12	Q14	Q16	Q18	Q20	Historical	Baseline	Q2	Q4	Q6	Q8	Q10	Q12	Q14	Q16	Q18	Q20
Date Collected:			04/28/04	04/04/13	08/27/13	02/06/14	08/07/14	02/26/15	08/27/15	02/11/16	08/25/16	02/23/17	08/24/17	02/15/18	04/28/04	04/04/13	08/27/13	02/06/14	08/07/14	02/26/15	08/27/15	02/11/16	08/25/16	02/23/17	08/24/17	02/15/18
BTEX																										
Benzene	1	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	5	µg/L	4 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	4 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Toluene	5	µg/L	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Xylenes (total)	5	ug/L	5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Total BTEX	- -	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PAHs																										
Acenaphthene	20 (GV)	µg/L	10 U	4.8 U	4.6 U	4.7 U	9.9 U	4.9 U	4.9 U	5.3 U	4.7 U	4.6 U	5 U	5 U	10 U	4.8 U	4.7 U	4.6 U	10 U	4.7 U	4.7 U	5.2 U	4.9 U	4.6 U	5 U	5 U
Acenaphthylene	- -	µg/L	10 U	4.8 UJ	4.6 U	4.7 U	9.9 U	4.9 U	4.9 U	5.3 U	4.7 U	4.6 U	5 U	5 U	10 U	4.8 U	4.7 U	4.6 U	10 U	4.7 U	4.7 U	5.2 U	4.9 U	4.6 U	5 U	5 U
Anthracene	50 (GV)	µg/L	10 U	4.8 UJ	4.6 U	4.7 U	9.9 U	4.9 U	4.9 U	5.3 U	4.7 U	4.6 U	5 U	5 U	10 U	4.8 U	4.7 U	4.6 U	10 U	4.7 U	4.7 U	5.2 U	4.9 U	4.6 U	5 U	5 U
Benzo(a)anthracene*	0.002 (GV)	µg/L	1 U	4.8 UJ	4.6 U	4.7 UJ	9.9 U	4.9 U	4.9 U	5.3 U	4.7 U	4.6 U	5 U	5 U	1 U	4.8 U	4.7 U	4.6 U	10 U	4.7 U	4.7 U	5.2 U	4.9 U	4.6 U	5 U	5 U
Benzo(a)pyrene*	0	µg/L	1 U	4.8 U	4.6 U	4.7 UJ	9.9 U	4.9 U	4.9 U	5.3 U	4.7 U	4.6 U	5 U	5 U	1 U	4.8 U	4.7 U	4.6 U	10 U	4.7 U	4.7 U	5.2 U	4.9 U	4.6 U	5 U	5 U
Benzo(b)fluoranthene*	0.002 (GV)	µg/L	1 U	4.8 U	4.6 U	4.7 UJ	9.9 U	4.9 U	4.9 U	5.3 U	4.7 U	4.6 U	5 U	5 U	1 U	4.8 U	4.7 U	4.6 U	10 U	4.7 U	4.7 U	5.2 U	4.9 U	4.6 U	5 U	5 U
Benzo(g,h,i)perylene	- -	µg/L	10 U	4.8 UJ	4.6 U	4.7 UJ	9.9 U	4.9 U	4.9 U	5.3 U	4.7 U	4.6 U	5 U	5 U	10 U	4.8 U	4.7 U	4.6 U	10 U	4.7 U	4.7 U	5.2 UJ	4.9 U	4.6 U	5 U	5 U
Benzo(k)fluoranthene*	0.002 (GV)	µg/L	1 U	4.8 U	4.6 U	4.7 UJ	9.9 U	4.9 U	4.9 U	5.3 U	4.7 U	4.6 U	5 U	5 U	1 U	4.8 U	4.7 U	4.6 U	10 U	4.7 U	4.7 U	5.2 U	4.9 U	4.6 U	5 U	5 U
Chrysene*	0.002 (GV)	µg/L	10 U	4.8 UJ	4.6 U	4.7 UJ	9.9 U	4.9 U	4.9 U	5.3 U	4.7 U	4.6 U	5 U	5 U	10 U	4.8 U	4.7 U	4.6 U	10 U	4.7 U	4.7 U	5.2 U	4.9 U	4.6 U	5 U	5 U
Dibenzo(a,h)anthracene	- -	µg/L	1 U	4.8 U	4.6 U	4.7 UJ	9.9 U	4.9 U	4.9 U	5.3 U	4.7 U	4.6 U	5 U	5 U	1 U	4.8 U	4.7 U	4.6 U	10 U	4.7 U	4.7 U	5.2 U	4.9 U	4.6 U	5 U	5 U
Fluoranthene	50 (GV)	µg/L	10 U	4.8 U	4.6 U	4.7 U	9.9 U	4.9 U	4.9 U	5.3 U	4.7 U	4.6 U	5 U	5 U	10 U	4.8 U	4.7 U	4.6 U	10 U	4.7 U	4.7 U	5.2 U	4.9 U	4.6 U	5 U	5 U
Fluorene	50 (GV)	µg/L	10 U	4.8 UJ	4.6 U	4.7 U	9.9 U	4.9 U	4.9 U	5.3 U	4.7 U	4.6 U	5 U	5 U	10 U	4.8 U	4.7 U	4.6 U	10 U	4.7 U	4.7 U	5.2 U	4.9 U	4.6 U	5 U	5 U
Indeno(1,2,3-cd)pyrene*	0.002 (GV)	µg/L	1 U	4.8 UJ	4.6 U	4.7 UJ	9.9 U	4.9 U	4.9 U	5.3 U	4.7 U	4.6 U	5 U	5 U	1 U	4.8 U	4.7 U	4.6 U	10 U	4.7 U	4.7 U	5.2 UJ	4.9 U	4.6 U	5 U	5 U
Naphthalene	10 (GV)	µg/L	10 U	4.8 U	4.6 U	4.7 UJ	9.9 U	4.9 U	4.9 U	5.3 U	4.7 U	4.6 U	5 U	5 U	10 U	4.8 U	4.7 U	4.6 U	10 U	**0.94 J**	4.7 U	5.2 U	4.9 U	4.6 U	5 U	5 U
Phenanthrene	50 (GV)	µg/L	10 U	4.8 U	4.6 U	4.7 U	9.9 U	4.9 U	4.9 UB	5.3 U	4.7 U	4.6 U	5 U	5 U	10 U	4.8 U	4.7 U	4.6 U	10 U	4.7 U	4.7 UB	5.2 U	4.9 U	4.6 U	5 U	5 U
Pyrene	50 (GV)	µg/L	10 U	4.8 U	4.6 U	4.7 UJ	9.9 U	4.9 U	4.9 U	5.3 U	4.7 U	4.6 U	5 U	5 U	10 U	4.8 U	4.7 U	4.6 U	10 U	4.7 U	4.7 U	5.2 U	4.9 U	4.6 U	5 U	5 U
PAH COCs	- -	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total PAHs	- -	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.94 J**	ND	ND	ND	ND	ND	ND
Oxygen Demand																										
Biochemical Oxygen Demand	- -	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbonaceous Biochemical Oxygen Demand	- -	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

* Indicates analytes is COC per Record of Decision (Table 1)

1. D - Compound quantitated using a secondary dilution.
2. J - Indicates that the analyte was detected at a concentration less than the practical quantitation limit (PQL).
3. U - Indicates the constituent was not detected at the PQL. The value preceding the U indicates the PQL.
4. UB - Indicates the constituent was not detected at a concentration less than the PQL due to associated blank contamination.
5. ND - not detected
6. NA - not analyzed
7. Sample results detected above the Method Detection Limit (MDL) are presented in bold font.
8. Shading indicates that the result exceeds the NYSDEC TOGS 1.1.1 Water Quality Standard or Guidance Value.
9. "GV" indicates value is a guidance value (i.e., not a standard)

Table 7
Groundwater Analytical Data

Annual Periodic Review Report
Madison Avenue Former MGP Site, Elmira, New York

Location ID:	NYSDEC TOGS 1.1.1 Std. or Guidance Values	Units	MW-0404S												MW-0405S										
			Historical	Baseline	Q2	Q4	Q6	Q8	Q10	Q12	Q14	Q16	Q18	Q20	Historical	Baseline	Q2	Q4	Q6	Q8	Q10	Q12	Q14	Q16	Q18	Q20
Date Collected:			04/29/04	04/04/13	08/27/13	02/06/14	08/07/14	02/26/15	08/27/15	02/11/16	08/25/16	02/23/17	08/24/17	02/15/18	04/29/04	04/04/13	08/27/13	02/06/14	08/07/14	02/26/15	08/27/15	02/11/16	08/25/16	02/23/17	08/24/17	02/15/18
BTEX																										
Benzene	1	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	5	µg/L	4 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	4 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Toluene	5	µg/L	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Xylenes (total)	5	ug/L	5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	5 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Total BTEX	- -	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PAHs																										
Acenaphthene	20 (GV)	µg/L	10 U	4.7 U	**1.3 J**	4.7 U	9.8 U	4.7 U	4.9 U	4.9 U	4.9 U	4.6 U	5 U	5 U	10 U	4.7 U	4.7 U	4.6 U	9.7 U	5 U	4.9 U	5 U	4.9 U	4.5 U	5 U	5 U
Acenaphthylene	- -	µg/L	10 U	4.7 U	4.6 U	4.7 U	9.8 U	4.7 U	4.9 U	4.9 U	4.9 U	4.6 U	5 U	5 U	10 U	4.7 U	4.7 U	4.6 U	9.7 U	5 U	4.9 U	5 U	4.9 U	4.5 U	5 U	5 U
Anthracene	50 (GV)	µg/L	10 U	4.7 U	4.6 U	4.7 U	9.8 U	4.7 U	4.9 U	4.9 U	4.9 U	4.6 U	5 U	5 U	10 U	4.7 U	4.7 U	4.6 U	9.7 U	5 U	4.9 U	5 U	4.9 U	4.5 U	5 U	5 U
Benzo(a)anthracene*	0.002 (GV)	µg/L	1 U	4.7 U	4.6 U	4.7 U	9.8 U	4.7 U	4.9 U	4.9 U	4.9 U	4.6 U	5 U	5 U	1 U	4.7 U	4.7 U	4.6 U	9.7 U	5 U	4.9 U	5 U	4.9 U	4.5 U	5 U	5 U
Benzo(a)pyrene*	0	µg/L	1 U	4.7 U	4.6 U	4.7 U	9.8 U	4.7 U	4.9 U	4.9 U	4.9 U	4.6 U	5 U	5 U	1 U	4.7 U	4.7 U	4.6 U	9.7 U	5 U	4.9 U	5 U	4.9 U	4.5 U	5 U	5 U
Benzo(b)fluoranthene*	0.002 (GV)	µg/L	1 U	4.7 U	4.6 U	4.7 U	9.8 U	**0.33 J**	4.9 U	4.9 U	4.9 U	4.6 U	5 U	5 U	1 U	4.7 U	4.7 U	4.6 U	9.7 U	**0.35 J**	4.9 U	5 U	4.9 U	4.5 U	5 U	5 U
Benzo(g,h,i)perylene	- -	µg/L	10 U	4.7 U	4.6 U	4.7 U	9.8 U	4.7 U	4.9 U	4.9 U	4.9 U	4.6 U	5 U	5 U	10 U	4.7 U	4.7 U	4.6 U	9.7 U	5 U	4.9 U	5 U	4.9 U	4.5 U	5 U	5 U
Benzo(k)fluoranthene*	0.002 (GV)	µg/L	1 U	4.7 U	4.6 U	4.7 U	9.8 U	4.7 U	4.9 U	4.9 U	4.9 U	4.6 U	5 U	5 U	1 U	4.7 U	4.7 U	4.6 U	9.7 U	5 U	4.9 U	5 U	4.9 U	4.5 U	5 U	5 U
Chrysene*	0.002 (GV)	µg/L	10 U	4.7 U	4.6 U	4.7 U	9.8 U	4.7 U	4.9 U	4.9 U	4.9 U	4.6 U	5 U	5 U	10 U	4.7 U	4.7 U	4.6 U	9.7 U	5 U	4.9 U	5 U	4.9 U	4.5 U	5 U	5 U
Dibenzo(a,h)anthracene	- -	µg/L	1 U	4.7 U	4.6 U	4.7 U	9.8 U	4.7 U	4.9 U	4.9 U	4.9 U	4.6 U	5 U	5 U	1 U	4.7 U	4.7 U	4.6 U	9.7 U	5 U	4.9 U	5 U	4.9 U	4.5 U	5 U	5 U
Fluoranthene	50 (GV)	µg/L	10 U	4.7 U	**0.49 J**	4.7 U	9.8 U	4.7 U	4.9 U	4.9 U	4.9 U	4.6 U	5 U	5 U	10 U	4.7 U	4.7 U	4.6 U	9.7 U	5 U	4.9 U	5 U	4.9 U	4.5 U	5 U	5 U
Fluorene	50 (GV)	µg/L	10 U	4.7 U	**1.2 J**	4.7 U	9.8 U	4.7 U	4.9 U	4.9 U	4.9 U	4.6 U	5 U	5 U	10 U	4.7 U	4.7 U	4.6 U	9.7 U	5 U	4.9 U	5 U	4.9 U	4.5 U	5 U	5 U
Indeno(1,2,3-cd)pyrene*	0.002 (GV)	µg/L	1 U	4.7 U	4.6 U	4.7 U	9.8 U	4.7 U	4.9 U	4.9 U	4.9 U	4.6 U	5 U	5 U	1 U	4.7 U	4.7 U	4.6 U	9.7 U	5 U	4.9 U	5 U	4.9 U	4.5 U	5 U	5 U
Naphthalene	10 (GV)	µg/L	10 U	4.7 U	4.6 U	4.7 UJ	9.8 U	**3.2 J**	4.9 U	4.9 U	4.9 U	4.6 U	5 U	5 U	10 U	4.7 U	4.7 U	4.6 U	9.7 U	5 U	4.9 U	5 U	4.9 U	4.5 U	5 U	5 U
Phenanthrene	50 (GV)	µg/L	10 U	4.7 U	**0.45 J**	4.7 U	9.8 U	4.7 U	4.9 UB	4.9 U	4.9 U	4.6 U	5 U	5 U	10 U	4.7 U	**0.45 J**	4.6 U	9.7 U	5 U	4.9 UB	5 U	4.9 U	4.5 U	5 U	5 U
Pyrene	50 (GV)	µg/L	10 U	4.7 U	**0.38 J**	4.7 U	9.8 U	4.7 U	4.9 U	4.9 U	4.9 U	4.6 U	5 U	5 U	10 U	4.7 U	4.7 U	4.6 U	9.7 U	5 U	4.9 U	5 U	4.9 U	4.5 U	5 U	5 U
PAH COCs	- -	µg/L	ND	ND	ND	ND	ND	**0.33 J**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.35 J**	ND	ND	ND	ND	ND	ND
Total PAHs	- -	µg/L	ND	ND	**3.82 J**	ND	ND	**3.53 J**	ND	ND	ND	ND	ND	ND	ND	ND	**0.45 J**	ND	ND	**0.35 J**	ND	ND	ND	ND	ND	ND
Oxygen Demand																										
Biochemical Oxygen Demand	- -	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbonaceous Biochemical Oxygen Demand	- -	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

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Table 7
Groundwater Analytical Data

Annual Periodic Review Report
Madison Avenue Former MGP Site, Elmira, New York

Location ID:	NYSDEC TOGS 1.1.1 Std. or Guidance Values	Units	PMW-1				PMW-2					PMW-3				PMW-4				
			Baseline	Q2	Q6	Q8	Baseline	Q2	Q4	Q6	Q8	Baseline	Q2	Q6	Q8	Baseline	Q2	Q4	Q6	Q8
Date Collected:			04/03/13	08/28/13	08/06/14	02/24/15	04/03/13	08/28/13	02/05/14	08/06/14	02/24/15	04/03/13	08/30/13	08/06/14	02/24/15	04/03/13	08/28/13	02/05/14	08/06/14	02/25/15
BTEX																				
Benzene	1	µg/L	NA	NA	NA	NA	1 U	1 U	1 U	1 U	1 U	NA	NA	NA	NA	**230 D**	**81**	**150**	4 U	**81**
Ethylbenzene	5	µg/L	NA	NA	NA	NA	1 U	1 U	**0.92 J**	1 U	1 U	NA	NA	NA	NA	**110 D**	**36**	**55**	4 U	**29**
Toluene	5	µg/L	NA	NA	NA	NA	1 U	1 U	1 U	1 U	1 U	NA	NA	NA	NA	**9.3**	**2.9 J**	**5.4**	4 U	**4.9**
Xylenes (total)	5	ug/L	NA	NA	NA	NA	2 U	2 U	2 U	2 U	2 U	NA	NA	NA	NA	**80**	**21**	**33**	8 U	**21**
Total BTEX	- -	µg/L	NA	NA	NA	NA	ND	ND	**0.92 J**	ND	ND	NA	NA	NA	NA	**429**	**141 J**	**243**	ND	**136**
PAHs																				
Acenaphthene	20 (GV)	µg/L	NA	NA	NA	NA	4.8 U	NA	NA	NA	NA	NA	NA	NA	NA	**110 D**	NA	NA	NA	NA
Acenaphthylene	- -	µg/L	NA	NA	NA	NA	4.8 U	NA	NA	NA	NA	NA	NA	NA	NA	**6.2**	NA	NA	NA	NA
Anthracene	50 (GV)	µg/L	NA	NA	NA	NA	4.8 U	NA	NA	NA	NA	NA	NA	NA	NA	**8.8**	NA	NA	NA	NA
Benzo(a)anthracene*	0.002 (GV)	µg/L	NA	NA	NA	NA	4.8 U	NA	NA	NA	NA	NA	NA	NA	NA	**0.88 J**	NA	NA	NA	NA
Benzo(a)pyrene*	0	µg/L	NA	NA	NA	NA	4.8 U	NA	NA	NA	NA	NA	NA	NA	NA	**1.3 J**	NA	NA	NA	NA
Benzo(b)fluoranthene*	0.002 (GV)	µg/L	NA	NA	NA	NA	4.8 U	NA	NA	NA	NA	NA	NA	NA	NA	**1.3 J**	NA	NA	NA	NA
Benzo(g,h,i)perylene	- -	µg/L	NA	NA	NA	NA	4.8 U	NA	NA	NA	NA	NA	NA	NA	NA	**1 J**	NA	NA	NA	NA
Benzo(k)fluoranthene*	0.002 (GV)	µg/L	NA	NA	NA	NA	4.8 U	NA	NA	NA	NA	NA	NA	NA	NA	**0.71 J**	NA	NA	NA	NA
Chrysene*	0.002 (GV)	µg/L	NA	NA	NA	NA	4.8 U	NA	NA	NA	NA	NA	NA	NA	NA	**0.70 J**	NA	NA	NA	NA
Dibenzo(a,h)anthracene	- -	µg/L	NA	NA	NA	NA	4.8 U	NA	NA	NA	NA	NA	NA	NA	NA	4.7 U	NA	NA	NA	NA
Fluoranthene	50 (GV)	µg/L	NA	NA	NA	NA	4.8 U	NA	NA	NA	NA	NA	NA	NA	NA	**5.4**	NA	NA	NA	NA
Fluorene	50 (GV)	µg/L	NA	NA	NA	NA	4.8 U	NA	NA	NA	NA	NA	NA	NA	NA	**29**	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene*	0.002 (GV)	µg/L	NA	NA	NA	NA	4.8 U	NA	NA	NA	NA	NA	NA	NA	NA	4.7 U	NA	NA	NA	NA
Naphthalene	10 (GV)	µg/L	NA	NA	NA	NA	4.8 U	NA	NA	NA	NA	NA	NA	NA	NA	**800 D**	NA	NA	NA	NA
Phenanthrene	50 (GV)	µg/L	NA	NA	NA	NA	4.8 U	NA	NA	NA	NA	NA	NA	NA	NA	**33**	NA	NA	NA	NA
Pyrene	50 (GV)	µg/L	NA	NA	NA	NA	4.8 U	NA	NA	NA	NA	NA	NA	NA	NA	**9.5**	NA	NA	NA	NA
PAH COCs	- -	µg/L	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA	**4.89 J**	NA	NA	NA	NA
Total PAHs	- -	µg/L	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA	**1,008 J**	NA	NA	NA	NA
Oxygen Demand																				
Biochemical Oxygen Demand	- -	µg/L	**4,500**	**3,500**	2,000U	NA	NA	NA	NA	NA	NA	**99,000**	**13,000**	**6,900**	NA	NA	NA	NA	NA	NA
Carbonaceous Biochemical Oxygen Demand	- -	µg/L	**2,400**	NA	2,000U	NA	NA	NA	NA	NA	NA	**79,400**	NA	**10,600**	NA	NA	NA	NA	NA	NA

Notes:

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Table 7
Groundwater Analytical Data

Annual Periodic Review Report
Madison Avenue Former MGP Site, Elmira, New York

Location ID:	NYSDEC TOGS 1.1.1 Std. or Guidance Values	Units	PMW-5				PMW-6				
			Baseline	Q2	Q6	Q8	Baseline	Q2	Q4	Q6	Q8
Date Collected:			04/03/13	08/28/13	08/06/14	02/24/15	04/03/13	08/28/13	02/05/14	08/06/14	02/25/15
BTEX											
Benzene	1	µg/L	NA	NA	NA	NA	**3.4**	**25**	**89**	**90**	**1,200 D**
Ethylbenzene	5	µg/L	NA	NA	NA	NA	**1.4**	**6.4**	**42**	**57**	**290 D**
Toluene	5	µg/L	NA	NA	NA	NA	1 U	**0.54 J**	**1**	**3.4**	**10**
Xylenes (total)	5	ug/L	NA	NA	NA	NA	**1.1 J**	**8.9**	**30**	**95**	**290 D**
Total BTEX	- -	µg/L	NA	NA	NA	NA	**5.9 J**	**40.8 J**	**162**	**245**	**1,790 D**
PAHs											
Acenaphthene	20 (GV)	µg/L	NA	NA	NA	NA	**7.2**	NA	NA	NA	NA
Acenaphthylene	- -	µg/L	NA	NA	NA	NA	4.8 U	NA	NA	NA	NA
Anthracene	50 (GV)	µg/L	NA	NA	NA	NA	4.8 U	NA	NA	NA	NA
Benzo(a)anthracene*	0.002 (GV)	µg/L	NA	NA	NA	NA	4.8 U	NA	NA	NA	NA
Benzo(a)pyrene*	0	µg/L	NA	NA	NA	NA	4.8 U	NA	NA	NA	NA
Benzo(b)fluoranthene*	0.002 (GV)	µg/L	NA	NA	NA	NA	4.8 U	NA	NA	NA	NA
Benzo(g,h,i)perylene	- -	µg/L	NA	NA	NA	NA	4.8 U	NA	NA	NA	NA
Benzo(k)fluoranthene*	0.002 (GV)	µg/L	NA	NA	NA	NA	4.8 U	NA	NA	NA	NA
Chrysene*	0.002 (GV)	µg/L	NA	NA	NA	NA	4.8 U	NA	NA	NA	NA
Dibenzo(a,h)anthracene	- -	µg/L	NA	NA	NA	NA	4.8 U	NA	NA	NA	NA
Fluoranthene	50 (GV)	µg/L	NA	NA	NA	NA	4.8 U	NA	NA	NA	NA
Fluorene	50 (GV)	µg/L	NA	NA	NA	NA	4.8 U	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene*	0.002 (GV)	µg/L	NA	NA	NA	NA	4.8 U	NA	NA	NA	NA
Naphthalene	10 (GV)	µg/L	NA	NA	NA	NA	**7.3**	NA	NA	NA	NA
Phenanthrene	50 (GV)	µg/L	NA	NA	NA	NA	4.8 U	NA	NA	NA	NA
Pyrene	50 (GV)	µg/L	NA	NA	NA	NA	4.8 U	NA	NA	NA	NA
PAH COCs	- -	µg/L	NA	NA	NA	NA	ND	NA	NA	NA	NA
Total PAHs	- -	µg/L	NA	NA	NA	NA	**14.5**	NA	NA	NA	NA
Oxygen Demand											
Biochemical Oxygen Demand	- -	µg/L	2,000 U	2,000 U	2,000U	NA	NA	NA	NA	NA	NA
Carbonaceous Biochemical Oxygen Demand	- -	µg/L	2,000 U	NA	2,000U	NA	NA	NA	NA	NA	NA

Notes:

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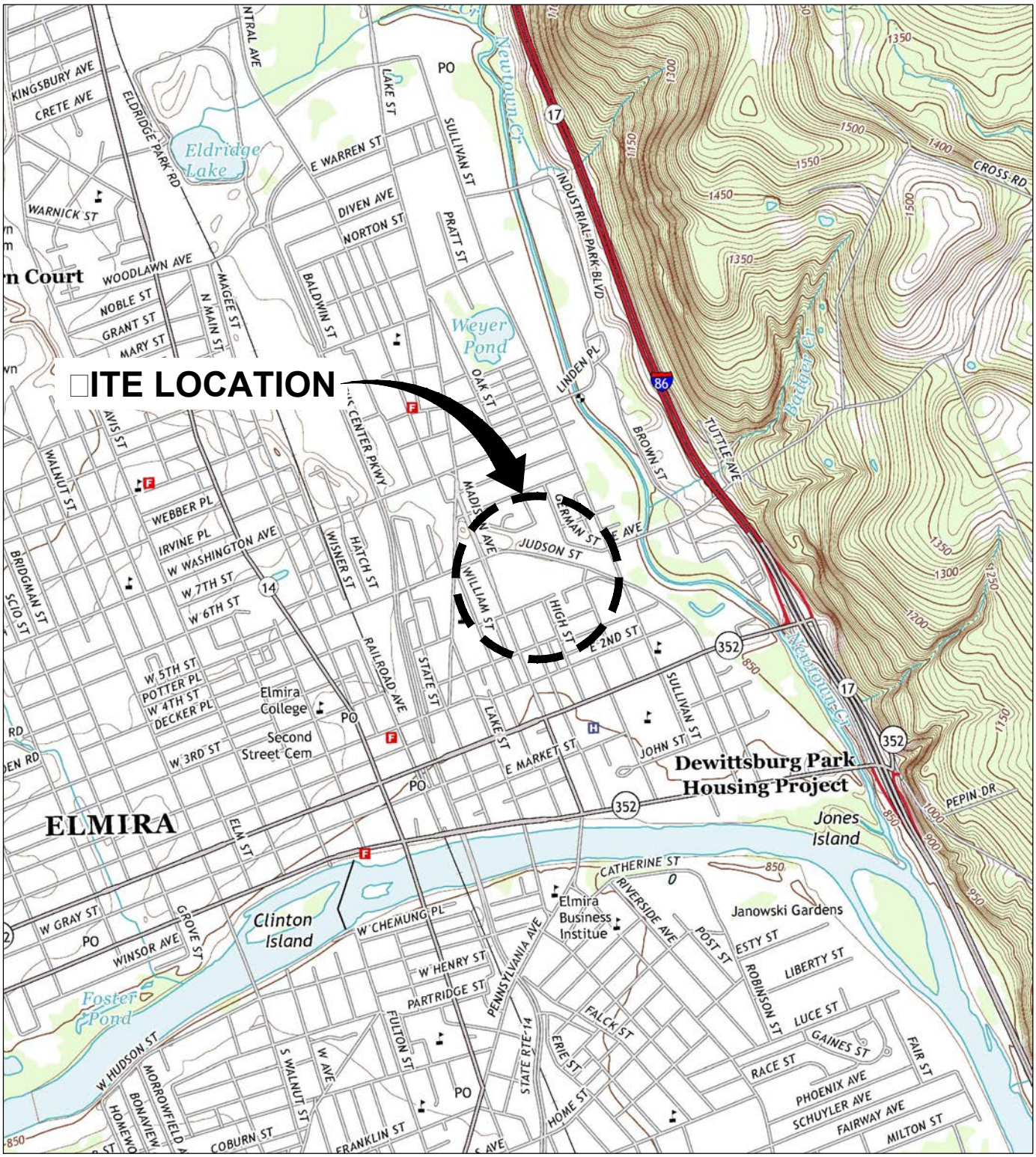
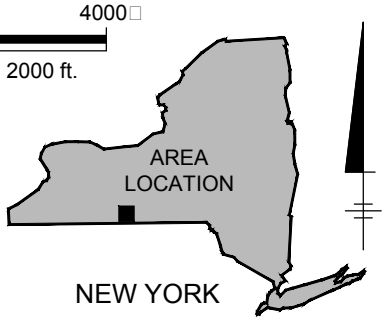
FIGURES



REFERENCE: BASE MAP USGS 7.5. MIN. TOPO. UAD., ELMIRA, NY-PA., 2013.

0 2000 4000

Approximate Scale: 1 in. = 2000 ft.



NYSEG
MADISON AVENUE FORMER MGP SITE
ANNUAL PERIODIC REVIEW REPORT

SITE LOCATION MAP

ARCADIS Design & Consultancy for natural and built assets

FIGURE
1

CITY: SYRACUSE NY DIV/GROUP: ENVCAD DB: E. KRAHMER, R. ALLEN LD:(Opt) PIC: K. WHITE PM: B. AHRENS TM: B. AHRENS TR: N. BEYRLE LYR:(Opt)ON=*;OFF=*REF*
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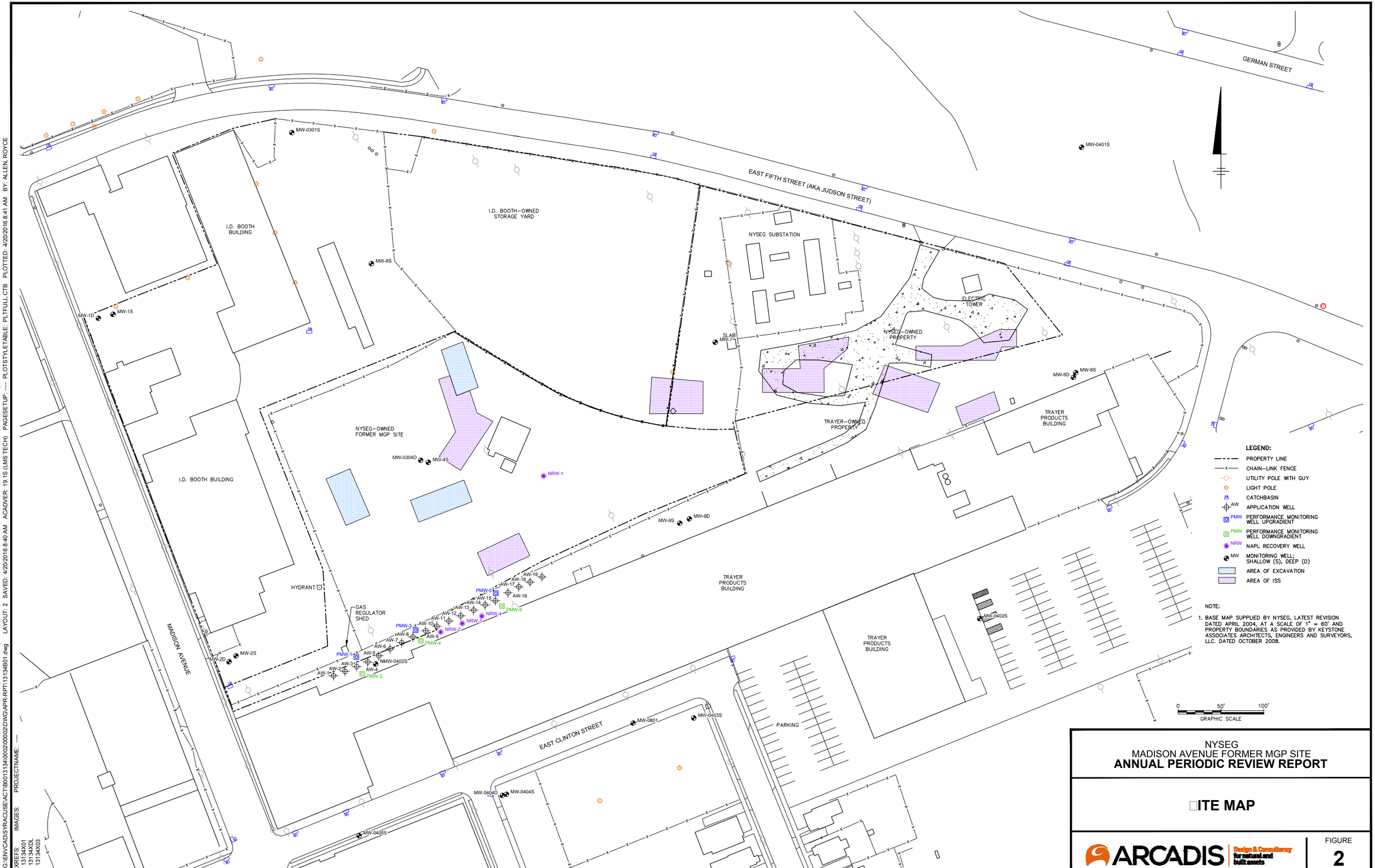

LEGEND:

- PROPERTY LINE
- CHAIN–LINK FENCE
- UTILITY POLE WITH GUY
- LIGHT POLE
- CATCHBASIN
- AW — APPLICATION WELL
- PMW — PERFORMANCE MONITORING WELL UPGRADIENT
- PMW — PERFORMANCE MONITORING WELL DOWNGRADIENT
- NRW — NAPL RECOVERY WELL
- MW — MONITORING WELL: SHALLOW (S), DEEP (D)
- AREA OF EXCAVATION
- AREA OF ISS

NOTE:

1. BASE MAP SUPPLIED BY NYSEG, LATEST REVISION DATED APRIL 2004, AT A SCALE OF 1" = 60' AND PROPERTY BOUNDARIES AS PROVIDED BY KEYSTONE ASSOCIATES ARCHITECTS, ENGINEERS AND SURVEYORS, LLC. DATED OCTOBER 2008.

0 50' 100'
GRAPHIC SCALE

NYSEG
MADISON AVENUE FORMER MGP SITE
ANNUAL PERIODIC REVIEW REPORT

□ITE MAP

ARCADIS Design & Consultancy for natural and built assets

FIGURE
2

GERMAN STREET

EAST FIFTH STREET (AKA JUDSON STREET)

MADISON AVENUE

EAST CLINTON STREET

I.D. BOOTH BUILDING

I.D. BOOTH—OWNED STORAGE YARD

NYSEG SUBSTATION

NYSEG—OWNED FORMER MGP SITE

NYSEG—OWNED PROPERTY

TRAYER—OWNED PROPERTY

TRAYER PRODUCTS BUILDING

ELECTRIC TOWER

SLAB

HYDRANT

GAS REGULATOR SHED

PARKING

MW-0301S

MW-0401S

MW-6S (844.44)

MW-1D

MW-1S (844.32)

MW-2D

MW-2S (843.83)

MW-7 (843.64)

MW-8D

MW-8S (843.58)

MW-0304D

MW-4S (843.64)

NRW-1

MW-9S (842.85)

MW-9D

MW-0402S (842.14)

MW-0801

MW-0403S (839.74)

MW-0404D

MW-0404S (839.80)

MW-0405S (839.47)

PMW-1 PMW-2 PMW-3 PMW-4 PMW-5 PMW-6

NRW-2 NRW-3 NRW-4

AW-1 AW-2 AW-3 AW-4 AW-5 AW-6 AW-7 AW-8 AW-9 AW-10 AW-11 AW-12 AW-13 AW-14 AW-15 AW-16 AW-17 AW-18 AW-19

844 843 842 841 84

LEGEND:

- PROPERTY LINE
- CHAIN—LINK FENCE
- UTILITY POLE WITH GUY
- LIGHT POLE
- CATCHBASIN
- AW — APPLICATION WELL
- PMW — PERFORMANCE MONITORING WELL UPGRADIENT
- PMW — PERFORMANCE MONITORING WELL DOWNGRADIENT
- NRW — NAPL RECOVERY WELL
- MW — MONITORING WELL; SHALLOW (S), DEEP (D)
- AREA OF EXCAVATION
- AREA OF ISS
- GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED)
- (89.79) GROUNDWATER ELEVATION (FEET ABOVE MEAN SEA LEVEL)
- GROUNDWATER FLOW DIRECTION

NOTE:

1. BASE MAP SUPPLIED BY NYSEG, LATEST REVISION DATED APRIL 2004, AT A SCALE OF 1" = 60' AND PROPERTY BOUNDARIES AS PROVIDED BY KEYSTONE ASSOCIATES ARCHITECTS, ENGINEERS AND SURVEYORS, LLC. DATED OCTOBER 2008.

0 50' 100'
GRAPHIC SCALE

NYSEG
MADISON AVENUE FORMER MGP SITE
ANNUAL PERIODIC REVIEW REPORT

GROUNDWATER ELEVATION CONTOUR□ AUGU□T 21□2□17

ARCADIS Design & Consultancy for natural and built assets

FIGURE
3

CITY: SYRACUSE DIV/GROUP: ENV/IM-DV DB: S. KOWALCZYK, E. KRAHMER, R. ALLEN PIC: K. WHITE PM: B. AHRENS TM: B. AHRENS TR: N. BEYRLE LYR: ON=*;OFF=*REF*
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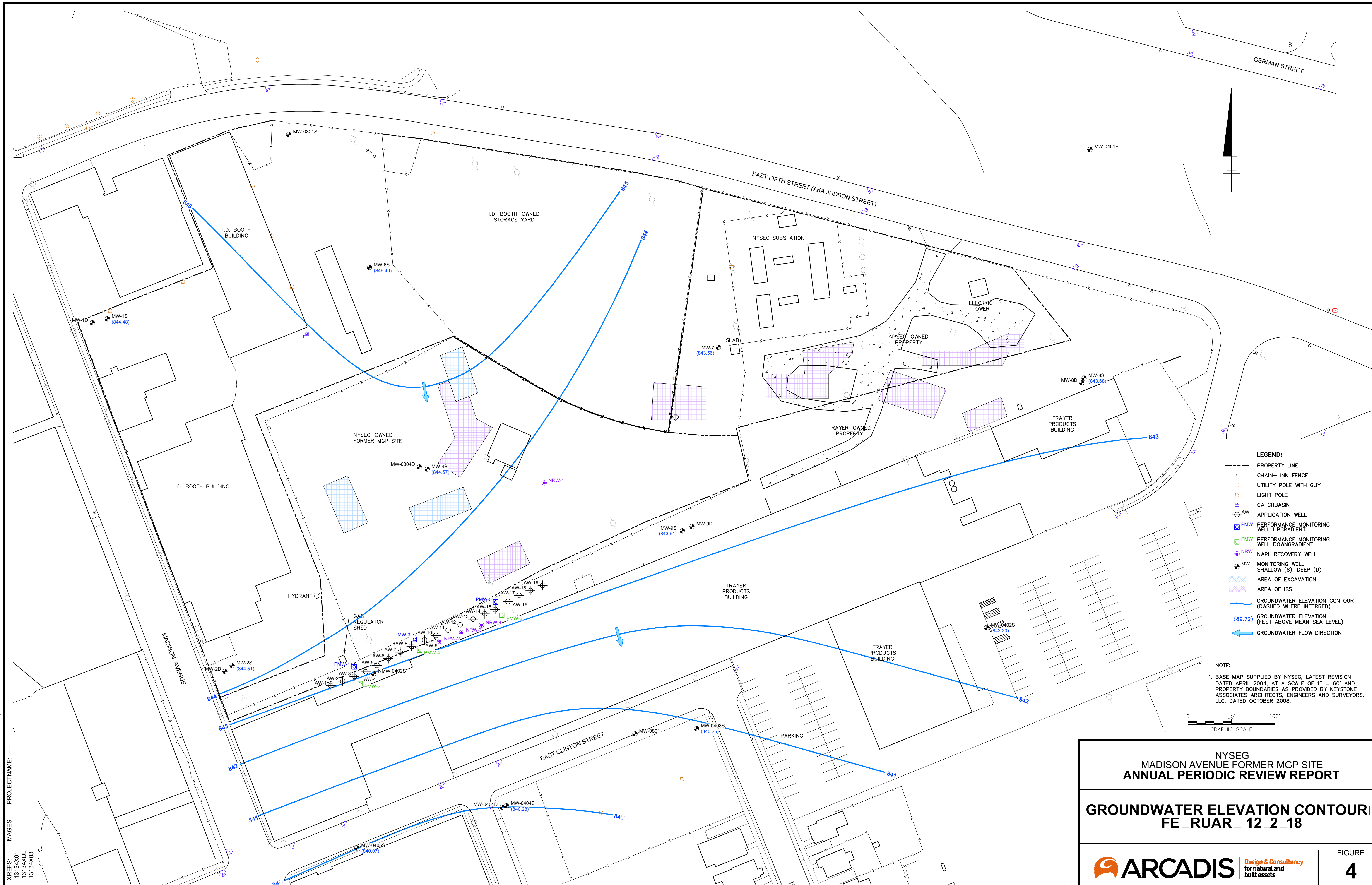


NYSEG
MADISON AVENUE FORMER MGP SITE
ANNUAL PERIODIC REVIEW REPORT

GROUNDWATER ELEVATION CONTOUR□ FE□RUAR□ 12□2□18

ARCADIS Design & Consultancy for natural and built assets

FIGURE
4

MW-6S	
Date	Total BTEX
4/22/04	BDL
4/4/13	BDL
8/27/13	BDL
2/6/14	BDL
8/7/14	BDL
2/26/15	BDL
8/27/15	BDL
2/11/16	BDL
8/25/16	BDL
2/23/17	BDL
8/24/17	BDL
2/15/18	BDL

MW-7	
Date	Total BTEX
4/22/04	BDL
4/4/13	BDL
8/27/13	BDL
2/6/14	0.45 J
8/6/14	BDL
2/26/15	BDL
8/27/15	BDL
2/11/16	BDL
8/25/16	BDL
2/23/17	BDL
8/24/17	BDL
2/15/18	BDL

MW-8S	
Date	Total BTEX
4/22/04	7.8 J
4/5/13	BDL
8/27/13	BDL
2/7/14	BDL
8/7/14	BDL
2/26/15	BDL
8/27/15	BDL
2/11/16	BDL
8/25/16	BDL
2/23/17	BDL
8/24/17	BDL
2/15/18	BDL

MW-4S	
Date	Total BTEX
4/22/04	BDL
8/23/11	BDL
4/4/13	BDL
8/27/13	BDL
2/6/14	BDL
8/6/14	BDL
2/26/15	BDL
8/27/15	BDL
2/11/16	BDL
8/25/16	BDL
2/23/17	BDL
8/24/17	BDL
2/15/18	BDL

MW-2S	
Date	Total BTEX
4/21/04	BDL
4/4/13	BDL
8/27/13	BDL
2/6/14	BDL
8/6/14	BDL
2/26/15	BDL
8/27/15	BDL
2/11/16	BDL
8/25/16	BDL
2/23/17	BDL
8/24/17	BDL
2/15/18	BDL

MW-9S	
Date	Total BTEX
4/27/04	BDL
4/5/13	BDL
8/27/13	BDL
2/7/14	BDL
8/6/14	BDL
2/26/15	BDL
8/27/15	BDL
2/11/16	BDL
8/25/16	BDL
2/23/17	BDL
8/24/17	BDL
2/15/18	BDL

MW-0402S	
Date	Total BTEX
4/28/04	BDL
4/4/13	BDL
8/27/13	BDL
2/6/14	BDL
8/7/14	BDL
2/26/15	BDL
8/27/15	BDL
2/11/16	BDL
8/25/16	BDL
2/23/17	BDL
8/24/17	BDL
2/15/18	BDL

MW-0405S	
Date	Total BTEX
4/29/04	BDL
4/4/13	BDL
8/27/13	BDL
2/6/14	BDL
8/7/14	BDL
2/26/15	BDL
8/27/15	BDL
2/11/16	BDL
8/25/16	BDL
2/23/17	BDL
8/24/17	BDL
2/15/18	BDL

MW-0404S	
Date	Total BTEX
4/29/04	BDL
4/4/13	BDL
8/27/13	BDL
2/6/14	BDL
8/7/14	BDL
2/26/15	BDL
8/27/15	BDL
2/11/16	BDL
8/25/16	BDL
2/23/17	BDL
8/24/17	BDL
2/15/18	BDL

MW-0403S	
Date	Total BTEX
4/28/04	BDL
4/4/13	BDL
8/27/13	BDL
2/6/14	BDL
8/7/14	BDL
2/26/15	BDL
8/27/15	BDL
2/11/16	BDL
8/25/16	BDL
2/23/17	BDL
8/24/17	BDL
2/15/18	BDL

GERMAN STREET
EAST FIFTH STREET (AKA JUDSON STREET)
CLINTON STREET
MADISON AVENUE
I.D. BOOTH BUILDING
I.D. BOOTH–OWNED STORAGE YARD
NYSEG SUBSTATION
ELECTRIC TOWER
NYSEG–OWNED PROPERTY
NYSEG–OWNED FORMER MGP SITE
TRAYER–OWNED PROPERTY
TRAYER PRODUCTS BUILDING
PARKING
GAS REGULATOR SHED
HYDRANT
SLAB
MW-0301S
MW-0401S
MW-1D
MW-1S
MW-2D
MW-2S
MW-4S
MW-6S
MW-7
MW-8D
MW-8S
MW-9D
MW-9S
MW-0304D
MW-0801
MW-0402S
MW-0403S
MW-0404D
MW-0404S
MW-0405S
NRW-1
NRW-2
NRW-3
NRW-4
PMW-1
PMW-2
PMW-3
PMW-4
PMW-5
PMW-6
NMW-0402S
AW-1 AW-2 AW-3 AW-4 AW-5 AW-6 AW-7 AW-8 AW-9 AW-10 AW-11 AW-12 AW-13 AW-14 AW-15 AW-16 AW-17 AW-18 AW-19

LEGEND:

- PROPERTY LINE
- CHAIN–LINK FENCE
- UTILITY POLE WITH GUY
- LIGHT POLE
- CATCHBASIN
- AW APPLICATION WELL
- PMW PERFORMANCE MONITORING WELL UPGRADIENT
- PMW PERFORMANCE MONITORING WELL DOWNGRADIENT
- NRW NAPL RECOVERY WELL
- MW MONITORING WELL; SHALLOW (S), DEEP (D)
- AREA OF EXCAVATION
- AREA OF ISS

NOTES:

1. ALL RESULTS ARE IN MICROGRAMS PER LITER (µg/L).
2. BTEX = BENZENE, TOLUENE, ETHYLBENZENE XYLENE.
3. BDL = BELOW DETECTION LIMITS.
4. J = QUALIFIER INDICATES AN ESTIMATED VALUE.
5. BASE MAP SUPPLIED BY NYSEG, LATEST REVISION DATED APRIL 2004, AT A SCALE OF 1" = 60' AND PROPERTY BOUNDARIES AS PROVIDED BY KEYSTONE ASSOCIATES ARCHITECTS, ENGINEERS AND SURVEYORS, LLC. DATED OCTOBER 2008.

0 50' 100'
GRAPHIC SCALE

NYSEG
MADISON AVENUE FORMER MGP SITE
ANNUAL PERIODIC REVIEW REPORT

TOTAL □TE□ CONCENTRATION□ IN GROUNDWATER

ARCADIS Design & Consultancy for natural and built assets

FIGURE
5

MW-6S												
Date	4/22/2004	4/4/2013	8/27/2013	2/6/2014	8/7/2014	2/26/2015	8/27/2015	2/11/2016	8/25/2016	2/23/2017	8/24/2017	2/15/2018
Benzo(a)anthracene	1 U	4.8 U	4.7 U	4.8 UJ	9.8 U	5 UJ	4.8 U	5 U	5.1 U	4.9 U	5 U	5 U
Benzo(a)pyrene	1 U	4.8 U	4.7 U	4.8 U	9.8 U	5 UJ	4.8 U	5 U	5.1 U	4.9 U	5 U	5 U
Benzo(b)fluoranthene	1 U	4.8 U	4.7 U	4.8 U	9.8 U	5 UJ	4.8 U	5 U	5.1 U	4.9 U	5 U	5 U
Benzo(k)fluoranthene	1 UJ	4.8 U	4.7 U	4.8 U	9.8 U	5 UJ	4.8 U	5 U	5.1 U	4.9 U	5 U	5 U
Chrysene	10 U	4.8 U	4.7 U	4.8 UJ	9.8 U	5 UJ	4.8 U	5 U	5.1 U	4.9 U	5 U	5 U
Indeno(1,2,3-cd)pyrene	1 U	4.8 U	4.7 U	4.8 U	9.8 U	5 UJ	4.8 U	5 U	5.1 U	4.9 U	5 U	5 U
Total PAHs	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

MW-7												
Date	4/22/2004	4/4/2013	8/27/2013	2/6/2014	8/6/2014	2/26/2015	8/27/2015	2/11/2016	8/25/2016	2/23/2017	8/24/2017	2/15/2018
Benzo(a)anthracene	1 U	4.9 U	4.9 U	4.9 U	9.9 U	4.7 U	4.9 U	4.8 U	5 U	4.9 U	5 U	5 U
Benzo(a)pyrene	1 U	4.9 U	4.9 U	4.9 U	9.9 U	4.7 U	4.9 U	4.8 U	5 U	4.9 U	5 U	5 U
Benzo(b)fluoranthene	1 U	4.9 U	4.9 U	4.9 UJ	9.9 U	4.7 U	4.9 U	4.8 U	5 U	4.9 U	5 U	5 U
Benzo(k)fluoranthene	1 UJ	4.9 U	4.9 U	4.9 U	9.9 U	4.7 U	4.9 U	4.8 U	5 U	4.9 U	5 U	5 U
Chrysene	10 U	4.9 U	4.9 U	4.9 UJ	9.9 U	4.7 U	4.9 U	4.8 U	5 U	4.9 U	5 U	5 U
Indeno(1,2,3-cd)pyrene	1 U	4.9 U	4.9 U	4.9 UJ	9.9 U	4.7 U	4.9 U	4.8 U	5 U	4.9 U	5 U	5 U
Total PAHs	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

MW-8S												
Date	4/22/2004	4/5/2013	8/27/2013	2/7/2014	8/7/2014	2/26/2015	8/27/2015	2/11/2016	8/25/2016	2/23/2017	8/24/2017	2/15/2018
Benzo(a)anthracene	1 U	4.8 U	4.8 U	23 UJ	9.6 U	**1.2 J**	4.7 U	**1.2 J**	**0.52 J**	**0.38 J**	25 U	25 U
Benzo(a)pyrene	1 U	4.8 U	4.8 UJ	23 UJ	9.6 U	**1.2 J**	4.7 U	**1.2 J**	4.7 U	**0.43 J**	25 U	25 U
Benzo(b)fluoranthene	1 U	4.8 U	4.8 UJ	23 UJ	9.6 U	**1.4 J**	4.7 U	**1.2 J**	**0.43 J**	**0.39 J**	25 U	25 U
Benzo(k)fluoranthene	1 UJ	4.8 U	4.8 UJ	23 UJ	9.6 U	4.9 U	4.7 U	5.3 U	4.7 U	4.6 U	25 U	25 U
Chrysene	10 U	4.8 U	4.8 UJ	23 UJ	9.6 U	**0.97 J**	4.7 U	**1 J**	**0.31 J**	4.6 U	25 U	25 U
Indeno(1,2,3-cd)pyrene	1 U	4.8 U	4.8 UJ	23 UJ	9.6 U	**0.55 J**	4.7 U	**0.7 J**	4.7 U	4.6 U	25 U	25 U
Total PAHs	BDL	BDL	BDL	BDL	BDL	**5.32**	BDL	**5.3**	**1.26 J**	**1.2 J**	BDL	BDL

MW-4S												
Date	4/22/2004	8/23/2011	4/4/2013	8/27/2013	2/6/2014	8/6/2014	2/26/2015	8/27/2015	2/11/2016	8/25/2016	2/23/2017	8/24/2017	2/15/2018
Benzo(a)anthracene	1 U	**0.06**	4.9 U	4.8 U	4.8 U	9.6 U	5 U	4.8 U	5 U	4.8 U	4.5 U	25 U	5 U
Benzo(a)pyrene	1 U	0.05 U	**1.2 J**	4.8 U	4.8 U	9.6 U	5 U	4.8 U	5 U	4.8 U	4.5 U	25 U	5 U
Benzo(b)fluoranthene	1 U	**0.07**	**1.2 J**	4.8 U	4.8 U	9.6 U	**0.48 J**	4.8 U	5 U	4.8 U	4.5 U	25 U	5 U
Benzo(k)fluoranthene	1 UJ	0.05 U	**0.75 J**	4.8 U	4.8 U	9.6 U	5 U	4.8 U	5 U	4.8 U	4.5 U	25 U	5 U
Chrysene	10 U	0.05 U	4.9 U	4.8 U	4.8 U	9.6 U	5 U	4.8 U	5 U	4.8 U	4.5 U	25 U	5 U
Indeno(1,2,3-cd)pyrene	1 U	0.05 U	**1.7 J**	4.8 U	4.8 U	9.6 U	5 U	4.8 U	5 U	4.8 U	4.5 U	25 U	5 U
Total PAHs	BDL	**0.13**	**4.85 J**	BDL	BDL	BDL	**0.48 J**	BDL	BDL	BDL	BDL	BDL	BDL

MW-9S												
Date	4/27/2004	4/5/2013	8/27/2013	2/7/2014	8/6/2014	2/26/2015	8/27/2015	2/11/2016	8/25/2016	2/23/2017	8/24/2017	2/15/2018
Benzo(a)anthracene	1.1 U	5.1 U	4.8 U	4.9 U	9.6 U	4.9 U	4.7 U	4.8 U	4.7 U	4.9 U	5 U	5 U
Benzo(a)pyrene	1.1 U	5.1 U	4.8 U	4.9 U	9.6 U	4.9 U	4.7 U	4.8 U	4.7 U	4.9 U	5 U	5 U
Benzo(b)fluoranthene	1.1 U	5.1 U	4.8 U	4.9 U	9.6 U	4.9 U	4.7 U	4.8 U	4.7 U	4.9 U	5 U	5 U
Benzo(k)fluoranthene	1.1 U	5.1 U	4.8 U	4.9 U	9.6 U	4.9 U	4.7 U	4.8 U	4.7 U	4.9 U	5 U	5 U
Chrysene	11 U	5.1 U	4.8 U	4.9 U	9.6 U	4.9 U	4.7 U	4.8 U	4.7 U	4.9 U	5 U	5 U
Indeno(1,2,3-cd)pyrene	1.1 U	5.1 U	4.8 U	4.9 U	9.6 U	4.9 U	4.7 U	4.8 U	4.7 U	4.9 U	5 U	5 U
Total PAHs	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

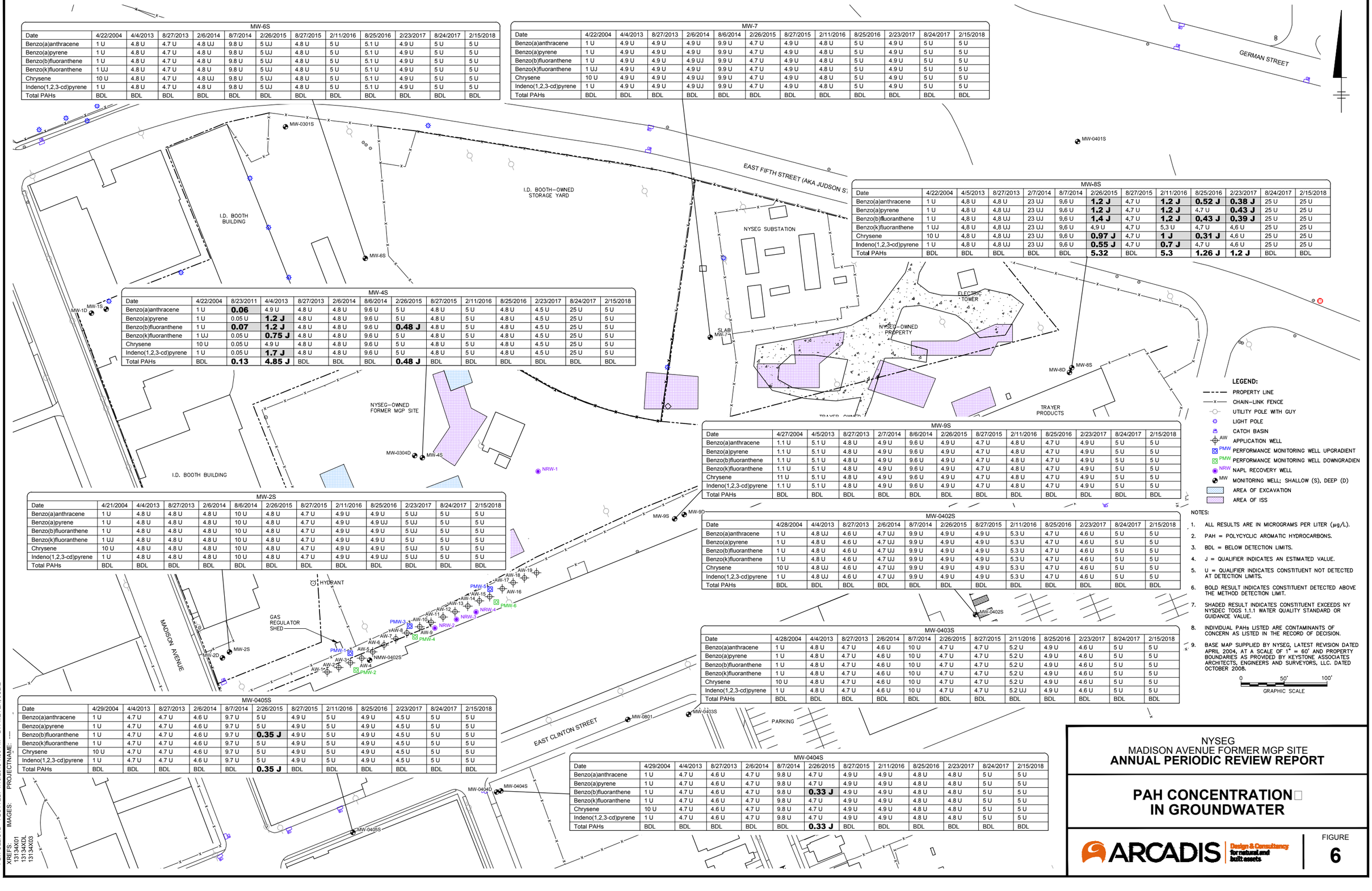
MW-2S												
Date	4/21/2004	4/4/2013	8/27/2013	2/6/2014	8/6/2014	2/26/2015	8/27/2015	2/11/2016	8/25/2016	2/23/2017	8/24/2017	2/15/2018
Benzo(a)anthracene	1 U	4.8 U	4.8 U	4.8 U	10 U	4.8 U	4.7 U	4.9 U	4.9 U	5 UJ	5 U	5 U
Benzo(a)pyrene	1 U	4.8 U	4.8 U	4.8 U	10 U	4.8 U	4.7 U	4.9 U	4.9 UJ	5 UJ	5 U	5 U
Benzo(b)fluoranthene	1 U	4.8 U	4.8 U	4.8 U	10 U	4.8 U	4.7 U	4.9 U	4.9 U	5 UJ	5 U	5 U
Benzo(k)fluoranthene	1 UJ	4.8 U	4.8 U	4.8 U	10 U	4.8 U	4.7 U	4.9 U	4.9 U	5 U	5 U	5 U
Chrysene	10 U	4.8 U	4.8 U	4.8 U	10 U	4.8 U	4.7 U	4.9 U	4.9 U	5 UJ	5 U	5 U
Indeno(1,2,3-cd)pyrene	1 U	4.8 U	4.8 U	4.8 U	10 U	4.8 U	4.7 U	4.9 U	4.9 UJ	5 UJ	5 U	5 U
Total PAHs	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

MW-0402S												
Date	4/28/2004	4/4/2013	8/27/2013	2/6/2014	8/7/2014	2/26/2015	8/27/2015	2/11/2016	8/25/2016	2/23/2017	8/24/2017	2/15/2018
Benzo(a)anthracene	1 U	4.8 UJ	4.6 U	4.7 UJ	9.9 U	4.9 U	4.9 U	5.3 U	4.7 U	4.6 U	5 U	5 U
Benzo(a)pyrene	1 U	4.8 U	4.6 U	4.7 UJ	9.9 U	4.9 U	4.9 U	5.3 U	4.7 U	4.6 U	5 U	5 U
Benzo(b)fluoranthene	1 U	4.8 U	4.6 U	4.7 UJ	9.9 U	4.9 U	4.9 U	5.3 U	4.7 U	4.6 U	5 U	5 U
Benzo(k)fluoranthene	1 U	4.8 U	4.6 U	4.7 UJ	9.9 U	4.9 U	4.9 U	5.3 U	4.7 U	4.6 U	5 U	5 U
Chrysene	10 U	4.8 UJ	4.6 U	4.7 UJ	9.9 U	4.9 U	4.9 U	5.3 U	4.7 U	4.6 U	5 U	5 U
Indeno(1,2,3-cd)pyrene	1 U	4.8 UJ	4.6 U	4.7 UJ	9.9 U	4.9 U	4.9 U	5.3 U	4.7 U	4.6 U	5 U	5 U
Total PAHs	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

MW-0403S												
Date	4/28/2004	4/4/2013	8/27/2013	2/6/2014	8/7/2014	2/26/2015	8/27/2015	2/11/2016	8/25/2016	2/23/2017	8/24/2017	2/15/2018
Benzo(a)anthracene	1 U	4.8 U	4.7 U	4.6 U	10 U	4.7 U	4.7 U	5.2 U	4.9 U	4.6 U	5 U	5 U
Benzo(a)pyrene	1 U	4.8 U	4.7 U	4.6 U	10 U	4.7 U	4.7 U	5.2 U	4.9 U	4.6 U	5 U	5 U
Benzo(b)fluoranthene	1 U	4.8 U	4.7 U	4.6 U	10 U	4.7 U	4.7 U	5.2 U	4.9 U	4.6 U	5 U	5 U
Benzo(k)fluoranthene	1 U	4.8 U	4.7 U	4.6 U	10 U	4.7 U	4.7 U	5.2 U	4.9 U	4.6 U	5 U	5 U
Chrysene	10 U	4.8 U	4.7 U	4.6 U	10 U	4.7 U	4.7 U	5.2 U	4.9 U	4.6 U	5 U	5 U
Indeno(1,2,3-cd)pyrene	1 U	4.8 U	4.7 U	4.6 U	10 U	4.7 U	4.7 U	5.2 UJ	4.9 U	4.6 U	5 U	5 U
Total PAHs	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

MW-0405S												
Date	4/29/2004	4/4/2013	8/27/2013	2/6/2014	8/7/2014	2/26/2015	8/27/2015	2/11/2016	8/25/2016	2/23/2017	8/24/2017	2/15/2018
Benzo(a)anthracene	1 U	4.7 U	4.7 U	4.6 U	9.7 U	5 U	4.9 U	5 U	4.9 U	4.5 U	5 U	5 U
Benzo(a)pyrene	1 U	4.7 U	4.7 U	4.6 U	9.7 U	5 U	4.9 U	5 U	4.9 U	4.5 U	5 U	5 U
Benzo(b)fluoranthene	1 U	4.7 U	4.7 U	4.6 U	9.7 U	**0.35 J**	4.9 U	5 U	4.9 U	4.5 U	5 U	5 U
Benzo(k)fluoranthene	1 U	4.7 U	4.7 U	4.6 U	9.7 U	5 U	4.9 U	5 U	4.9 U	4.5 U	5 U	5 U
Chrysene	10 U	4.7 U	4.7 U	4.6 U	9.7 U	5 U	4.9 U	5 U	4.9 U	4.5 U	5 U	5 U
Indeno(1,2,3-cd)pyrene	1 U	4.7 U	4.7 U	4.6 U	9.7 U	5 U	4.9 U	5 U	4.9 U	4.5 U	5 U	5 U
Total PAHs	BDL	BDL	BDL	BDL	BDL	**0.35 J**	BDL	BDL	BDL	BDL	BDL	BDL

MW-0404S												
Date	4/29/2004	4/4/2013	8/27/2013	2/6/2014	8/7/2014	2/26/2015	8/27/2015	2/11/2016	8/25/2016	2/23/2017	8/24/2017	2/15/2018
Benzo(a)anthracene	1 U	4.7 U	4.6 U	4.7 U	9.8 U	4.7 U	4.9 U	4.9 U	4.8 U	4.8 U	5 U	5 U
Benzo(a)pyrene	1 U	4.7 U	4.6 U	4.7 U	9.8 U	4.7 U	4.9 U	4.9 U	4.8 U	4.8 U	5 U	5 U
Benzo(b)fluoranthene	1 U	4.7 U	4.6 U	4.7 U	9.8 U	**0.33 J**	4.9 U	4.9 U	4.8 U	4.8 U	5 U	5 U
Benzo(k)fluoranthene	1 U	4.7 U	4.6 U	4.7 U	9.8 U	4.7 U	4.9 U	4.9 U	4.8 U	4.8 U	5 U	5 U
Chrysene	10 U	4.7 U	4.6 U	4.7 U	9.8 U	4.7 U	4.9 U	4.9 U	4.8 U	4.8 U	5 U	5 U
Indeno(1,2,3-cd)pyrene	1 U	4.7 U	4.6 U	4.7 U	9.8 U	4.7 U	4.9 U	4.9 U	4.8 U	4.8 U	5 U	5 U
Total PAHs	BDL	BDL	BDL	BDL	BDL	**0.33 J**	BDL	BDL	BDL	BDL	BDL	BDL



LEGEND:

- PROPERTY LINE
- CHAIN–LINK FENCE
- UTILITY POLE WITH GUY
- LIGHT POLE
- CATCH BASIN
- AW APPLICATION WELL
- PMW PERFORMANCE MONITORING WELL UPGRADIENT
- PMW PERFORMANCE MONITORING WELL DOWNGRADIEN
- NRW NAPL RECOVERY WELL
- MW MONITORING WELL; SHALLOW (S), DEEP (D)
- AREA OF EXCAVATION
- AREA OF ISS

NOTES:

1. ALL RESULTS ARE IN MICROGRAMS PER LITER (µg/L).
2. PAH = POLYCYCLIC AROMATIC HYDROCARBONS.
3. BDL = BELOW DETECTION LIMITS.
4. J = QUALIFIER INDICATES AN ESTIMATED VALUE.
5. U = QUALIFIER INDICATES CONSTITUENT NOT DETECTED AT DETECTION LIMITS.
6. BOLD RESULT INDICATES CONSTITUENT DETECTED ABOVE THE METHOD DETECTION LIMIT.
7. SHADED RESULT INDICATES CONSTITUENT EXCEEDS NY NYSDEC TOGS 1.1.1 WATER QUALITY STANDARD OR GUIDANCE VALUE.
8. INDIVIDUAL PAHs LISTED ARE CONTAMINANTS OF CONCERN AS LISTED IN THE RECORD OF DECISION.
9. BASE MAP SUPPLIED BY NYSEG, LATEST REVISION DATED APRIL 2004, AT A SCALE OF 1" = 60' AND PROPERTY BOUNDARIES AS PROVIDED BY KEYSTONE ASSOCIATES ARCHITECTS, ENGINEERS AND SURVEYORS, LLC. DATED OCTOBER 2008.

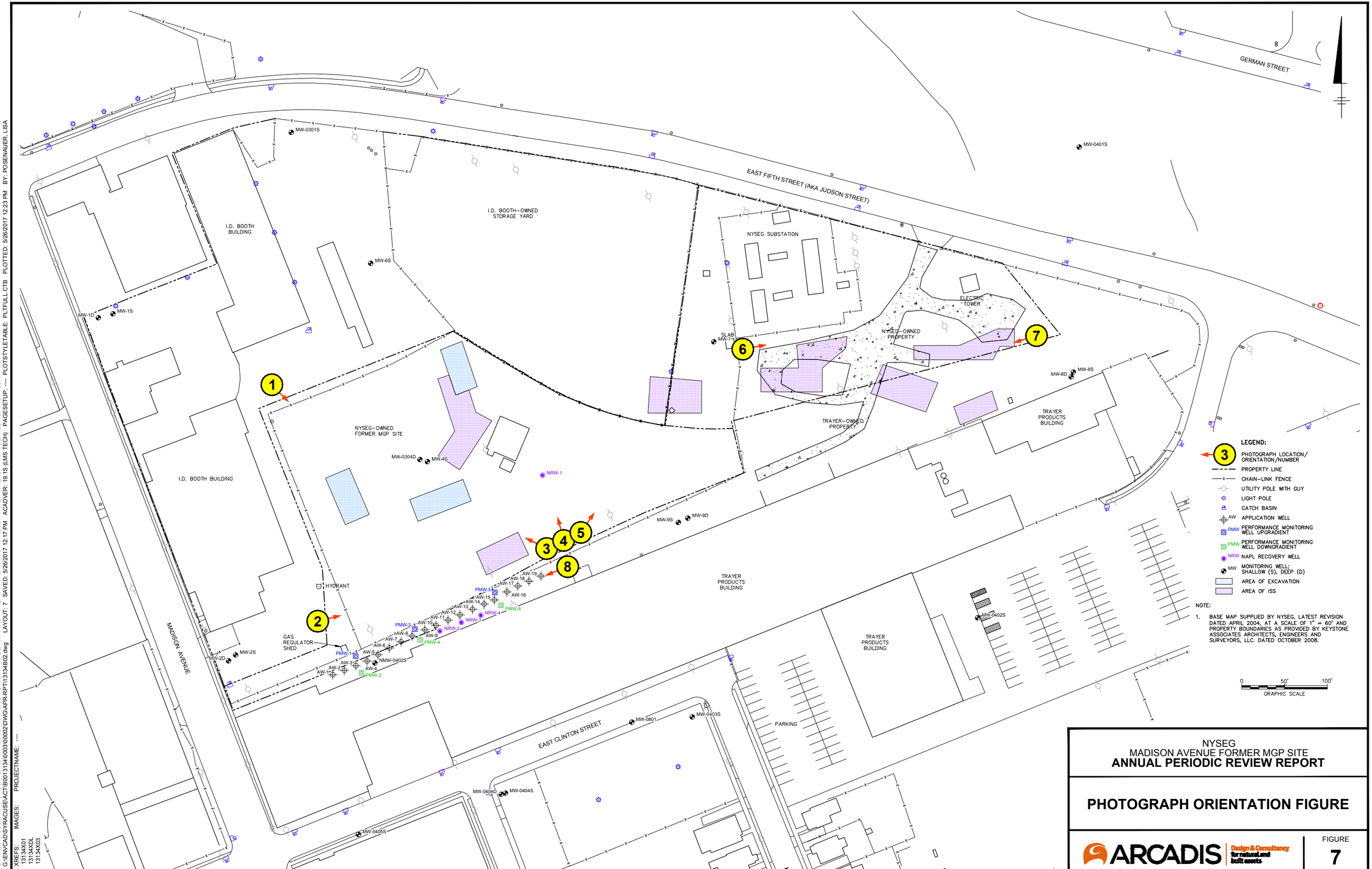
0 50' 100'
GRAPHIC SCALE

NYSEG
MADISON AVENUE FORMER MGP SITE
ANNUAL PERIODIC REVIEW REPORT

PAH CONCENTRATION IN GROUNDWATER

ARCADIS Design & Consultancy for natural and built assets

FIGURE
6



NYSEG
MADISON AVENUE FORMER MGP SITE
ANNUAL PERIODIC REVIEW REPORT

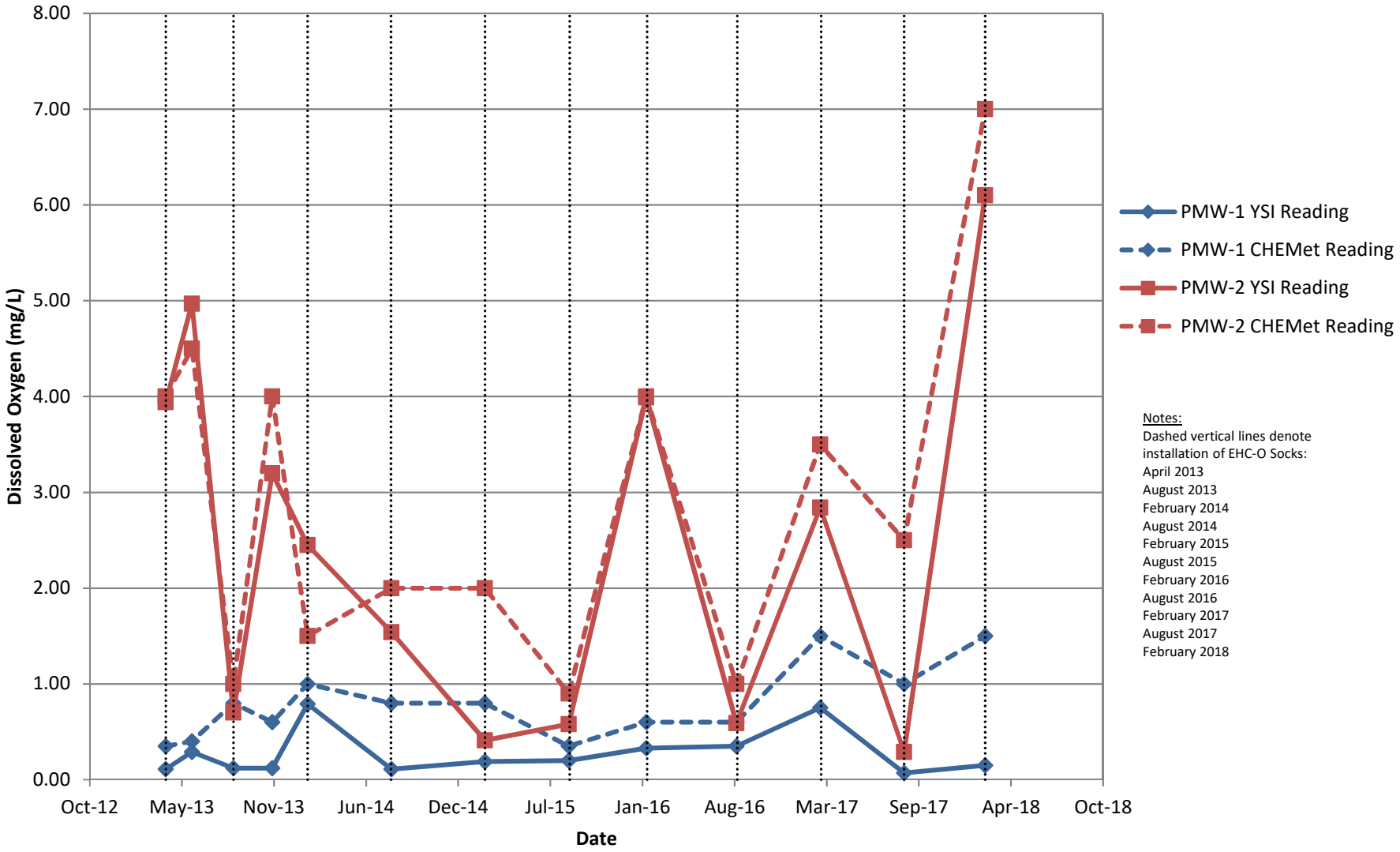
PHOTOGRAPH ORIENTATION FIGURE

ARCADIS Design & Consultancy for natural and built assets

FIGURE
7

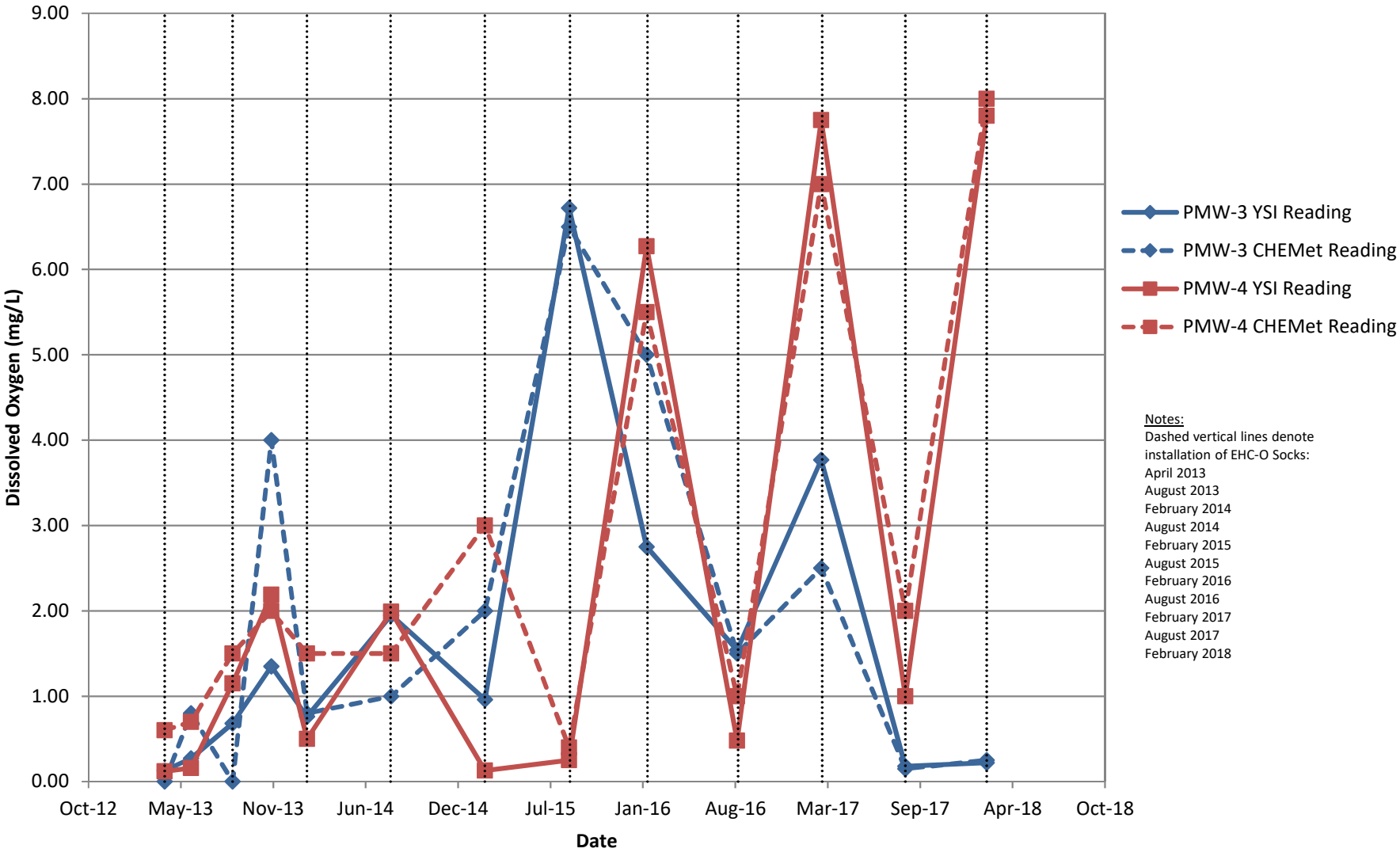
GRAPHS

Graph 1 - Dissolved Oxygen Readings from PMW-1 and PMW-2



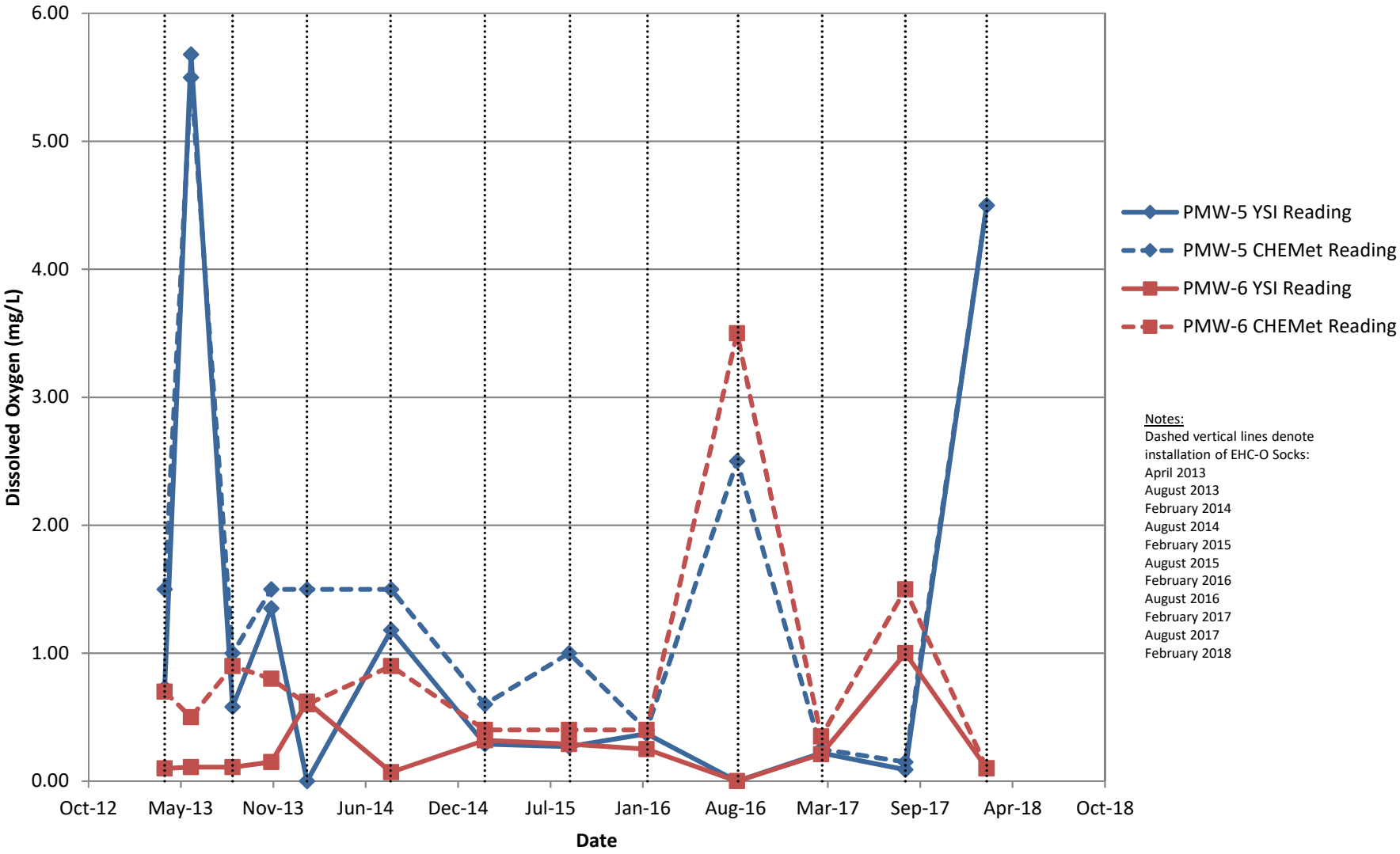
Notes:
Dashed vertical lines denote installation of EHC-O Socks:
April 2013
August 2013
February 2014
August 2014
February 2015
August 2015
February 2016
August 2016
February 2017
August 2017
February 2018

Graph 2 - Dissolved Oxygen Readings from PMW-3 and PMW-4



Notes:
Dashed vertical lines denote installation of EHC-O Socks:
April 2013
August 2013
February 2014
August 2014
February 2015
August 2015
February 2016
August 2016
February 2017
August 2017
February 2018

Graph 3 - Dissolved Oxygen Readings from PMW-5 and PMW-6



Notes:
Dashed vertical lines denote installation of EHC-O Socks:
April 2013
August 2013
February 2014
August 2014
February 2015
August 2015
February 2016
August 2016
February 2017
August 2017
February 2018

APPENDIX A

DUSRs

ARCADIS Design & Consultancy for natural and built assets

NYSEG Elmira Madison Avenue Former MGP Site

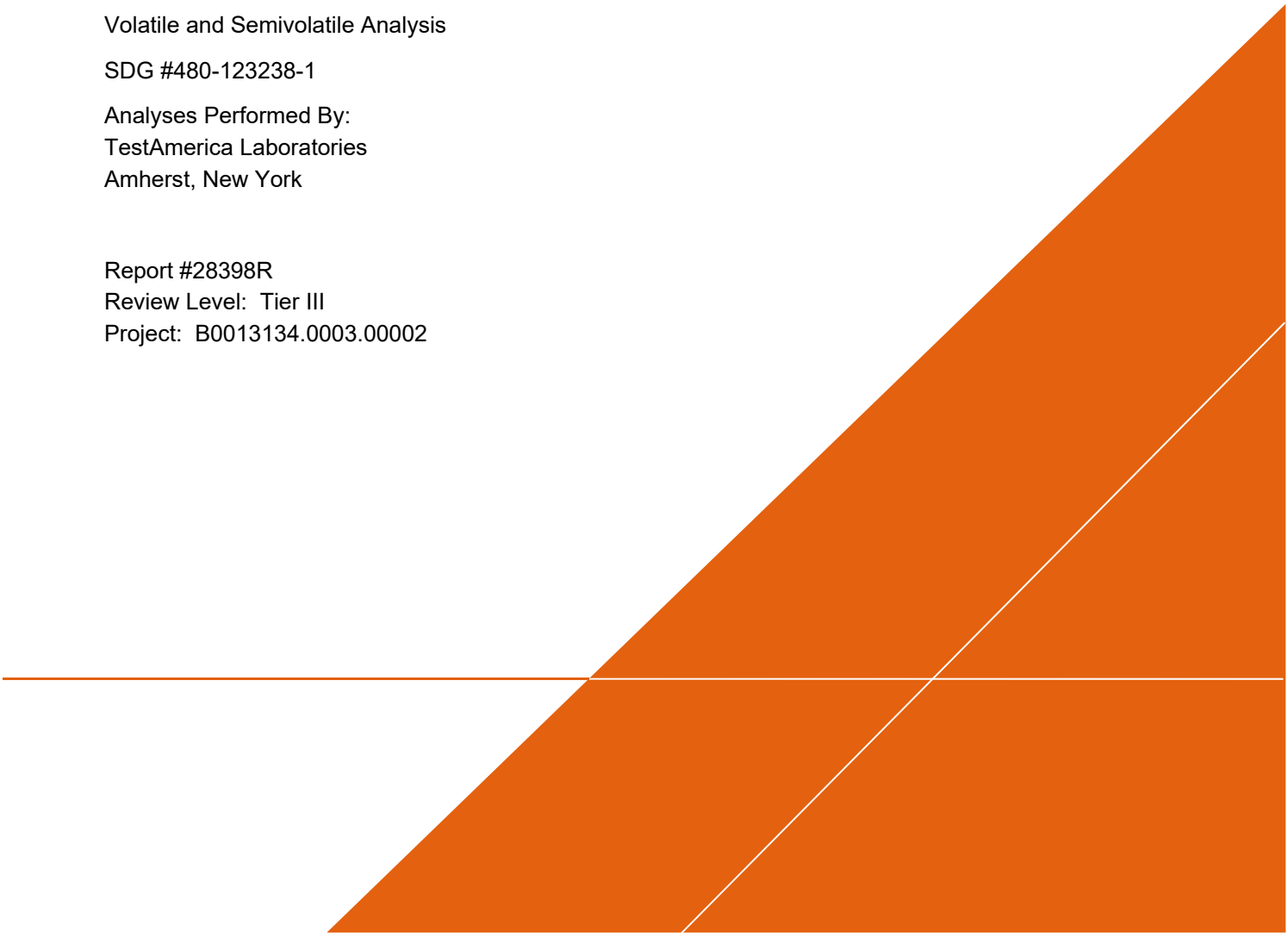
DATA USABILITY SUMMARY REPORT ELMIRA, NEW YORK

Volatile and Semivolatile Analysis

SDG #480-123238-1

Analyses Performed By:
TestAmerica Laboratories
Amherst, New York

Report #28398R
Review Level: Tier III
Project: B0013134.0003.00002



SUMMARY

This data usability summary report (DUSR) summarizes the review of Sample Delivery Group (SDG) # 480-123238-1 for samples collected in association with the NYSEG Elmira Madison Avenue Former MGP Site. The review was conducted as a Tier III evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
					VOC	SVOC	PCB	MET	MISC
MW-0405S	480-123238-1	Water	8/24/2017		X	X			
MW-0403S	480-123238-2	Water	8/24/2017		X	X			
MW-0404S	480-123238-3	Water	8/24/2017		X	X			
MW-0402S	480-123238-4	Water	8/24/2017		X	X			
MW-8S	480-123238-5	Water	8/24/2017		X	X			
MW-9S	480-123238-6	Water	8/24/2017		X	X			
MW-6S	480-123238-7	Water	8/24/2017		X	X			
MW-7	480-123238-8	Water	8/24/2017		X	X			
MW-2S	480-123238-9	Water	8/24/2017		X	X			
MW-4S	480-123238-10	Water	8/24/2017		X	X			
DUP-082417	480-123238-11	Water	8/24/2017	MW-9S	X	X			

Note:

1. Matrix spike/matrix spike duplicate was performed on sample location MW-9S for VOCs and SVOCs.

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8.Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of QA or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

Note:
QA - Quality Assurance

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260C and 8270D. Data were reviewed in accordance with USEPA National Functional Guidelines (October 1999) and applicable Region II SOPs. USEPA NFGs and Region II SOPs were followed for qualification purposes.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The compound was positively identified; however, the associated numerical value is an estimated concentration only.

  UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.

  JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.

  UB Compound considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times/Preservation

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260	Water	14 days from collection to analysis (preserved) 7 days from collection to analysis (non-preserved)	Cool to <6 °C; preserved to a pH of less than 2 s.u.
	Soil	48 hours from collection to extraction and 14 days from extraction to analysis	Cool to <6 °C.

Note:
s.u. Standard units

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

3. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

4. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

4.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

4.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

5. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. VOC analysis requires that all surrogates associated with the analysis exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits.

6. Internal Standard Performance

Internal standard performance criteria insure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

7. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

The MS/MSD exhibited acceptable recoveries.

The laboratory noted: Method(s) 8260C: Due to a laboratory oversight, the Matrix Spike (MS) in analytical batch 480-374508 was spiked at five times the normal spiking concentration. This caused the Precision / Relative Percent Difference (%RPD) between the Matrix Spike and the Matrix Spike Duplicate to exceed the established TAL quality control limits. All of the individual spike recoveries were compliant.

Due to this laboratory oversight the RPD between the Matrix Spike and the Matrix Spike Duplicate was not evaluated. The data was not qualified.

8. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits.

9. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
MW-9S/DUP-082417	All compounds	U	U	AC

Notes:
AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

10. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

11. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: SW-846 8260	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks					
C. Trip blanks					X
Laboratory Control Sample (LCS)		X		X	
Laboratory Control Sample Duplicate(LCSD)					
LCS/LCSD Precision (RPD)					
Matrix Spike (MS)		X		X	
Matrix Spike Duplicate(MSD)		X		X	
MS/MSD Precision (RPD)		X	X		
Field/Lab Duplicate (RPD)		X		X	
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content	X				X
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	

VOCs: SW-846 8260	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

SEMIVOLATILE ORGANIC COMPOUND (SVOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8270	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C
	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

3. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

4. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

4.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

4.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

5. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. SVOC analysis requires that two of the three SVOC surrogate compounds within each fraction exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits.

6. Internal Standard Performance

Internal standard performance criteria insure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the SVOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

7. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

The MS/MSD exhibited acceptable recoveries and RPD between the MS/MSD recoveries.

8. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits.

9. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
MW-9S/DUP-082417	All compounds	U	U	AC

Notes:
AC Acceptable

10. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

11. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR SVOCs

SVOCs: SW-846 8270	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks					X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate(MSD) %R		X		X	
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)		X		X	
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content	X				X
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Internal standard		X		X	
Compound identification and quantitation					
F. Reconstructed ion chromatograms		X		X	
G. Quantitation Reports		X		X	
H. RT of sample compounds within the established RT windows		X		X	

SVOCs: SW-846 8270		Reported		Performance Acceptable		Not Required
		No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)						
I.	Quantitation transcriptions/calculations		X		X	
J.	Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

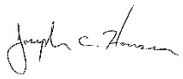
SAMPLE COMPLIANCE REPORT

Sample Delivery Group (SDG)	Sampling Date	Protocol	Sample ID	Matrix	Compliancy[1]					Noncompliance
					VOC	SVOC	PCB	MET	MISC	
480-123238-1	8/24/2017	USEPA/ SW846	MW-0405S	Water	Yes	Yes	--	--	--	
	8/24/2017	USEPA/ SW846	MW-0403S	Water	Yes	Yes	--	--	--	
	8/24/2017	USEPA/ SW846	MW-0404S	Water	Yes	Yes	--	--	--	
	8/24/2017	USEPA/ SW846	MW-0402S	Water	Yes	Yes	--	--	--	
	8/24/2017	USEPA/ SW846	MW-8S	Water	Yes	Yes	--	--	--	
	8/24/2017	USEPA/ SW846	MW-9S	Water	Yes	Yes	--	--	--	
	8/24/2017	USEPA/ SW846	MW-6S	Water	Yes	Yes	--	--	--	
	8/24/2017	USEPA/ SW846	MW-7	Water	Yes	Yes	--	--	--	
	8/24/2017	USEPA/ SW846	MW-2S	Water	Yes	Yes	--	--	--	
	8/24/2017	USEPA/ SW846	MW-4S	Water	Yes	Yes	--	--	--	
	8/24/2017	USEPA/ SW846	DUP-082417	Water	Yes	Yes	--	--	--	

Note:

1 Samples which are compliant with no added validation qualifiers are listed as "yes". Samples which are non-compliant or which have added qualifiers are listed as "no". A "no" designation does not necessarily indicate that the data have been rejected or are otherwise unusable.

VALIDATION PERFORMED BY: Joseph C. Houser

SIGNATURE: 

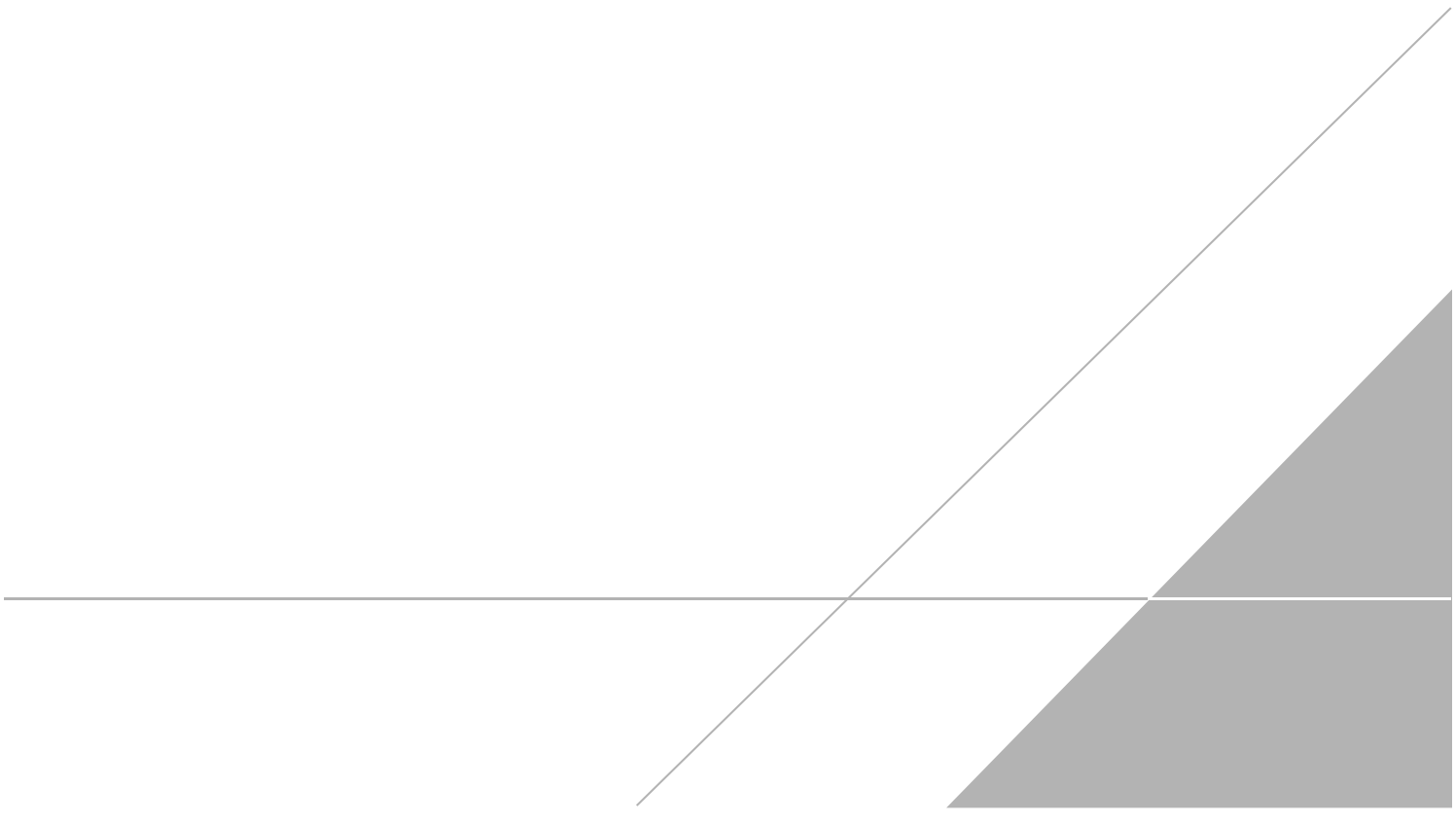
DATE: September 25, 2017

PEER REVIEW: Dennis Capria

DATE: September 29, 2017

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS



Client Sample ID: MW-0405S

Lab Sample ID: 480-123238-1

Date Collected: 08/24/17 10:20

Matrix: Water

Date Received: 08/25/17 09:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<1.0		1.0	0.41	ug/L			08/29/17 15:58	1
Toluene	<1.0		1.0	0.51	ug/L			08/29/17 15:58	1
Ethylbenzene	<1.0		1.0	0.74	ug/L			08/29/17 15:58	1
m-Xylene & p-Xylene	<2.0		2.0	0.66	ug/L			08/29/17 15:58	1
o-Xylene	<1.0		1.0	0.76	ug/L			08/29/17 15:58	1
Xylenes, Total	<2.0		2.0	0.66	ug/L			08/29/17 15:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*77 - 120*		*08/29/17 15:58*	*1*
Toluene-d8 (Surr)	*98*		*80 - 120*		*08/29/17 15:58*	*1*
4-Bromofluorobenzene (Surr)	*91*		*73 - 120*		*08/29/17 15:58*	*1*
Dibromofluoromethane (Surr)	*107*		*75 - 123*		*08/29/17 15:58*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<5.0		5.0	0.41	ug/L		08/28/17 08:08	08/30/17 18:07	1
Acenaphthylene	<5.0		5.0	0.38	ug/L		08/28/17 08:08	08/30/17 18:07	1
Anthracene	<5.0		5.0	0.28	ug/L		08/28/17 08:08	08/30/17 18:07	1
Benz(a)anthracene	<5.0		5.0	0.36	ug/L		08/28/17 08:08	08/30/17 18:07	1
Benzo(a)pyrene	<5.0		5.0	0.47	ug/L		08/28/17 08:08	08/30/17 18:07	1
Benzo(b)fluoranthene	<5.0		5.0	0.34	ug/L		08/28/17 08:08	08/30/17 18:07	1
Benzo(g,h,i)perylene	<5.0		5.0	0.35	ug/L		08/28/17 08:08	08/30/17 18:07	1
Benzo(k)fluoranthene	<5.0		5.0	0.73	ug/L		08/28/17 08:08	08/30/17 18:07	1
Chrysene	<5.0		5.0	0.33	ug/L		08/28/17 08:08	08/30/17 18:07	1
Dibenz(a,h)anthracene	<5.0		5.0	0.42	ug/L		08/28/17 08:08	08/30/17 18:07	1
Fluoranthene	<5.0		5.0	0.40	ug/L		08/28/17 08:08	08/30/17 18:07	1
Fluorene	<5.0		5.0	0.36	ug/L		08/28/17 08:08	08/30/17 18:07	1
Indeno(1,2,3-c,d)pyrene	<5.0		5.0	0.47	ug/L		08/28/17 08:08	08/30/17 18:07	1
Naphthalene	<5.0		5.0	0.76	ug/L		08/28/17 08:08	08/30/17 18:07	1
Phenanthrene	<5.0		5.0	0.44	ug/L		08/28/17 08:08	08/30/17 18:07	1
Pyrene	<5.0		5.0	0.34	ug/L		08/28/17 08:08	08/30/17 18:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*85*		*46 - 120*	*08/28/17 08:08*	*08/30/17 18:07*	*1*
2-Fluorobiphenyl	*81*		*48 - 120*	*08/28/17 08:08*	*08/30/17 18:07*	*1*
p-Terphenyl-d14	*86*		*59 - 136*	*08/28/17 08:08*	*08/30/17 18:07*	*1*

Client Sample ID: MW-0403S

Lab Sample ID: 480-123238-2

Date Collected: 08/24/17 11:55

Matrix: Water

Date Received: 08/25/17 09:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<1.0		1.0	0.41	ug/L			08/29/17 16:25	1
Toluene	<1.0		1.0	0.51	ug/L			08/29/17 16:25	1
Ethylbenzene	<1.0		1.0	0.74	ug/L			08/29/17 16:25	1
m-Xylene & p-Xylene	<2.0		2.0	0.66	ug/L			08/29/17 16:25	1
o-Xylene	<1.0		1.0	0.76	ug/L			08/29/17 16:25	1
Xylenes, Total	<2.0		2.0	0.66	ug/L			08/29/17 16:25	1

Client Sample ID: MW-0403S

Lab Sample ID: 480-123238-2

Date Collected: 08/24/17 11:55

Matrix: Water

Date Received: 08/25/17 09:30

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*105*		*77 - 120*		*08/29/17 16:25*	*1*
Toluene-d8 (Surr)	*100*		*80 - 120*		*08/29/17 16:25*	*1*
4-Bromofluorobenzene (Surr)	*92*		*73 - 120*		*08/29/17 16:25*	*1*
Dibromofluoromethane (Surr)	*105*		*75 - 123*		*08/29/17 16:25*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<5.0		5.0	0.41	ug/L		08/28/17 08:08	08/30/17 18:35	1
Acenaphthylene	<5.0		5.0	0.38	ug/L		08/28/17 08:08	08/30/17 18:35	1
Anthracene	<5.0		5.0	0.28	ug/L		08/28/17 08:08	08/30/17 18:35	1
Benz(a)anthracene	<5.0		5.0	0.36	ug/L		08/28/17 08:08	08/30/17 18:35	1
Benzo(a)pyrene	<5.0		5.0	0.47	ug/L		08/28/17 08:08	08/30/17 18:35	1
Benzo(b)fluoranthene	<5.0		5.0	0.34	ug/L		08/28/17 08:08	08/30/17 18:35	1
Benzo(g,h,i)perylene	<5.0		5.0	0.35	ug/L		08/28/17 08:08	08/30/17 18:35	1
Benzo(k)fluoranthene	<5.0		5.0	0.73	ug/L		08/28/17 08:08	08/30/17 18:35	1
Chrysene	<5.0		5.0	0.33	ug/L		08/28/17 08:08	08/30/17 18:35	1
Dibenz(a,h)anthracene	<5.0		5.0	0.42	ug/L		08/28/17 08:08	08/30/17 18:35	1
Fluoranthene	<5.0		5.0	0.40	ug/L		08/28/17 08:08	08/30/17 18:35	1
Fluorene	<5.0		5.0	0.36	ug/L		08/28/17 08:08	08/30/17 18:35	1
Indeno(1,2,3-c,d)pyrene	<5.0		5.0	0.47	ug/L		08/28/17 08:08	08/30/17 18:35	1
Naphthalene	<5.0		5.0	0.76	ug/L		08/28/17 08:08	08/30/17 18:35	1
Phenanthrene	<5.0		5.0	0.44	ug/L		08/28/17 08:08	08/30/17 18:35	1
Pyrene	<5.0		5.0	0.34	ug/L		08/28/17 08:08	08/30/17 18:35	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Nitrobenzene-d5	*85*		*46 - 120*	*08/28/17 08:08*	*08/30/17 18:35*	*1*
2-Fluorobiphenyl	*79*		*48 - 120*	*08/28/17 08:08*	*08/30/17 18:35*	*1*
p-Terphenyl-d14	*84*		*59 - 136*	*08/28/17 08:08*	*08/30/17 18:35*	*1*

Client Sample ID: MW-0404S

Lab Sample ID: 480-123238-3

Date Collected: 08/24/17 13:15

Matrix: Water

Date Received: 08/25/17 09:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<1.0		1.0	0.41	ug/L			08/29/17 16:52	1
Toluene	<1.0		1.0	0.51	ug/L			08/29/17 16:52	1
Ethylbenzene	<1.0		1.0	0.74	ug/L			08/29/17 16:52	1
m-Xylene & p-Xylene	<2.0		2.0	0.66	ug/L			08/29/17 16:52	1
o-Xylene	<1.0		1.0	0.76	ug/L			08/29/17 16:52	1
Xylenes, Total	<2.0		2.0	0.66	ug/L			08/29/17 16:52	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	*104*		*77 - 120*		*08/29/17 16:52*	*1*
Toluene-d8 (Surr)	*100*		*80 - 120*		*08/29/17 16:52*	*1*
4-Bromofluorobenzene (Surr)	*95*		*73 - 120*		*08/29/17 16:52*	*1*
Dibromofluoromethane (Surr)	*105*		*75 - 123*		*08/29/17 16:52*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<5.0		5.0	0.41	ug/L		08/28/17 08:08	08/30/17 19:04	1

Client Sample ID: MW-0404S

Date Collected: 08/24/17 13:15
Date Received: 08/25/17 09:30

Lab Sample ID: 480-123238-3
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthylene	<5.0		5.0	0.38	ug/L		08/28/17 08:08	08/30/17 19:04	1
Anthracene	<5.0		5.0	0.28	ug/L		08/28/17 08:08	08/30/17 19:04	1
Benz(a)anthracene	<5.0		5.0	0.36	ug/L		08/28/17 08:08	08/30/17 19:04	1
Benzo(a)pyrene	<5.0		5.0	0.47	ug/L		08/28/17 08:08	08/30/17 19:04	1
Benzo(b)fluoranthene	<5.0		5.0	0.34	ug/L		08/28/17 08:08	08/30/17 19:04	1
Benzo(g,h,i)perylene	<5.0		5.0	0.35	ug/L		08/28/17 08:08	08/30/17 19:04	1
Benzo(k)fluoranthene	<5.0		5.0	0.73	ug/L		08/28/17 08:08	08/30/17 19:04	1
Chrysene	<5.0		5.0	0.33	ug/L		08/28/17 08:08	08/30/17 19:04	1
Dibenz(a,h)anthracene	<5.0		5.0	0.42	ug/L		08/28/17 08:08	08/30/17 19:04	1
Fluoranthene	<5.0		5.0	0.40	ug/L		08/28/17 08:08	08/30/17 19:04	1
Fluorene	<5.0		5.0	0.36	ug/L		08/28/17 08:08	08/30/17 19:04	1
Indeno(1,2,3-c,d)pyrene	<5.0		5.0	0.47	ug/L		08/28/17 08:08	08/30/17 19:04	1
Naphthalene	<5.0		5.0	0.76	ug/L		08/28/17 08:08	08/30/17 19:04	1
Phenanthrene	<5.0		5.0	0.44	ug/L		08/28/17 08:08	08/30/17 19:04	1
Pyrene	<5.0		5.0	0.34	ug/L		08/28/17 08:08	08/30/17 19:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*81*		*46 - 120*	*08/28/17 08:08*	*08/30/17 19:04*	*1*
2-Fluorobiphenyl	*77*		*48 - 120*	*08/28/17 08:08*	*08/30/17 19:04*	*1*
p-Terphenyl-d14	*83*		*59 - 136*	*08/28/17 08:08*	*08/30/17 19:04*	*1*

Client Sample ID: MW-0402S

Date Collected: 08/24/17 14:20
Date Received: 08/25/17 09:30

Lab Sample ID: 480-123238-4
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<1.0		1.0	0.41	ug/L			08/30/17 15:00	1
Toluene	<1.0		1.0	0.51	ug/L			08/30/17 15:00	1
Ethylbenzene	<1.0		1.0	0.74	ug/L			08/30/17 15:00	1
m-Xylene & p-Xylene	<2.0		2.0	0.66	ug/L			08/30/17 15:00	1
o-Xylene	<1.0		1.0	0.76	ug/L			08/30/17 15:00	1
Xylenes, Total	<2.0		2.0	0.66	ug/L			08/30/17 15:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*102*		*77 - 120*		*08/30/17 15:00*	*1*
Toluene-d8 (Surr)	*98*		*80 - 120*		*08/30/17 15:00*	*1*
4-Bromofluorobenzene (Surr)	*93*		*73 - 120*		*08/30/17 15:00*	*1*
Dibromofluoromethane (Surr)	*104*		*75 - 123*		*08/30/17 15:00*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<5.0		5.0	0.41	ug/L		08/28/17 08:08	08/30/17 19:33	1
Acenaphthylene	<5.0		5.0	0.38	ug/L		08/28/17 08:08	08/30/17 19:33	1
Anthracene	<5.0		5.0	0.28	ug/L		08/28/17 08:08	08/30/17 19:33	1
Benz(a)anthracene	<5.0		5.0	0.36	ug/L		08/28/17 08:08	08/30/17 19:33	1
Benzo(a)pyrene	<5.0		5.0	0.47	ug/L		08/28/17 08:08	08/30/17 19:33	1
Benzo(b)fluoranthene	<5.0		5.0	0.34	ug/L		08/28/17 08:08	08/30/17 19:33	1
Benzo(g,h,i)perylene	<5.0		5.0	0.35	ug/L		08/28/17 08:08	08/30/17 19:33	1
Benzo(k)fluoranthene	<5.0		5.0	0.73	ug/L		08/28/17 08:08	08/30/17 19:33	1

Client Sample ID: MW-0402S

Lab Sample ID: 480-123238-4

Date Collected: 08/24/17 14:20

Matrix: Water

Date Received: 08/25/17 09:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chrysene	<5.0		5.0	0.33	ug/L		08/28/17 08:08	08/30/17 19:33	1
Dibenz(a,h)anthracene	<5.0		5.0	0.42	ug/L		08/28/17 08:08	08/30/17 19:33	1
Fluoranthene	<5.0		5.0	0.40	ug/L		08/28/17 08:08	08/30/17 19:33	1
Fluorene	<5.0		5.0	0.36	ug/L		08/28/17 08:08	08/30/17 19:33	1
Indeno(1,2,3-c,d)pyrene	<5.0		5.0	0.47	ug/L		08/28/17 08:08	08/30/17 19:33	1
Naphthalene	<5.0		5.0	0.76	ug/L		08/28/17 08:08	08/30/17 19:33	1
Phenanthrene	<5.0		5.0	0.44	ug/L		08/28/17 08:08	08/30/17 19:33	1
Pyrene	<5.0		5.0	0.34	ug/L		08/28/17 08:08	08/30/17 19:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*73*		*46 - 120*	*08/28/17 08:08*	*08/30/17 19:33*	*1*
2-Fluorobiphenyl	*74*		*48 - 120*	*08/28/17 08:08*	*08/30/17 19:33*	*1*
p-Terphenyl-d14	*75*		*59 - 136*	*08/28/17 08:08*	*08/30/17 19:33*	*1*

Client Sample ID: MW-8S

Lab Sample ID: 480-123238-5

Date Collected: 08/24/17 16:05

Matrix: Water

Date Received: 08/25/17 09:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<4.0		4.0	1.6	ug/L			08/30/17 15:27	4
Toluene	<4.0		4.0	2.0	ug/L			08/30/17 15:27	4
Ethylbenzene	<4.0		4.0	3.0	ug/L			08/30/17 15:27	4
m-Xylene & p-Xylene	<8.0		8.0	2.6	ug/L			08/30/17 15:27	4
o-Xylene	<4.0		4.0	3.0	ug/L			08/30/17 15:27	4
Xylenes, Total	<8.0		8.0	2.6	ug/L			08/30/17 15:27	4

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*77 - 120*		*08/30/17 15:27*	*4*
Toluene-d8 (Surr)	*99*		*80 - 120*		*08/30/17 15:27*	*4*
4-Bromofluorobenzene (Surr)	*92*		*73 - 120*		*08/30/17 15:27*	*4*
Dibromofluoromethane (Surr)	*106*		*75 - 123*		*08/30/17 15:27*	*4*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	**7.9**	**J**	25	2.1	ug/L		08/28/17 08:08	08/30/17 20:01	5
Acenaphthylene	<25		25	1.9	ug/L		08/28/17 08:08	08/30/17 20:01	5
Anthracene	<25		25	1.4	ug/L		08/28/17 08:08	08/30/17 20:01	5
Benz(a)anthracene	<25		25	1.8	ug/L		08/28/17 08:08	08/30/17 20:01	5
Benzo(a)pyrene	<25		25	2.4	ug/L		08/28/17 08:08	08/30/17 20:01	5
Benzo(b)fluoranthene	<25		25	1.7	ug/L		08/28/17 08:08	08/30/17 20:01	5
Benzo(g,h,i)perylene	<25		25	1.8	ug/L		08/28/17 08:08	08/30/17 20:01	5
Benzo(k)fluoranthene	<25		25	3.7	ug/L		08/28/17 08:08	08/30/17 20:01	5
Chrysene	<25		25	1.7	ug/L		08/28/17 08:08	08/30/17 20:01	5
Dibenz(a,h)anthracene	<25		25	2.1	ug/L		08/28/17 08:08	08/30/17 20:01	5
Fluoranthene	**2.7**	**J**	25	2.0	ug/L		08/28/17 08:08	08/30/17 20:01	5
Fluorene	**5.2**	**J**	25	1.8	ug/L		08/28/17 08:08	08/30/17 20:01	5
Indeno(1,2,3-c,d)pyrene	<25		25	2.4	ug/L		08/28/17 08:08	08/30/17 20:01	5
Naphthalene	<25		25	3.8	ug/L		08/28/17 08:08	08/30/17 20:01	5
Phenanthrene	<25		25	2.2	ug/L		08/28/17 08:08	08/30/17 20:01	5

Client Sample ID: MW-8S

Lab Sample ID: 480-123238-5

Date Collected: 08/24/17 16:05

Matrix: Water

Date Received: 08/25/17 09:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Pyrene	<25		25	1.7	ug/L		08/28/17 08:08	08/30/17 20:01	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*78*		*46 - 120*	*08/28/17 08:08*	*08/30/17 20:01*	*5*
2-Fluorobiphenyl	*82*		*48 - 120*	*08/28/17 08:08*	*08/30/17 20:01*	*5*
p-Terphenyl-d14	*70*		*59 - 136*	*08/28/17 08:08*	*08/30/17 20:01*	*5*

Client Sample ID: MW-9S

Lab Sample ID: 480-123238-6

Date Collected: 08/24/17 08:45

Matrix: Water

Date Received: 08/25/17 09:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<1.0	~~F2~~	1.0	0.41	ug/L			08/30/17 15:55	1
Toluene	<1.0	~~F2~~	1.0	0.51	ug/L			08/30/17 15:55	1
Ethylbenzene	<1.0	~~F2~~	1.0	0.74	ug/L			08/30/17 15:55	1
m-Xylene & p-Xylene	<2.0	~~F2~~	2.0	0.66	ug/L			08/30/17 15:55	1
o-Xylene	<1.0	~~F2~~	1.0	0.76	ug/L			08/30/17 15:55	1
Xylenes, Total	<2.0	~~F2~~	2.0	0.66	ug/L			08/30/17 15:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*77 - 120*		*08/30/17 15:55*	*1*
Toluene-d8 (Surr)	*99*		*80 - 120*		*08/30/17 15:55*	*1*
4-Bromofluorobenzene (Surr)	*93*		*73 - 120*		*08/30/17 15:55*	*1*
Dibromofluoromethane (Surr)	*104*		*75 - 123*		*08/30/17 15:55*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<5.0		5.0	0.41	ug/L		08/28/17 08:08	08/30/17 20:30	1
Acenaphthylene	<5.0		5.0	0.38	ug/L		08/28/17 08:08	08/30/17 20:30	1
Anthracene	<5.0		5.0	0.28	ug/L		08/28/17 08:08	08/30/17 20:30	1
Benz(a)anthracene	<5.0		5.0	0.36	ug/L		08/28/17 08:08	08/30/17 20:30	1
Benzo(a)pyrene	<5.0		5.0	0.47	ug/L		08/28/17 08:08	08/30/17 20:30	1
Benzo(b)fluoranthene	<5.0		5.0	0.34	ug/L		08/28/17 08:08	08/30/17 20:30	1
Benzo(g,h,i)perylene	<5.0		5.0	0.35	ug/L		08/28/17 08:08	08/30/17 20:30	1
Benzo(k)fluoranthene	<5.0		5.0	0.73	ug/L		08/28/17 08:08	08/30/17 20:30	1
Chrysene	<5.0		5.0	0.33	ug/L		08/28/17 08:08	08/30/17 20:30	1
Dibenz(a,h)anthracene	<5.0		5.0	0.42	ug/L		08/28/17 08:08	08/30/17 20:30	1
Fluoranthene	<5.0		5.0	0.40	ug/L		08/28/17 08:08	08/30/17 20:30	1
Fluorene	<5.0		5.0	0.36	ug/L		08/28/17 08:08	08/30/17 20:30	1
Indeno(1,2,3-c,d)pyrene	<5.0		5.0	0.47	ug/L		08/28/17 08:08	08/30/17 20:30	1
Naphthalene	<5.0		5.0	0.76	ug/L		08/28/17 08:08	08/30/17 20:30	1
Phenanthrene	<5.0		5.0	0.44	ug/L		08/28/17 08:08	08/30/17 20:30	1
Pyrene	<5.0		5.0	0.34	ug/L		08/28/17 08:08	08/30/17 20:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*83*		*46 - 120*	*08/28/17 08:08*	*08/30/17 20:30*	*1*
2-Fluorobiphenyl	*80*		*48 - 120*	*08/28/17 08:08*	*08/30/17 20:30*	*1*
p-Terphenyl-d14	*85*		*59 - 136*	*08/28/17 08:08*	*08/30/17 20:30*	*1*

Client Sample ID: MW-6S

Lab Sample ID: 480-123238-7

Date Collected: 08/24/17 10:20

Matrix: Water

Date Received: 08/25/17 09:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<1.0		1.0	0.41	ug/L			08/30/17 16:22	1
Toluene	<1.0		1.0	0.51	ug/L			08/30/17 16:22	1
Ethylbenzene	<1.0		1.0	0.74	ug/L			08/30/17 16:22	1
m-Xylene & p-Xylene	<2.0		2.0	0.66	ug/L			08/30/17 16:22	1
o-Xylene	<1.0		1.0	0.76	ug/L			08/30/17 16:22	1
Xylenes, Total	<2.0		2.0	0.66	ug/L			08/30/17 16:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*106*		*77 - 120*		*08/30/17 16:22*	*1*
Toluene-d8 (Surr)	*98*		*80 - 120*		*08/30/17 16:22*	*1*
4-Bromofluorobenzene (Surr)	*92*		*73 - 120*		*08/30/17 16:22*	*1*
Dibromofluoromethane (Surr)	*104*		*75 - 123*		*08/30/17 16:22*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<5.0		5.0	0.41	ug/L		08/28/17 08:08	08/30/17 20:59	1
Acenaphthylene	<5.0		5.0	0.38	ug/L		08/28/17 08:08	08/30/17 20:59	1
Anthracene	<5.0		5.0	0.28	ug/L		08/28/17 08:08	08/30/17 20:59	1
Benz(a)anthracene	<5.0		5.0	0.36	ug/L		08/28/17 08:08	08/30/17 20:59	1
Benzo(a)pyrene	<5.0		5.0	0.47	ug/L		08/28/17 08:08	08/30/17 20:59	1
Benzo(b)fluoranthene	<5.0		5.0	0.34	ug/L		08/28/17 08:08	08/30/17 20:59	1
Benzo(g,h,i)perylene	<5.0		5.0	0.35	ug/L		08/28/17 08:08	08/30/17 20:59	1
Benzo(k)fluoranthene	<5.0		5.0	0.73	ug/L		08/28/17 08:08	08/30/17 20:59	1
Chrysene	<5.0		5.0	0.33	ug/L		08/28/17 08:08	08/30/17 20:59	1
Dibenz(a,h)anthracene	<5.0		5.0	0.42	ug/L		08/28/17 08:08	08/30/17 20:59	1
Fluoranthene	<5.0		5.0	0.40	ug/L		08/28/17 08:08	08/30/17 20:59	1
Fluorene	<5.0		5.0	0.36	ug/L		08/28/17 08:08	08/30/17 20:59	1
Indeno(1,2,3-c,d)pyrene	<5.0		5.0	0.47	ug/L		08/28/17 08:08	08/30/17 20:59	1
Naphthalene	<5.0		5.0	0.76	ug/L		08/28/17 08:08	08/30/17 20:59	1
Phenanthrene	<5.0		5.0	0.44	ug/L		08/28/17 08:08	08/30/17 20:59	1
Pyrene	<5.0		5.0	0.34	ug/L		08/28/17 08:08	08/30/17 20:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*80*		*46 - 120*	*08/28/17 08:08*	*08/30/17 20:59*	*1*
2-Fluorobiphenyl	*77*		*48 - 120*	*08/28/17 08:08*	*08/30/17 20:59*	*1*
p-Terphenyl-d14	*82*		*59 - 136*	*08/28/17 08:08*	*08/30/17 20:59*	*1*

Client Sample ID: MW-7

Lab Sample ID: 480-123238-8

Date Collected: 08/24/17 12:15

Matrix: Water

Date Received: 08/25/17 09:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<1.0		1.0	0.41	ug/L			08/30/17 16:50	1
Toluene	<1.0		1.0	0.51	ug/L			08/30/17 16:50	1
Ethylbenzene	<1.0		1.0	0.74	ug/L			08/30/17 16:50	1
m-Xylene & p-Xylene	<2.0		2.0	0.66	ug/L			08/30/17 16:50	1
o-Xylene	<1.0		1.0	0.76	ug/L			08/30/17 16:50	1
Xylenes, Total	<2.0		2.0	0.66	ug/L			08/30/17 16:50	1

Client Sample ID: MW-7

Lab Sample ID: 480-123238-8

Date Collected: 08/24/17 12:15

Matrix: Water

Date Received: 08/25/17 09:30

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*77 - 120*		*08/30/17 16:50*	*1*
Toluene-d8 (Surr)	*99*		*80 - 120*		*08/30/17 16:50*	*1*
4-Bromofluorobenzene (Surr)	*93*		*73 - 120*		*08/30/17 16:50*	*1*
Dibromofluoromethane (Surr)	*106*		*75 - 123*		*08/30/17 16:50*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<5.0		5.0	0.41	ug/L		08/28/17 08:08	08/30/17 21:28	1
Acenaphthylene	<5.0		5.0	0.38	ug/L		08/28/17 08:08	08/30/17 21:28	1
Anthracene	<5.0		5.0	0.28	ug/L		08/28/17 08:08	08/30/17 21:28	1
Benz(a)anthracene	<5.0		5.0	0.36	ug/L		08/28/17 08:08	08/30/17 21:28	1
Benzo(a)pyrene	<5.0		5.0	0.47	ug/L		08/28/17 08:08	08/30/17 21:28	1
Benzo(b)fluoranthene	<5.0		5.0	0.34	ug/L		08/28/17 08:08	08/30/17 21:28	1
Benzo(g,h,i)perylene	<5.0		5.0	0.35	ug/L		08/28/17 08:08	08/30/17 21:28	1
Benzo(k)fluoranthene	<5.0		5.0	0.73	ug/L		08/28/17 08:08	08/30/17 21:28	1
Chrysene	<5.0		5.0	0.33	ug/L		08/28/17 08:08	08/30/17 21:28	1
Dibenz(a,h)anthracene	<5.0		5.0	0.42	ug/L		08/28/17 08:08	08/30/17 21:28	1
Fluoranthene	<5.0		5.0	0.40	ug/L		08/28/17 08:08	08/30/17 21:28	1
Fluorene	<5.0		5.0	0.36	ug/L		08/28/17 08:08	08/30/17 21:28	1
Indeno(1,2,3-c,d)pyrene	<5.0		5.0	0.47	ug/L		08/28/17 08:08	08/30/17 21:28	1
Naphthalene	<5.0		5.0	0.76	ug/L		08/28/17 08:08	08/30/17 21:28	1
Phenanthrene	<5.0		5.0	0.44	ug/L		08/28/17 08:08	08/30/17 21:28	1
Pyrene	<5.0		5.0	0.34	ug/L		08/28/17 08:08	08/30/17 21:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*82*		*46 - 120*	*08/28/17 08:08*	*08/30/17 21:28*	*1*
2-Fluorobiphenyl	*78*		*48 - 120*	*08/28/17 08:08*	*08/30/17 21:28*	*1*
p-Terphenyl-d14	*84*		*59 - 136*	*08/28/17 08:08*	*08/30/17 21:28*	*1*

Client Sample ID: MW-2S

Lab Sample ID: 480-123238-9

Date Collected: 08/24/17 15:30

Matrix: Water

Date Received: 08/25/17 09:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<1.0		1.0	0.41	ug/L			08/30/17 17:17	1
Toluene	<1.0		1.0	0.51	ug/L			08/30/17 17:17	1
Ethylbenzene	<1.0		1.0	0.74	ug/L			08/30/17 17:17	1
m-Xylene & p-Xylene	<2.0		2.0	0.66	ug/L			08/30/17 17:17	1
o-Xylene	<1.0		1.0	0.76	ug/L			08/30/17 17:17	1
Xylenes, Total	<2.0		2.0	0.66	ug/L			08/30/17 17:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*77 - 120*		*08/30/17 17:17*	*1*
Toluene-d8 (Surr)	*99*		*80 - 120*		*08/30/17 17:17*	*1*
4-Bromofluorobenzene (Surr)	*90*		*73 - 120*		*08/30/17 17:17*	*1*
Dibromofluoromethane (Surr)	*106*		*75 - 123*		*08/30/17 17:17*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<5.0		5.0	0.41	ug/L		08/28/17 08:08	08/30/17 21:57	1

Client Sample ID: MW-2S

Date Collected: 08/24/17 15:30
Date Received: 08/25/17 09:30

Lab Sample ID: 480-123238-9
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthylene	<5.0		5.0	0.38	ug/L		08/28/17 08:08	08/30/17 21:57	1
Anthracene	<5.0		5.0	0.28	ug/L		08/28/17 08:08	08/30/17 21:57	1
Benz(a)anthracene	<5.0		5.0	0.36	ug/L		08/28/17 08:08	08/30/17 21:57	1
Benzo(a)pyrene	<5.0		5.0	0.47	ug/L		08/28/17 08:08	08/30/17 21:57	1
Benzo(b)fluoranthene	<5.0		5.0	0.34	ug/L		08/28/17 08:08	08/30/17 21:57	1
Benzo(g,h,i)perylene	<5.0		5.0	0.35	ug/L		08/28/17 08:08	08/30/17 21:57	1
Benzo(k)fluoranthene	<5.0		5.0	0.73	ug/L		08/28/17 08:08	08/30/17 21:57	1
Chrysene	<5.0		5.0	0.33	ug/L		08/28/17 08:08	08/30/17 21:57	1
Dibenz(a,h)anthracene	<5.0		5.0	0.42	ug/L		08/28/17 08:08	08/30/17 21:57	1
Fluoranthene	<5.0		5.0	0.40	ug/L		08/28/17 08:08	08/30/17 21:57	1
Fluorene	<5.0		5.0	0.36	ug/L		08/28/17 08:08	08/30/17 21:57	1
Indeno(1,2,3-c,d)pyrene	<5.0		5.0	0.47	ug/L		08/28/17 08:08	08/30/17 21:57	1
Naphthalene	<5.0		5.0	0.76	ug/L		08/28/17 08:08	08/30/17 21:57	1
Phenanthrene	<5.0		5.0	0.44	ug/L		08/28/17 08:08	08/30/17 21:57	1
Pyrene	<5.0		5.0	0.34	ug/L		08/28/17 08:08	08/30/17 21:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*81*		*46 - 120*	*08/28/17 08:08*	*08/30/17 21:57*	*1*
2-Fluorobiphenyl	*78*		*48 - 120*	*08/28/17 08:08*	*08/30/17 21:57*	*1*
p-Terphenyl-d14	*80*		*59 - 136*	*08/28/17 08:08*	*08/30/17 21:57*	*1*

Client Sample ID: MW-4S

Date Collected: 08/24/17 15:00
Date Received: 08/25/17 09:30

Lab Sample ID: 480-123238-10
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<1.0		1.0	0.41	ug/L			08/30/17 17:44	1
Toluene	<1.0		1.0	0.51	ug/L			08/30/17 17:44	1
Ethylbenzene	<1.0		1.0	0.74	ug/L			08/30/17 17:44	1
m-Xylene & p-Xylene	<2.0		2.0	0.66	ug/L			08/30/17 17:44	1
o-Xylene	<1.0		1.0	0.76	ug/L			08/30/17 17:44	1
Xylenes, Total	<2.0		2.0	0.66	ug/L			08/30/17 17:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*77 - 120*		*08/30/17 17:44*	*1*
Toluene-d8 (Surr)	*100*		*80 - 120*		*08/30/17 17:44*	*1*
4-Bromofluorobenzene (Surr)	*92*		*73 - 120*		*08/30/17 17:44*	*1*
Dibromofluoromethane (Surr)	*105*		*75 - 123*		*08/30/17 17:44*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<25		25	2.1	ug/L		08/28/17 08:08	08/30/17 22:26	5
Acenaphthylene	<25		25	1.9	ug/L		08/28/17 08:08	08/30/17 22:26	5
Anthracene	<25		25	1.4	ug/L		08/28/17 08:08	08/30/17 22:26	5
Benz(a)anthracene	<25		25	1.8	ug/L		08/28/17 08:08	08/30/17 22:26	5
Benzo(a)pyrene	<25		25	2.4	ug/L		08/28/17 08:08	08/30/17 22:26	5
Benzo(b)fluoranthene	<25		25	1.7	ug/L		08/28/17 08:08	08/30/17 22:26	5
Benzo(g,h,i)perylene	<25		25	1.8	ug/L		08/28/17 08:08	08/30/17 22:26	5
Benzo(k)fluoranthene	<25		25	3.7	ug/L		08/28/17 08:08	08/30/17 22:26	5

Client Sample ID: MW-4S

Lab Sample ID: 480-123238-10

Date Collected: 08/24/17 15:00

Matrix: Water

Date Received: 08/25/17 09:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chrysene	<25		25	1.7	ug/L		08/28/17 08:08	08/30/17 22:26	5
Dibenz(a,h)anthracene	<25		25	2.1	ug/L		08/28/17 08:08	08/30/17 22:26	5
Fluoranthene	<25		25	2.0	ug/L		08/28/17 08:08	08/30/17 22:26	5
Fluorene	<25		25	1.8	ug/L		08/28/17 08:08	08/30/17 22:26	5
Indeno(1,2,3-c,d)pyrene	<25		25	2.4	ug/L		08/28/17 08:08	08/30/17 22:26	5
Naphthalene	<25		25	3.8	ug/L		08/28/17 08:08	08/30/17 22:26	5
Phenanthrene	<25		25	2.2	ug/L		08/28/17 08:08	08/30/17 22:26	5
Pyrene	<25		25	1.7	ug/L		08/28/17 08:08	08/30/17 22:26	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*79*		*46 - 120*	*08/28/17 08:08*	*08/30/17 22:26*	*5*
2-Fluorobiphenyl	*78*		*48 - 120*	*08/28/17 08:08*	*08/30/17 22:26*	*5*
p-Terphenyl-d14	*86*		*59 - 136*	*08/28/17 08:08*	*08/30/17 22:26*	*5*

Client Sample ID: DUP-082417

Lab Sample ID: 480-123238-11

Date Collected: 08/24/17 00:00

Matrix: Water

Date Received: 08/25/17 09:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<1.0		1.0	0.41	ug/L			08/30/17 18:12	1
Toluene	<1.0		1.0	0.51	ug/L			08/30/17 18:12	1
Ethylbenzene	<1.0		1.0	0.74	ug/L			08/30/17 18:12	1
m-Xylene & p-Xylene	<2.0		2.0	0.66	ug/L			08/30/17 18:12	1
o-Xylene	<1.0		1.0	0.76	ug/L			08/30/17 18:12	1
Xylenes, Total	<2.0		2.0	0.66	ug/L			08/30/17 18:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*105*		*77 - 120*		*08/30/17 18:12*	*1*
Toluene-d8 (Surr)	*99*		*80 - 120*		*08/30/17 18:12*	*1*
4-Bromofluorobenzene (Surr)	*89*		*73 - 120*		*08/30/17 18:12*	*1*
Dibromofluoromethane (Surr)	*108*		*75 - 123*		*08/30/17 18:12*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<5.0		5.0	0.41	ug/L		08/28/17 08:08	08/30/17 22:55	1
Acenaphthylene	<5.0		5.0	0.38	ug/L		08/28/17 08:08	08/30/17 22:55	1
Anthracene	<5.0		5.0	0.28	ug/L		08/28/17 08:08	08/30/17 22:55	1
Benz(a)anthracene	<5.0		5.0	0.36	ug/L		08/28/17 08:08	08/30/17 22:55	1
Benzo(a)pyrene	<5.0		5.0	0.47	ug/L		08/28/17 08:08	08/30/17 22:55	1
Benzo(b)fluoranthene	<5.0		5.0	0.34	ug/L		08/28/17 08:08	08/30/17 22:55	1
Benzo(g,h,i)perylene	<5.0		5.0	0.35	ug/L		08/28/17 08:08	08/30/17 22:55	1
Benzo(k)fluoranthene	<5.0		5.0	0.73	ug/L		08/28/17 08:08	08/30/17 22:55	1
Chrysene	<5.0		5.0	0.33	ug/L		08/28/17 08:08	08/30/17 22:55	1
Dibenz(a,h)anthracene	<5.0		5.0	0.42	ug/L		08/28/17 08:08	08/30/17 22:55	1
Fluoranthene	<5.0		5.0	0.40	ug/L		08/28/17 08:08	08/30/17 22:55	1
Fluorene	<5.0		5.0	0.36	ug/L		08/28/17 08:08	08/30/17 22:55	1
Indeno(1,2,3-c,d)pyrene	<5.0		5.0	0.47	ug/L		08/28/17 08:08	08/30/17 22:55	1
Naphthalene	<5.0		5.0	0.76	ug/L		08/28/17 08:08	08/30/17 22:55	1
Phenanthrene	<5.0		5.0	0.44	ug/L		08/28/17 08:08	08/30/17 22:55	1

Client: New York State Electric & Gas
Project/Site: NYSEG - Elmira Madison Ave Lab & Test

TestAmerica Job ID: 480-123238-1

Client Sample ID: DUP-082417
Date Collected: 08/24/17 00:00
Date Received: 08/25/17 09:30

Lab Sample ID: 480-123238-11
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Pyrene	<5.0		5.0	0.34	ug/L		08/28/17 08:08	08/30/17 22:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*82*		*46 - 120*	*08/28/17 08:08*	*08/30/17 22:55*	*1*
2-Fluorobiphenyl	*83*		*48 - 120*	*08/28/17 08:08*	*08/30/17 22:55*	*1*
p-Terphenyl-d14	*84*		*59 - 136*	*08/28/17 08:08*	*08/30/17 22:55*	*1*

TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228
Phone: 716.691.2600 Fax: 716.691.7991

Chain of Custody Record 245899

TestA
THE LEADER IN E
TestAmerica

480-123238 COC

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	Project Manager: Klaus Beyrle	Site Contact: Ryan Clare	Date: 8-24-17	COC No:
Company Name: Arcadis	Tel/Fax: 585-662-4044	Lab Contact: Mel Deyo	Carrier: FedEx	1 of 1 COCs
Address: 295 Woodcliff Dr.	Analysis Turnaround Time			Sampler:
City/State/Zip: Rochester, NY 14450	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
Phone:	TAT if different from Below Standard			Walk-in Client:
Email: nicholas.beyrle@arcadis.com	☐ 2 weeks			Lab Sampling:
Project Name: Madison Ave Fmr. MGP	☐ 1 week			
Site: Madison Ave	☐ 2 days			Job / SDG No.:
PO # B00131340002	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	BTEX	PAH	Sample Specific Notes:
MW-0405S	8/24/17	1020	G	GW	5			3	2	
MW-0403S		1155			5			3	2	
MW-0404S		1315			5			3	2	
MW-0402S		1420			5			3	2	
MW-8S		1605			5			3	2	
MW-9S		0845			5			3	2	
MW-9S-MS/MSD		0845			10			6	4	
MW-6S		1020			5			3	2	
MW-7		1215			5			3	2	
MW-2S		1330			5			3	2	
MW-4S		1500			5			3	2	
DUP-082417	↓	—	↓	↓	5			3	2	

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☐ Disposal by Lab ☐ Archive for_____ Months

Special Instructions/QC Requirements & Comments:

2.6, 2.9 #1

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd:_____ Corr'd:_____ | Therm ID No.:_____

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Arcadis	8/24/17 1830	[signature]		8/25/17 0930
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

9/8/2017

ARCADIS Design & Consultancy for natural and built assets

NYSEG Elmira Madison Avenue Former MGP Site

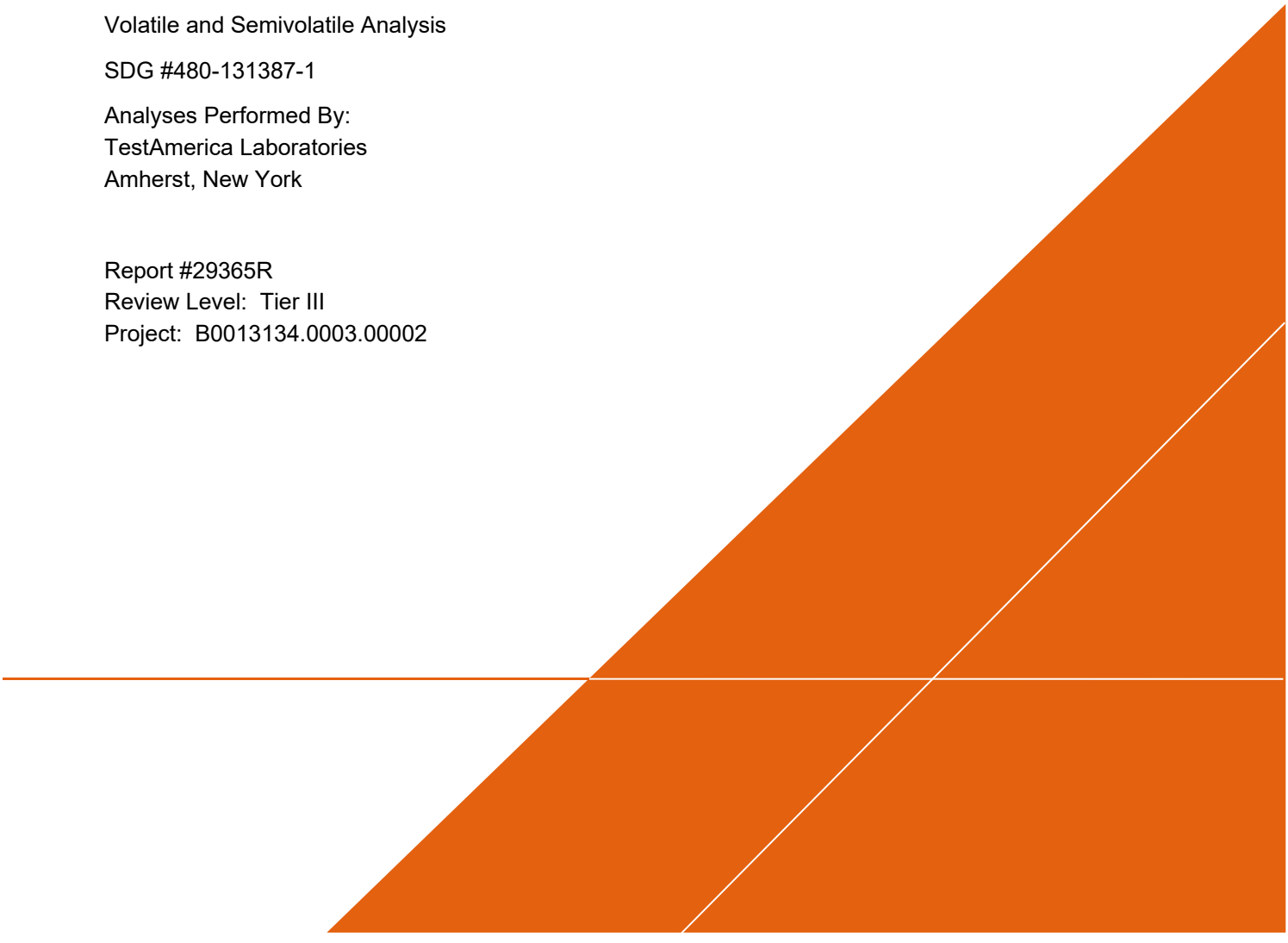
DATA USABILITY SUMMARY REPORT ELMIRA, NEW YORK

Volatile and Semivolatile Analysis

SDG #480-131387-1

Analyses Performed By:
TestAmerica Laboratories
Amherst, New York

Report #29365R
Review Level: Tier III
Project: B0013134.0003.00002



SUMMARY

This data usability summary report (DUSR) summarizes the review of Sample Delivery Group (SDG) # 480-131387-1 for samples collected in association with the NYSEG Elmira Madison Avenue Former MGP Site. The review was conducted as a Tier III evaluation and included review of data package completeness. Only analytical data associated with constituents of concern were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis				
					VOC	SVOC	PCB	MET	MISC
MW-0405S	480-131387-1	Water	02/15/2018		X	X			
MW-6S	480-131387-2	Water	02/15/2018		X	X			
MW-0404S	480-131387-3	Water	02/15/2018		X	X			
MW-04S	480-131387-4	Water	02/15/2018		X	X			
MW-0403S	480-131387-5	Water	02/15/2018		X	X			
MW-0402S	480-131387-7	Water	02/15/2018		X	X			
MW-2S	480-131387-8	Water	02/15/2018		X	X			
MW-9S	480-131387-9	Water	02/15/2018		X	X			
MW-7	480-131387-10	Water	02/15/2018		X	X			
MW-8S	480-131387-11	Water	02/15/2018		X	X			
DUP-021518	480-131387-12	Water	02/15/2018	MW-0405S	X	X			
TRIP BLANK	480-131387-13	Water	02/15/2018		X				

Note:

1. Matrix spike/matrix spike duplicate was performed on sample location MW-6S for VOCs and SVOCs.

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of QA or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

Note:
QA - Quality Assurance

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 8260C and 8270D. Data were reviewed in accordance with USEPA National Functional Guidelines (October 1999) and applicable Region II SOPs. USEPA NFGs and Region II SOPs were followed for qualification purposes.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

  U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

  B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

  E The compound was quantitated above the calibration range.

  D Concentration is based on a diluted sample analysis.

- Validation Qualifiers

  J The compound was positively identified; however, the associated numerical value is an estimated concentration only.

  UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.

  JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.

  UB Compound considered non-detect at the listed value due to associated blank contamination.

  N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

  R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times/Preservation

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260	Water	14 days from collection to analysis (preserved) 7 days from collection to analysis (non-preserved)	Cool to <6 °C; preserved to a pH of less than 2 s.u.
	Soil	48 hours from collection to extraction and 14 days from extraction to analysis	Cool to <6 °C.

Note:
s.u. Standard units

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

3. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

4. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

4.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

4.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

5. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. VOC analysis requires that all surrogates associated with the analysis exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits.

6. Internal Standard Performance

Internal standard performance criteria insure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the VOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

7. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

The MS/MSD exhibited acceptable recoveries and RPD between the MS/MSD recoveries.

8. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits.

9. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
MW-0405S/DUP-021518	All compounds	U	U	AC

Notes:
AC Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

10. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

11. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCs

VOCs: SW-846 8260	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks					
C. Trip blanks					X
Laboratory Control Sample (LCS)		X		X	
Laboratory Control Sample Duplicate(LCSD)					
LCS/LCSD Precision (RPD)					
Matrix Spike (MS)		X		X	
Matrix Spike Duplicate(MSD)		X		X	
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)		X		X	
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content	X				X
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Internal standard		X		X	
Compound identification and quantitation					
A. Reconstructed ion chromatograms		X		X	
B. Quantitation Reports		X		X	

VOCs: SW-846 8260	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
C. RT of sample compounds within the established RT windows		X		X	
D. Transcription/calculation errors present		X		X	
E. Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

SEMIVOLATILE ORGANIC COMPOUND (SVOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8270	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C
	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e., method and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Compounds were not detected above the MDL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

3. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable and all analyses were performed within a 12-hour tune clock.

System performance and column resolution were acceptable.

4. Calibration

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

4.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (20%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

4.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less than the control limit (20%) and RRF value greater than control limit (0.05).

All compounds associated with the calibrations were within the specified control limits.

5. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. SVOC analysis requires that two of the three SVOC surrogate compounds within each fraction exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits.

6. Internal Standard Performance

Internal standard performance criteria insure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria require the internal standard compounds associated with the SVOC exhibit area counts that are not greater than two times (+100%) or less than one-half (-50%) of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

7. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The compounds used to perform the MS/MSD analysis must exhibit a percent recovery within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS/MSD recoveries must exhibit an RPD within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSD performed on sample locations where the compound concentration detected in the parent sample exceeds the MS/MSD concentration by a factor of four or greater.

The MS/MSD exhibited acceptable recoveries and RPD between the MS/MSD recoveries.

8. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits.

9. Field Duplicate Analysis

Field duplicate analysis is used to assess the overall precision of the field sampling procedures and analytical method. A control limit of 30% for water matrices and 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL is applied for water matrices or three times the RL is applied for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
MW-0405S/DUP-021518	All compounds	U	U	AC

Notes:
AC Acceptable

10. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

11. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR SVOCs

SVOCs: SW-846 8270	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment blanks					X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate(LCSD) %R					X
LCS/LCSD Precision (RPD)					X
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate(MSD) %R		X		X	
MS/MSD Precision (RPD)		X		X	
Field/Lab Duplicate (RPD)		X		X	
Surrogate Spike Recoveries		X		X	
Dilution Factor		X		X	
Moisture Content	X				X
Tier III Validation					
System performance and column resolution		X		X	
Initial calibration %RSDs		X		X	
Continuing calibration RRFs		X		X	
Continuing calibration %Ds		X		X	
Instrument tune and performance check		X		X	
Ion abundance criteria for each instrument used		X		X	
Internal standard		X		X	
Compound identification and quantitation					
F. Reconstructed ion chromatograms		X		X	
G. Quantitation Reports		X		X	
H. RT of sample compounds within the established RT windows		X		X	

SVOCs: SW-846 8270		Reported		Performance Acceptable		Not Required
		No	Yes	No	Yes	
GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS)						
I.	Quantitation transcriptions/calculations		X		X	
J.	Reporting limits adjusted to reflect sample dilutions		X		X	

Notes:

%RSD Relative standard deviation

%R Percent recovery

RPD Relative percent difference

%D Percent difference

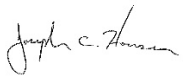
SAMPLE COMPLIANCE REPORT

Sample Delivery Group (SDG)	Sampling Date	Protocol	Sample ID	Matrix	Compliancy[1]					Noncompliance
					VOC	SVOC	PCB	MET	MISC	
480-131387-1	02/15/2018	USEPA/ SW846	MW-0405S	Water	Yes	Yes	--	--	--	
	02/15/2018	USEPA/ SW846	MW-6S	Water	Yes	Yes	--	--	--	
	02/15/2018	USEPA/ SW846	MW-0404S	Water	Yes	Yes	--	--	--	
	02/15/2018	USEPA/ SW846	MW-04S	Water	Yes	Yes	--	--	--	
	02/15/2018	USEPA/ SW846	MW-0403S	Water	Yes	Yes	--	--	--	
	02/15/2018	USEPA/ SW846	MW-0402S	Water	Yes	Yes	--	--	--	
	02/15/2018	USEPA/ SW846	MW-2S	Water	Yes	Yes	--	--	--	
	02/15/2018	USEPA/ SW846	MW-9S	Water	Yes	Yes	--	--	--	
	02/15/2018	USEPA/ SW846	MW-7	Water	Yes	Yes	--	--	--	
	02/15/2018	USEPA/ SW846	MW-8S	Water	Yes	Yes	--	--	--	
	02/15/2018	USEPA/ SW846	DUP-021518	Water	Yes	Yes	--	--	--	
	02/15/2018	USEPA/ SW846	TRIP BLANK	Water	Yes	--	--	--	--	

Note:

1 Samples which are compliant with no added validation qualifiers are listed as "yes". Samples which are non-compliant or which have added qualifiers are listed as "no". A "no" designation does not necessarily indicate that the data have been rejected or are otherwise unusable.

VALIDATION PERFORMED BY: Joseph C. Houser

SIGNATURE: 

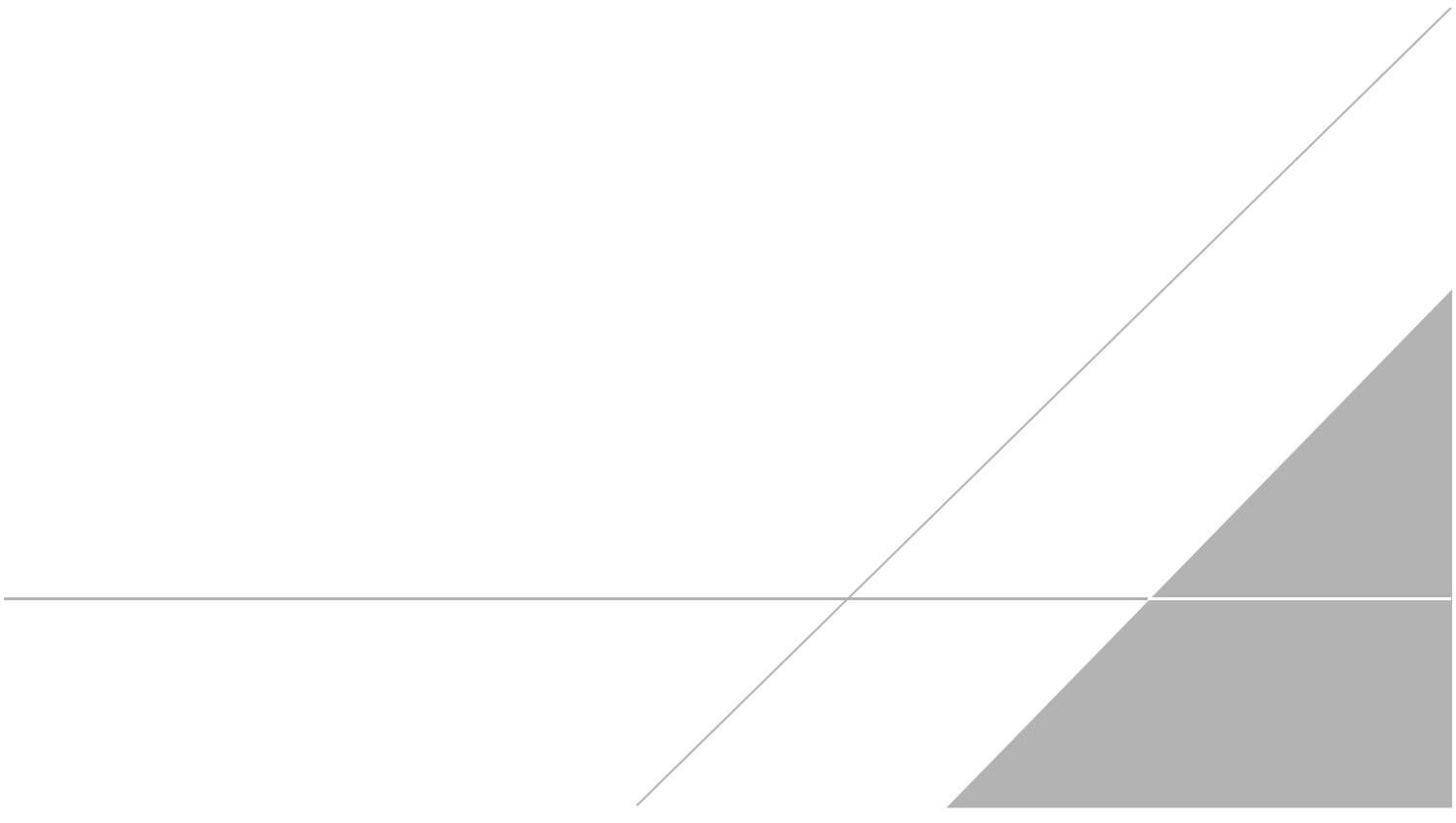
DATE: March 6, 2018

PEER REVIEW: Dennis Capria

DATE: March 13, 2018

CHAIN OF CUSTODY

CORRECTED SAMPLE ANALYSIS DATA SHEETS



Client Sample ID: MW-0405S

Lab Sample ID: 480-131387-1

Date Collected: 02/15/18 08:20

Matrix: Water

Date Received: 02/16/18 10:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<1.0		1.0	0.41	ug/L			02/18/18 11:29	1
Toluene	<1.0		1.0	0.51	ug/L			02/18/18 11:29	1
Ethylbenzene	<1.0		1.0	0.74	ug/L			02/18/18 11:29	1
m-Xylene & p-Xylene	<2.0		2.0	0.66	ug/L			02/18/18 11:29	1
o-Xylene	<1.0		1.0	0.76	ug/L			02/18/18 11:29	1
Xylenes, Total	<2.0		2.0	0.66	ug/L			02/18/18 11:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*77 - 120*		*02/18/18 11:29*	*1*
Toluene-d8 (Surr)	*105*		*80 - 120*		*02/18/18 11:29*	*1*
4-Bromofluorobenzene (Surr)	*101*		*73 - 120*		*02/18/18 11:29*	*1*
Dibromofluoromethane (Surr)	*101*		*75 - 123*		*02/18/18 11:29*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<5.0		5.0	0.41	ug/L		02/19/18 07:45	02/20/18 15:25	1
Acenaphthylene	<5.0		5.0	0.38	ug/L		02/19/18 07:45	02/20/18 15:25	1
Anthracene	<5.0		5.0	0.28	ug/L		02/19/18 07:45	02/20/18 15:25	1
Benz(a)anthracene	<5.0		5.0	0.36	ug/L		02/19/18 07:45	02/20/18 15:25	1
Benzo(a)pyrene	<5.0		5.0	0.47	ug/L		02/19/18 07:45	02/20/18 15:25	1
Benzo(b)fluoranthene	<5.0		5.0	0.34	ug/L		02/19/18 07:45	02/20/18 15:25	1
Benzo(g,h,i)perylene	<5.0		5.0	0.35	ug/L		02/19/18 07:45	02/20/18 15:25	1
Benzo(k)fluoranthene	<5.0		5.0	0.73	ug/L		02/19/18 07:45	02/20/18 15:25	1
Chrysene	<5.0		5.0	0.33	ug/L		02/19/18 07:45	02/20/18 15:25	1
Dibenz(a,h)anthracene	<5.0		5.0	0.42	ug/L		02/19/18 07:45	02/20/18 15:25	1
Fluoranthene	<5.0		5.0	0.40	ug/L		02/19/18 07:45	02/20/18 15:25	1
Fluorene	<5.0		5.0	0.36	ug/L		02/19/18 07:45	02/20/18 15:25	1
Indeno(1,2,3-c,d)pyrene	<5.0		5.0	0.47	ug/L		02/19/18 07:45	02/20/18 15:25	1
Naphthalene	<5.0		5.0	0.76	ug/L		02/19/18 07:45	02/20/18 15:25	1
Phenanthrene	<5.0		5.0	0.44	ug/L		02/19/18 07:45	02/20/18 15:25	1
Pyrene	<5.0		5.0	0.34	ug/L		02/19/18 07:45	02/20/18 15:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*84*		*46 - 120*	*02/19/18 07:45*	*02/20/18 15:25*	*1*
2-Fluorobiphenyl	*98*		*48 - 120*	*02/19/18 07:45*	*02/20/18 15:25*	*1*
p-Terphenyl-d14	*96*		*59 - 136*	*02/19/18 07:45*	*02/20/18 15:25*	*1*

Client Sample ID: MW-6S

Lab Sample ID: 480-131387-2

Date Collected: 02/15/18 08:40

Matrix: Water

Date Received: 02/16/18 10:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<1.0		1.0	0.41	ug/L			02/18/18 11:53	1
Toluene	<1.0		1.0	0.51	ug/L			02/18/18 11:53	1
Ethylbenzene	<1.0		1.0	0.74	ug/L			02/18/18 11:53	1
m-Xylene & p-Xylene	<2.0		2.0	0.66	ug/L			02/18/18 11:53	1
o-Xylene	<1.0		1.0	0.76	ug/L			02/18/18 11:53	1
Xylenes, Total	<2.0		2.0	0.66	ug/L			02/18/18 11:53	1

Client Sample ID: MW-6S

Lab Sample ID: 480-131387-2

Date Collected: 02/15/18 08:40

Matrix: Water

Date Received: 02/16/18 10:00

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*77 - 120*		*02/18/18 11:53*	*1*
Toluene-d8 (Surr)	*102*		*80 - 120*		*02/18/18 11:53*	*1*
4-Bromofluorobenzene (Surr)	*99*		*73 - 120*		*02/18/18 11:53*	*1*
Dibromofluoromethane (Surr)	*101*		*75 - 123*		*02/18/18 11:53*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<5.0		5.0	0.41	ug/L		02/19/18 07:45	02/20/18 14:55	1
Acenaphthylene	<5.0		5.0	0.38	ug/L		02/19/18 07:45	02/20/18 14:55	1
Anthracene	<5.0		5.0	0.28	ug/L		02/19/18 07:45	02/20/18 14:55	1
Benz(a)anthracene	<5.0		5.0	0.36	ug/L		02/19/18 07:45	02/20/18 14:55	1
Benzo(a)pyrene	<5.0		5.0	0.47	ug/L		02/19/18 07:45	02/20/18 14:55	1
Benzo(b)fluoranthene	<5.0		5.0	0.34	ug/L		02/19/18 07:45	02/20/18 14:55	1
Benzo(g,h,i)perylene	<5.0		5.0	0.35	ug/L		02/19/18 07:45	02/20/18 14:55	1
Benzo(k)fluoranthene	<5.0		5.0	0.73	ug/L		02/19/18 07:45	02/20/18 14:55	1
Chrysene	<5.0		5.0	0.33	ug/L		02/19/18 07:45	02/20/18 14:55	1
Dibenz(a,h)anthracene	<5.0		5.0	0.42	ug/L		02/19/18 07:45	02/20/18 14:55	1
Fluoranthene	<5.0		5.0	0.40	ug/L		02/19/18 07:45	02/20/18 14:55	1
Fluorene	<5.0		5.0	0.36	ug/L		02/19/18 07:45	02/20/18 14:55	1
Indeno(1,2,3-c,d)pyrene	<5.0		5.0	0.47	ug/L		02/19/18 07:45	02/20/18 14:55	1
Naphthalene	<5.0		5.0	0.76	ug/L		02/19/18 07:45	02/20/18 14:55	1
Phenanthrene	<5.0		5.0	0.44	ug/L		02/19/18 07:45	02/20/18 14:55	1
Pyrene	<5.0		5.0	0.34	ug/L		02/19/18 07:45	02/20/18 14:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*85*		*46 - 120*	*02/19/18 07:45*	*02/20/18 14:55*	*1*
2-Fluorobiphenyl	*97*		*48 - 120*	*02/19/18 07:45*	*02/20/18 14:55*	*1*
p-Terphenyl-d14	*97*		*59 - 136*	*02/19/18 07:45*	*02/20/18 14:55*	*1*

Client Sample ID: MW-0404S

Lab Sample ID: 480-131387-3

Date Collected: 02/15/18 09:25

Matrix: Water

Date Received: 02/16/18 10:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<1.0		1.0	0.41	ug/L			02/18/18 12:16	1
Toluene	<1.0		1.0	0.51	ug/L			02/18/18 12:16	1
Ethylbenzene	<1.0		1.0	0.74	ug/L			02/18/18 12:16	1
m-Xylene & p-Xylene	<2.0		2.0	0.66	ug/L			02/18/18 12:16	1
o-Xylene	<1.0		1.0	0.76	ug/L			02/18/18 12:16	1
Xylenes, Total	<2.0		2.0	0.66	ug/L			02/18/18 12:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*97*		*77 - 120*		*02/18/18 12:16*	*1*
Toluene-d8 (Surr)	*100*		*80 - 120*		*02/18/18 12:16*	*1*
4-Bromofluorobenzene (Surr)	*98*		*73 - 120*		*02/18/18 12:16*	*1*
Dibromofluoromethane (Surr)	*106*		*75 - 123*		*02/18/18 12:16*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<5.0		5.0	0.41	ug/L		02/19/18 07:45	02/20/18 15:54	1

Client Sample ID: MW-0404S

Date Collected: 02/15/18 09:25
Date Received: 02/16/18 10:00

Lab Sample ID: 480-131387-3
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthylene	<5.0		5.0	0.38	ug/L		02/19/18 07:45	02/20/18 15:54	1
Anthracene	<5.0		5.0	0.28	ug/L		02/19/18 07:45	02/20/18 15:54	1
Benz(a)anthracene	<5.0		5.0	0.36	ug/L		02/19/18 07:45	02/20/18 15:54	1
Benzo(a)pyrene	<5.0		5.0	0.47	ug/L		02/19/18 07:45	02/20/18 15:54	1
Benzo(b)fluoranthene	<5.0		5.0	0.34	ug/L		02/19/18 07:45	02/20/18 15:54	1
Benzo(g,h,i)perylene	<5.0		5.0	0.35	ug/L		02/19/18 07:45	02/20/18 15:54	1
Benzo(k)fluoranthene	<5.0		5.0	0.73	ug/L		02/19/18 07:45	02/20/18 15:54	1
Chrysene	<5.0		5.0	0.33	ug/L		02/19/18 07:45	02/20/18 15:54	1
Dibenz(a,h)anthracene	<5.0		5.0	0.42	ug/L		02/19/18 07:45	02/20/18 15:54	1
Fluoranthene	<5.0		5.0	0.40	ug/L		02/19/18 07:45	02/20/18 15:54	1
Fluorene	<5.0		5.0	0.36	ug/L		02/19/18 07:45	02/20/18 15:54	1
Indeno(1,2,3-c,d)pyrene	<5.0		5.0	0.47	ug/L		02/19/18 07:45	02/20/18 15:54	1
Naphthalene	<5.0		5.0	0.76	ug/L		02/19/18 07:45	02/20/18 15:54	1
Phenanthrene	<5.0		5.0	0.44	ug/L		02/19/18 07:45	02/20/18 15:54	1
Pyrene	<5.0		5.0	0.34	ug/L		02/19/18 07:45	02/20/18 15:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*83*		*46 - 120*	*02/19/18 07:45*	*02/20/18 15:54*	*1*
2-Fluorobiphenyl	*95*		*48 - 120*	*02/19/18 07:45*	*02/20/18 15:54*	*1*
p-Terphenyl-d14	*91*		*59 - 136*	*02/19/18 07:45*	*02/20/18 15:54*	*1*

Client Sample ID: MW-04S

Date Collected: 02/15/18 10:05
Date Received: 02/16/18 10:00

Lab Sample ID: 480-131387-4
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<1.0		1.0	0.41	ug/L			02/18/18 12:39	1
Toluene	<1.0		1.0	0.51	ug/L			02/18/18 12:39	1
Ethylbenzene	<1.0		1.0	0.74	ug/L			02/18/18 12:39	1
m-Xylene & p-Xylene	<2.0		2.0	0.66	ug/L			02/18/18 12:39	1
o-Xylene	<1.0		1.0	0.76	ug/L			02/18/18 12:39	1
Xylenes, Total	<2.0		2.0	0.66	ug/L			02/18/18 12:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*77 - 120*		*02/18/18 12:39*	*1*
Toluene-d8 (Surr)	*103*		*80 - 120*		*02/18/18 12:39*	*1*
4-Bromofluorobenzene (Surr)	*98*		*73 - 120*		*02/18/18 12:39*	*1*
Dibromofluoromethane (Surr)	*99*		*75 - 123*		*02/18/18 12:39*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<5.0		5.0	0.41	ug/L		02/19/18 07:45	02/20/18 16:22	1
Acenaphthylene	<5.0		5.0	0.38	ug/L		02/19/18 07:45	02/20/18 16:22	1
Anthracene	<5.0		5.0	0.28	ug/L		02/19/18 07:45	02/20/18 16:22	1
Benz(a)anthracene	<5.0		5.0	0.36	ug/L		02/19/18 07:45	02/20/18 16:22	1
Benzo(a)pyrene	<5.0		5.0	0.47	ug/L		02/19/18 07:45	02/20/18 16:22	1
Benzo(b)fluoranthene	<5.0		5.0	0.34	ug/L		02/19/18 07:45	02/20/18 16:22	1
Benzo(g,h,i)perylene	<5.0		5.0	0.35	ug/L		02/19/18 07:45	02/20/18 16:22	1
Benzo(k)fluoranthene	<5.0		5.0	0.73	ug/L		02/19/18 07:45	02/20/18 16:22	1

Client Sample ID: MW-04S

Date Collected: 02/15/18 10:05
Date Received: 02/16/18 10:00

Lab Sample ID: 480-131387-4
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chrysene	<5.0		5.0	0.33	ug/L		02/19/18 07:45	02/20/18 16:22	1
Dibenz(a,h)anthracene	<5.0		5.0	0.42	ug/L		02/19/18 07:45	02/20/18 16:22	1
Fluoranthene	<5.0		5.0	0.40	ug/L		02/19/18 07:45	02/20/18 16:22	1
Fluorene	<5.0		5.0	0.36	ug/L		02/19/18 07:45	02/20/18 16:22	1
Indeno(1,2,3-c,d)pyrene	<5.0		5.0	0.47	ug/L		02/19/18 07:45	02/20/18 16:22	1
Naphthalene	<5.0		5.0	0.76	ug/L		02/19/18 07:45	02/20/18 16:22	1
Phenanthrene	<5.0		5.0	0.44	ug/L		02/19/18 07:45	02/20/18 16:22	1
Pyrene	<5.0		5.0	0.34	ug/L		02/19/18 07:45	02/20/18 16:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*87*		*46 - 120*	*02/19/18 07:45*	*02/20/18 16:22*	*1*
2-Fluorobiphenyl	*103*		*48 - 120*	*02/19/18 07:45*	*02/20/18 16:22*	*1*
p-Terphenyl-d14	*106*		*59 - 136*	*02/19/18 07:45*	*02/20/18 16:22*	*1*

Client Sample ID: MW-0403S

Date Collected: 02/15/18 10:15
Date Received: 02/16/18 10:00

Lab Sample ID: 480-131387-5
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<1.0		1.0	0.41	ug/L			02/18/18 13:02	1
Toluene	<1.0		1.0	0.51	ug/L			02/18/18 13:02	1
Ethylbenzene	<1.0		1.0	0.74	ug/L			02/18/18 13:02	1
m-Xylene & p-Xylene	<2.0		2.0	0.66	ug/L			02/18/18 13:02	1
o-Xylene	<1.0		1.0	0.76	ug/L			02/18/18 13:02	1
Xylenes, Total	<2.0		2.0	0.66	ug/L			02/18/18 13:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*77 - 120*		*02/18/18 13:02*	*1*
Toluene-d8 (Surr)	*101*		*80 - 120*		*02/18/18 13:02*	*1*
4-Bromofluorobenzene (Surr)	*98*		*73 - 120*		*02/18/18 13:02*	*1*
Dibromofluoromethane (Surr)	*107*		*75 - 123*		*02/18/18 13:02*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<5.0		5.0	0.41	ug/L		02/19/18 07:45	02/20/18 16:51	1
Acenaphthylene	<5.0		5.0	0.38	ug/L		02/19/18 07:45	02/20/18 16:51	1
Anthracene	<5.0		5.0	0.28	ug/L		02/19/18 07:45	02/20/18 16:51	1
Benz(a)anthracene	<5.0		5.0	0.36	ug/L		02/19/18 07:45	02/20/18 16:51	1
Benzo(a)pyrene	<5.0		5.0	0.47	ug/L		02/19/18 07:45	02/20/18 16:51	1
Benzo(b)fluoranthene	<5.0		5.0	0.34	ug/L		02/19/18 07:45	02/20/18 16:51	1
Benzo(g,h,i)perylene	<5.0		5.0	0.35	ug/L		02/19/18 07:45	02/20/18 16:51	1
Benzo(k)fluoranthene	<5.0		5.0	0.73	ug/L		02/19/18 07:45	02/20/18 16:51	1
Chrysene	<5.0		5.0	0.33	ug/L		02/19/18 07:45	02/20/18 16:51	1
Dibenz(a,h)anthracene	<5.0		5.0	0.42	ug/L		02/19/18 07:45	02/20/18 16:51	1
Fluoranthene	<5.0		5.0	0.40	ug/L		02/19/18 07:45	02/20/18 16:51	1
Fluorene	<5.0		5.0	0.36	ug/L		02/19/18 07:45	02/20/18 16:51	1
Indeno(1,2,3-c,d)pyrene	<5.0		5.0	0.47	ug/L		02/19/18 07:45	02/20/18 16:51	1
Naphthalene	<5.0		5.0	0.76	ug/L		02/19/18 07:45	02/20/18 16:51	1
Phenanthrene	<5.0		5.0	0.44	ug/L		02/19/18 07:45	02/20/18 16:51	1

Client Sample ID: MW-0403S

Lab Sample ID: 480-131387-5

Date Collected: 02/15/18 10:15

Matrix: Water

Date Received: 02/16/18 10:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Pyrene	<5.0		5.0	0.34	ug/L		02/19/18 07:45	02/20/18 16:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*79*		*46 - 120*	*02/19/18 07:45*	*02/20/18 16:51*	*1*
2-Fluorobiphenyl	*92*		*48 - 120*	*02/19/18 07:45*	*02/20/18 16:51*	*1*
p-Terphenyl-d14	*93*		*59 - 136*	*02/19/18 07:45*	*02/20/18 16:51*	*1*

Client Sample ID: MW-0402S

Lab Sample ID: 480-131387-7

Date Collected: 02/15/18 11:10

Matrix: Water

Date Received: 02/16/18 10:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<1.0		1.0	0.41	ug/L			02/18/18 13:25	1
Toluene	<1.0		1.0	0.51	ug/L			02/18/18 13:25	1
Ethylbenzene	<1.0		1.0	0.74	ug/L			02/18/18 13:25	1
m-Xylene & p-Xylene	<2.0		2.0	0.66	ug/L			02/18/18 13:25	1
o-Xylene	<1.0		1.0	0.76	ug/L			02/18/18 13:25	1
Xylenes, Total	<2.0		2.0	0.66	ug/L			02/18/18 13:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*77 - 120*		*02/18/18 13:25*	*1*
Toluene-d8 (Surr)	*105*		*80 - 120*		*02/18/18 13:25*	*1*
4-Bromofluorobenzene (Surr)	*101*		*73 - 120*		*02/18/18 13:25*	*1*
Dibromofluoromethane (Surr)	*103*		*75 - 123*		*02/18/18 13:25*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<5.0		5.0	0.41	ug/L		02/19/18 07:45	02/20/18 17:21	1
Acenaphthylene	<5.0		5.0	0.38	ug/L		02/19/18 07:45	02/20/18 17:21	1
Anthracene	<5.0		5.0	0.28	ug/L		02/19/18 07:45	02/20/18 17:21	1
Benz(a)anthracene	<5.0		5.0	0.36	ug/L		02/19/18 07:45	02/20/18 17:21	1
Benzo(a)pyrene	<5.0		5.0	0.47	ug/L		02/19/18 07:45	02/20/18 17:21	1
Benzo(b)fluoranthene	<5.0		5.0	0.34	ug/L		02/19/18 07:45	02/20/18 17:21	1
Benzo(g,h,i)perylene	<5.0		5.0	0.35	ug/L		02/19/18 07:45	02/20/18 17:21	1
Benzo(k)fluoranthene	<5.0		5.0	0.73	ug/L		02/19/18 07:45	02/20/18 17:21	1
Chrysene	<5.0		5.0	0.33	ug/L		02/19/18 07:45	02/20/18 17:21	1
Dibenz(a,h)anthracene	<5.0		5.0	0.42	ug/L		02/19/18 07:45	02/20/18 17:21	1
Fluoranthene	<5.0		5.0	0.40	ug/L		02/19/18 07:45	02/20/18 17:21	1
Fluorene	<5.0		5.0	0.36	ug/L		02/19/18 07:45	02/20/18 17:21	1
Indeno(1,2,3-c,d)pyrene	<5.0		5.0	0.47	ug/L		02/19/18 07:45	02/20/18 17:21	1
Naphthalene	<5.0		5.0	0.76	ug/L		02/19/18 07:45	02/20/18 17:21	1
Phenanthrene	<5.0		5.0	0.44	ug/L		02/19/18 07:45	02/20/18 17:21	1
Pyrene	<5.0		5.0	0.34	ug/L		02/19/18 07:45	02/20/18 17:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*82*		*46 - 120*	*02/19/18 07:45*	*02/20/18 17:21*	*1*
2-Fluorobiphenyl	*96*		*48 - 120*	*02/19/18 07:45*	*02/20/18 17:21*	*1*
p-Terphenyl-d14	*84*		*59 - 136*	*02/19/18 07:45*	*02/20/18 17:21*	*1*

Client Sample ID: MW-2S

Lab Sample ID: 480-131387-8

Date Collected: 02/15/18 11:35

Matrix: Water

Date Received: 02/16/18 10:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<1.0		1.0	0.41	ug/L			02/18/18 13:48	1
Toluene	<1.0		1.0	0.51	ug/L			02/18/18 13:48	1
Ethylbenzene	<1.0		1.0	0.74	ug/L			02/18/18 13:48	1
m-Xylene & p-Xylene	<2.0		2.0	0.66	ug/L			02/18/18 13:48	1
o-Xylene	<1.0		1.0	0.76	ug/L			02/18/18 13:48	1
Xylenes, Total	<2.0		2.0	0.66	ug/L			02/18/18 13:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*98*		*77 - 120*		*02/18/18 13:48*	*1*
Toluene-d8 (Surr)	*104*		*80 - 120*		*02/18/18 13:48*	*1*
4-Bromofluorobenzene (Surr)	*100*		*73 - 120*		*02/18/18 13:48*	*1*
Dibromofluoromethane (Surr)	*104*		*75 - 123*		*02/18/18 13:48*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<5.0		5.0	0.41	ug/L		02/19/18 07:45	02/20/18 17:49	1
Acenaphthylene	<5.0		5.0	0.38	ug/L		02/19/18 07:45	02/20/18 17:49	1
Anthracene	<5.0		5.0	0.28	ug/L		02/19/18 07:45	02/20/18 17:49	1
Benz(a)anthracene	<5.0		5.0	0.36	ug/L		02/19/18 07:45	02/20/18 17:49	1
Benzo(a)pyrene	<5.0		5.0	0.47	ug/L		02/19/18 07:45	02/20/18 17:49	1
Benzo(b)fluoranthene	<5.0		5.0	0.34	ug/L		02/19/18 07:45	02/20/18 17:49	1
Benzo(g,h,i)perylene	<5.0		5.0	0.35	ug/L		02/19/18 07:45	02/20/18 17:49	1
Benzo(k)fluoranthene	<5.0		5.0	0.73	ug/L		02/19/18 07:45	02/20/18 17:49	1
Chrysene	<5.0		5.0	0.33	ug/L		02/19/18 07:45	02/20/18 17:49	1
Dibenz(a,h)anthracene	<5.0		5.0	0.42	ug/L		02/19/18 07:45	02/20/18 17:49	1
Fluoranthene	<5.0		5.0	0.40	ug/L		02/19/18 07:45	02/20/18 17:49	1
Fluorene	<5.0		5.0	0.36	ug/L		02/19/18 07:45	02/20/18 17:49	1
Indeno(1,2,3-c,d)pyrene	<5.0		5.0	0.47	ug/L		02/19/18 07:45	02/20/18 17:49	1
Naphthalene	<5.0		5.0	0.76	ug/L		02/19/18 07:45	02/20/18 17:49	1
Phenanthrene	<5.0		5.0	0.44	ug/L		02/19/18 07:45	02/20/18 17:49	1
Pyrene	<5.0		5.0	0.34	ug/L		02/19/18 07:45	02/20/18 17:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*83*		*46 - 120*	*02/19/18 07:45*	*02/20/18 17:49*	*1*
2-Fluorobiphenyl	*95*		*48 - 120*	*02/19/18 07:45*	*02/20/18 17:49*	*1*
p-Terphenyl-d14	*95*		*59 - 136*	*02/19/18 07:45*	*02/20/18 17:49*	*1*

Client Sample ID: MW-9S

Lab Sample ID: 480-131387-9

Date Collected: 02/15/18 12:05

Matrix: Water

Date Received: 02/16/18 10:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<1.0		1.0	0.41	ug/L			02/18/18 14:10	1
Toluene	<1.0		1.0	0.51	ug/L			02/18/18 14:10	1
Ethylbenzene	<1.0		1.0	0.74	ug/L			02/18/18 14:10	1
m-Xylene & p-Xylene	<2.0		2.0	0.66	ug/L			02/18/18 14:10	1
o-Xylene	<1.0		1.0	0.76	ug/L			02/18/18 14:10	1
Xylenes, Total	<2.0		2.0	0.66	ug/L			02/18/18 14:10	1

Client Sample ID: MW-9S

Lab Sample ID: 480-131387-9

Date Collected: 02/15/18 12:05

Matrix: Water

Date Received: 02/16/18 10:00

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*103*		*77 - 120*		*02/18/18 14:10*	*1*
Toluene-d8 (Surr)	*102*		*80 - 120*		*02/18/18 14:10*	*1*
4-Bromofluorobenzene (Surr)	*99*		*73 - 120*		*02/18/18 14:10*	*1*
Dibromofluoromethane (Surr)	*108*		*75 - 123*		*02/18/18 14:10*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<5.0		5.0	0.41	ug/L		02/19/18 07:45	02/20/18 18:19	1
Acenaphthylene	<5.0		5.0	0.38	ug/L		02/19/18 07:45	02/20/18 18:19	1
Anthracene	<5.0		5.0	0.28	ug/L		02/19/18 07:45	02/20/18 18:19	1
Benz(a)anthracene	<5.0		5.0	0.36	ug/L		02/19/18 07:45	02/20/18 18:19	1
Benzo(a)pyrene	<5.0		5.0	0.47	ug/L		02/19/18 07:45	02/20/18 18:19	1
Benzo(b)fluoranthene	<5.0		5.0	0.34	ug/L		02/19/18 07:45	02/20/18 18:19	1
Benzo(g,h,i)perylene	<5.0		5.0	0.35	ug/L		02/19/18 07:45	02/20/18 18:19	1
Benzo(k)fluoranthene	<5.0		5.0	0.73	ug/L		02/19/18 07:45	02/20/18 18:19	1
Chrysene	<5.0		5.0	0.33	ug/L		02/19/18 07:45	02/20/18 18:19	1
Dibenz(a,h)anthracene	<5.0		5.0	0.42	ug/L		02/19/18 07:45	02/20/18 18:19	1
Fluoranthene	<5.0		5.0	0.40	ug/L		02/19/18 07:45	02/20/18 18:19	1
Fluorene	<5.0		5.0	0.36	ug/L		02/19/18 07:45	02/20/18 18:19	1
Indeno(1,2,3-c,d)pyrene	<5.0		5.0	0.47	ug/L		02/19/18 07:45	02/20/18 18:19	1
Naphthalene	<5.0		5.0	0.76	ug/L		02/19/18 07:45	02/20/18 18:19	1
Phenanthrene	<5.0		5.0	0.44	ug/L		02/19/18 07:45	02/20/18 18:19	1
Pyrene	<5.0		5.0	0.34	ug/L		02/19/18 07:45	02/20/18 18:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*87*		*46 - 120*	*02/19/18 07:45*	*02/20/18 18:19*	*1*
2-Fluorobiphenyl	*101*		*48 - 120*	*02/19/18 07:45*	*02/20/18 18:19*	*1*
p-Terphenyl-d14	*111*		*59 - 136*	*02/19/18 07:45*	*02/20/18 18:19*	*1*

Client Sample ID: MW-7

Lab Sample ID: 480-131387-10

Date Collected: 02/15/18 13:40

Matrix: Water

Date Received: 02/16/18 10:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<1.0		1.0	0.41	ug/L			02/18/18 14:34	1
Toluene	<1.0		1.0	0.51	ug/L			02/18/18 14:34	1
Ethylbenzene	<1.0		1.0	0.74	ug/L			02/18/18 14:34	1
m-Xylene & p-Xylene	<2.0		2.0	0.66	ug/L			02/18/18 14:34	1
o-Xylene	<1.0		1.0	0.76	ug/L			02/18/18 14:34	1
Xylenes, Total	<2.0		2.0	0.66	ug/L			02/18/18 14:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*101*		*77 - 120*		*02/18/18 14:34*	*1*
Toluene-d8 (Surr)	*104*		*80 - 120*		*02/18/18 14:34*	*1*
4-Bromofluorobenzene (Surr)	*101*		*73 - 120*		*02/18/18 14:34*	*1*
Dibromofluoromethane (Surr)	*108*		*75 - 123*		*02/18/18 14:34*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<5.0		5.0	0.41	ug/L		02/19/18 07:45	02/20/18 18:48	1

Client Sample ID: MW-7

Lab Sample ID: 480-131387-10

Date Collected: 02/15/18 13:40

Matrix: Water

Date Received: 02/16/18 10:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthylene	<5.0		5.0	0.38	ug/L		02/19/18 07:45	02/20/18 18:48	1
Anthracene	<5.0		5.0	0.28	ug/L		02/19/18 07:45	02/20/18 18:48	1
Benz(a)anthracene	<5.0		5.0	0.36	ug/L		02/19/18 07:45	02/20/18 18:48	1
Benzo(a)pyrene	<5.0		5.0	0.47	ug/L		02/19/18 07:45	02/20/18 18:48	1
Benzo(b)fluoranthene	<5.0		5.0	0.34	ug/L		02/19/18 07:45	02/20/18 18:48	1
Benzo(g,h,i)perylene	<5.0		5.0	0.35	ug/L		02/19/18 07:45	02/20/18 18:48	1
Benzo(k)fluoranthene	<5.0		5.0	0.73	ug/L		02/19/18 07:45	02/20/18 18:48	1
Chrysene	<5.0		5.0	0.33	ug/L		02/19/18 07:45	02/20/18 18:48	1
Dibenz(a,h)anthracene	<5.0		5.0	0.42	ug/L		02/19/18 07:45	02/20/18 18:48	1
Fluoranthene	<5.0		5.0	0.40	ug/L		02/19/18 07:45	02/20/18 18:48	1
Fluorene	<5.0		5.0	0.36	ug/L		02/19/18 07:45	02/20/18 18:48	1
Indeno(1,2,3-c,d)pyrene	<5.0		5.0	0.47	ug/L		02/19/18 07:45	02/20/18 18:48	1
Naphthalene	<5.0		5.0	0.76	ug/L		02/19/18 07:45	02/20/18 18:48	1
Phenanthrene	<5.0		5.0	0.44	ug/L		02/19/18 07:45	02/20/18 18:48	1
Pyrene	<5.0		5.0	0.34	ug/L		02/19/18 07:45	02/20/18 18:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*83*		*46 - 120*	*02/19/18 07:45*	*02/20/18 18:48*	*1*
2-Fluorobiphenyl	*99*		*48 - 120*	*02/19/18 07:45*	*02/20/18 18:48*	*1*
p-Terphenyl-d14	*101*		*59 - 136*	*02/19/18 07:45*	*02/20/18 18:48*	*1*

Client Sample ID: MW-8S

Lab Sample ID: 480-131387-11

Date Collected: 02/15/18 13:45

Matrix: Water

Date Received: 02/16/18 10:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<4.0		4.0	1.6	ug/L			02/18/18 14:57	4
Toluene	<4.0		4.0	2.0	ug/L			02/18/18 14:57	4
Ethylbenzene	<4.0		4.0	3.0	ug/L			02/18/18 14:57	4
m-Xylene & p-Xylene	<8.0		8.0	2.6	ug/L			02/18/18 14:57	4
o-Xylene	<4.0		4.0	3.0	ug/L			02/18/18 14:57	4
Xylenes, Total	<8.0		8.0	2.6	ug/L			02/18/18 14:57	4

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*100*		*77 - 120*		*02/18/18 14:57*	*4*
Toluene-d8 (Surr)	*103*		*80 - 120*		*02/18/18 14:57*	*4*
4-Bromofluorobenzene (Surr)	*96*		*73 - 120*		*02/18/18 14:57*	*4*
Dibromofluoromethane (Surr)	*101*		*75 - 123*		*02/18/18 14:57*	*4*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	**4.7**	**J**	25	2.1	ug/L		02/19/18 07:45	02/20/18 19:17	5
Acenaphthylene	<25		25	1.9	ug/L		02/19/18 07:45	02/20/18 19:17	5
Anthracene	<25		25	1.4	ug/L		02/19/18 07:45	02/20/18 19:17	5
Benz(a)anthracene	<25		25	1.8	ug/L		02/19/18 07:45	02/20/18 19:17	5
Benzo(a)pyrene	<25		25	2.4	ug/L		02/19/18 07:45	02/20/18 19:17	5
Benzo(b)fluoranthene	<25		25	1.7	ug/L		02/19/18 07:45	02/20/18 19:17	5
Benzo(g,h,i)perylene	<25		25	1.8	ug/L		02/19/18 07:45	02/20/18 19:17	5
Benzo(k)fluoranthene	<25		25	3.7	ug/L		02/19/18 07:45	02/20/18 19:17	5

Client Sample ID: MW-8S

Date Collected: 02/15/18 13:45
Date Received: 02/16/18 10:00

Lab Sample ID: 480-131387-11
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chrysene	<25		25	1.7	ug/L		02/19/18 07:45	02/20/18 19:17	5
Dibenz(a,h)anthracene	<25		25	2.1	ug/L		02/19/18 07:45	02/20/18 19:17	5
Fluoranthene	<25		25	2.0	ug/L		02/19/18 07:45	02/20/18 19:17	5
Fluorene	**4.2**	**J**	25	1.8	ug/L		02/19/18 07:45	02/20/18 19:17	5
Indeno(1,2,3-c,d)pyrene	<25		25	2.4	ug/L		02/19/18 07:45	02/20/18 19:17	5
Naphthalene	<25		25	3.8	ug/L		02/19/18 07:45	02/20/18 19:17	5
Phenanthrene	<25		25	2.2	ug/L		02/19/18 07:45	02/20/18 19:17	5
Pyrene	<25		25	1.7	ug/L		02/19/18 07:45	02/20/18 19:17	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*71*		*46 - 120*	*02/19/18 07:45*	*02/20/18 19:17*	*5*
2-Fluorobiphenyl	*90*		*48 - 120*	*02/19/18 07:45*	*02/20/18 19:17*	*5*
p-Terphenyl-d14	*65*		*59 - 136*	*02/19/18 07:45*	*02/20/18 19:17*	*5*

Client Sample ID: DUP-021518

Date Collected: 02/15/18 00:00
Date Received: 02/16/18 10:00

Lab Sample ID: 480-131387-12
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<1.0		1.0	0.41	ug/L			02/20/18 15:35	1
Toluene	<1.0		1.0	0.51	ug/L			02/20/18 15:35	1
Ethylbenzene	<1.0		1.0	0.74	ug/L			02/20/18 15:35	1
m-Xylene & p-Xylene	<2.0		2.0	0.66	ug/L			02/20/18 15:35	1
o-Xylene	<1.0		1.0	0.76	ug/L			02/20/18 15:35	1
Xylenes, Total	<2.0		2.0	0.66	ug/L			02/20/18 15:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*87*		*77 - 120*		*02/20/18 15:35*	*1*
Toluene-d8 (Surr)	*99*		*80 - 120*		*02/20/18 15:35*	*1*
4-Bromofluorobenzene (Surr)	*105*		*73 - 120*		*02/20/18 15:35*	*1*
Dibromofluoromethane (Surr)	*99*		*75 - 123*		*02/20/18 15:35*	*1*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	<5.0		5.0	0.41	ug/L		02/19/18 07:45	02/20/18 19:46	1
Acenaphthylene	<5.0		5.0	0.38	ug/L		02/19/18 07:45	02/20/18 19:46	1
Anthracene	<5.0		5.0	0.28	ug/L		02/19/18 07:45	02/20/18 19:46	1
Benz(a)anthracene	<5.0		5.0	0.36	ug/L		02/19/18 07:45	02/20/18 19:46	1
Benzo(a)pyrene	<5.0		5.0	0.47	ug/L		02/19/18 07:45	02/20/18 19:46	1
Benzo(b)fluoranthene	<5.0		5.0	0.34	ug/L		02/19/18 07:45	02/20/18 19:46	1
Benzo(g,h,i)perylene	<5.0		5.0	0.35	ug/L		02/19/18 07:45	02/20/18 19:46	1
Benzo(k)fluoranthene	<5.0		5.0	0.73	ug/L		02/19/18 07:45	02/20/18 19:46	1
Chrysene	<5.0		5.0	0.33	ug/L		02/19/18 07:45	02/20/18 19:46	1
Dibenz(a,h)anthracene	<5.0		5.0	0.42	ug/L		02/19/18 07:45	02/20/18 19:46	1
Fluoranthene	<5.0		5.0	0.40	ug/L		02/19/18 07:45	02/20/18 19:46	1
Fluorene	<5.0		5.0	0.36	ug/L		02/19/18 07:45	02/20/18 19:46	1
Indeno(1,2,3-c,d)pyrene	<5.0		5.0	0.47	ug/L		02/19/18 07:45	02/20/18 19:46	1
Naphthalene	<5.0		5.0	0.76	ug/L		02/19/18 07:45	02/20/18 19:46	1
Phenanthrene	<5.0		5.0	0.44	ug/L		02/19/18 07:45	02/20/18 19:46	1

Client: New York State Electric & Gas
Project/Site: NYSEG - Elmira Madison Ave Lab & Test

TestAmerica Job ID: 480-131387-1

Client Sample ID: DUP-021518

Lab Sample ID: 480-131387-12

Date Collected: 02/15/18 00:00

Matrix: Water

Date Received: 02/16/18 10:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Pyrene	<5.0		5.0	0.34	ug/L		02/19/18 07:45	02/20/18 19:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5	*79*		*46 - 120*	*02/19/18 07:45*	*02/20/18 19:46*	*1*
2-Fluorobiphenyl	*94*		*48 - 120*	*02/19/18 07:45*	*02/20/18 19:46*	*1*
p-Terphenyl-d14	*103*		*59 - 136*	*02/19/18 07:45*	*02/20/18 19:46*	*1*

Client Sample ID: TRIP BLANK

Lab Sample ID: 480-131387-13

Date Collected: 02/15/18 00:00

Matrix: Water

Date Received: 02/16/18 10:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	<1.0		1.0	0.41	ug/L			02/18/18 15:43	1
Toluene	<1.0		1.0	0.51	ug/L			02/18/18 15:43	1
Ethylbenzene	<1.0		1.0	0.74	ug/L			02/18/18 15:43	1
m-Xylene & p-Xylene	<2.0		2.0	0.66	ug/L			02/18/18 15:43	1
o-Xylene	<1.0		1.0	0.76	ug/L			02/18/18 15:43	1
Xylenes, Total	<2.0		2.0	0.66	ug/L			02/18/18 15:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*99*		*77 - 120*		*02/18/18 15:43*	*1*
Toluene-d8 (Surr)	*102*		*80 - 120*		*02/18/18 15:43*	*1*
4-Bromofluorobenzene (Surr)	*98*		*73 - 120*		*02/18/18 15:43*	*1*
Dibromofluoromethane (Surr)	*106*		*75 - 123*		*02/18/18 15:43*	*1*

TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228
Phone: 716.691.2600 Fax: 716.691.7991

Chain of Custody Record

240152

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TestAmerica Laboratories, Inc.
TAL-8210 (0713)

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	Project Manager: Nicholas Begrle	Site Contact: Ryan Clare	Date: 2-15-18	COC No:
Company Name: Arcadis	Tel/Fax: 585-662-4044	Lab Contact: Mel Deyo	Carrier: FedEX	1 of 2 COCs
Address: 295 Woodcliff Dr, ste 301	Analysis Turnaround Time			Sampler: Ryan Clare
City/State/Zip: Fairport, NY 14450	☐ CALENDAR DAYS ☒ WORKING DAYS			For Lab Use Only:
Phone: 585-662-4057	TAT if different from Below 10 Days			Walk-in Client:
Fax: —	☐ 2 weeks			Lab Sampling:
Project Name: Madison Ave Former MGP	☐ 1 week			
Site: NYSEG-Elmira	☐ 2 days			Job / SDG No.:
PO# B0013134.0003	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	BTEX 8260C	PAH's 8270D	Sample Specific Notes:
MW-04055	2/15/18	0820	G	GW	5			X	X	
MW-65	2/15/18	0840	G	GW	5			X	X	
MW-04045	2/15/18	0925	G	GW	5			X	X	
MW-45	2/15/18	1005	G	GW	5			X	X	
MW-04035	2/15/18	1015	G	GW	5			X	X	
MW-65(MS/MSD)	2/15/18	0840	G	GW	10			X	X	
MW-04025	2/15/18	1110	G	GW	5			X	X	
MW-25	2/15/18	1135	G	GW	5			X	X	
MW-95	2/15/18	1205	G	GW	5			X	X	
MW-7	2/15/18	1340	G	GW	5			X	X	
MW-85	2/15/18	1345	G	GW	5			X	X	
DUP-021518	2/15/18	—	G	GW	5			X	X	

480-131387 COC

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☒ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: 3.1, 4.3 Corr'd: _____ | Therm ID No.: #4

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Ryan Clare	Arcadis	2/15/18 1700		TDB	2/16/18 1000
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

TestAmerica Buffalo
10 Hazelwood Drive
Amherst, NY 14228
Phone: 716.691.2600 Fax: 716.691.7991

Chain of Custody Record 240151

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TestAmerica Laboratories, Inc.
TAL-8210 (0713)

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact	Project Manager: Nicholas Beyrle	Site Contact: Ryan Clare	Date: 7-15-18	COC No:
Company Name: Arcadis	Tel/Fax: 585-662-4044	Lab Contact: Mel Deyo	Carrier: Fed Ex	2 of 2 COCs
Address: 295 Woodcliff Dr. Ste 301	Analysis Turnaround Time			Sampler:
City/State/Zip: Fairport, NY 14420	☐ CALENDAR DAYS ☐ WORKING DAYS			For Lab Use Only:
Phone: 585-662-4057	TAT if different from Below 10 Days			Walk-in Client:
Fax: -	☐ 2 weeks			Lab Sampling:
Project Name: Madison Ave Former MGP	☐ 1 week			
Site: NYSEG - Elmira	☐ 2 days			Job / SDG No.:
PO # B0013134.0003	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	BTEX 8260C	Sample Specific Notes:
TRIP BLANK	—	—	—		2				

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification:
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

☐ Return to Client ☒ Disposal by Lab ☐ Archive for _____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temp. (°C): Obs'd: 3.1, 4.2 Corr'd: _____ | Therm ID No.: #4

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Ryan Clare	Arcadis	7/15/18 1700		TAB	7/16/18 1000
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

APPENDIX B

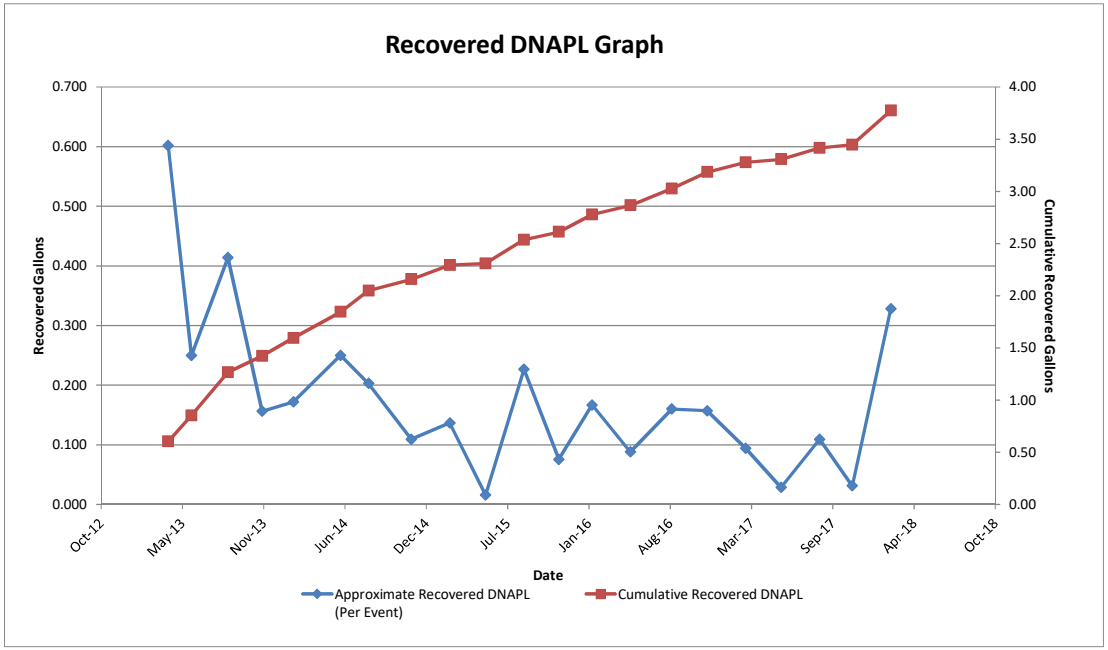
Summary Table and Graph

Appendix B
DNAPL Recovery Summary

Annual Periodic Review Report
Madison Avenue Former MGP Site, Elmira, New York

Date	AW-17			NRW-2			NMW-0402S			Totals		
	Recoverd DNAPL (gal)	Total (gal)	Cumulative (gal)	Recoverd DNAPL (gal)	Total (gal)	Cumulative (gal)	Recoverd DNAPL (gal)	Total (gal)	Cumulative (gal)	Recoverd DNAPL (gal)	Total (gal)	Cumulative (gal)
4/1/2013	--		--	0.008		0.01	0.594		0.59	0.602		0.60
5/28/2013	--		--	0.000		0.01	0.250		0.84	0.250		0.85
8/26/2013	--	--	--	0.188	0.24	0.20	0.227	1.35	1.07	0.414	1.59	1.27
11/18/2013	--		--	0.031		0.23	0.125		1.20	0.156		1.42
2/3/2014	--		--	0.016		0.24	0.156		1.35	0.172		1.59
5/30/2014	--		--	0.000		0.24	0.250		1.60	0.250		1.84
8/7/2014	--	--	--	0.109	0.17	0.35	0.094	0.53	1.70	0.203	0.70	2.05
11/20/2014	--		--	0.047		0.40	0.063		1.76	0.109		2.16
2/23/2015	--		--	0.012		0.41	0.125		1.88	0.137		2.29
5/22/2015	--		--	0.000		0.41	0.016		1.90	0.016		2.31
8/24/2015	0.008	0.02	0.01	0.188	0.35	0.60	0.031	0.11	1.93	0.227	0.48	2.54
11/18/2015	0.008		0.02	0.021		0.62	0.047		1.98	0.076		2.61
2/8/2016	0		0.02	0.146		0.76	0.021		2.00	0.167		2.78
5/12/2016	0		0.02	0.078		0.84	0.010		2.01	0.088		2.87
8/22/2016	0	0.00	0.02	0.156	0.45	1.00	0.004	0.05	2.01	0.160	0.50	3.03
11/17/2016	0		0.02	0.141		1.14	0.016		2.03	0.157		3.18
2/20/2017	0		0.02	0.078		1.22	0.016		2.04	0.094		3.28
5/18/2017	0		0.02	0.021		1.24	0.008		2.05	0.03		3.31
8/21/2017	0	0.00	0.02	0.094	0.41	1.33	0.016	0.09	2.07	0.11	0.50	3.41
11/9/2017	0		0.02	0.000		1.33	0.031		2.10	0.03		3.45
2/12/2018	0		0.02	0.297		1.63	0.031		2.13	0.33		3.77

Notes:
1. A value of zero for 'Recovered DNAPL' indicates DNAPL was observed but not recoverable.
2. "--" for 'Recovered DNAPL' indicates DNAPL was not observed.
3. DNAPL was first observed in AW-17 during the August 24, 2015 site visit. AW-17 is now included in quarterly NAPL gauging schedule.



APPENDIX C

Site Inspection Form

Site Inspection Form
Madison Avenue Former MGP Site - Elmira, New York

Date/Time: 2/15/2018 0930

Weather: Mostly Cloudy

Personnel: Ryan Clare

Temperature: 45 degrees F

General Requirements

Photographs will be attached to document the condition of each inspection item identified below. A written description of any item(s) that is considered to be in poor condition is required.

1. General Site Conditions:

Monitoring wells	[X] Good	[ ] Poor*
Application wells	[X] Good	[ ] Poor*
Performance Monitoring wells	[X] Good	[ ] Poor*
NAPL Monitoring/Recovery wells	[X] Good	[ ] Poor*
Cover Areas (Grass and Stone)	[X] Good	[ ] Poor*
Signs of intrusive activities	[X] No	[ ] Yes*
Evidence of Settlement	[X] No	[ ] Yes*

Note:
-Cover area inspection is to determine if intrusive activities may have occurred since the previous site visit.

2. Site Cover Systems:

Borrowing/Depressions	[X] No	[ ] Yes*
Standing Water	[ ] No	[X] Yes*
Missing Stone	[X] No	[ ] Yes*
Vegetative Growth	[ ] No	[X] Yes*
Evidence of Settlement	[X] No	[ ] Yes*
Sedimentation	[X] No	[ ] Yes*
Damage/Failure	[X] No	[ ] Yes*

3. Notes:

The site was in good condition. Previously overgrown areas of brush have been trimmed back/cut down since the August 2017 visit.

Aplication well (AW-2) road box is still pushed up from concrete apron as noted during February 2016 annual site inspection. The condition of AW-2 will be monitored moving forward and recommendations for repair will be made as necessary.

Standing water observed on site is due to melting snow cover.

Site Inspection Form
Madison Avenue Former MGP Site - Elmira, New York

* Indicates condition should be reported to NYSEG Project Manager/OM&M Coordinator.

APPENDIX D

Site Inspection Photo Log

CLIENT: NYSEG	**SITE NAME: Madison Avenue Former MGP Site**
PROJECT#: B0013134.0001	**SITE LOCATION: Elmira, New York**
PHOTOGRAPH #: 1	
PHOTOGRAPHER: NJB	
DATE: 02/12/18	
DIRECTION: SE	
COMMENT: Picture showing stone parking area over former manufactured gas plant (MGP) area. Photo indicates cover is in good condition; no repair is needed.	

CLIENT: NYSEG	**SITE NAME: Madison Avenue Former MGP Site**
PROJECT#: B0013134.0001	**SITE LOCATION: Elmira, New York**
PHOTOGRAPH #: 2	
PHOTOGRAPHER: NJB	
DATE: 02/12/18	
DIRECTION: E	
COMMENT: Picture showing stone parking area over former MGP. Photo indicates cover is in good condition; no repair is needed.	

CLIENT: NYSEG	**SITE NAME: Madison Avenue Former MGP Site**
PROJECT#: B0013134.0001	**SITE LOCATION: Elmira, New York**
PHOTOGRAPH #: 3	
PHOTOGRAPHER: NJB	
DATE: 02/12/18	
DIRECTION: NW	
COMMENT: Picture showing stone parking area over former MGP. Photo indicates cover is in good condition; no repair is needed. Area currently used for material staging.	

CLIENT: NYSEG	**SITE NAME: Madison Avenue Former MGP Site**
PROJECT#: B0013134.0001	**SITE LOCATION: Elmira, New York**
PHOTOGRAPH #: 4	
PHOTOGRAPHER: NJB	
DATE: 02/12/18	
DIRECTION: N	
COMMENT: Picture showing stone parking area over former MGP. Photo indicates cover is in good condition; no repair is needed. Area currently used for material staging.	

CLIENT: NYSEG	**SITE NAME: Madison Avenue Former MGP Site**
PROJECT#: B0013134.0001	**SITE LOCATION: Elmira, New York**
PHOTOGRAPH #: 5	
PHOTOGRAPHER: NJB	
DATE: 02/12/18	
DIRECTION: NE	
COMMENT: Picture showing stone and vegetation coverage over PCB IRM removal areas (1997) and purifier waste removal area (2011). Photo indicates cover is in good condition; no repair is needed. Area currently used for material staging	

CLIENT: NYSEG	**SITE NAME: Madison Avenue Former MGP Site**
PROJECT#: B0013134.0001	**SITE LOCATION: Elmira, New York**
PHOTOGRAPH #: 6	
PHOTOGRAPHER: NJB	
DATE: 02/12/18	
DIRECTION: E	
COMMENT: Picture showing stone coverage and stock piled materials over ISS areas. Photo indicates cover is in good condition; no repair is needed.	

CLIENT: NYSEG	**SITE NAME: Madison Avenue Former MGP Site**
PROJECT#: B0013134.0001	**SITE LOCATION: Elmira, New York**
PHOTOGRAPH #: 7	
PHOTOGRAPHER: NJB	
DATE: 02/12/18	
DIRECTION: SW	
COMMENT: Picture showing grass area and stone coverage over ISS area, purifier waste IRM removal area (2004) and purifier waste removal area (2011). Photo indicates cover is in good condition; no repair is needed.	

CLIENT: NYSEG	**SITE NAME: Madison Avenue Former MGP Site**
PROJECT#: B0013134.0001	**SITE LOCATION: Elmira, New York**
PHOTOGRAPH #: 8	
PHOTOGRAPHER: NJB	
DATE: 02/12/18	
DIRECTION: WSW	
COMMENT: Picture showing treatment system area. Photo indicates cover is in good condition; no repair is needed.	

APPENDIX E

Well Inspection Photo Log

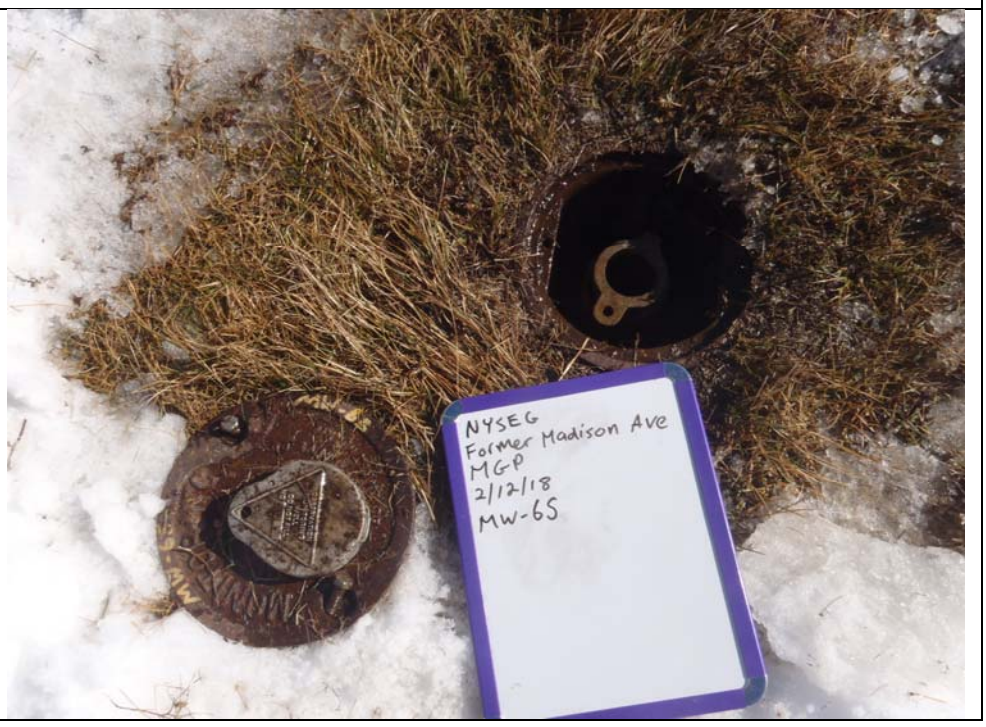
CLIENT: NYSEG	**SITE NAME: Madison Avenue Former MGP Site**
PROJECT#: B0013134.0001	**SITE LOCATION: Elmira, New York**
WELL ID: MW-1S	
PHOTOGRAPHER: NJB	
DATE: 02/12/18	
DIRECTION: NA	
COMMENT: Photograph showing MW-1S. Well is in good condition with cap and competent cover.	

CLIENT: NYSEG	**SITE NAME: Madison Avenue Former MGP Site**
PROJECT#: B0013134.0001	**SITE LOCATION: Elmira, New York**
WELL ID: MW-1D	
PHOTOGRAPHER: NJB	
DATE: 02/12/18	
DIRECTION: NA	
COMMENT: Photograph showing MW-1D. Well is in good condition with cap and competent cover.	

CLIENT: NYSEG	**SITE NAME: Madison Avenue Former MGP Site**
PROJECT#: B0013134.0001	**SITE LOCATION: Elmira, New York**
WELL ID: MW-2S	
PHOTOGRAPHER: NJB	
DATE: 02/12/18	
DIRECTION: NA	
COMMENT: Photograph showing MW-2S. Cap mounting rig is cracked but competent. Well is in good condition with locking cap.	

CLIENT: NYSEG	**SITE NAME: Madison Avenue Former MGP Site**
PROJECT#: B0013134.0001	**SITE LOCATION: Elmira, New York**
WELL ID: MW-2D	
PHOTOGRAPHER: NJB	
DATE: 02/12/18	
DIRECTION: NA	
COMMENT: Photograph showing MW-2D. Well is in good condition with locking cap.	

CLIENT: NYSEG	**SITE NAME: Madison Avenue Former MGP Site**
PROJECT#: B0013134.0001	**SITE LOCATION: Elmira, New York**
WELL ID: MW-4S	
PHOTOGRAPHER: NJB	
DATE: 02/12/18	
DIRECTION: NA	
COMMENT: Photograph showing MW-4S. Well is in good condition with locking cap and competent cover.	

CLIENT: NYSEG	**SITE NAME: Madison Avenue Former MGP Site**
PROJECT#: B0013134.0001	**SITE LOCATION: Elmira, New York**
WELL ID: MW-6S	
PHOTOGRAPHER: NJB	
DATE: 02/12/18	
DIRECTION: NA	
COMMENT: Photograph showing MW-6S. Well is in good condition with locking cap and competent cover.	

CLIENT: NYSEG	**SITE NAME: Madison Avenue Former MGP Site**
PROJECT#: B0013134.0001	**SITE LOCATION: Elmira, New York**
WELL ID: MW-7	
PHOTOGRAPHER: NJB	
DATE: 02/12/18	
DIRECTION: NA	
COMMENT: Photograph showing MW-7. Well is in good condition. Well has well plug and locking well cover.	

CLIENT: NYSEG	**SITE NAME: Madison Avenue Former MGP Site**
PROJECT#: B0013134.0001	**SITE LOCATION: Elmira, New York**
WELL ID: MW-8S	
PHOTOGRAPHER: NJB	
DATE: 02/12/18	
DIRECTION: NA	
COMMENT: Photograph of MW-8S. Well is in good condition with locking well cap and competent cover.	

CLIENT: NYSEG	**SITE NAME: Madison Avenue Former MGP Site**
PROJECT#: B0013134.0001	**SITE LOCATION: Elmira, New York**
WELL ID: MW-8D	
PHOTOGRAPHER: NJB	
DATE: 02/12/18	
DIRECTION: NA	
COMMENT: Photograph showing MW-8D. Well is in good condition with locking well cap and competent cover.	

CLIENT: NYSEG	**SITE NAME: Madison Avenue Former MGP Site**
PROJECT#: B0013134.0001	**SITE LOCATION: Elmira, New York**
WELL ID: MW-9S	
PHOTOGRAPHER: NJB	
DATE: 02/12/18	
DIRECTION: NA	
COMMENT: Photograph showing MW-9S. Well is in good condition with locking well cap and competent cover.	

CLIENT: NYSEG	**SITE NAME: Madison Avenue Former MGP Site**
PROJECT#: B0013134.0001	**SITE LOCATION: Elmira, New York**
WELL ID: MW-9D	
PHOTOGRAPHER: NJB	
DATE: 02/12/18	
DIRECTION: NA	
COMMENT: Photograph showing MW-9D. Well is in good condition with locking well cap and competent cover.	

CLIENT: NYSEG	**SITE NAME: Madison Avenue Former MGP Site**
PROJECT#: B0013134.0001	**SITE LOCATION: Elmira, New York**
WELL ID: MW-0304D	
PHOTOGRAPHER: NJB	
DATE: 02/12/18	
DIRECTION: NA	
COMMENT: Photograph showing MW-0304D. Well is in good condition with well and competent cover.	

CLIENT: NYSEG	**SITE NAME: Madison Avenue Former MGP Site**
PROJECT#: B0013134.0001	**SITE LOCATION: Elmira, New York**
WELL ID: MW-0402S	
PHOTOGRAPHER: NJB	
DATE: 02/12/18	
DIRECTION: NA	
COMMENT: Photograph showing MW-0402S. Well is in good condition with locking well plug and competent cover.	

CLIENT: NYSEG	**SITE NAME: Madison Avenue Former MGP Site**
PROJECT#: B0013134.0001	**SITE LOCATION: Elmira, New York**
WELL ID: MW-0403S	
PHOTOGRAPHER: NJB	
DATE: 02/12/18	
DIRECTION: NA	
COMMENT: Photograph showing MW-0403S. Well is in good condition with locking well plug and competent cover.	

CLIENT: NYSEG	**SITE NAME: Madison Avenue Former MGP Site**
PROJECT#: B0013134.0001	**SITE LOCATION: Elmira, New York**
WELL ID: MW-0404S	
PHOTOGRAPHER: NJB	
DATE: 02/12/18	
DIRECTION: NA	
COMMENT: Photograph showing MW-0404S. Well is in good condition with locking well plug and competent cover. Bolted well lid was observed missing during the Annual Site Inspection. The lid will be replaced.	

CLIENT: NYSEG	**SITE NAME: Madison Avenue Former MGP Site**
PROJECT#: B0013134.0001	**SITE LOCATION: Elmira, New York**
WELL ID: MW-0404D	
PHOTOGRAPHER: NJB	
DATE: 02/12/18	
DIRECTION: NA	
COMMENT: Photograph of MW-0404D. Well is in good condition with locking well plug and competent cover.	

CLIENT: NYSEG	**SITE NAME: Madison Avenue Former MGP Site**
PROJECT#: B0013134.0001	**SITE LOCATION: Elmira, New York**
WELL ID: MW-0405S	
PHOTOGRAPHER: NJB	
DATE: 02/12/18	
DIRECTION: NA	
COMMENT: Photograph of MW-0405S. Well is in good condition with locking well plug and competent cover. Surrounding concrete flags are cracked, but road box is secure.	

CLIENT: NYSEG	**SITE NAME: Madison Avenue Former MGP Site**
PROJECT#: B0013134.0001	**SITE LOCATION: Elmira, New York**
WELL ID: AW-1	
PHOTOGRAPHER: NJB	
DATE: 02/12/18	
DIRECTION: NA	
COMMENT: Photograph showing AW-1. Well and stainless-steel canister/assembly is in good condition. Well has well plug and competent cover.	

CLIENT: NYSEG	**SITE NAME: Madison Avenue Former MGP Site**
PROJECT#: B0013134.0001	**SITE LOCATION: Elmira, New York**
WELL ID: AW-2	
PHOTOGRAPHER: NJB	
DATE: 02/12/18	
DIRECTION: NA	
COMMENT: Photograph showing AW-2. Well and stainless-steel canister/assembly is in good condition. Well has well plug and competent cover.	

CLIENT: NYSEG	**SITE NAME: Madison Avenue Former MGP Site**
PROJECT#: B0013134.0001	**SITE LOCATION: Elmira, New York**
WELL ID: AW-3	
PHOTOGRAPHER: NJB	
DATE: 02/12/18	
DIRECTION: NA	
COMMENT: Photograph showing AW-03. Well and stainless-steel canister/assembly is in good condition. Well has well plug and competent cover.	

CLIENT: NYSEG	**SITE NAME: Madison Avenue Former MGP Site**
PROJECT#: B0013134.0001	**SITE LOCATION: Elmira, New York**
WELL ID: AW-4	
PHOTOGRAPHER: NJB	
DATE: 02/12/18	
DIRECTION: NA	
COMMENT: Photograph showing AW-4. Well and stainless-steel canister/assembly is in good condition. Well has well plug and competent cover.	

CLIENT: NYSEG	**SITE NAME: Madison Avenue Former MGP Site**
PROJECT#: B0013134.0001	**SITE LOCATION: Elmira, New York**
WELL ID: AW-5	
PHOTOGRAPHER: NJB	
DATE: 02/12/18	
DIRECTION: NA	
COMMENT: Photograph showing AW-05 Well and stainless – steel canister/assembly is in good condition. Well has well and competent cover.	

CLIENT: NYSEG	**SITE NAME: Madison Avenue Former MGP Site**
PROJECT#: B0013134.0001	**SITE LOCATION: Elmira, New York**
WELL ID: AW-6	
PHOTOGRAPHER: NJB	
DATE: 02/12/18	
DIRECTION: NA	
COMMENT: Photograph showing AW-6. Well and stainless-steel canister/assembly is in good condition. Well has well plug and competent cover.	

CLIENT: NYSEG	**SITE NAME: Madison Avenue Former MGP Site**
PROJECT#: B0013134.0001	**SITE LOCATION: Elmira, New York**
WELL ID: AW-7	
PHOTOGRAPHER: NJB	
DATE: 02/12/18	
DIRECTION: NA	
COMMENT: Photograph showing AW-7. Well and stainless-steel canister/assembly is in good condition. Well has well plug and competent cover.	

CLIENT: NYSEG	SITE NAME: Madison Avenue Former MGP Site
PROJECT#: B0013134.0001	**SITE LOCATION: Elmira, New York**
WELL ID: AW-8	
PHOTOGRAPHER: NJB	
DATE: 02/12/18	
DIRECTION: NA	
COMMENT: Photograph showing AW-8. Well and stainless-steel canister/assembly is in good condition. Well has well plug and competent cover.	

CLIENT: NYSEG	SITE NAME: Madison Avenue Former MGP Site
PROJECT#: B0013134.0001	**SITE LOCATION: Elmira, New York**
WELL ID: AW-9	
PHOTOGRAPHER: NJB	
DATE: 02/12/18	
DIRECTION: NA	
COMMENT: Photograph showing AW-9. Well and stainless-steel canister/assembly is in good condition. Well has well plug and competent cover.	

CLIENT: NYSEG	**SITE NAME: Madison Avenue Former MGP Site**
PROJECT#: B0013134.0001	**SITE LOCATION: Elmira, New York**
WELL ID: AW-10	
PHOTOGRAPHER: NJB	
DATE: 02/12/18	
DIRECTION: NA	
COMMENT: Photograph showing AW-10. Well and stainless-steel canister/assembly is in good condition. Well has well plug and competent cover.	

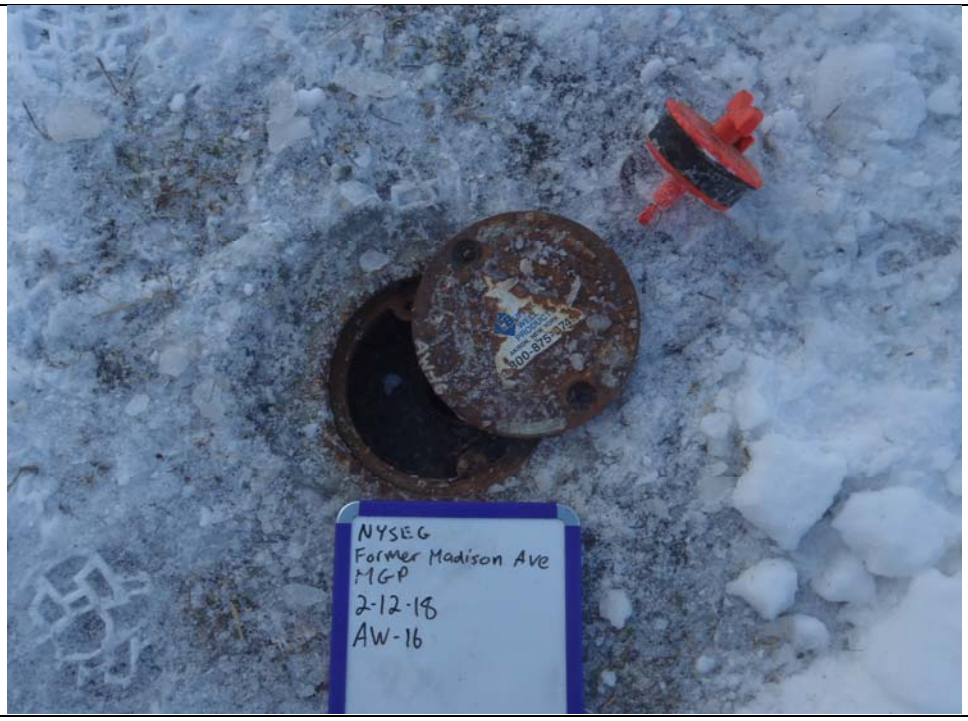
CLIENT: NYSEG	**SITE NAME: Madison Avenue Former MGP Site**
PROJECT#: B0013134.0001	**SITE LOCATION: Elmira, New York**
WELL ID: AW-11	
PHOTOGRAPHER: NJB	
DATE: 02/12/18	
DIRECTION: NA	
COMMENT: Photograph showing AW-11. Well and stainless-steel canister/assembly is in good condition. Well has well plug and competent cover.	

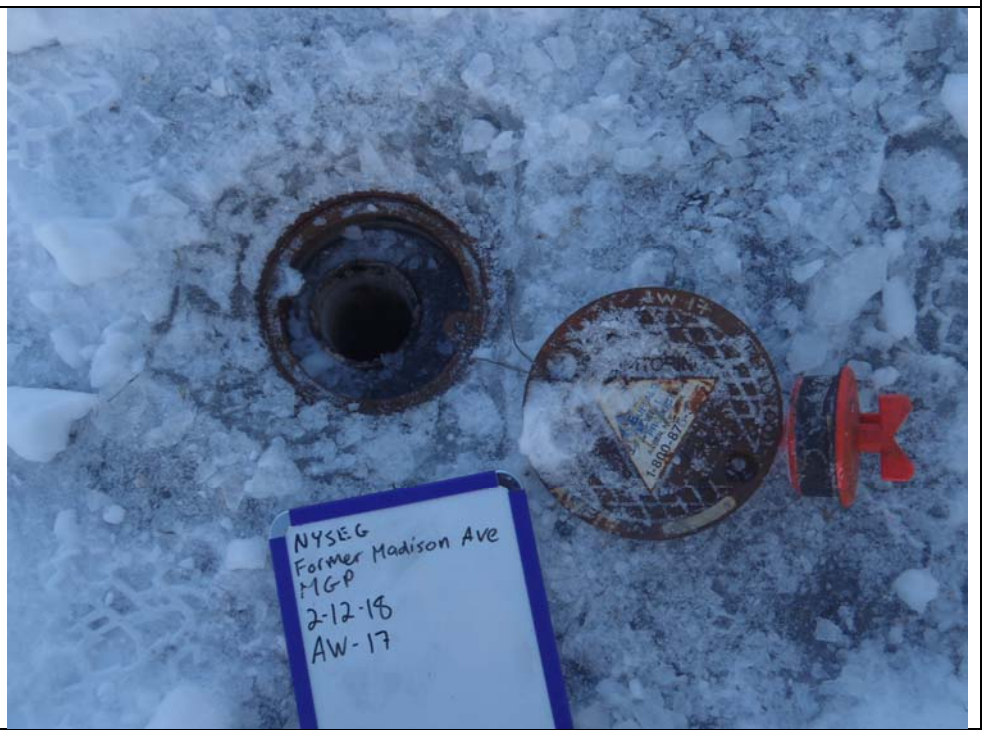
CLIENT: NYSEG	**SITE NAME: Madison Avenue Former MGP Site**
PROJECT#: B0013134.0001	**SITE LOCATION: Elmira, New York**
WELL ID: AW-12	
PHOTOGRAPHER: NJB	
DATE: 02/12/18	
DIRECTION: NA	
COMMENT: Photograph showing AW-12. Well and stainless-steel canister/assembly is in good condition. Well has well plug and competent cover.	

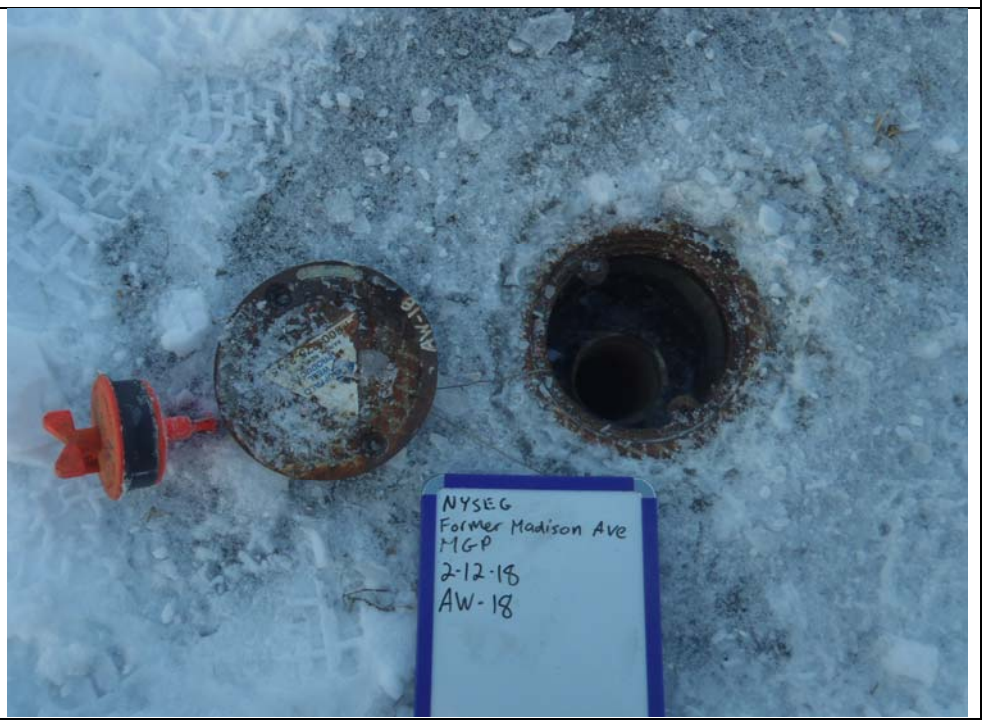
CLIENT: NYSEG	**SITE NAME: Madison Avenue Former MGP Site**
PROJECT#: B0013134.0001	**SITE LOCATION: Elmira, New York**
WELL ID: AW-13	
PHOTOGRAPHER: NJB	
DATE: 02/12/18	
DIRECTION: NA	
COMMENT: Photograph showing AW-13. Well and stainless-steel canister/assembly is in good condition. Well has well plug and competent cover.	

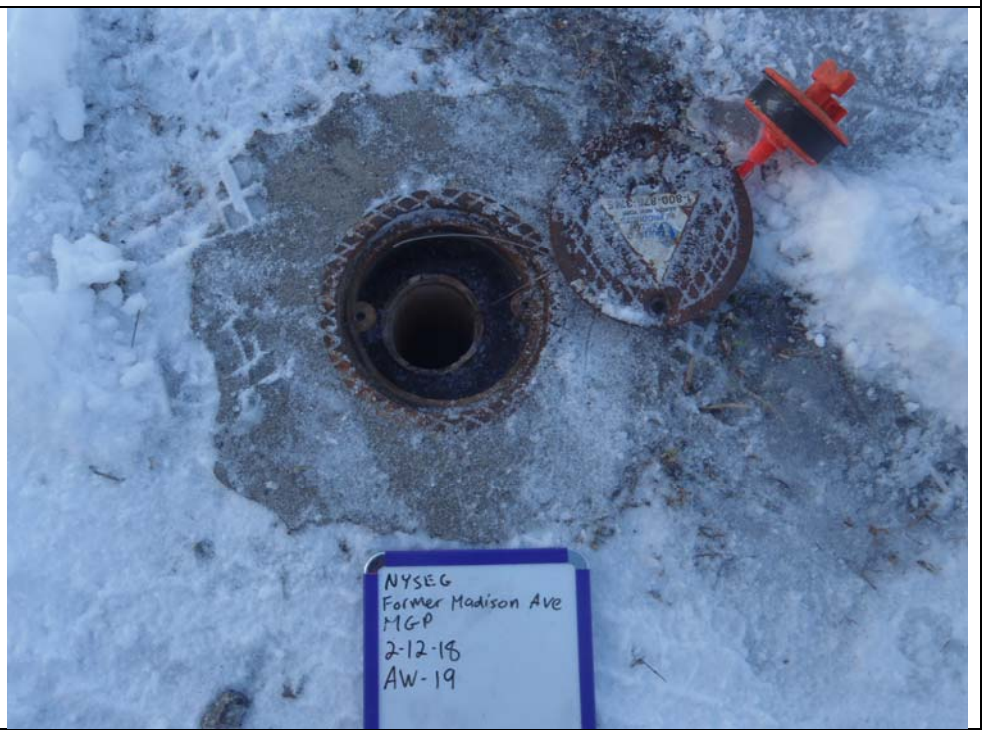
CLIENT: NYSEG	SITE NAME: Madison Avenue Former MGP Site
PROJECT#: B0013134.0001	**SITE LOCATION: Elmira, New York**
WELL ID: AW-14	
PHOTOGRAPHER: NJB	
DATE: 02/12/18	
DIRECTION: NA	
COMMENT: Photograph showing AW-14. Well and stainless-steel canister/assembly is in good condition. Well has well plug and competent cover.	

CLIENT: NYSEG	SITE NAME: Madison Avenue Former MGP Site
PROJECT#: B0013134.0001	**SITE LOCATION: Elmira, New York**
WELL ID: AW-15	
PHOTOGRAPHER: NJB	
DATE: 02/12/18	
DIRECTION: NA	
COMMENT: Photograph showing AW-15. Well and stainless-steel canister/assembly is in good condition. Well has well plug and competent cover.	

CLIENT: NYSEG	**SITE NAME: Madison Avenue Former MGP Site**
PROJECT#: B0013134.0001	**SITE LOCATION: Elmira, New York**
WELL ID: AW-16	
PHOTOGRAPHER: NJB	
DATE: 02/12/18	
DIRECTION: NA	
COMMENT: Photograph showing AW-16. Well and stainless-steel canister/assembly is in good condition. Well has well plug and competent cover.	

CLIENT: NYSEG	**SITE NAME: Madison Avenue Former MGP Site**
PROJECT#: B0013134.0001	**SITE LOCATION: Elmira, New York**
WELL ID: AW-17	
PHOTOGRAPHER: NJB	
DATE: 02/12/18	
DIRECTION: NA	
COMMENT: Photograph showing AW-17. Well and stainless-steel canister/assembly is in good condition. Well has well plug and competent cover.	

CLIENT: NYSEG	**SITE NAME: Madison Avenue Former MGP Site**
PROJECT#: B0013134.0001	**SITE LOCATION: Elmira, New York**
WELL ID: AW-18	
PHOTOGRAPHER: NJB	
DATE: 02/12/18	
DIRECTION: NA	
COMMENT: Photograph showing AW-18. Well and stainless-steel canister/assembly is in good condition. Well has well plug and competent cover.	

CLIENT: NYSEG	**SITE NAME: Madison Avenue Former MGP Site**
PROJECT#: B0013134.0001	**SITE LOCATION: Elmira, New York**
WELL ID: AW-19	
PHOTOGRAPHER: NJB	
DATE: 02/12/18	
DIRECTION: NA	
COMMENT: Photograph showing AW-19. Well and stainless-steel canister/assembly is in good condition. Well has well plug and competent cover.	

CLIENT: NYSEG	**SITE NAME: Madison Avenue Former MGP Site**
PROJECT#: B0013134.0001	**SITE LOCATION: Elmira, New York**
WELL ID: PMW-1	
PHOTOGRAPHER: NJB	
DATE: 02/12/18	
DIRECTION: NA	
COMMENT: Photograph showing PMW-1. Well is in good condition with well plug and competent cover.	

CLIENT: NYSEG	**SITE NAME: Madison Avenue Former MGP Site**
PROJECT#: B0013134.0001	**SITE LOCATION: Elmira, New York**
WELL ID: PMW-2	
PHOTOGRAPHER: NJB	
DATE: 02/12/18	
DIRECTION: NA	
COMMENT: Photograph showing PMW-2. Well is in good condition with well plug and competent cover.	

CLIENT: NYSEG	**SITE NAME: Madison Avenue Former MGP Site**
PROJECT#: B0013134.0001	**SITE LOCATION: Elmira, New York**
WELL ID: PMW-3	
PHOTOGRAPHER: NJB	
DATE: 02/12/18	
DIRECTION: NA	
COMMENT: Photograph is showing well PMW-03. Well is in good condition with well and competent cover.	

CLIENT: NYSEG	**SITE NAME: Madison Avenue Former MGP Site**
PROJECT#: B0013134.0001	**SITE LOCATION: Elmira, New York**
WELL ID: PMW-4	
PHOTOGRAPHER: NJB	
DATE: 02/12/18	
DIRECTION: NA	
COMMENT: Photograph showing PMW-4. Well is in good condition with well plug and competent cover.	

CLIENT: NYSEG	**SITE NAME: Madison Avenue Former MGP Site**
PROJECT#: B0013134.0001	**SITE LOCATION: Elmira, New York**
WELL ID: PMW-5	
PHOTOGRAPHER: NJB	
DATE: 02/12/18	
DIRECTION: NA	
COMMENT: Photograph showing PMW-5. Well is in good condition with well plug and competent cover.	

CLIENT: NYSEG	**SITE NAME: Madison Avenue Former MGP Site**
PROJECT#: B0013134.0001	**SITE LOCATION: Elmira, New York**
WELL ID: PMW-6	
PHOTOGRAPHER: NJB	
DATE: 02/12/18	
DIRECTION: NA	
COMMENT: Photograph showing PMW-6. Well is in good condition with well plug and competent cover.	

CLIENT: NYSEG	**SITE NAME: Madison Avenue Former MGP Site**
PROJECT#: B0013134.0001	**SITE LOCATION: Elmira, New York**
WELL ID: NRW-1	
PHOTOGRAPHER: NJB	
DATE: 02/15/18	
DIRECTION: NA	
COMMENT: Photograph showing NRW-1. Well is in good condition with well plug and competent cover.	

CLIENT: NYSEG	**SITE NAME: Madison Avenue Former MGP Site**
PROJECT#: B0013134.0001	**SITE LOCATION: Elmira, New York**
WELL ID: NRW-2	
PHOTOGRAPHER: NJB	
DATE: 02/12/18	
DIRECTION: NA	
COMMENT: Photograph showing NRW-2. Well is in good condition with the well plug and competent cover.	

CLIENT: NYSEG	SITE NAME: Madison Avenue Former MGP Site
PROJECT#: B0013134.0001	**SITE LOCATION: Elmira, New York**
WELL ID: NRW-3	
PHOTOGRAPHER: NJB	
DATE: 02/12/18	
DIRECTION: NA	
COMMENT: Photograph showing NRW-3. Well is in good condition with the plug and competent cover.	

CLIENT: NYSEG	SITE NAME: Madison Avenue Former MGP Site
PROJECT#: B0013134.0001	**SITE LOCATION: Elmira, New York**
WELL ID: NRW-4	
PHOTOGRAPHER: NJB	
DATE: 02/12/18	
DIRECTION: NA	
COMMENT: Photograph showing NRW-4. Well is in good condition with well plug and competent cover.	

CLIENT: NYSEG	**SITE NAME: Madison Avenue Former MGP Site**
PROJECT#: B0013134.0001	**SITE LOCATION: Elmira, New York**
WELL ID: NMW-0402S	
PHOTOGRAPHER: NJB	
DATE: 02/12/18	
DIRECTION: NA	
COMMENT: Photograph showing NMW-0402S. Well is in good condition with the plug and competent cover.	

APPENDIX F

NYSEG Statement

Appendix F
Certification Statement

Based on information provided to NYSEG, NYSEG verifies that the site engineering controls described in the ROD (NYSDEC 2008) were in place during the reporting period, and has no knowledge that changes have occurred at the Oneonta Former MGP Site that would impair the ability of the engineering controls to protect public health and the environment, or constitute a violation or failure to comply with the operation and maintenance plan described in the *Site Management Plan*.

Mr. John J. Ruspantini, CHMM
NYSEG, Lead Environmental Analyst

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