NYSEG

Site Management Plan

Oneonta Former Manufactured Gas Plant Site
James Georgeson Avenue, Oneonta New York

Otsego County
Oneonta, New York
Site No. 4-39-001

January 2022, Revised June 2022

Site Management Plan

Oneonta Former Manufactured Gas Plant Site

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Certification Statement
I, JASON BRIEN, P.E., certify that I am currently a New York State registered Professional Engineer as in defined in 6 NYCRR Part 375 and to the best of my knowledge and based on my inquiry of the persons involved in preparing this document under my direction, that this Site Management Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with applicable portions of the DER Technical Guidance for Site Investigation and Remediation (DER-10) and in general conformance with the Site Management Plan Template provided by the New York State Department of Environmental Conservation.

JASON DAVID BRIEN
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6/29/22

Date 6/29/2022

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Acronyms and Abbreviations

BDL	Below Detection Limits
BTEX	benzene, toluene, ethylbenzene, and xylene
CAMP	Community Air Monitoring Plan
CFR	Code of Federal Regulation
DER-10	Department of Environmental Remediation Technical Guidance for Site Investigation and Remediation
DNAPL	Dense Non-Aqueous Phase Liquids
EC	Engineering Control
EC/IC	Engineering and Institutional Controls
ECL	Environmental Conservation Law
EWP	Excavation Work Plan
ft.	feet
ft./day	feet per day
GFSP	Generic Field Sampling Plan
GHASP	Generic Health and Safety Plan
GQAPP	Generic Quality Assurance Project Plan
IC	Institutional Control
IRM	Interim Remedial Measure
mg/kg	milligrams per kilogram
MGP	Manufactured Gas Plant
MW	Monitoring Well
NAPL	Non-aqueous phase liquid
NRW	NAPL Recovery Well
NYCRR	New York Codes, Rules and Regulations
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYSDOT	New York State Department of Transportation
O&M	Operation and Maintenance
OSHA	Occupational Safety and Health Administration

PAH	polycyclic aromatic hydrocarbons
PFAS	Per- and Polyfluoroalkyl Substances
PID	Photoionization Detector
PRR	Periodic Review Report
QA/QC	Quality Assurance/Quality Control
RAO	Remedial Action Objective
ROD	Record of Decision
SCO	Soil Cleanup Objective
SCGs	Standards, Criteria and Guidelines
SMP	Site Management Plan
SOP	Standard Operating Procedures
SVI	Soil Vapor Intrusion
SVOCs	Semi-volatile organic compounds
USEPA	United States Environmental Protection Agency
VOCs	volatile organic compounds

Executive Summary

The following provides a brief summary of the controls implemented for the Site, as well as the inspections, monitoring, maintenance and reporting activities required by this Site Management Plan (SMP):

Site Identification:

Oneonta Former Manufactured Gas Plant Site
James Georgeson Avenue, Oneonta, New York
New York State Department of Environmental Conservation (NYSDEC)
Site No. 4-39-001

Institutional Controls:	1. The property may be used for restricted residential use.
	2. Imposition of an Environmental Easement pursuant to Article 71, Title 36 of the New York State Environmental Conservation Law that will: • As per the Environmental Easement, limit the use and development of the property to restricted residential use only. See section 2.2.1 for further explanation. • Restrict the use of groundwater as a source of potable or process water without appropriate treatment as determined by the New York State Department of Health (NYSDOH) or Otsego County DOH. • Require inspection of Engineering Controls (ECs)at the frequency and as described in this SMP. • Require periodic certification of institutional and ECs. • Require compliance with this SMP.
	3. All ECs must be inspected at a frequency and in a manner defined in the SMP.
Engineering Controls:	1. Maintain the existing site covers.

Inspections:	Frequency
1. Site and cover inspections	Annually and following severe weather event.
Monitoring and Sampling:	
1. Semi-annual gauging of monitoring wells, performance monitoring wells, non-aqueous phase liquid (NAPL) recovery wells, and staff gauges.	Semi-Annual
2. Maintenance/replacement of a sorbent sock semi-annually to passively remove accumulated Dense Non-Aqueous Phase Liquids (DNAPL) in AW-12.	Semi-Annual

Site Identification:	Oneonta Former Manufactured Gas Plant Site James Georgeson Avenue, Oneonta, New York New York State Department of Environmental Conservation (NYSDEC) Site No. 4-39-001

3. Semi-annual groundwater sampling for laboratory analysis for Benzene, Toluene, Ethylbenzene, Xylene (BTEX) and polycyclic aromatic hydrocarbons (PAHs).	Semi-Annual
4. Triennial groundwater sampling from MW-9111S for laboratory analysis for PFAS.	Triennial, beginning May 2022
Maintenance:	
1. As needed and required based on site inspections	As needed
Reporting:	
1. Periodic Review Report	Annually

Further descriptions of the above requirements are provided in detail in the latter sections of this Site Management Plan.

1 Introduction

1.1 General

This Site Management Plan (SMP) is a required element of the remedial program for the Oneonta Former Manufacture Gas Plant (MGP) Site located in Oneonta, New York (hereinafter referred to as the “Site”). See Figure 1. The Site is currently in the New York State (NYS) Inactive Hazardous Waste Disposal Site Remedial Program, Site No. 4-39-001, which is administered by New York State Department of Environmental Conservation (NYSDEC or Department).

The New York State Electric & Gas Corporation (NYSEG) entered into an Order on Consent effective on March 20, 1994 with the NYSDEC, subsequently superseded by an Amended and Restated Multi-site Consent Order (ARMSCO) effective on December 5, 2016, that obligated NYSEG to investigate, and where necessary to remediate the Site. A figure showing the Site’s location and boundaries of this Site is provided in Figure 2. The boundaries of the Site are more fully described in the metes and bounds site description that is part of the Environmental Easement provided in Appendix A.

After completion of the source material removal remedial work, some contamination was left at this Site, which is hereafter referred to as “remaining MGP-related impacts”. Institutional and Engineering Controls (ICs and ECs) in the form of a Deed Restriction have been incorporated into the Site remedy to control exposure to remaining MGP-related impacts to ensure protection of public health and the environment. An Environmental Easement granted to the NYSDEC, and recorded with the Otsego County Clerk, requires compliance with this SMP and all ECs and ICs placed on the Site.

This SMP was prepared to manage remaining MGP-related impacts at the Site until the Environmental Easement is extinguished in accordance with ECL Article 71, Title 36. This plan has been approved by the NYSDEC, and compliance with this plan is required by the grantor of the Environmental Easement and the grantor’s successors and assigns. This SMP may only be revised with the approval of the NYSDEC.

It is important to note that:

- This SMP details the site-specific implementation procedures that are required by the Environmental Easement. Failure to properly implement the SMP is a violation of the Environmental Easement, which is grounds for revocation of the Certificate of Completion (COC).
- This SMP presents the NYSDEC-approved field and reporting requirements for the third 5-year period (the five-year monitoring period from December 2018 through November 2023), including scheduled site visits from May 2019 through November 2023, after implementation of the groundwater remedy at the Site. The NYSDEC’s May 29, 2019 letter provided approval for the field and reporting requirements presented herein.
- Failure to comply with this SMP is also a violation of Environmental Conservation Law, 6 NYCRR Part 375 and the Order on Consent (Index #D0-002-9309) for the Site, and thereby subject to applicable penalties.

All reports associated with the Site can be viewed by contacting the NYSDEC or its successor agency managing environmental issues in New York State. A list of regulatory contacts for persons involved with the Site is provided in Table 1-1, below.

*Table 1-1 Regulatory Contacts and Notifications**

Name	Contact Information
NYSDEC Project Manager: Mr. Scott Deyette 625 Broadway Albany, New York 12233	Telephone: 518.402.9794 Email: Scott.deyette@dec.ny.gov
NYSDEC Region 4 Engineer: 1130 North Westcott Road Schenectady, NY 12306-2014	Telephone: (518) 357-2045
NYSDOH Project Manager: Ms. Kristin Kulow New York State Department of Health 28 Hill Street, Suite 201 Oneonta, NY 13820	Telephone: 607.353.4335 Email: kristin.kulow@health.ny.gov

The City of Oneonta (Site Owner) and NYSEG (Responsible Party) share the responsibility for implementing the SMP. A description of each party's responsibilities is provided in Appendix B. Site contact information for the Responsible Party and the owner/operator of the property is provided in Appendix B and Table 1-2, below.

*Table 1-2 Site Contacts**

Name	Contact Information
Property Owner: City of Oneonta	**Contact**: Mr. Jonathon Williams Brenner Recreation Center c/o City Hall, 258 Main Street Oneonta, NY 13820 Telephone: 607.432.6465 Email: jwilliams@oneonta.ny.us
Remedial/Responsible Party: New York State Electric & Gas Company (NYSEG)	**Contact**: Mr. John Ruspantini 18 Link Drive Binghamton, New York 13904 Telephone: 607.725.3801 Email: jjruspantini@nyseg.com

Name	Contact Information
Qualified Environmental Professional	**Contact**:
New York State Electric & Gas Company (NYSEG)	Mr. John Ruspantini 18 Link Drive Binghamton, New York 13904 Telephone: 607.725.3801 Email: jjruspantini@nyseg.com

* Site contacts are subject to change and will be updated as necessary

This SMP was prepared by Arcadis of New York, Inc. (Arcadis), on behalf of NYSEG, in accordance with the requirements of the NYSDEC's DER-10 Technical Guidance for Site Investigation and Remediation, dated May 2010, and subsequent corrected text, and the guidelines provided by the NYSDEC. This SMP addresses the means for implementing the ICs and/or ECs that are required by the Environmental Easement for the Site.

1.2 Revisions

Revisions to this plan will be proposed in writing to the NYSDEC's project manager. The NYSDEC can also make changes to the SMP or request revisions from the remedial party. Revisions will be necessary upon, but not limited to, the following occurring: a change in media monitoring requirements, upgrades to or shutdown of a remedial system, post-remedial removal of MGP-related impacted soil, or other significant change to the site conditions. In accordance with the Environmental Easement for the Site, the NYSDEC project manager will provide a notice of any approved changes to the SMP and append these notices to the SMP that is retained in its files.

1.3 Notifications

Notifications will be submitted by the property owner to the NYSDEC, as needed, in accordance with NYSDEC's DER – 10 for the following reasons:

- 60-day advance notice of any proposed changes in site use that are required under the terms of the Record of Decision (NYSDEC 2005), 6 NYCRR Part 375 and/or Environmental Conservation Law.
- 7-day advance notice of any non-intrusive field activity associated with the remedial program.
- 15-day advance notice of any proposed ground-intrusive activity in the Excavation Advisory Area pursuant to the Excavation Work Plan (EWP). If the ground-intrusive activity qualifies as a change of use as defined in 6 NYCRR Part 375, the above mentioned 60-day advance notice is also required.
- Notice within 48 hours of discovery of any damage or defect that reduces or has the potential to reduce the effectiveness of an EC, and likewise, any action to be taken to mitigate the damage or defect.
- Notice within 48 hours of any non-routine maintenance activities.
- Verbal notice by noon of the following day after discovery of any emergency, such as a fire; flood; or earthquake that reduces or has the potential to reduce the effectiveness of ECs in place at the Site, with written confirmation within 7 days that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public.
- Follow-up status reports on actions taken to respond to any emergency event requiring ongoing responsive action submitted to the NYSDEC within 45 days describing and documenting actions taken to restore the effectiveness of the ECs.

Any change in the ownership of the Site or the responsibility for implementing this SMP will include the following notifications:

- At least 60 days prior to the change, the NYSDEC will be notified in writing of the proposed change. This will include a certification that the prospective purchaser/Remedial Party has been provided with a copy of the Order on Consent, and all approved work plans and reports, including this SMP.
- Within 15 days after the transfer of all or part of the Site, the new owner's name, contact representative, and contact information will be confirmed in writing to the NYSDEC.

Table 1-1 above includes contact information for the above notifications. The information on this table will be updated as necessary to provide accurate contact information.

2 Summary of Previous Investigations and Remedial Actions

2.1 Site Location and Description

The Oneonta former MGP Site is located in the southeastern portion of the City of Oneonta, Otsego County, New York (Figure 1) and is identified as Section 300.10 Block 1 and Lot 34 on the Otsego County Tax Map. The City of Oneonta owns the former MGP Site and surrounding property. A Site plan is presented on Figure 2. The Site occupies approximately 2-acres of the 63.7-acre City owned parcel identified as Neahwa Park. The boundaries of the site are more fully described in Appendix A – Environmental Easement.

2.2 Physical Setting

2.2.1 Land Use

The eastern portion of the Oneonta former MGP was remediated in 2006 and is currently covered by James Georgeson Avenue and a parking area for Damaschke Field, a minor league baseball stadium. The western portion of the former MGP Site was remediated in 2007 and is also covered by a parking area for Damaschke Field.

The NYSDEC-issued Record of Decision (ROD), dated March 2005, identifies the use and development of the property as recreational use only. Recreational use is not a listed land use in NYSDEC DER-10 which is the current agency site remediation guidance document. The Environmental Easement identifies the use and development of the property as restricted residential use which allows for active recreational uses. Because active recreational use is allowed under the land use designation provided in the Environmental Easement (restricted residential use) and the Environmental Easement is the governing document as it pertains to this SMP, the use and development of the site is identified as restricted residential use only.

The properties adjoining and surrounding the Site primarily include commercial and residential properties. Damaschke Field borders the Site to the south. A city-owned recreational facility is located further to the south, east, and southwest. Mill Race Creek borders the Site to the north and northwest, with commercial and residential properties further north, beyond Mill Race Creek. Canadian Pacific Railroad tracks are located along the north bank of Mill Race Creek.

2.2.2 Geology

The Site is situated on relatively flat-lying land at an elevation of approximately 1,080 feet above mean sea level. Site investigations have identified the three principal geologic units beneath the Site:

- Fill: The uppermost unit is mostly man-made fill, including silt, sand, gravel, ash, cinders, slag, demolition debris, and foundation remnants ranging from 2 to 11 feet thick. Buried utilities are also located within the fill unit.
- Alluvial Sand and Gravel Unit: The unit beneath the fill consists of sand and gravel ranging from 4 to 18 feet thick. The majority of groundwater flow takes place in this unit.
- Silt and Fine Sand Unit: A silt and fine-grained sand unit underlies the sand and gravel unit to depths greater than 65 feet below ground surface (bgs). This unit contains trace amounts of clay and is far less permeable

than overburden units with little lithologic variation. This unit forms a barrier to MGP-related impacts downward migration.

Geologic cross sections are included in the Supplemental Remedial Investigation Report as Figure 3 and Figure 4 (BBL 2004) (SRI Report). Site specific monitoring well logs are provided in Appendix C.

2.2.3 Hydrogeology

Groundwater monitoring has been completed at the Site since 1986. The water table across the site is encountered from 5 to 8 feet bgs. Water table elevation contours and groundwater flow direction developed from the most recent spring (May 2021) and fall (November 2021) gauging events are presented on Figures 3 and 4, respectively. As shown on the figures, the general groundwater flow direction at the site was to the south and southwest during each gauging event. Groundwater elevation data is provided in Table 1. Groundwater monitoring well construction logs are provided in Appendix C.

Though somewhat variable, the sand and gravel and fill units are best described as a single hydrostratigraphic unit. This hydrostratigraphic unit is the most significant unit at the site for both groundwater flow and for storage and transport of MGP-related constituents. Variable estimates of hydraulic conductivity of this unit were reported in the SRI Report; however, estimates greater than 100 feet/day likely provide the best indication of the bulk hydraulic conductivity.

The City of Oneonta operates two public water supply wells in Catella Park, located approximately 2,000 feet east-northeast of the former MGP Site. As presented in the ROD, there is little chance that MGP-related impacts will reach those wells, either under current or future conditions.

2.3 Investigation and Remedial History

The following narrative provides a remedial history timeline and a brief summary of the available project records to document key investigative and remedial milestones for the Site. Full titles for each of the reports referenced below are provided in Section 8.0 - References.

- Task 1 – Preliminary Site Evaluation Report, TRC Environmental Consultants, Inc. (TRC) (TRC 1986). Task 1 consisted of completing historical research, conducting an electromagnetic survey, excavating four test pits, and collecting three samples for laboratory analyses.
- Task 2 – Report for the Site Investigation at the Former Oneonta Coal Gasification Plant (TRC 1988). Task 2 included excavating 20 test pits, installing eight monitoring wells, collecting five surface soil samples and seven sediment samples from Mill Race Creek, conducting electromagnetic-conductivity, and electric-resistivity surveys, and monitoring air quality.
- Final Task 3 Report for the Investigation of the Former Manufactured Gas Plant Site at Oneonta, New York (TRC 1989). This investigation included advancing nine soil borings; installing five monitoring wells and five piezometers in and around Mill Race Creek and Neahwa Pond; and collecting five surface soil samples, 16 subsurface samples, seven sediment samples, six indoor air samples, and groundwater samples during two sampling events.
- Task 4 Report, New York State Electric and Gas Corporation, Risk Assessment of the Former Coal Gasification Site, Oneonta, New York (TRC 1990). Task 4 included a risk assessment to evaluate exposure pathways and estimate potential risks posed by chemicals of interest at the site. The Task 4 Report concluded that, with the exception of on-site workers, all other risks associated with the site were either within

acceptable ranges or could not be exclusively attributed to the site. In addition, the Task IV Report concluded that because worker health can be protected by implementing health and safety procedures, the primary health risks of concern were those associated with future MGP-related constituents' migration, specifically groundwater migration.

- Supplemental Site Investigation for the Oneonta MGP Site, Oneonta, New York (Atlantic 1993). Field activities conducted during this investigation consisted of completing a comprehensive topographical survey; completing a ground penetrating radar (GPR) geophysical survey; advancing 27 soil borings; installing nine monitoring wells, one pumping well, and seven piezometers; collecting nine subsurface soil samples for laboratory analysis and performing a pumping test. A key conclusion presented in this report was that MGP-related byproducts in groundwater at the site would not likely impact the water quality of the Catella Park Well. Accelerated Groundwater Investigation (2002). NYSEG completed an accelerated groundwater investigation in accordance with NYSEG's 2002 letter work plan to the NYSDEC. The purpose of the investigation was to determine if impacted groundwater identified at monitoring well MW-9111S extended past this well toward the Catella Park Well. Eight soil borings were advanced southeast of well MW-9111S and groundwater samples from each boring were collected for laboratory analysis. The accelerated groundwater investigation results, showed that the groundwater sampled was unaffected by the site.
- Supplemental Remedial Investigation Report, Oneonta Former MGP Site (BBL 2004). The objective of the supplemental investigation was to adequately characterize the nature and extent of site-related impacts and to evaluate the risk posed to human health and the environment by those impacts so that a feasibility study to identify the preferred remedial strategy could be conducted. Forty-five (45) soil borings (14 completed as wells) and three test pits were installed and 2 surface soil, 48 sediment, and 3 creek bank samples were collected for laboratory analysis.
- Feasibility Study Report, Oneonta Former MGP Site (BBL 2004). A feasibility study was conducted to evaluate remedial alternatives and document the selection of the preferred remedial strategy for MGP-impacted media. Based on a comparative analysis, excavation of subsurface and sediment source material and groundwater monitoring was presented as the preferred remedial alternative.
- Pre-Design Investigation Summary Report (BBL 2006). The purpose of the pre-design investigation (PDI) was to obtain additional information required for the design of the NYSDEC-selected remedy for the site. PDI activities were conducted in Mill Race Creek and the western plant area to collect geotechnical information and groundwater vertical gradient information, to further define the NAPL extent beneath Mill Race Creek, and to collect additional subsurface soil and waste characterization data.
- Remedial Action Design (Earth Tech 2006). Presented the remedial design and field activities for removal and off-site disposal of MGP-impacted soil from the western plant area.
- Proof of Concept and Remedial Design Work Plan Addendum (Arcadis 2008). The work plan presented design details for installing a subsurface permeable wall and associated vertical well system for applying oxygen-releasing material. The permeable wall system and oxygen-releasing compound, along with passive tar removal and monitored natural attenuation (MNA) represents the NYSDEC-selected groundwater remedy for the site. As stated in the document, the objective of the permeable wall is to increase dissolved oxygen concentrations in groundwater to enhance dissolved benzene, toluene, ethylbenzene, and xylene (BTEX) natural biodegradation.

As described in the afore mentioned reports, soil, groundwater, and sediment samples were collected to characterize the nature and extent of MGP-related impacts. As presented in the ROD, the main categories of MGP-related impacts that exceed their standards were MGP coal tars (DNAPL) and volatile organic compounds

VOCs (specifically BTEX) and semivolatile organic compounds (SVOCs) (specifically PAHs) originating from MGP coal tars that were released at the site, principally from gas holders and other gas plant structures. Coal tars are dark colored, somewhat viscous, oil-like material which are denser than water. In general, when released in sufficient quantity, the MGP-tars sank downward into the ground until reaching the top of the silt and clay unit. At this point, the tar began to flow laterally along the top of the silt and clay unit. The tar spread over a broad area, eventually reaching approximately 300 feet east and 450 feet south from the center of the former MGP plant. Due to the physical properties of DNAPL and the complex nature of the sand and gravel unit, the distribution of DNAPL is expected to be highly irregular. Impacted soil was found at considerable depths below the ground surface; therefore, minimal potential for human exposure existed. The estimated lateral extent of NAPL and potentially DNAPL-containing soil that existed at the site (including soil that exhibited staining and/or sheens) is presented on Figure 5.

Subsurface DNAPL slowly dissolves, creating a plume of impacted groundwater. Groundwater monitoring has been completed at the site since 1986. Impacted groundwater, defined as groundwater containing MGP-related constituents above NYSDEC Class GA Standards and Guidance Values, is confined to the upper hydrostratigraphic unit (fill unit and the sand and gravel unit). As stated above, the groundwater table is typically encountered from approximately 5 to 8 feet bgs. The approximate extent of impacted groundwater ranges about 600 feet south-southwest of the former MGP (also shown on Figure 5). The primary constituents that exceed their respective Class GA standards are one or more BTEX compounds. Groundwater in the interior of the plume also contains several PAHs (specifically naphthalene, acenaphthene, fluorene, and phenanthrene) above NYSDEC Guidance Values. Class GA Standards or Guidance Values for PAHs are not exceeded near the perimeter of the plume. This is consistent with the relative mobility of BTEX and PAH compounds in groundwater (BTEX compounds are more soluble and mobile in groundwater). Based on long-term monitoring data, the extent of impacted groundwater appears to be stabilized due to a variety of naturally occurring processes, including, dilution, hydrophobic sorption, and in-situ biodegradation.

As presented in the ROD (NYSDEC 2005), impacted groundwater that leaves the former MGP Site travels away from the city’s municipal wells which are located in Catella Park approximately 2,000 feet east of the site. In addition, the NYSDEC has not identified any likely conditions under which site-related impacts would reach the wells.

2.4 Remedial Action Objectives

The Remediation goals for the Site, as listed in Section 6 of the March 2005 ROD, are to eliminate or reduce to the extent practicable:

- Exposures of persons at or around the site to site-related VOCs, specifically BTEX, and PAHs in subsurface soil, groundwater, and sediments.
- Environmental exposures of flora and fauna to MGP tar and tar-derived contaminants in sediments beneath Mill Race Creek.
- The release of contaminants from MGP tar and tar-contaminated soil into groundwater that may create exceedances of groundwater quality standards.
- The release of contaminants from tar-contaminated sediments into the water of Mill Race Creek, which creates sheens on the water surface.

The remediation goals for the site include attaining to the extent practicable:

- Ambient groundwater quality standards in the sand and gravel unit.

2.5 Remaining MGP-Related Impacts

As mentioned above, the ROD identified DNAPL, VOCs (specifically BTEX) and SVOCs (specifically PAHs) as the main categories of MGP-related impacts that exceed their standards at the site.

2.5.1 DNAPL

As presented above, the potential lateral estimated DNAPL extent and remaining soil potentially impacted with DNAPL (including soil that exhibited staining and/or sheens) is presented on Figure 5. These impacts potentially exist within the saturated zone, generally as a relatively thin (1 to 2 feet thick) layer along the surface of the fine sand and silt confining layer (approximately 16 to 20 feet below grade). Previous reports have indicated that the migration of NAPL has stabilized and NAPL is no longer migrating into uncontaminated areas (Arcadis 2009). Due to the physical properties of NAPL and complex nature of the sand and gravel unit, the distribution of NAPL is expected to be highly irregular. According to the Final Remedial Action Construction Certification Report (Earth Tech, Inc., 2008), based on visual inspection, no significant visible NAPL remained within the eastern or western plant soil excavation areas at the completion of the respective soil remedial actions.

2.5.2 Soil

The eastern plant area was remediated in 2006, and is currently covered by James Georgeson Avenue and a parking area for Damaschke Field. The western portion of the former MGP Site was remediated in 2007 and is currently covered by a parking area for Damaschke Field. Approximately 11,816 tons and 49,492 tons of soil that contained greater than 500 milligrams per kilogram (mg/kg) total PAHs or greater than 10 mg/kg BTEX was excavated from the former eastern and western plant areas, respectively, and sent off-site for disposal. The excavation sequence included installation of temporary watertight sheeting, excavation of impacted soil to pre-determined NYSDEC-approved depths of approximately 8 to 20 feet bgs, inspection of the excavation bottom conditions (by the NYSDEC and NYSEG representative), and collection of confirmation samples for laboratory analysis. Confirmatory sampling locations and results are presented in Appendix D (Figure 5, Eastern & Western Plant Area Soil Sample Locations, Earth Tech, 2007). At all confirmatory sampling locations within the eastern plan area, total PAHs and total BTEX were less than the remediation objectives; at several sampling locations within the western plant area at depths between 16 to 20 feet bgs, total PAHs and/or total BTEX were greater than the remediation objectives. Orange construction fence was placed at the bottom of the excavation as a demarcation prior to backfilling. Backfill material consisted of clean soil from previous site construction activities and bank-run gravel from a NYS Department of Transportation (NYSDOT) source topped with approximately 1 foot of crusher run. Geotextile fabric was placed over the gravel and covered with approximately 12 inches of crusher run stone. Cobbles (4 to 8-inches in diameter), geotextile fabric, and armor stone were used as fill within Mill Race Creek. Excavation limits are shown on Figure 5. As mentioned above, the approximate lateral extent of soil containing MGP-related impacts is shown on Figure 5.

2.5.3 Sediment

The sediment remedy (excavation and removal) for the site was completed in 2007. No known MGP-related impacts currently exist within Mill Race Creek.

2.5.4 Groundwater

During backfilling operations in 2007, a 3- to 4-feet wide by 135 feet long permeable wall was created along the southern and southwestern (i.e., hydraulically downgradient) sides of the former western plant area using #1 stone. The stone was wrapped in Mirafi 140N geotextile fabric. The well network/subsurface components of the groundwater remedy were installed in early 2008. Construction details of the permeable wall are included in the Final Engineering Report, Oneonta Former MGP Site (Arcadis 2014). The permeable wall was used as an infiltration gallery for the application of oxygen-releasing material.

The groundwater remedy consisted of enhancing the dissolved oxygen content of groundwater by suspending oxygen-releasing material in a series of application wells installed in the permeable wall (Arcadis 2008). Groundwater oxygen enhancement was conducted from May 2008 to November 2013. Based on review of treatment system performance and effectiveness monitoring data from this 5-year period (2008 through 2013), the NYSDEC approved suspending oxygen enhancement of groundwater for the subsequent 5-year period (2013 through 2018; i.e., first 5-year period of monitoring) while requiring collection of monitoring data to document the resulting effect on groundwater quality at the dissolved plume fringe.

The objective of groundwater effectiveness monitoring for the second 5-year period of monitoring (November 2018 through November 2023) was to document concentrations of dissolved BTEX and PAHs at the plume fringe. During groundwater sampling events, groundwater collected from monitoring wells identified in the SMP dated February 2014 were submitted for analysis of:

- BTEX by United States Environmental Protection Agency (USEPA) SW-846 Method 8260.
- PAHs by USEPA SW-846 Method 8270.

Analytical results for constituents compared to respective SCGs are summarized in Table 2. For comparison purposes, baseline groundwater quality results collected in April 2008 and data collected during the previous 13 years of groundwater treatment are included in the table. Dissolved BTEX data from previous 10 years are presented on Figure 6; dissolved PAH data from the previous 10 years are presented on Figure 7.

Based on data collected during the second 5-year monitoring period after suspension of oxygen-releasing material, the NYSDEC approved continued suspension of oxygen enhancement of groundwater for an additional 5-year period (November 2018 through November 2023) (NYSDEC 2019).

3 Institutional and Engineering Control Plan

3.1 General

Since remaining MGP-related impacts exists at the Site, Institutional Controls (ICs) and Engineering Controls (ECs) are required to protect human health and the environment. This IC/EC Plan describes the procedures for the implementation and management of all IC/ECs at the Site. The IC/EC Plan is one component of the SMP and is subject to revision by the NYSDEC project manager.

This plan provides:

- A description of all IC/ECs on the Site;
- The basic implementation and intended role of each IC/EC;
- A description of the key components of the ICs set forth in the Environmental Easement;
- A description of the controls to be evaluated during each required inspection and periodic review;
- A description of plans and procedures to be followed for implementation of IC/ECs, such as the implementation of the Excavation Work Plan (EWP) (as provided in Appendix E) for the proper handling of remaining MGP-related impacts that may be disturbed during maintenance or redevelopment work on the site; and

Any other provisions necessary to identify or establish methods for implementing the IC/ECs required by the Site remedy, as determined by the NYSDEC project manager

3.2 Institutional Controls

An IC in the form of an Environmental Easement is required by the ROD to: (1) implement, maintain and monitor Engineering Control systems; (2) prevent future exposure to remaining MGP-related impacts by controlling disturbances of potentially impacted subsurface soil; and, (3) limit the use and development of the site to restricted residential uses only.

The Environmental Easement for the Site was executed on September 5, 2013 and is currently filed with the Otsego County Clerk. Adherence to these ICs on the site is required by the Environmental Easement and will be implemented under this SMP. ICs identified in the Environmental Easement may not be discontinued without an amendment to or extinguishment of the Environmental Easement. The IC boundaries are shown on the metes and bounds survey included with the Environmental Easement in Appendix A. These ICs are:

- The Site may be used for restricted residential uses only.
- All ECs must be operated and maintained as specified in this SMP.
- All ECs must be inspected at a frequency and in a manner defined in the SMP.
- The use of groundwater underlying the property as a source of potable or process water is prohibited without necessary water quality treatment as determined by the NYSDOH or the Otsego County Department of Health to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the Department.
- Groundwater and other environmental or public health monitoring must be performed as defined in this SMP.

- Data and information pertinent to site management must be reported at the frequency and in a manner as defined in this SMP.
- All future activities that will disturb remaining MGP-related impacted material must be conducted in accordance with this SMP.
- Monitoring to assess the effectiveness of the remedy must be performed as defined in this SMP.
- Inspection, maintenance, and reporting of any component of the remedy shall be performed as defined in this SMP.
- Access to the site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by the Environmental Easement.
- The potential for vapor intrusion must be evaluated for any buildings developed in the area within the IC boundaries noted on the Environmental Easement, and any potential impacts that are identified must be monitored or mitigated.
- Vegetable gardens and farming on the site are prohibited.
- An evaluation shall be performed to determine the need for further investigation and remediation should large scale redevelopment occur, if any of the existing structures are demolished, or if the subsurface is otherwise made accessible.

3.3 Engineering Controls

3.3.1 Cover (or Cap)

Exposure to remaining MGP-related impacts at the Site is prevented by a cover system placed over the former eastern and western plant areas.

- The former eastern plant area was backfilled with 11 feet of bank-run gravel to within one foot of the previously existing grade. A geotextile fabric was placed over the bank-run backfill, and one foot crusher-run gravel was placed on top of the fabric. Portions of the former eastern plant area are currently covered by James Georgeson Avenue and a parking area for Damaschke Field. At excavation areas that were designated to be vegetated, two-feet of clean soil was placed above the geotextile fabric.
- The former western plant area was also backfilled with bank-run gravel to within one foot of the final grade across the entire excavation area, and a geotextile fabric was placed over the bank-run backfill. The former western plant area is also currently covered by a parking area for Damaschke Field. At excavation areas that were designated to be vegetated, two-feet of clean soil was placed above the geotextile fabric.

Figure 5 presents the extent of excavation/backfill and the extent of the cover system and applicable demarcation layers. The EWP provided in Appendix E outlines the procedures required to be implemented in the event the cover system is breached, penetrated, or temporarily removed within the Excavation Advisory Area (shown on Figure 5) and any underlying remaining MGP-related impacts are disturbed. Procedures for the inspection of this cover are provided in the Monitoring and Sampling Plan included in Section 4.0 of this SMP. Any work conducted pursuant to the EWP must also be conducted in accordance with the procedures defined in a Generic Health and Safety Plan (GHASP) and associated Community Air Monitoring Plan (CAMP) prepared for the Site and provided in Appendix F and Appendix G, respectively. Any disturbance of the site's cover system must be overseen by a qualified environmental professional as defined in 6 NYCRR Part 375, a Professional Engineer (PE) who is licensed and registered in New York State, or a qualified person who directly reports to a PE who is licensed and registered in New York State.

3.3.2 Criteria for Completion of Remediation/Termination of Remedial Systems

Generally, remedial processes are considered completed when monitoring indicates that the remedy has achieved the remedial action objectives identified by the decision document. The framework for determining when remedial processes are complete is provided in Section 6.4 of NYSDEC DER-10. Unless waived by the NYSDEC, confirmation samples of applicable environmental media are required before terminating any remedial actions at the Site. Confirmation samples require Category B deliverables and a Data Usability Summary Report (DUSR).

As discussed below, the NYSDEC may approve termination of a groundwater monitoring program. When a remedial party receives this approval, the remedial party will decommission all site-related monitoring, injection and recovery wells as per the NYSDEC CP-43 policy.

The remedial party will also conduct any needed site restoration activities, such as asphalt patching and decommissioning treatment system equipment. In addition, the remedial party will conduct any necessary restoration of vegetation coverage, trees and wetlands, and will comply with NYSDEC and United States Army Corps of Engineers regulations and guidance. Also, the remedial party will ensure that no ongoing erosion is occurring on the site.

3.3.2.1 Cover (or Cap)

The composite cover system is a permanent control and the quality and integrity of this system will be inspected at defined, regular intervals in accordance with this SMP in perpetuity.

3.3.2.2 Monitoring Wells associated with Monitored Natural Attenuation

Groundwater monitoring activities to assess natural attenuation will continue, as determined by the NYSDEC project manager in consultation with NYSDOH project manager, until residual groundwater concentrations are found to be consistently below ambient water quality standards or have become asymptotic at an acceptable level over an extended period. In the event that monitoring data indicates that monitoring for natural attenuation may no longer be required, a proposal to discontinue the monitoring will be submitted by the remedial party. Monitoring will continue until permission to discontinue is granted in writing by the NYSDEC project manager. If groundwater contaminant levels become asymptotic at a level that is not acceptable to the NYSDEC, additional source removal, treatment and/or control measures will be evaluated.

4 Monitoring and Sampling Plan

4.1 General

This Monitoring and Sampling Plan describes the measures for evaluating the overall effectiveness of the remedy. This Monitoring and Sampling Plan may only be revised with the approval of the NYSDEC project manager. Details regarding the sampling procedures, data quality usability objectives, analytical methods, etc. for all samples collected as part of site management for the Site are included in the Generic Quality Assurance Project Plan (GQAPP) provided in Appendix H.

This Monitoring and Sampling Plan describes the methods to be used for:

- Sampling and analysis of groundwater.
- Assessing compliance with applicable NYSDEC groundwater standards and guidance values.
- Evaluating site information periodically to confirm that the remedy continues to be effective in protecting public health and the environment.

To adequately address these issues, this Monitoring and Sampling Plan provides information on:

- Groundwater sampling locations, protocol and frequency.
- Information on all designed monitoring systems.
- Analytical sampling program requirements.
- Inspection and maintenance requirements for monitoring wells.
- Monitoring well decommissioning procedures.
- Annual inspection and periodic certification.

Reporting requirements are provided in Section 7.0 of this SMP.

4.2 Site-Wide Inspection

Site-wide inspections will be performed annually. These periodic inspections must be conducted when the ground surface is visible (i.e. no snow cover). Site-wide inspections will be performed by a qualified environmental professional as defined in 6 NYCRR Part 375, a PE who is licensed and registered in New York State, or a qualified person who directly reports to a PE who is licensed and registered in New York State. Modification to the frequency or duration of the inspections will require approval from the NYSDEC project manager. Site-wide inspections will also be performed after all severe weather conditions that may affect ECs or monitoring devices. During these inspections, a photographic log of site conditions will be created and all observations/activities recorded in a dedicated field log book. An inspection form will be completed as provided in Appendix I – Site Inspection Forms. The field notes will compile sufficient information to assess the following:

- Compliance with all ICs, including site usage.
- An evaluation of the condition and continued effectiveness of ECs.
- General site conditions at the time of the inspection.
- The site management activities being conducted including, where appropriate, confirmation sampling and a health and safety inspection.

- Confirm that site records are up to date.

Inspections of all remedial components installed at the site will be conducted. A comprehensive site-wide inspection will be conducted and documented according to the SMP schedule, regardless of the frequency of the Periodic Review Report. The inspections will determine and document the following:

- Whether ECs continue to perform as designed.
- If these controls continue to be protective of human health and the environment.
- Compliance with requirements of this SMP and the Environmental Easement.
- If site records are complete and up to date.

Reporting requirements are outlined in Section 7.0 of this plan.

Inspections will also be performed in the event of an emergency. If an emergency, such as a natural disaster or an unforeseen failure of any of the ECs occurs that reduces or has the potential to reduce the effectiveness of ECs in place at the site, verbal notice to the NYSDEC project manager must be given by noon of the following day after discovery of a deficiency, or as soon as practical. In addition, an inspection of the site will be conducted within 5 days of the event or as soon as can be safely conducted, to verify the effectiveness of the IC/ECs implemented at the site by a qualified environmental professional, as defined in 6 NYCCR Part 375. Written confirmation must be provided to the NYSDEC project manager within 7 days of discovery of a deficiency that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public.

4.3 Treatment System Monitoring and Sampling

As approved by the NYSDEC, suspension of the oxygen-enhancement of groundwater will continue during the period covered by this SMP (NYSDEC 2019). Therefore, no treatment system performance monitoring is required.

4.4 Post-Remediation Media Monitoring and Sampling

Samples shall be collected from groundwater on a semi-annual basis. Sampling locations, required analytical parameters, and schedule are provided in Table 3. Modification to the frequency or sampling requirements will require approval from the NYSDEC project manager.

Detailed sample collection and analytical procedures and protocols are provided in in the Generic Field Sampling Plan (GFSP) included as Appendix J and the GQAPP included as Appendix H. A detailed sampling and analysis summary is provided in Table 4.

4.4.1 Groundwater Sampling

Groundwater monitoring will be performed semi-annually to assess the performance of the remedy. Modification to the frequency or sampling requirements will require approval from the NYSDEC project manager.

A monitoring well network has been installed to monitor upgradient, on-site, and downgradient groundwater conditions at the Site. The locations of the monitoring wells are shown on the Site Map (Figure 2). Monitoring well construction logs that include the depths, diameter, materials of construction, and screened intervals of each well approved by the NYSDEC for effectiveness monitoring during the period included in this SMP are provided on the well logs included in Appendix C.

If biofouling or silt accumulation occurs in any of the sit-related monitoring wells, the wells will be physically agitated/surged and redeveloped. Additionally, monitoring wells will be properly decommissioned and replaced, if an event renders the wells unusable.

Repairs and/or replacement of wells in the monitoring well network will be performed based on assessments of structural integrity and overall performance.

The NYSDEC project manager will be notified prior to any repair or decommissioning of any monitoring well for the purpose of replacement, and the repair or decommissioning and replacement process will be documented in the subsequent Periodic Review Report (PRR). Well decommissioning without replacement will be done only with the prior approval of the NYSDEC project manager. Well abandonment will be performed in accordance with NYSDEC's guidance entitled CP-43: Groundwater Monitoring Well Decommissioning Procedures. Monitoring wells that are decommissioned because they have been rendered unusable will be replaced in kind in the nearest available location, unless otherwise approved by the NYSDEC project manager.

The sampling frequency may only be modified with the approval of the NYSDEC project manager. This SMP will be modified to reflect changes in sampling plans approved by the NYSDEC project manager.

Deliverables for the groundwater monitoring program are specified in Section 7.0 – Reporting Requirements.

4.4.2 Soil Vapor Intrusion Sampling

Prior to additional development (i.e. construction of regularly occupied structures) within potentially impacted areas, a soil vapor intrusion (SVI) evaluation will be required to determine potential measures to eliminate the potential for volatile organic vapors associated with remaining MGP-related impacts. The SVI evaluation would be conducted in accordance with a NYSDEC/NYSDOH-approved work plan prior to construction of the structure.

If required, mitigation measures may include, but are not limited to, installing a vapor barrier and/or passive sub-slab depressurization system capable of being converted to an active system. Actual measures to be employed to mitigate potential vapor intrusion will be evaluated, selected, designed, installed, and maintained based on the SVI evaluation and construction details of the proposed structure.

NYSEG, or its contractor, will have maintenance responsibilities related to the soil vapor mitigation system if any are to be installed during future development activities. Maintenance related work will be documented and included in PRR.

4.4.3 Monitoring and Sampling Protocol

All sampling activities will be recorded in a field book and/or associated sampling log as provided and in accordance with the procedures identified in the GFSP (Appendix J). Other observations (e.g., groundwater monitoring well integrity) will be noted on the sampling log. The sampling log will serve as the inspection form for the monitoring network. Additional detail regarding monitoring and sampling protocols are provided in the GFSP provided as Appendix J.

5 Operation and Maintenance Plan

The site remedy does not rely on any mechanical systems, such as groundwater treatment systems, sub-slab depressurization systems or air sparge/soil vapor extraction systems to protect public health and the environment. Therefore, operation and maintenance (O&M) requirements include site inspection and routine site maintenance.

5.1 Site Inspection

A comprehensive site inspection will be completed annually and will be conducted after a major weather event (e.g., flooding that could cause major erosion) or as otherwise necessary.

The selected remedy requires maintaining a site cover over the former MGP. Vegetated areas require a 2-foot layer of clean soil, and all non-vegetated areas covered with either concrete or a paving system (e.g., macadam). The parking area and vegetated areas around the former MGP Site will be evaluated annually and repaired as needed. The annual inspection should include, at a minimum, inspection of the following:

- Asphalt surfaces for evidence of significant potholes or depressions that expose sub-base materials.
- Soil cover areas to identify any areas where excessive settlement has occurred relative to the surrounding areas.
- Soil cover areas to identify the exposed or damaged underlying demarcation barrier.
- Soil cover areas for evidence of animal burrows, large-rooted vegetation (e.g., shrubs, trees) that could compromise the integrity of the cover.

In addition, wells associated with the site (including monitoring wells, Application Wells [AWs], Performance Monitoring Wells [PMWs], and NAPL Recovery Wells [NRWs]) will be inspected to verify:

- The integrity of the protective road boxes and surrounding concrete/asphalt collars are maintained.
- Locking caps exist for each well and are in good shape, and that security locks exist.
- Excessive settlement around a well has not occurred.

Results from the field inspection will be recorded in a dedicated field logbook. Results from the site inspection will be included in the PRR (described in Section 7).

5.2 Site Maintenance

The City of Oneonta is responsible for overall maintenance of Neahwa Park and Damaschke Field, including day to day maintenance issues. NYSEG is responsible for maintaining any aspect of the Site that is associated with remediation activities for the former MGP facility, as well as the maintenance of the items listed below. Site maintenance activities associated with remediation activities will be recorded in a dedicated field logbook.

Due to the nature of the Site (i.e., baseball stadium) and associated activities, sufficient notice (minimum of 1 week) must be provided to the City of Oneonta to arrange for site visits, and to verify maintenance activities will not interfere with scheduled activities.

5.3 General Maintenance

Areas within the former MGP excavation limits will be maintained as outlined below:

- Reseeding areas with sparse vegetation, as well as any areas where additional fill material and/or topsoil is placed.
- Maintaining a 2-foot layer of clean soil in all vegetated areas by re-grading areas exhibiting erosion or visually apparent settlement.
- Maintaining asphalt surfaces above the groundwater treatment system (i.e., permeable wall), including repair of cracks or potholes, depressions, and/or rutting due to settlement of the wall.
- Clearing obstructions within drainage features (e.g., swales, culverts, and catch basins).

5.4 Site Security

The City of Oneonta owns the Site and is, therefore, responsible for maintaining site access and security. Access to the former MGP site to perform sampling, inspections, or O&M activities will be coordinated and arranged with the City of Oneonta personnel.

5.5 Cover Materials

The site cover (soil and hard surface) must be maintained to confirm that mitigation of potential future exposure of persons at the Site to potentially MGP-impacted material is being achieved within the former MGP excavation limits.

If for any reason the cover is to be repaired or replaced, new soil or pavement material will meet the requirements identified herein and be replaced in kind.

Sloughing, cracking, settling, and erosion of the cover will be repaired by placing additional cover material to meet, at a minimum, the original cover specifications, or taking other action as appropriate. Unless the current cover is replaced with an impervious cover material, such as concrete or asphalt, as described in this section, areas with distressed vegetation or bare spots will be addressed, as appropriate, to restore vegetation. Potential erosion of the soil cover will be mitigated by maintaining a vegetative cover (grass), at a minimum. Additional seeding/watering, as needed, will be performed to maintain the grass.

As the site is developed or changes over time, the requirements of the surface barrier will remain as specified below.

5.6 Replacing Soil Cover within the Former MGP Excavation Limits

If subsurface disturbance occurs within the former MGP excavation limits in landscaped or vegetated areas, the topsoil cover will be re-established, as necessary, to maintain a minimum 2-foot imported topsoil cover.

At a minimum, soil fill material will be from a NYSDOT-certified source and meet the following requirements (if the excavated soil does not meet the requirements of Section 3 that allows the excavated soil to be returned to the excavation):

- Fill materials and topsoil will meet the applicable 6NYCRR Part 375-6 criteria for restricted-residential use or active recreational uses, as well as topsoil.
- Fill materials (other than topsoil) will be suitable for compaction in layers not exceeding 12 inches in loose thickness and will remain stable when wet.

- Fill materials (other than topsoil) will produce 95% compaction and will be tested using in-place density testing in accordance with American Society for Testing and Materials D2922 or D1556.
- Selected soil fill material will be natural soil, free from excessive moisture, free from frost, stumps, trees, roots, sod, muck, marl, vegetable matter, or other unsuitable materials.
- Soil fill material will have an organic content of less than 0.5% as determined using a loss on ignition test.

At a minimum, topsoil will be from a NYSDOT-certified source and meet the following requirements:

- Consist of loam or sandy loam, free from clay lumps, stones, roots, sticks, stumps, brush, and other extraneous material that could discourage plant growth.
- Have organic matter content ranging between 5% and 20% and pH between 5 and 7.5, as determined by laboratory analysis of representative samples.

Largest particles will not exceed 1 inch in any dimension.

5.7 Replacing Hard Surface Cover

If replacement of soil occurs within the former MGP excavation limits and it is determined that the area will be a hard surface, or the area excavated was previously a hard surface and is being replaced, the following will apply:

- The hard surface will be asphalt, concrete, macadam, or similar hard surface, and will have an overall thickness of at least 4 inches.

5.8 Treatment System Maintenance

The AWs and PMWs previously used during oxygen-enhancement, along with NAPL recovery wells and site monitoring wells will require periodic maintenance as described below.

All maintenance activities will be recorded in a dedicated field logbook. Maintenance activities will be included in the PRR for the Site.

5.9 Application Wells

The 16 AWs that were used to add oxygen-releasing material to groundwater passing through the permeable wall will be inspected annually. During the November 2013 site visit, the oxygen releasing socks were removed and their stainless-steel suspension canisters were removed, brushed clean, soaked in acid and stored in the on-site storage shed. Even though these wells are not actively being used for oxygen releasing material application, depth to bottom measurements will be recorded and compared to the baseline measurements annually to evaluate the potential need for well re-development due to siltation. Well re-development procedures are included in the GFSP.

In addition, for safety and security reasons, maintenance activities will generally consist of the following:

- Replacing missing or broken locks.
- Repairing/replacing of ground seals, protective casings, and locking caps.

5.10 Performance Monitoring Wells

During annual sampling events PMWs will be inspected. Depth to bottom measurements will be recorded annually for the 14 PMWs and compared to baseline measurements to evaluate the potential need for well re-development due to siltation. Well re-development procedures are included in the GFSP.

In addition, maintenance activities will generally consist of the following:

- Replacing missing or broken locks.
- Repairing/replacing ground seals, protective casings, and locking caps.

5.11 Dense Non-Aqueous Phase Liquid Recovery Wells

Maintenance activities will generally consist of the following:

- Replacing missing or broken locks.
- Repairing/replacing ground seals, protective casings, and locking caps.
- Continuing to install a sorbent sock to passively remove accumulated DNAPL in AW-12. Replacing the sorbent sock will continue to be conducted on a semi-annual basis.

If accumulated DNAPL is identified in the sump, the DNAPL will be removed using dedicated bailers, or dedicated pumps and tubing, as appropriate. NAPL will be containerized in USDOT-approved containers for characterization sampling and disposal.

6 Periodic Assessments/Evaluations

6.1 Climate Change Vulnerability Assessment

Increases in both the severity and frequency of storms/weather events, an increase in sea level elevations along with accompanying flooding impacts, shifting precipitation patterns and wide temperature fluctuation, resulting from global climactic change and instability, have the potential to significantly impact the performance, effectiveness and protectiveness of a given site and associated remedial systems. Vulnerability assessments provide information so that the site and associated remedial systems are prepared for the impacts of the increasing frequency and intensity of severe storms/weather events and associated flooding.

As described above, no active remediation systems exist at the Site; maintenance of site wells and effectiveness monitoring will be conducted during the effective period of this SMP. This section briefly summarizes the vulnerability of the site and/or engineering controls to severe storms/weather events and associated flooding.

The Site is located adjacent to Mill Race Creek, a Federal Emergency Management Agency (FEMA) designated regulatory floodway. A majority of the Site is located in a designated special Zone AE flood hazard area (indicating a 1 percent annual chance of flooding). A portion of the northeastern end of the Site is designated within the 500-year flood zone. Therefore, areas of the Site may be vulnerable to flooding during severe rain events; however, flow to Mill Race Creek and Neahwa Pond can be regulated. No evidence of erosion at the Site has been identified during the previous 10 years of annual site inspections. The Site monitoring wells are not susceptible to damage due to high wind conditions, nor is the effectiveness monitoring dependent upon electrical power. NAPL removed from recovery wells (in sorbent socks), and purge water associated with groundwater sampling are temporarily staged within the secured site shed and disposed off-site as required. Therefore, the potential for spill/contaminant releases due to storm-related damage caused by flooding, erosion, high winds, loss of power, etc., is minimal.

6.2 Green Remediation Evaluation

NYSDEC’s DER-31 Green Remediation requires that green remediation concepts and techniques be considered during all stages of the remedial program including site management, with the goal of improving the sustainability of the cleanup and summarizing the net environmental benefit of any implemented green technology. This section of the SMP provides a summary of any green remediation evaluations for the Site during site management.

Site maintenance activities (i.e., groundwater monitoring, NAPL monitoring, and site inspection) will be performed in such a way to minimize energy usage, waste generation and water consumption. If feasible, these activities will be performed during the same mobilization and with local staff carpooling to minimize fuel usage and emissions generated from traveling to the Site. Measures to minimize the generation of wastewater will be reported in the PRR.

Additionally, monitoring and maintenance occurs during daylight hours and does not require electrical usage or create emissions. Required site visits are scheduled to be completed in conjunction with other sites in the general area to minimize fuel usage for transportation to and from the Site. Dedicated sampling equipment is used whenever feasible to minimize decontamination water requirements.

6.2.1 Timing of Green Remediation Evaluations

For major future remedial system components, green remediation evaluations and corresponding modifications will be undertaken as part of a formal Remedial System Optimization (RSO), or in conjunction with storm recovery activities.

6.2.2 Frequency of System Checks, Sampling and Other Periodic Activities

Transportation to and from the Site, use of consumables in relation to visiting the Site in order to conduct checks and/or collect samples, and shipping samples to a laboratory for analyses have direct and/or inherent energy costs. The schedule and/or means of these periodic activities have been prepared so that these tasks can be accomplished in a manner that does not impact remedy protectiveness but reduces expenditure of energy or resources.

To reduce expenditure of energy, site data will be evaluated annually to determine if reduced site visits and/or number of wells included in the sampling plan can be reduced while maintaining the site monitoring objectives. Changes to the frequency of visits or monitoring requirements will not be implemented without NYSDEC approval.

7 Reporting Requirements

7.1 Site Management Plan

All site management inspection, maintenance and monitoring events will be recorded in a dedicated logbook and/or on the appropriate site inspection form provided in Appendix I. This form is subject to NYSDEC revision. All site management inspection, maintenance, and monitoring events will be conducted by a qualified environmental professional as defined in 6 NYCRR Part 375, a PE who is licensed and registered in New York State, or a qualified person who directly reports to a PE who is licensed and registered in New York State.

All applicable inspection forms and other records, including media sampling data and system maintenance reports, generated for the site during the reporting period will be provided in electronic format to the NYSDEC in accordance with the requirements of Table 7-1 and summarized in the PRR.

Table 7-1 – Reporting Schedule

Report	**Reporting Frequency***
Periodic Review Report	Annually, or as otherwise determined by the Department

* The frequency of events will be conducted as specified until otherwise approved by the NYSDEC.

7.2 Periodic Review Report

A PRR will be submitted annually to the NYSDEC project manager or at another frequency as may be required by the NYSDEC project manager. In the event that the site is subdivided into separate parcels with different ownership, a single Periodic Review Report will be prepared that addresses the site described in Appendix A-Environmental Easement. The report will be prepared in accordance with NYSDEC's DER-10 and submitted within 30 days of the end of each certification period. Media sampling results will also be incorporated into the PRR. The report will include:

- Identification, assessment and certification of all ECs/ICs required by the remedy for the Site.
- Results of the required annual site inspections and severe condition inspections, if applicable.
- All applicable site management forms and other records generated for the site during the reporting period in the NYSDEC-approved electronic format, if not previously submitted.
- A summary of any discharge monitoring data and/or information generated during the reporting period, with comments and conclusions.
- Data summary tables and graphical representations of contaminants of concern by media (i.e., groundwater), which include a listing of all compounds analyzed, along with the applicable standards, with all exceedances highlighted. These tables and figures will include a presentation of past data as part of an evaluation of contaminant concentration trends.A groundwater elevation contour map for each gauging event.
- Results of all analyses, copies of all laboratory data sheets, and the required laboratory data deliverables for all samples collected during the reporting period will be submitted in digital format as determined by the NYSDEC. Currently, data is supplied electronically and submitted to the NYSDEC EQuIS^{TM} database in accordance with the requirements found at this link: http://www.dec.ny.gov/chemical/62440.html.

- A site evaluation, which includes the following:
    - Compliance of the remedy with the requirements of the site-specific ROD.
    - The effectiveness of all monitoring wells etc., including identification of any needed repairs or modifications.
    - Any new conclusions or observations regarding site MGP-related impacts based on inspections or data generated by the Monitoring and Sampling Plan for the media being monitored.
    - Recommendations regarding any necessary changes to the remedy and/or Monitoring and Sampling Plan.
    - An evaluation of trends in contaminant levels in the groundwater to determine if the remedy continues to be effective in achieving remedial goals as specified by the ROD.
    - The overall effectiveness of the remedy.

7.2.1 Certification of Institutional and Engineering Controls

Following the last inspection of the reporting period, a qualified environmental professional as defined in 6 NYCRR Part 375 or Professional Engineer licensed to practice and registered in New York State will prepare, and include in the PRR, the following certification as per the requirements of NYSDEC DER-10:

"*For each institutional or engineering control identified for the site, I certify that all of the following statements are true:*

- *The inspection of the site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under my direction;*
- *The institutional control and/or engineering control employed at this site is unchanged from the date the control was put in place, or last approved by the NYSDEC;*
- *There are no apparent changes that would impair the ability of the control to protect the public health and environment;*
- *There are no apparent changes that would constitute a violation or failure to comply with any site management plan for this control;*
- *Access to the site will continue to be provided to the NYSDEC to evaluate the remedy, including access to evaluate the continued maintenance of this control;*
- *Use of the site is compliant with the environmental easement;*
- *The site inspection and sampling data demonstrate that engineering control systems are performing as designed and are effective;*
- *To the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program [and generally accepted engineering practices]; and*
- *The information presented in this report is accurate and complete.*

Based on my inquiry of NYSEG and persons under my direction who performed the activities summarized herein, I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law. I, [insert name of Professional Engineer*], of [business address], am certifying as* NYSEG's *representative for the site."*

The signed certification will be included in the PRR. The PRR will be submitted, in electronic format, to the NYSDEC project manager and the NYSDOH project manager. The PRR may also need to be submitted in hard-copy format if requested by the NYSDEC project manager.

7.3 Corrective Measures Work Plan

If any component of the remedy is found to have failed, or if the periodic certification cannot be provided due to the failure of an institutional or engineering control or failure to conduct site management activities, a Corrective Measures Work Plan will be submitted to the NYSDEC project manager for approval. This plan will explain the failure and provide the details and schedule for performing work necessary to correct the failure. Unless an emergency condition exists, no work will be performed pursuant to the Corrective Measures Work Plan until it has been approved by the NYSDEC project manager.

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Tables

Table 1
Gauging Data
NYSEG
Oneonta Former MGP Site
Oneonta, New York

Well ID	Measuring Point Elevation	Actual Depth to Bottom	Screen Length	Date	Depth to Water (feet TOC)	Groundwater Elevation	Depth to Product (feet TOC)	Depth to Bottom (feet TOC)	Accumulated Thickness of Sediments (feet)	Percent Screen Occluded By Sediments (%)
MW-9502S	1080.74	23.72	19.0	April 21, 2008	5.56	1075.41	-	24.01	-0.09	0.00
				May 6, 2008	-	-	-	-	-	-
				August 5, 2008	-	-	-	-	-	-
				November 10, 2008	7.47	1073.50	-	24.04	-0.12	0.00
				February 17, 2009	-	-	-	-	-	-
				May 11, 2009	6.67	1074.30	-	24.01	-0.09	0.00
				August 5, 2009	6.04	1074.93	-	24.02	-0.10	0.00
				November 30, 2009	6.77	1074.20	-	24.02	-0.10	0.00
				February 24, 2010	7.22	1073.75	-	24.03	-0.11	0.00
				May 17, 2010	6.15	1074.82	-	23.97	-0.05	0.00
				November 1, 2010	5.55	1075.42	-	23.80	0.12	0.63
				May 9, 2011	4.70	1076.07	-	23.80	-0.08	0.00
				November 7, 2011	6.08	1074.69	-	23.81	-0.09	0.00
				May 29, 2012	6.09	1074.68	-	23.82	-0.10	0.00
				November 26, 2012	7.23	1073.54	-	23.88	-0.16	0.00
				May 6, 2013	6.01	1074.76	-	23.77	-0.05	0.00
				November 12, 2013	7.22	1073.55	-	23.75	-0.03	0.00
				May 27, 2014	5.44	1075.33	-	23.76	-0.04	0.00
				November 17, 2014	7.35	1073.42	-	23.75	-0.03	0.00
				May 19, 2015	7.01	1073.76	-	23.74	-0.02	0.00
				November 16, 2015	6.10	1074.67	-	23.78	-0.06	0.00
				May 9, 2016	6.68	1074.09	-	23.74	-0.02	0.00
				November 15, 2016	8.01	1072.76	-	23.75	-0.03	0.00
				May 16, 2017	5.54	1075.23	-	23.75	-0.03	0.00
				November 6, 2017	7.65	1073.12	-	23.75	-0.03	0.00
				May 14, 2018	5.95	1074.82	-	23.75	-0.03	0.00
				November 12, 2018	5.79	1074.98	-	23.75	-0.03	0.00
				May 20, 2019	5.32	1075.45	-	23.73	-0.01	0.00
				November 4, 2019	5.59	1075.18	-	23.74	-0.02	0.00
				June 15, 2020	7.47	1073.30	-	23.79	-0.07	0.00
				November 17, 2020	8.01	1072.76	-	23.72	0.00	0.00
				May 25, 2021	6.10	1074.67	-	23.55	0.17	0.89
				November 10, 2021	5.99	1074.75	-	23.61	0.11	0.58
MW-0203*	1075.16	29.58	10.0	April 21, 2008	1.95	1073.21	-	28.82	0.76	5.60
				May 6, 2008	-	-	-	-	-	-
				August 5, 2008	-	-	-	-	-	-
				November 10, 2008	3.57	1071.59	-	28.84	0.74	5.40
				February 17, 2009	-	-	-	-	-	-
				May 11, 2009	3.23	1071.93	-	28.80	0.78	5.80
				August 5, 2009	2.29	1072.87	-	28.84	0.74	5.40
				November 30, 2009	3.11	1072.05	-	28.81	0.77	5.70
				February 24, 2010	3.57	1071.59	-	28.81	0.77	5.70
				May 17, 2010	2.64	1072.52	-	29.58	0.00	0.00
				November 1, 2010	1.93	1073.23	-	29.63	-0.05	0.00
				May 9, 2011	1.09	1074.07	-	29.62	-0.04	0.00
				November 7, 2011	2.57	1072.59	-	29.58	0.00	0.00
				May 29, 2012	2.85	1072.31	-	29.66	-0.08	0.00
				November 26, 2012	3.69	1071.47	-	29.62	-0.04	0.00
				May 6, 2013	2.68	1072.48	-	29.54	0.04	0.00
				November 12, 2013	3.82	1071.34	-	29.57	0.01	0.00
				May 27, 2014	2.11	1073.05	-	29.63	-0.05	0.00
				November 17, 2014	3.90	1071.26	-	29.60	-0.02	0.00
				May 19, 2015	3.85	1071.31	-	29.59	-0.01	0.00
				November 16, 2015	2.58	1072.58	-	29.59	-0.01	0.00
				May 9, 2016	3.19	1071.97	-	29.59	-0.01	0.00
				November 15, 2016	4.62	1070.54	-	29.59	-0.01	0.00
				May 16, 2017	2.02	1073.14	-	29.60	-0.02	0.00
				November 6, 2017	4.00	1071.16	-	29.59	-0.01	0.00
				May 14, 2018	2.59	1072.57	-	29.59	-0.01	0.00
				November 12, 2018	2.02	1073.14	-	29.59	-0.01	0.00
				May 20, 2019	1.59	1073.57	-	29.60	-0.02	0.00
				November 4, 2019	1.48	1073.68	-	29.60	-0.02	0.00
				June 15, 2020	4.14	1071.02	-	29.71	-0.13	0.00
				November 17, 2020	4.35	1070.81	-	29.62	-0.04	0.00
				May 25, 2021	-	-	-	-	-	-
				November 10, 2021	2.55	-	-	29.19	0.39	1.90

Table 1
Gauging Data
NYSEG
Oneonta Former MGP Site
Oneonta, New York

Well ID	Measuring Point Elevation	Actual Depth to Bottom	Screen Length	Date	Depth to Water (feet TOC)	Groundwater Elevation	Depth to Product (feet TOC)	Depth to Bottom (feet TOC)	Accumulated Thickness of Sediments (feet)	Percent Screen Occluded By Sediments (%)
MW-9114S	1082.38	10.63	5.5	April 21, 2008	6.23	1076.15	-	11.16	-0.53	0.00
				May 6, 2008	-	-	-	-	-	-
				August 5, 2008	-	-	-	-	-	-
				November 10, 2008	8.15	1074.23	-	11.16	-0.53	0.00
				February 17, 2009	-	-	-	-	-	-
				May 11, 2009	7.38	1075.00	-	11.16	-0.53	0.00
				August 5, 2009	6.71	1075.67	-	11.16	-0.53	0.00
				November 30, 2009	7.51	1074.87	-	11.15	-0.52	0.00
				February 24, 2010	7.83	1074.55	-	11.17	-0.54	0.00
				May 17, 2010	6.77	1075.61	-	11.11	-0.48	0.00
				November 1, 2010	6.38	1076.00	-	11.16	-0.53	0.00
				May 9, 2011	5.54	1076.84	-	11.16	-0.53	0.00
				November 7, 2011	7.10	1075.28	-	11.18	-0.55	0.00
				May 29, 2012	7.08	1075.30	-	11.18	-0.55	0.00
				November 26, 2012	8.21	1074.17	-	11.17	-0.54	0.00
				May 6, 2013	7.03	1075.35	-	11.16	-0.53	0.00
				November 12, 2013	8.09	1074.29	-	11.12	-0.49	0.00
				May 27, 2014	6.30	1076.08	-	11.15	-0.52	0.00
				November 17, 2014	8.20	1074.18	-	11.15	-0.52	0.00
				May 19, 2015	7.89	1074.49	-	11.11	-0.48	0.00
				November 16, 2015	7.04	1075.34	-	11.13	-0.50	0.00
				May 9, 2016	7.60	1074.78	-	11.13	-0.50	0.00
				November 15, 2016	8.89	1073.49	-	11.12	-0.49	0.00
				May 16, 2017	6.40	1075.98	-	11.13	-0.50	0.00
				November 6, 2017	8.40	1073.98	-	11.12	-0.49	0.00
				May 14, 2018	6.85	1075.53	-	11.15	-0.52	0.00
				November 12, 2018	6.66	1075.72	-	11.14	-0.51	0.00
				May 20, 2019	6.13	1076.25	-	11.13	-0.50	0.00
				November 4, 2019	6.45	1075.93	-	11.15	-0.52	0.00
				June 15, 2020	8.28	1074.10	-	11.16	-0.53	0.00
				November 17, 2020	8.75	1073.63	-	11.15	-0.52	0.00
				May 25, 2021	7.17	1075.21	-	11.12	-0.49	0.00
				November 10, 2021	7.04	1075.34	-	11.14	-0.51	0.00
MW-8604S	1083.02	19.00	15.0	April 21, 2008	9.22	1073.80	-	19.48	-0.48	0.00
				May 6, 2008	-	-	-	-	-	-
				August 5, 2008	-	-	-	-	-	-
				November 10, 2008	9.40	1073.62	-	19.49	-0.49	0.00
				February 17, 2009	-	-	-	-	-	-
				May 11, 2009	9.19	1073.83	-	19.48	-0.48	0.00
				August 5, 2009	8.97	1074.05	-	19.46	-0.46	0.00
				November 30, 2009	9.20	1073.82	-	19.48	-0.48	0.00
				February 24, 2010	9.37	1073.65	-	19.47	-0.47	0.00
				May 17, 2010	8.98	1074.04	-	19.44	-0.44	0.00
				November 1, 2010	8.89	1074.13	-	19.48	-0.48	0.00
				May 9, 2011	8.90	1074.12	-	19.51	-0.51	0.00
				November 7, 2011	9.23	1073.79	-	19.50	-0.50	0.00
				May 29, 2012	9.09	1073.93	-	19.44	-0.44	0.00
				November 26, 2012	9.36	1073.66	-	19.50	-0.50	0.00
				May 6, 2013	9.01	1074.01	-	19.45	-0.45	0.00
				November 12, 2013	9.29	1073.73	-	19.48	-0.48	0.00
				May 27, 2014	8.86	1074.16	-	19.44	-0.44	0.00
				November 17, 2014	9.31	1073.71	-	19.47	-0.47	0.00
				May 19, 2015	9.06	1073.96	-	19.45	-0.45	0.00
				November 16, 2015	9.35	1073.67	-	19.43	-0.43	0.00
				May 9, 2016	9.49	1073.53	-	19.47	-0.47	0.00
				November 15, 2016	10.11	1072.91	-	19.50	-0.50	0.00
				May 16, 2017	8.80	1074.22	-	19.45	-0.45	0.00
				November 6, 2017	8.95	1074.07	-	19.50	-0.50	0.00
				May 14, 2018	9.10	1073.92	-	19.35	-0.35	0.00
				November 12, 2018	9.24	1073.78	-	19.47	-0.47	0.00
				May 20, 2019	8.82	1074.20	-	19.46	-0.46	0.00
				November 4, 2019	9.25	1073.77	-	19.45	-0.45	0.00
				June 15, 2020	9.85	1073.17	-	20.16	-1.16	0.00
				November 17, 2020	10.13	1072.89	-	20.15	-1.15	0.00
				May 25, 2021	9.66	1073.36	-	20.09	-1.09	0.00
				November 10, 2021	9.41	1073.61	-	20.09	-1.09	0.00

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Well ID	Measuring Point Elevation	Actual Depth to Bottom	Screen Length	Date	Depth to Water (feet TOC)	Groundwater Elevation	Depth to Product (feet TOC)	Depth to Bottom (feet TOC)	Accumulated Thickness of Sediments (feet)	Percent Screen Occluded By Sediments (%)
MW-9112S	1079.32	9.44	5.0	April 21, 2008	3.46	1075.86	-	9.59	-0.15	0.00
				May 6, 2008	-	-	-	-	-	-
				August 5, 2008	-	-	-	-	-	-
				November 10, 2008	5.87	1073.45	-	9.60	-0.16	0.00
				February 17, 2009	-	-	-	-	-	-
				May 11, 2009	5.24	1074.08	-	9.58	-0.14	0.00
				August 5, 2009	4.12	1075.20	-	9.59	-0.15	0.00
				November 30, 2009	5.19	1074.13	-	9.56	-0.12	0.00
				February 24, 2010	5.96	1073.36	-	9.59	-0.15	0.00
				May 17, 2010	4.96	1074.36	-	9.55	-0.11	0.00
				November 1, 2010	3.60	1075.72	-	9.60	-0.16	0.00
				May 9, 2011	4.85	1074.47	-	9.59	-0.15	0.00
				November 7, 2011	4.71	1074.61	-	9.61	-0.17	0.00
				May 29, 2012	4.95	1074.37	-	9.64	-0.20	0.00
				November 26, 2012	6.59	1072.73	-	9.53	-0.09	0.00
				May 6, 2013	4.91	1074.41	-	9.59	-0.15	0.00
				November 12, 2013	6.01	1073.31	-	9.55	-0.11	0.00
				May 27, 2014	3.50	1075.82	-	9.59	-0.15	0.00
				November 17, 2014	7.10	1072.22	-	9.59	-0.15	0.00
				May 19, 2015	6.14	1073.18	-	9.54	-0.10	0.00
				November 16, 2015	4.84	1074.48	-	9.55	-0.11	0.00
				May 9, 2016	5.60	1073.72	-	9.56	-0.12	0.00
				November 15, 2016	7.81	1071.51	-	9.55	-0.11	0.00
				May 16, 2017	3.80	1075.52	-	9.58	-0.14	0.00
				November 6, 2017	6.85	1072.47	-	9.55	-0.11	0.00
				May 14, 2018	5.21	1074.11	-	9.60	-0.16	0.00
				November 12, 2018	4.28	1075.04	-	9.55	-0.11	0.00
				May 20, 2019	3.35	1075.97	-	9.54	-0.10	0.00
				November 4, 2019	3.54	1075.78	-	9.56	-0.12	0.00
				June 15, 2020	6.15	1073.17	-	9.56	-0.12	0.00
				November 17, 2020	6.57	1072.75	-	9.58	-0.14	0.00
				May 25, 2021	4.86	1074.46	-	9.53	-0.09	0.00
				November 10, 2021	4.71	1074.61	-	9.56	-0.12	0.00
PTMW-0202*	1078.17	16.40	10.0	April 21, 2008	3.28	1074.89	-	15.88	0.52	3.20
				May 6, 2008	-	-	-	-	-	-
				August 5, 2008	-	-	-	-	-	-
				November 10, 2008	5.03	1073.14	-	15.88	0.52	3.20
				February 17, 2009	-	-	-	-	-	-
				May 11, 2009	4.24	1073.93	-	15.87	0.53	3.30
				August 5, 2009	3.75	1074.42	-	15.90	0.50	3.00
				November 30, 2009	4.34	1073.83	-	15.88	0.52	3.20
				February 24, 2010	4.71	1073.46	-	15.84	0.56	3.60
				May 17, 2010	3.88	1074.29	-	15.81	0.59	3.90
				November 1, 2010	3.43	1074.74	-	15.90	0.50	3.00
				May 9, 2011	2.73	1075.44	-	15.89	0.51	3.10
				November 7, 2011	3.90	1074.27	-	15.90	0.50	3.00
				May 29, 2012	3.92	1074.25	-	15.90	0.50	3.00
				November 26, 2012	4.78	1073.39	-	15.87	0.53	3.30
				May 6, 2013	3.75	1074.42	-	15.88	0.52	3.20
				November 12, 2013	4.71	1073.46	-	15.85	0.55	3.50
				May 27, 2014	3.29	1074.88	-	15.86	0.54	3.40
				November 17, 2014	5.05	1073.12	-	15.88	0.52	3.20
				May 19, 2015	4.55	1073.62	-	16.42	-0.02	0.00
				November 16, 2015	3.79	1074.38	-	16.44	-0.04	0.00
				May 9, 2016	4.33	1073.84	-	16.45	-0.05	0.00
				November 15, 2016	5.35	1072.82	-	16.44	-0.04	0.00
				May 16, 2017	3.20	1074.97	-	16.45	-0.05	0.00
				November 6, 2017	5.25	1072.92	-	16.39	0.01	0.00
				May 14, 2018	3.60	1074.57	-	16.45	-0.05	0.00
				November 12, 2018	3.62	1074.55	-	16.42	-0.02	0.00
				May 20, 2019	3.11	1075.06	-	16.40	0.00	0.00
				November 4, 2019	3.42	1074.75	-	16.44	-0.04	0.00
				June 15, 2020	5.04	1073.13	-	16.40	0.00	0.00
				November 17, 2020	5.68	1072.49	-	16.44	-0.04	0.00
				May 25, 2021	3.93	1074.24	-	16.38	0.02	0.00
				November 10, 2021	3.91	1074.26	-	16.41	-0.01	0.00

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Well ID	Measuring Point Elevation	Actual Depth to Bottom	Screen Length	Date	Depth to Water (feet TOC)	Groundwater Elevation	Depth to Product (feet TOC)	Depth to Bottom (feet TOC)	Accumulated Thickness of Sediments (feet)	Percent Screen Occluded By Sediments (%)
MW-9111S	1076.43	15.92	10.0	April 21, 2008	2.65	1073.78	-	15.98	-0.06	0.00
				May 6, 2008	-	-	-	-	-	-
				August 5, 2008	-	-	-	-	-	-
				November 10, 2008	4.42	1072.01	-	15.95	-0.03	0.00
				February 17, 2009	-	-	-	-	-	-
				May 11, 2009	3.97	1072.46	-	15.92	0.00	0.00
				August 5, 2009	3.01	1073.42	-	15.91	0.01	0.10
				November 30, 2009	3.94	1072.49	-	15.93	-0.01	0.00
				February 24, 2010	4.39	1072.04	-	15.93	-0.01	0.00
				May 17, 2010	3.35	1073.08	-	15.89	0.03	0.30
				November 1, 2010	2.72	1073.71	-	15.80	0.12	1.20
				May 9, 2011	1.83	1074.60	-	15.92	0.00	0.00
				November 7, 2011	3.41	1073.02	-	15.82	0.10	1.00
				May 29, 2012	3.60	1072.83	-	15.92	0.00	0.00
				November 26, 2012	4.54	1071.89	-	15.87	0.05	0.50
				May 6, 2013	3.43	1073.00	-	15.90	0.02	0.20
				November 12, 2013	4.64	1071.79	-	15.85	0.07	0.70
				May 27, 2014	2.81	1073.62	-	15.74	0.18	1.80
				November 17, 2014	4.67	1071.76	-	15.88	0.04	0.40
				May 19, 2015	4.60	1071.83	-	15.75	0.17	1.70
				November 16, 2015	3.32	1073.11	-	15.82	0.10	1.00
				May 9, 2016	4.00	1072.43	-	15.80	0.12	1.20
				November 15, 2016	5.41	1071.02	-	15.78	0.14	1.40
				May 16, 2017	2.79	1073.64	-	15.68	0.24	2.40
				November 6, 2017	4.88	1071.55	-	15.70	0.22	2.20
				May 14, 2018	3.35	1073.08	-	15.72	0.20	2.00
				November 12, 2018	2.91	1073.52	-	15.74	0.18	1.80
				May 20, 2019	2.40	1074.03	-	15.68	0.24	2.40
				November 4, 2019	2.43	1074.00	-	15.75	0.17	1.70
				June 15, 2020	4.95	1071.48	-	15.66	0.26	2.60
				November 17, 2020	5.26	1071.17	-	15.71	0.21	2.10
				May 25, 2021	3.66	1072.77	-	15.68	0.24	2.40
				November 10, 2021	3.39	1073.04	-	15.68	0.24	2.40
MW-9109S	1076.45	7.86	5.0	April 21, 2008	5.63	1070.82	-	7.75	0.11	2.20
				May 6, 2008	-	-	-	-	-	-
				August 5, 2008	-	-	-	-	-	-
				November 10, 2008	6.88	1069.57	-	7.74	0.12	2.40
				February 17, 2009	-	-	-	-	-	-
				May 11, 2009	6.16	1070.29	-	7.74	0.12	2.40
				August 5, 2009	6.12	1070.33	-	7.78	0.08	1.60
				November 30, 2009	6.53	1069.92	-	7.73	0.13	2.60
				February 24, 2010	6.91	1069.54	-	7.73	0.13	2.60
				May 17, 2010	6.23	1070.22	-	7.71	0.15	3.00
				November 1, 2010	5.67	1070.78	-	7.75	0.11	2.20
				May 9, 2011	4.83	1071.62	-	7.76	0.10	2.00
				November 7, 2011	6.07	1070.38	-	7.78	0.08	1.60
				May 29, 2012	6.18	1070.27	-	7.78	0.08	1.60
				November 26, 2012	6.92	1069.53	-	7.75	0.11	2.20
				May 6, 2013	5.96	1070.49	-	7.74	0.12	2.40
				November 12, 2013	6.94	1069.51	-	7.71	0.15	3.00
				May 27, 2014	5.72	1070.73	-	7.70	0.16	3.20
				November 17, 2014	7.52	1068.93	-	7.73	0.13	2.60
				May 19, 2015	6.98	1069.47	-	7.75	0.11	2.20
				November 16, 2015	5.92	1070.53	-	7.74	0.12	2.40
				May 9, 2016	6.45	1070.00	-	7.75	0.11	2.20
				November 15, 2016	7.36	1069.09	-	7.75	0.11	2.20
				May 16, 2017	5.40	1071.05	-	7.76	0.10	2.00
				November 6, 2017	7.18	1069.27	-	7.72	0.14	2.80
				May 14, 2018	6.00	1070.45	-	7.75	0.11	2.20
				November 12, 2018	5.52	1070.93	-	7.75	0.11	2.20
				May 20, 2019	5.27	1071.18	-	7.74	0.12	2.40
				November 4, 2019	4.73	1071.72	-	7.78	0.08	1.60
				June 15, 2020	7.27	1069.18	-	7.75	0.11	2.20
				November 17, 2020	7.70	1068.75	-	7.77	0.09	1.80
				May 25, 2021	6.44	1070.01	-	7.73	0.13	2.60
				November 10, 2021	6.39	1070.06	-	7.76	0.10	2.00

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Well ID	Measuring Point Elevation	Actual Depth to Bottom	Screen Length	Date	Depth to Water (feet TOC)	Groundwater Elevation	Depth to Product (feet TOC)	Depth to Bottom (feet TOC)	Accumulated Thickness of Sediments (feet)	Percent Screen Occluded By Sediments (%)
MW-8808S	1076.00	17.65	16.3	April 21, 2008	4.65	1071.35	-	16.77	0.88	5.40
				May 6, 2008	-	-	-	-	-	-
				August 5, 2008	-	-	-	-	-	-
				November 10, 2008	6.58	1069.42	-	16.78	0.87	5.34
				February 17, 2009	-	-	-	-	-	-
				May 11, 2009	4.76	1071.24	-	16.74	0.91	5.58
				August 5, 2009	4.56	1071.44	-	16.75	0.90	5.52
				November 30, 2009	5.59	1070.41	-	16.75	0.90	5.52
				February 24, 2010	6.17	1069.83	-	16.75	0.90	5.52
				May 17, 2010	5.45	1070.55	-	17.65	0.00	0.00
				November 1, 2010	5.04	1070.96	-	17.71	-0.06	0.00
				May 9, 2011	4.31	1071.69	-	17.70	-0.05	0.00
				November 7, 2011	5.13	1070.87	-	17.72	-0.07	0.00
				May 29, 2012	4.71	1071.29	-	17.74	-0.09	0.00
				November 26, 2012	6.31	1069.69	-	17.72	-0.07	0.00
				May 6, 2013	4.30	1071.70	-	17.70	-0.05	0.00
				November 12, 2013	6.34	1069.66	-	17.67	-0.02	0.00
				May 27, 2014	4.72	1071.28	-	17.71	-0.06	0.00
				November 17, 2014	7.05	1068.95	-	17.72	-0.07	0.00
				May 19, 2015	6.10	1069.90	-	17.67	-0.02	0.00
				November 16, 2015	5.08	1070.92	-	17.68	-0.03	0.00
				May 9, 2016	5.74	1070.26	-	17.70	-0.05	0.00
				November 15, 2016	6.21	1069.79	-	17.67	-0.02	0.00
				May 16, 2017	4.29	1071.71	-	17.70	-0.05	0.00
				November 6, 2017	6.78	1069.22	-	17.67	-0.02	0.00
				May 14, 2018	4.83	1071.17	-	17.70	-0.05	0.00
				November 12, 2018	5.18	1070.82	-	17.68	-0.03	0.00
				May 20, 2019	4.64	1071.36	-	17.69	-0.04	0.00
				November 4, 2019	4.45	1071.55	-	17.70	-0.05	0.00
				June 15, 2020	6.33	1069.67	-	17.68	-0.03	0.00
				November 17, 2020	7.57	1068.43	-	17.70	-0.05	0.00
				May 25, 2021	5.65	1070.35	-	17.63	0.02	0.12
				November 10, 2021	4.96	1071.04	-	17.70	-0.05	0.00
MW-0201*	1077.20	18.92	5.0	April 21, 2008	5.17	1072.03	-	19.71	-0.79	0.00
				May 6, 2008	-	-	-	-	-	-
				August 5, 2008	-	-	-	-	-	-
				November 10, 2008	7.11	1070.09	-	19.62	-0.70	0.00
				February 17, 2009	-	-	-	-	-	-
				May 11, 2009	5.74	1071.46	-	19.62	-0.70	0.00
				August 5, 2009	5.84	1071.36	-	19.69	-0.77	0.00
				November 30, 2009	6.08	1071.12	-	19.63	-0.71	0.00
				February 24, 2010	6.41	1070.79	-	19.67	-0.75	0.00
				May 17, 2010	5.97	1071.23	-	19.63	-0.71	0.00
				November 1, 2010	5.29	1071.91	-	19.70	-0.78	0.00
				May 9, 2011	4.86	1072.34	-	19.68	-0.76	0.00
				November 7, 2011	5.51	1071.69	-	19.64	-0.72	0.00
				May 29, 2012	5.48	1071.72	-	19.72	-0.80	0.00
				November 26, 2012	6.61	1070.59	-	19.63	-0.71	0.00
				May 6, 2013	5.16	1072.04	-	19.62	-0.70	0.00
				November 12, 2013	6.88	1070.32	-	19.63	-0.71	0.00
				May 27, 2014	5.45	1071.75	-	19.69	-0.77	0.00
				November 17, 2014	7.33	1069.87	-	19.67	-0.75	0.00
				May 19, 2015	6.57	1070.63	-	19.64	-0.72	0.00
				November 16, 2015	5.66	1071.54	-	19.67	-0.75	0.00
				May 9, 2016	6.22	1070.98	-	19.65	-0.73	0.00
				November 15, 2016	6.76	1070.44	-	19.65	-0.73	0.00
				May 16, 2017	5.00	1072.20	-	19.66	-0.74	0.00
				November 6, 2017	7.13	1070.07	-	19.63	-0.71	0.00
				May 14, 2018	5.45	1071.75	-	19.65	-0.73	0.00
				November 12, 2018	5.84	1071.36	-	19.66	-0.74	0.00
				May 20, 2019	5.25	1071.95	-	19.65	-0.73	0.00
				November 4, 2019	5.26	1071.94	-	19.66	-0.74	0.00
				June 15, 2020	6.97	1070.23	-	19.66	-0.74	0.00
				November 17, 2020	7.82	1069.38	-	19.68	-0.76	0.00
				May 5, 2021	6.26	1070.94	-	19.65	-0.73	0.00
				November 10, 2021	6.08	1071.12	-	19.66	-0.74	0.00

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MW-9110S	1077.66	22.00	10.0	April 21, 2008	4.84	1072.82	-	20.91	1.09	10.90
				May 6, 2008	-	-	-	-	-	-
				August 5, 2008	-	-	-	-	-	-
				November 10, 2008	5.11	1072.55	-	20.64	1.36	13.60
				February 17, 2009	-	-	-	-	-	-
				May 11, 2009	5.11	1072.55	-	20.64	1.36	13.60
				August 5, 2009	4.92	1072.74	-	20.69	1.31	13.10
				November 30, 2009	5.21	1072.45	-	20.65	1.35	13.50
				February 24, 2010	5.55	1072.11	-	20.53	1.47	14.70
				May 17, 2010	4.99	1072.67	-	22.00	0.00	0.00
				November 1, 2010	4.74	1072.92	-	22.06	-0.06	0.00
				May 9, 2011	4.33	1073.33	-	22.05	-0.05	0.00
				November 7, 2011	3.95	1073.71	-	22.08	-0.08	0.00
				May 29, 2012	4.94	1072.72	-	22.08	-0.08	0.00
				November 26, 2012	5.71	1071.95	-	22.01	-0.01	0.00
				May 6, 2013	4.87	1072.79	-	22.05	-0.05	0.00
				November 12, 2013	5.63	1072.03	-	22.01	-0.01	0.00
				May 27, 2014	4.70	1072.96	-	22.01	-0.01	0.00
				November 17, 2014	5.74	1071.92	-	22.04	-0.04	0.00
				May 19, 2015	5.42	1072.24	-	22.01	-0.01	0.00
				November 16, 2015	4.84	1072.82	-	22.02	-0.02	0.00
				May 9, 2016	5.21	1072.45	-	22.03	-0.03	0.00
				November 15, 2016	5.94	1071.72	-	22.02	-0.02	0.00
				May 16, 2017	4.42	1073.24	-	22.01	-0.01	0.00
				November 6, 2017	5.62	1072.04	-	21.95	0.05	0.50
				May 14, 2018	4.89	1072.77	-	22.01	-0.01	0.00
				November 12, 2018	4.68	1072.98	-	22.00	0.00	0.00
				May 20, 2019	4.35	1073.31	-	22.01	-0.01	0.00
				November 4, 2019	4.59	1073.07	-	22.02	-0.02	0.00
				June 15, 2020	5.74	1071.92	-	21.74	0.26	2.60
				November 17, 2020	6.21	1071.45	-	22.00	0.00	0.00
				May 25, 2021	5.23	1072.43	-	21.96	0.04	0.40
				November 10, 2021	5.39	1072.27	-	21.92	0.08	0.80
MW-8807S	1077.89	17.94	16.3	April 21, 2008	4.50	1073.39	-	15.54	2.40	14.72
				May 6, 2008	-	-	-	-	-	-
				August 5, 2008	-	-	-	-	-	-
				November 10, 2008	5.21	1072.68	-	15.37	2.57	15.77
				February 17, 2009	-	-	-	-	-	-
				May 11, 2009	4.75	1073.14	-	15.39	2.55	15.64
				August 5, 2009	4.40	1073.49	-	15.46	2.48	15.21
				November 30, 2009	4.76	1073.13	-	15.43	2.51	15.40
				February 24, 2010	5.10	1072.79	-	15.38	2.56	15.71
				May 17, 2010	4.53	1073.36	-	17.94	0.00	0.00
				November 1, 2010	4.38	1073.51	-	17.98	-0.04	0.00
				May 9, 2011	4.15	1073.74	-	17.97	-0.03	0.00
				November 7, 2011	4.61	1073.28	-	17.98	-0.04	0.00
				May 29, 2012	4.65	1073.24	-	17.99	-0.05	0.00
				November 26, 2012	5.19	1072.70	-	17.98	-0.04	0.00
				May 6, 2013	4.56	1073.33	-	17.98	-0.04	0.00
				November 12, 2013	5.91	1071.98	-	17.94	0.00	0.00
				May 27, 2014	4.39	1073.50	-	17.97	-0.03	0.00
				November 17, 2014	5.32	1072.57	-	17.95	-0.01	0.00
				May 19, 2015	4.90	1072.99	-	17.95	-0.01	0.00
				November 16, 2015	4.45	1073.44	-	17.98	-0.04	0.00
				May 9, 2016	4.86	1073.03	-	17.97	-0.03	0.00
				November 15, 2016	5.53	1072.36	-	17.96	-0.02	0.00
				May 16, 2017	4.05	1073.84	-	17.98	-0.04	0.00
				November 6, 2017	5.19	1072.70	-	17.96	-0.02	0.00
				May 14, 2018	4.41	1073.48	-	17.98	-0.04	0.00
				November 12, 2018	4.33	1073.56	-	17.95	-0.01	0.00
				May 20, 2019	4.19	1073.70	-	17.96	-0.02	0.00
				November 4, 2019	4.29	1073.60	-	17.97	-0.03	0.00
				June 15, 2020	5.33	1072.56	-	17.95	-0.01	0.00
				November 17, 2020	5.88	1072.01	-	17.98	-0.04	0.00
				May 25, 2021	4.68	1073.21	-	17.94	0.00	0.00
				November 10, 2021	4.83	1073.06	-	17.98	-0.04	0.00

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MW-0301*	1075.36	18.72	10.0	April 21, 2008	4.38	1070.98	-	18.57	0.15	0.00
				May 6, 2008	-	-	-	-	-	-
				August 5, 2008	-	-	-	-	-	-
				November 10, 2008	6.35	1069.01	-	18.58	0.14	0.00
				February 17, 2009	-	-	-	-	-	-
				May 11, 2009	4.58	1070.78	-	18.56	0.16	0.00
				August 5, 2009	5.16	1070.20	-	18.52	0.20	0.00
				November 30, 2009	5.34	1070.02	-	18.54	0.18	0.00
				February 24, 2010	5.91	1069.45	-	18.54	0.18	0.00
				May 17, 2010	5.16	1070.20	-	18.72	0.00	0.00
				November 1, 2010	4.69	1070.67	-	18.75	-0.03	0.00
				May 9, 2011	3.94	1071.42	-	18.74	-0.02	0.00
				November 7, 2011	4.80	1070.56	-	18.78	-0.06	0.00
				May 29, 2012	4.45	1070.91	-	18.78	-0.06	0.00
				November 26, 2012	6.01	1069.35	-	18.74	-0.02	0.00
				May 6, 2013	4.06	1071.30	-	18.50	0.22	0.20
				November 12, 2013	6.07	1069.29	-	18.72	0.00	0.00
				May 27, 2014	4.42	1070.94	-	18.75	-0.03	0.00
				November 17, 2014	6.68	1068.68	-	18.79	-0.07	0.00
				May 19, 2015	5.88	1069.48	-	18.74	-0.02	0.00
				November 16, 2015	4.72	1070.64	-	18.73	-0.01	0.00
				May 9, 2016	5.39	1069.97	-	18.73	-0.01	0.00
				November 15, 2016	5.99	1069.37	-	18.74	-0.02	0.00
				May 16, 2017	4.01	1071.35	-	18.75	-0.03	0.00
				November 6, 2017	6.35	1069.01	-	18.72	0.00	0.00
				May 14, 2018	4.69	1070.67	-	18.75	-0.03	0.00
				November 12, 2018	4.80	1070.56	-	18.76	-0.04	0.00
				May 20, 2019	4.29	1071.07	-	18.74	-0.02	0.00
				November 4, 2019	4.11	1071.25	-	18.72	0.00	0.00
				June 15, 2020	6.16	1069.20	-	18.73	-0.01	0.00
				November 17, 2020	7.05	1068.31	-	18.75	-0.03	0.00
				May 25, 2021	5.47	1069.89	-	18.75	-0.03	0.00
				November 10, 2021	4.71	1070.65	-	18.78	-0.06	0.00
MW-8806S	1079.10	19.30	16.3	April 21, 2008	4.73	1074.37	-	18.66	0.64	3.93
				May 6, 2008	-	-	-	-	-	-
				August 5, 2008	-	-	-	-	-	-
				November 10, 2008	5.72	1073.38	-	18.67	0.63	3.87
				February 17, 2009	-	-	-	-	-	-
				May 11, 2009	5.30	1073.80	-	18.60	0.70	4.29
				August 5, 2009	4.80	1074.30	-	18.67	0.63	3.87
				November 30, 2009	5.23	1073.87	-	18.56	0.74	4.54
				February 24, 2010	5.62	1073.48	-	18.65	0.65	3.99
				May 17, 2010	4.97	1074.13	-	19.30	0.00	0.00
				November 1, 2010	4.65	1074.45	-	19.37	-0.07	0.00
				May 9, 2011	4.33	1074.77	-	19.35	-0.05	0.00
				November 7, 2011	5.09	1074.01	-	19.38	-0.08	0.00
				May 29, 2012	5.02	1074.08	-	19.37	-0.07	0.00
				November 26, 2012	5.64	1073.46	-	19.34	-0.04	0.00
				May 6, 2013	4.91	1074.19	-	19.35	-0.05	0.00
				November 12, 2013	5.62	1073.48	-	19.30	0.00	0.00
				May 27, 2014	4.64	1074.46	-	19.34	-0.04	0.00
				November 17, 2014	5.52	1073.58	-	19.32	-0.02	0.00
				May 19, 2015	5.16	1073.94	-	19.29	0.01	0.06
				November 16, 2015	4.88	1074.22	-	19.30	0.00	0.00
				May 9, 2016	5.32	1073.78	-	19.30	0.00	0.00
				November 15, 2016	6.21	1072.89	-	19.31	-0.01	0.00
				May 16, 2017	4.16	1074.94	-	19.30	0.00	0.00
				November 6, 2017	5.75	1073.35	-	19.30	0.00	0.00
				May 14, 2018	4.78	1074.32	-	19.30	0.00	0.00
				November 12, 2018	4.74	1074.36	-	19.29	0.01	0.06
				May 20, 2019	4.34	1074.76	-	19.29	0.01	0.06
				November 6, 2019	4.85	1074.25	-	19.30	0.00	0.00
				June 15, 2020	5.83	1073.27	-	19.31	-0.01	0.00
				November 17, 2020	6.29	1072.81	-	19.32	-0.02	0.00
				May 25, 2021	5.05	1074.05	-	19.25	0.05	0.31
				November 10, 2021	5.19	1073.91	-	19.28	0.02	0.12

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AW-01	1079.68	15.04	11.7	April 21, 2008	5.20	1074.73	-	15.26	0.03	0.26
				May 6, 2008	-	-	-	-	-	-
				August 5, 2008	-	-	-	-	-	-
				November 10, 2008	-	-	-	15.29	0.00	0.00
				February 17, 2009	-	-	-	-	-	-
				May 11, 2009	-	-	-	15.23	0.06	0.51
				August 5, 2009	4.88	1075.05	-	15.12	0.17	1.45
				November 30, 2009	-	-	-	15.23	0.06	0.51
				February 24, 2010	-	-	-	-	-	-
				May 17, 2010	-	-	-	14.70	0.59	5.04
				November 1, 2010	4.68	1075.25	-	14.40	0.89	7.61
				May 9, 2011	4.77	1074.91	-	14.35	0.69	5.90
				November 7, 2011	4.83	1074.85	-	14.53	0.51	4.36
				May 29, 2012	4.85	1074.83	-	14.52	0.52	4.44
				November 26, 2012	5.16	1074.52	-	14.40	0.64	5.47
				May 6, 2013	4.89	1074.79	-	15.14	-0.10	0.00
				November 12, 2013	4.82	1074.86	-	15.12	-0.08	0.00
				May 27, 2014	4.78	1074.90	-	14.99	0.05	0.43
				May 19, 2015	-	-	-	15.00	0.04	0.34
				May 9, 2016	4.86	1074.82	-	15.50	-0.46	0.00
				May 16, 2017	4.60	1075.08	-	14.98	0.06	0.51
				May 14, 2018	4.80	1074.88	-	15.05	-0.01	0.00
				May 20, 2019	4.51	1075.17	-	14.91	0.13	1.11
				June 15, 2020	-	-	-	14.98	0.06	0.51
				May 25, 2021	-	-	-	14.96	0.08	0.68
AW-02	1079.57	14.69	6.0	April 21, 2008	4.85	1074.72	-	13.79	0.90	15.00
				May 6, 2008	-	-	-	-	-	-
				August 5, 2008	-	-	-	-	-	-
				November 10, 2008	-	-	-	13.70	0.99	16.50
				February 17, 2009	-	-	-	-	-	-
				May 11, 2009	-	-	-	13.48	1.21	20.17
				August 5, 2009	4.54	1075.03	-	13.41	1.28	21.33
				November 30, 2009	-	-	-	13.29	1.40	23.33
				February 24, 2010	-	-	-	-	-	-
				May 17, 2010	-	-	-	14.53	0.16	2.67
				November 1, 2010	4.47	1075.10	-	14.34	0.35	5.83
				May 9, 2011	4.55	1075.02	-	14.33	0.36	6.00
				November 7, 2011	4.60	1074.97	-	14.45	0.24	4.00
				May 29, 2012	4.61	1074.96	-	14.31	0.38	6.33
				November 26, 2012	4.95	1074.62	-	14.34	0.35	5.83
				May 6, 2013	4.65	1074.92	-	14.29	0.40	6.67
				November 12, 2013	4.61	1074.96	-	14.37	0.32	5.33
				May 27, 2014	4.52	1075.05	-	14.28	0.41	6.83
				May 19, 2015	-	-	-	14.27	0.42	7.00
				May 9, 2016	4.68	1074.89	-	14.33	0.36	6.00
				May 16, 2017	4.39	1075.18	-	14.20	0.49	8.17
				May 14, 2018	4.60	1074.97	-	14.19	0.50	8.33
				May 20, 2019	4.33	1075.24	-	13.99	0.70	11.67
				June 15, 2020	-	-	-	14.14	0.55	9.17
				May 25, 2021	-	-	-	14.16	0.53	8.83

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AW-03	1079.69	17.13	8.0	April 21, 2008	4.96	1074.73	-	14.83	2.30	28.75
				May 6, 2008	-	-	-	-	-	-
				August 5, 2008	-	-	-	-	-	-
				November 10, 2008	-	-	-	14.65	2.48	31.00
				February 17, 2009	-	-	-	-	-	-
				May 11, 2009	-	-	-	14.27	2.86	35.75
				August 5, 2009	4.93	1074.76	-	14.35	2.78	34.75
				November 30, 2009	-	-	-	14.25	2.88	36.00
				February 24, 2010	-	-	-	-	-	-
				May 17, 2010	-	-	-	17.13	0.00	0.00
				November 1, 2010	4.56	1075.13	-	17.21	-0.08	0.00
				May 9, 2011	4.68	1075.01	-	17.10	0.03	0.37
				November 7, 2011	4.69	1075.00	-	17.15	-0.02	0.00
				May 29, 2012	4.73	1074.96	-	17.01	0.12	1.50
				November 26, 2012	5.05	1074.64	-	17.15	-0.02	0.00
				May 6, 2013	4.77	1074.92	-	17.10	0.03	0.37
				November 12, 2013	4.71	1074.98	-	17.12	0.01	0.12
				May 27, 2014	4.66	1075.03	-	16.97	0.16	2.00
				May 19, 2015	-	-	-	17.05	0.08	1.00
				May 9, 2016	4.79	1074.90	-	17.10	0.03	0.37
				May 16, 2017	4.45	1075.24	-	16.88	0.25	3.13
				May 14, 2018	4.67	1075.02	-	16.90	0.23	2.88
				May 20, 2019	4.41	1075.28	-	16.89	0.24	3.00
				June 15, 2020	-	-	-	16.72	0.41	5.13
				May 25, 2021	-	-	-	16.93	0.20	2.50
AW-04	1081.31	18.97	10.0	April 21, 2008	7.01	1074.73	-	17.95	1.45	14.50
				May 6, 2008	-	-	-	-	-	-
				August 5, 2008	-	-	-	-	-	-
				November 10, 2008	-	-	-	17.75	1.65	16.50
				February 17, 2009	-	-	-	-	-	-
				May 11, 2009	-	-	-	17.52	1.88	18.80
				August 5, 2009	6.71	1075.03	-	17.59	1.81	18.10
				November 30, 2009	-	-	-	17.32	2.08	20.80
				February 24, 2010	-	-	-	-	-	-
				May 17, 2010	-	-	-	19.40	0.00	0.00
				November 1, 2010	6.45	1075.29	-	19.28	0.12	1.20
				May 9, 2011	6.54	1074.77	-	19.27	-0.30	0.00
				November 7, 2011	6.58	1074.73	-	19.26	-0.29	0.00
				May 29, 2012	6.60	1074.71	-	19.30	-0.33	0.00
				November 26, 2012	6.93	1074.38	-	19.23	-0.26	0.00
				May 6, 2013	6.65	1074.66	-	19.24	-0.27	0.00
				November 12, 2013	6.95	1074.36	-	19.14	-0.17	0.00
				May 27, 2014	6.51	1074.80	-	19.22	-0.25	0.00
				May 19, 2015	-	-	-	19.19	-0.22	0.00
				May 9, 2016	6.64	1074.67	-	19.24	-0.27	0.00
				May 16, 2017	6.32	1074.99	-	19.20	-0.23	0.00
				May 14, 2018	6.42	1074.89	-	19.24	-0.27	0.00
				May 20, 2019	6.24	1075.07	-	19.16	-0.19	0.00
				June 15, 2020	-	-	-	19.29	-0.32	0.00
				May 25, 2021	-	-	-	19.20	-0.23	0.00

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AW-05	1081.00	16.25	8.5	April 21, 2008	6.27	1074.73	-	15.54	0.71	8.35
				May 6, 2008	-	-	-	-	-	-
				August 5, 2008	-	-	-	-	-	-
				November 10, 2008	-	-	-	15.65	0.60	7.06
				February 17, 2009	-	-	-	-	-	-
				May 11, 2009	-	-	-	15.21	1.04	12.24
				August 5, 2009	5.98	1075.02	-	15.38	0.87	10.24
				November 30, 2009	-	-	-	15.15	1.10	12.94
				February 24, 2010	-	-	-	-	-	-
				May 17, 2010	-	-	-	16.25	0.00	0.00
				November 1, 2010	5.88	1075.12	-	16.36	-0.11	0.00
				May 9, 2011	5.99	1075.01	-	16.23	0.02	0.24
				November 7, 2011	6.01	1074.99	-	16.25	0.00	0.00
				May 29, 2012	6.05	1074.95	-	16.30	-0.05	0.00
				November 26, 2012	6.35	1074.65	-	16.24	0.01	0.12
				May 6, 2013	6.08	1074.92	-	16.29	-0.04	0.00
				November 12, 2013	6.82	1074.18	-	16.20	0.05	0.59
				May 27, 2014	5.96	1075.04	-	16.22	0.03	0.35
				May 19, 2015	-	-	-	16.19	0.06	0.71
				May 9, 2016	6.09	1074.91	-	16.20	0.05	0.59
				May 16, 2017	5.76	1075.24	-	16.22	0.03	0.35
				May 14, 2018	6.00	1075.00	-	16.23	0.02	0.24
				May 20, 2019	5.72	1075.28	-	16.16	0.09	1.06
				June 15, 2020	-	-	-	16.25	0.00	0.00
				May 25, 2021	-	-	-	16.14	0.11	1.29
AW-06	1080.72	14.80	9.0	April 21, 2008	6.00	1074.72	-	14.45	0.35	3.89
				May 6, 2008	-	-	-	-	-	-
				August 5, 2008	-	-	-	-	-	-
				November 10, 2008	-	-	-	14.83	-0.03	0.00
				February 17, 2009	-	-	-	-	-	-
				May 11, 2009	-	-	-	14.11	0.69	7.67
				August 5, 2009	5.71	1075.01	-	13.90	0.90	10.00
				November 30, 2009	-	-	-	14.00	0.80	8.89
				February 24, 2010	-	-	-	-	-	-
				May 17, 2010	-	-	-	13.76	1.04	11.56
				November 1, 2010	5.61	1075.11	-	13.60	1.20	13.33
				May 9, 2011	5.71	1075.01	-	13.65	1.15	12.78
				November 7, 2011	5.74	1074.98	-	13.76	1.04	11.56
				May 29, 2012	5.78	1074.94	-	13.72	1.08	12.00
				November 26, 2012	6.08	1074.64	-	13.74	1.06	11.78
				May 6, 2013	5.81	1074.91	-	14.85	-0.05	0.00
				November 12, 2013	5.73	1074.99	-	14.28	0.52	5.78
				May 27, 2014	5.68	1075.04	-	14.51	0.29	3.22
				May 19, 2015	-	-	-	14.76	0.04	0.44
				May 9, 2016	5.82	1074.90	-	14.69	0.11	1.22
				May 16, 2017	5.51	1075.21	-	14.51	0.29	3.22
				May 14, 2018	5.67	1075.05	-	14.51	0.29	3.22
				May 20, 2019	5.44	1075.28	-	14.45	0.35	3.89
				June 15, 2020	-	-	-	14.50	0.30	3.33
				May 25, 2021	-	-	-	14.41	0.39	4.33

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AW-07	1080.38	14.56	9.0	April 21, 2008	5.65	1074.73	-	14.40	0.16	1.78
				May 6, 2008	-	-	-	-	-	-
				August 5, 2008	-	-	-	-	-	-
				November 10, 2008	-	-	-	14.47	0.09	1.00
				February 17, 2009	-	-	-	-	-	-
				May 11, 2009	-	-	-	14.42	0.14	1.56
				August 5, 2009	5.38	1075.00	-	14.41	0.15	1.67
				November 30, 2009	-	-	-	14.32	0.24	2.67
				February 24, 2010	-	-	-	-	-	-
				May 17, 2010	-	-	-	14.25	0.31	3.44
				November 1, 2010	5.27	1075.11	-	14.35	0.21	2.33
				May 9, 2011	5.36	1075.02	-	14.35	0.21	2.33
				November 7, 2011	5.40	1074.98	-	14.40	0.16	1.78
				May 29, 2012	5.44	1074.94	-	14.38	0.18	2.00
				November 26, 2012	5.74	1074.64	-	14.36	0.20	2.22
				May 6, 2013	5.46	1074.92	-	14.35	0.21	2.33
				November 12, 2013	5.43	1074.95	-	14.33	0.23	2.56
				May 27, 2014	5.34	1075.04	-	14.19	0.37	4.11
				May 19, 2015	-	-	-	14.32	0.24	2.67
				May 9, 2016	5.47	1074.91	-	14.28	0.28	3.11
				May 16, 2017	5.11	1075.27	-	14.22	0.34	3.78
				May 14, 2018	5.35	1075.03	-	14.25	0.31	3.44
				May 20, 2019	5.10	1075.28	-	14.13	0.43	4.78
				June 15, 2020	-	-	-	14.16	0.40	4.44
				May 25, 2021	-	-	-	14.13	0.43	4.78
AW-08	1079.93	13.95	8.0	April 21, 2008	5.59	1074.67	-	14.21	0.07	0.87
				May 6, 2008	-	-	-	-	-	-
				August 5, 2008	-	-	-	-	-	-
				November 10, 2008	-	-	-	14.32	-0.04	0.00
				February 17, 2009	-	-	-	-	-	-
				May 11, 2009	-	-	-	14.22	0.06	0.75
				August 5, 2009	5.25	1075.01	-	14.12	0.16	2.00
				November 30, 2009	-	-	-	14.18	0.10	1.25
				February 24, 2010	-	-	-	-	-	-
				May 17, 2010	-	-	-	13.87	0.41	5.13
				November 1, 2010	5.02	1075.24	-	13.97	0.31	3.87
				May 9, 2011	5.11	1074.82	-	13.74	0.21	2.62
				November 7, 2011	5.16	1074.77	-	13.32	0.63	7.87
				May 29, 2012	5.19	1074.74	-	13.29	0.66	8.25
				November 26, 2012	5.49	1074.44	-	13.27	0.68	8.50
				May 6, 2013	5.23	1074.70	-	14.15	-0.20	0.00
				November 12, 2013	5.18	1074.75	-	13.75	0.20	2.50
				May 27, 2014	5.10	1074.83	-	13.21	0.74	9.25
				May 19, 2015	-	-	-	13.27	0.68	8.50
				May 9, 2016	5.22	1074.71	-	13.29	0.66	8.25
				May 16, 2017	4.90	1075.03	-	13.28	0.67	8.38
				May 14, 2018	5.10	1074.83	-	13.28	0.67	8.38
				May 20, 2019	4.87	1075.06	-	13.26	0.69	8.62
				June 15, 2020	-	-	-	13.19	0.76	9.50
				May 25, 2021	-	-	-	13.21	0.74	9.25

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AW-09	1080.15	15.13	7.5	April 21, 2008	5.42	1074.73	-	15.11	0.02	0.27
				May 6, 2008	-	-	-	-	-	-
				August 5, 2008	-	-	-	-	-	-
				November 10, 2008	-	-	-	15.19	-0.06	0.00
				February 17, 2009	-	-	-	-	-	-
				May 11, 2009	-	-	-	14.95	0.18	2.40
				August 5, 2009	5.13	1075.02	-	14.90	0.23	3.07
				November 30, 2009	-	-	-	14.80	0.33	4.40
				February 24, 2010	-	-	-	-	-	-
				May 17, 2010	-	-	-	13.72	1.41	18.80
				November 1, 2010	5.03	1075.12	-	13.75	1.38	18.40
				May 9, 2011	5.12	1075.03	-	14.85	0.28	3.73
				November 7, 2011	5.17	1074.98	-	14.79	0.34	4.53
				May 29, 2012	5.18	1074.97	-	14.82	0.31	4.13
				November 26, 2012	5.51	1074.64	-	14.83	0.30	4.00
				May 6, 2013	5.25	1074.90	-	14.90	0.23	3.07
				November 12, 2013	5.16	1074.99	-	14.75	0.38	5.07
				May 27, 2014	5.12	1075.03	-	14.29	0.84	11.20
				May 19, 2015	-	-	-	14.65	0.48	6.40
				May 9, 2016	5.23	1074.92	-	14.60	0.53	7.07
				May 16, 2017	4.87	1075.28	-	14.43	0.70	9.33
				May 14, 2018	5.13	1075.02	-	14.44	0.69	9.20
				May 20, 2019	4.86	1075.29	-	14.45	0.68	9.07
				June 15, 2020	-	-	-	14.31	0.82	10.93
				May 25, 2021	-	-	-	14.25	0.88	11.73
AW-10	1079.78	15.90	7.0	April 21, 2008	5.04	1074.74	-	15.90	0.00	0.00
				May 6, 2008	-	-	-	-	-	-
				August 5, 2008	-	-	-	-	-	-
				November 10, 2008	-	-	-	15.92	-0.02	0.00
				February 17, 2009	-	-	-	-	-	-
				May 11, 2009	-	-	-	15.33	0.57	8.14
				August 5, 2009	4.77	1075.01	-	15.50	0.40	5.71
				November 30, 2009	-	-	-	15.30	0.60	8.57
				February 24, 2010	-	-	-	-	-	-
				May 17, 2010	-	-	-	15.24	0.66	9.43
				November 1, 2010	4.66	1075.12	-	15.14	0.76	10.86
				May 9, 2011	4.73	1075.05	-	14.80	1.10	15.71
				November 7, 2011	4.77	1075.01	-	15.37	0.53	7.57
				May 29, 2012	4.80	1074.98	-	15.25	0.65	9.29
				November 26, 2012	5.13	1074.65	-	15.20	0.70	10.00
				May 6, 2013	4.85	1074.93	-	15.92	-0.02	0.00
				November 12, 2013	4.81	1074.97	-	15.55	0.35	5.00
				May 27, 2014	4.73	1075.05	-	14.72	1.18	16.86
				May 19, 2015	-	-	-	15.10	0.80	11.43
				May 9, 2016	4.87	1074.91	-	14.85	1.05	15.00
				May 16, 2017	4.52	1075.26	-	14.78	1.12	16.00
				May 14, 2018	4.81	1074.97	-	14.80	1.10	15.71
				May 20, 2019	4.52	1075.26	-	14.71	1.19	17.00
				June 15, 2020	-	-	-	14.68	1.22	17.43
				May 25, 2021	-	-	-	14.88	1.02	14.57

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AW-11	1080.20	16.30	7.0	April 21, 2008	6.01	1074.73	-	16.19	0.11	1.57
				May 6, 2008	-	-	-	-	-	-
				August 5, 2008	-	-	-	-	-	-
				November 10, 2008	-	-	-	16.26	0.04	0.57
				February 17, 2009	-	-	-	-	-	-
				May 11, 2009	-	-	-	16.12	0.18	2.57
				August 5, 2009	5.72	1075.02	-	16.02	0.28	4.00
				November 30, 2009	-	-	-	15.80	0.50	7.14
				February 24, 2010	-	-	-	-	-	-
				May 17, 2010	-	-	-	15.60	0.70	10.00
				November 1, 2010	5.29	1075.45	-	15.27	1.03	14.71
				May 9, 2011	5.42	1074.78	-	15.76	0.54	7.71
				November 7, 2011	4.45	1075.75	-	14.93	1.37	19.57
				May 29, 2012	5.47	1074.73	-	15.13	1.17	16.71
				November 26, 2012	5.80	1074.40	-	15.04	1.26	18.00
				May 6, 2013	5.52	1074.68	-	15.92	0.38	5.43
				November 12, 2013	5.45	1074.75	-	15.67	0.63	9.00
				May 27, 2014	5.40	1074.80	-	15.54	0.76	10.86
				May 19, 2015	-	-	-	15.52	0.78	11.14
				May 9, 2016	5.52	1074.68	-	15.57	0.73	10.43
				May 16, 2017	5.15	1075.05	-	15.56	0.74	10.57
				May 14, 2018	5.46	1074.74	-	15.56	0.74	10.57
				May 20, 2019	5.12	1075.08	-	15.50	0.80	11.43
				June 15, 2020	-	-	-	15.53	0.77	11.00
				May 25, 2021	-	-	-	15.41	0.89	12.71
AW-12*	1079.47	19.43	10.0	April 21, 2008	4.73	1074.74	-	19.39	0.04	0.00
				May 6, 2008	-	-	-	-	-	-
				August 5, 2008	-	-	-	-	-	-
				November 10, 2008	-	-	-	19.76	-0.33	0.00
				February 17, 2009	-	-	-	-	-	-
				May 11, 2009	-	-	18.72	19.22	0.21	0.00
				August 5, 2009	4.42	1075.05	18.8	19.30	0.13	0.00
				November 30, 2009	4.42	1075.05	18.06	19.40	0.03	0.00
				February 24, 2010	4.72	1074.75	18.88	19.38	0.05	0.00
				May 17, 2010	4.44	1075.03	19.17	19.37	0.06	0.00
				November 1, 2010	4.32	1075.15	19.06	19.76	-0.33	0.00
				May 9, 2011	4.43	1075.04	19.26	19.76	-0.33	0.00
				November 7, 2011	4.47	1075.00	19.26	19.76	-0.33	0.00
				May 29, 2012	4.51	1074.96	-	19.73	-0.30	0.00
				November 26, 2012	4.83	1074.64	-	19.73	-0.30	0.00
				May 6, 2013	4.55	1074.92	-	19.73	-0.30	0.00
				November 12, 2013	4.48	1074.99	-	19.73	-0.30	0.00
				May 27, 2014	4.42	1075.05	-	18.65	0.78	0.00
				November 17, 2014	-	-	-	19.32	0.11	0.00
				May 19, 2015	-	-	-	19.23	0.20	0.00
				November 18, 2015	-	-	-	-	-	-
				May 9, 2016	4.58	1074.89	-	18.50	0.93	0.00
				November 15, 2016	4.38	1075.09	-	18.55	0.88	0.00
				May 16, 2017	4.41	1075.06	-	19.25	0.18	0.00
				November 6, 2017	4.57	1074.90	-	19.05	0.38	0.00
				May 14, 2018	4.40	1075.07	-	19.40	0.03	0.00
				November 14, 2018	4.29	1075.18	-	19.29	0.14	0.00
				May 22, 2019	4.36	1075.11	-	19.33	0.10	0.00
				November 4, 2019	4.44	1075.03	-	19.28	0.15	0.00
				June 15, 2020	-	-	-	19.25	0.18	0.00
				November 17, 2020	-	-	-	19.30	0.13	0.00
				May 27, 2021	4.59	1074.88	-	19.31	0.12	0.00
				November 10, 2021	4.71	1074.76	-	19.29	0.14	0.00

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Well ID	Measuring Point Elevation	Actual Depth to Bottom	Screen Length	Date	Depth to Water (feet TOC)	Groundwater Elevation	Depth to Product (feet TOC)	Depth to Bottom (feet TOC)	Accumulated Thickness of Sediments (feet)	Percent Screen Occluded By Sediments (%)
AW-13	1079.39	19.00	11.0	April 21, 2008	4.66	1074.73	-	19.02	-0.02	0.00
				May 6, 2008	-	-	-	-	-	-
				August 5, 2008	-	-	-	-	-	-
				November 10, 2008	-	-	-	19.35	-0.35	0.00
				February 17, 2009	-	-	-	-	-	-
				May 11, 2009	-	-	-	18.84	0.16	1.45
				August 5, 2009	4.37	1075.02	-	18.98	0.02	0.18
				November 30, 2009	-	-	-	18.84	0.16	1.45
				February 24, 2010	-	-	-	-	-	-
				May 17, 2010	-	-	-	18.89	0.11	1.00
				November 1, 2010	4.25	1075.14	-	18.54	0.46	4.18
				May 9, 2011	4.37	1075.02	-	18.63	0.37	3.36
				November 7, 2011	4.40	1074.99	-	18.45	0.55	5.00
				May 29, 2012	4.42	1074.97	-	18.57	0.43	3.91
				November 26, 2012	4.74	1074.65	-	18.55	0.45	4.09
				May 6, 2013	4.47	1074.92	-	18.54	0.46	4.18
				November 12, 2013	4.41	1074.98	-	18.42	0.58	5.27
				May 27, 2014	4.35	1075.04	-	18.25	0.75	6.82
				May 19, 2015	-	-	-	18.20	0.80	7.27
				May 9, 2016	4.45	1074.94	-	18.27	0.73	6.64
				May 16, 2017	4.13	1075.26	-	18.25	0.75	6.82
				May 14, 2018	4.40	1074.99	-	18.20	0.80	7.27
				May 20, 2019	4.12	1075.27	-	18.26	0.74	6.73
				June 15, 2020	-	-	-	18.16	0.84	7.64
				May 25, 2021	-	-	-	18.07	0.93	8.45
AW-14	1079.60	23.05	4.0	April 21, 2008	4.01	1075.59	-	20.05	3.00	75.00
				May 6, 2008	-	-	-	-	-	-
				August 5, 2008	-	-	-	-	-	-
				November 10, 2008	-	-	-	20.05	3.00	75.00
				February 17, 2009	-	-	-	-	-	-
				May 11, 2009	-	-	-	19.91	3.14	78.50
				August 5, 2009	4.26	1075.34	-	19.97	3.08	77.00
				November 30, 2009	-	-	-	19.90	3.15	78.75
				February 24, 2010	-	-	-	-	-	-
				May 17, 2010	-	-	-	20.15	2.90	72.50
				November 1, 2010	4.22	1075.38	-	19.86	3.19	79.75
				May 9, 2011	3.39	1076.21	-	21.05	2.00	50.00
				November 7, 2011	4.45	1075.15	-	21.94	1.11	27.75
				May 29, 2012	4.25	1075.35	-	20.80	2.25	56.25
				November 26, 2012	5.34	1074.26	-	20.75	2.30	57.50
				May 6, 2013	4.27	1075.33	-	20.65	2.40	60.00
				November 12, 2013	5.28	1074.32	-	20.73	2.32	58.00
				May 27, 2014	3.79	1075.81	-	20.66	2.39	59.75
				May 19, 2015	-	-	-	20.57	2.48	62.00
				May 9, 2016	4.80	1074.80	-	20.60	2.45	61.25
				May 16, 2017	3.80	1075.80	-	20.64	2.41	60.25
				May 14, 2018	4.10	1075.50	-	20.64	2.41	60.25
				May 20, 2019	3.52	1076.08	-	20.58	2.47	61.75
				June 15, 2020	-	-	-	20.59	2.46	61.50
				May 25, 2021	-	-	-	20.57	2.48	62.00

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AW-15	1079.85	19.33	3.0	April 21, 2008	4.27	1075.58	-	19.34	-0.01	0.00
				May 6, 2008	-	-	-	-	-	-
				August 5, 2008	-	-	-	-	-	-
				November 10, 2008	-	-	-	19.34	-0.01	0.00
				February 17, 2009	-	-	-	-	-	-
				May 11, 2009	-	-	-	19.30	0.03	1.00
				August 5, 2009	4.52	1075.33	-	19.35	-0.02	0.00
				November 30, 2009	-	-	-	19.30	0.03	1.00
				February 24, 2010	-	-	-	-	-	-
				May 17, 2010	-	-	-	19.28	0.05	1.67
				November 1, 2010	4.41	1075.44	-	19.86	-0.53	0.00
				May 9, 2011	3.66	1076.19	-	19.29	0.04	1.33
				November 7, 2011	4.69	1075.16	-	19.36	-0.03	0.00
				May 29, 2012	4.51	1075.34	-	19.32	0.01	0.33
				November 26, 2012	5.60	1074.25	-	19.31	0.02	0.67
				May 6, 2013	4.53	1075.32	-	19.10	0.23	7.67
				November 12, 2013	5.56	1074.29	-	19.26	0.07	2.33
				May 27, 2014	4.01	1075.84	-	19.08	0.25	8.33
				May 19, 2015	-	-	-	19.42	-0.09	0.00
				May 9, 2016	5.05	1074.80	-	19.25	0.08	2.67
				May 16, 2017	4.01	1075.84	-	19.26	0.07	2.33
				May 14, 2018	4.35	1075.50	-	19.26	0.07	2.33
				May 20, 2019	3.60	1076.25	-	19.28	0.05	1.67
				June 15, 2020	-	-	-	19.12	0.21	7.00
				May 25, 2021	-	-	-	19.22	0.11	3.67
AW-16	1079.61	18.39	3.0	April 21, 2008	4.04	1075.57	-	17.76	0.63	21.00
				May 6, 2008	-	-	-	-	-	-
				August 5, 2008	-	-	-	-	-	-
				November 10, 2008	-	-	-	17.70	0.69	23.00
				February 17, 2009	-	-	-	-	-	-
				May 11, 2009	-	-	-	17.69	0.70	23.33
				August 5, 2009	4.30	1075.31	-	17.71	0.68	22.67
				November 30, 2009	-	-	-	17.69	0.70	23.33
				February 24, 2010	-	-	-	-	-	-
				May 17, 2010	-	-	-	18.39	0.00	0.00
				November 1, 2010	4.19	1075.42	-	18.47	-0.08	0.00
				May 9, 2011	3.39	1076.22	-	18.46	-0.07	0.00
				November 7, 2011	4.44	1075.17	-	18.48	-0.09	0.00
				May 29, 2012	4.29	1075.32	-	18.47	-0.08	0.00
				November 26, 2012	5.37	1074.24	-	18.45	-0.06	0.00
				May 6, 2013	4.32	1075.29	-	18.42	-0.03	0.00
				November 12, 2013	5.31	1074.30	-	18.39	0.00	0.00
				May 27, 2014	3.86	1075.75	-	18.40	-0.01	0.00
				May 19, 2015	-	-	-	18.39	0.00	0.00
				May 9, 2016	4.86	1074.75	-	18.44	-0.05	0.00
				May 16, 2017	3.83	1075.78	-	18.45	-0.06	0.00
				May 14, 2018	4.21	1075.40	-	18.45	-0.06	0.00
				May 20, 2019	3.46	1076.15	-	18.47	-0.08	0.00
				June 15, 2020	-	-	-	18.42	-0.03	0.00
				May 25, 2021	-	-	-	18.32	0.07	2.33

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PMW-01	1079.56	14.65	6.0	April 21, 2008	4.83	1074.73	-	14.67	-0.02	0.00
				May 6, 2008	4.85	1074.71	-	14.50	0.15	2.50
				August 5, 2008	4.76	1074.80	-	14.52	0.13	2.17
				November 10, 2008	4.83	1074.73	-	14.62	0.03	0.50
				February 17, 2009	4.50	1075.06	-	14.50	0.15	2.50
				May 11, 2009	4.64	1074.92	-	14.47	0.18	3.00
				August 5, 2009	4.53	1075.03	-	14.52	0.13	2.17
				November 30, 2009	4.46	1075.10	-	14.41	0.24	4.00
				February 24, 2010	4.65	1074.91	-	14.52	0.13	2.17
				May 17, 2010	4.62	1074.94	-	14.48	0.17	2.83
				November 1, 2010	4.45	1075.11	-	14.47	0.18	3.00
				May 9, 2011	4.54	1075.02	-	14.47	0.18	3.00
				November 7, 2011	4.57	1074.99	-	14.50	0.15	2.50
				May 29, 2012	4.60	1074.96	-	14.51	0.14	2.33
				November 26, 2012	4.93	1074.63	-	14.45	0.20	3.33
				May 6, 2013	4.64	1074.92	-	14.44	0.21	3.50
				November 12, 2013	4.59	1074.97	-	14.44	0.21	3.50
				May 27, 2014	4.54	1075.02	-	14.44	0.21	3.50
				November 17, 2014	4.00	1075.56	-	14.40	0.25	4.17
				May 19, 2015	4.39	1075.17	-	14.40	0.25	4.17
				November 16, 2015	4.69	1074.87	-	14.46	0.19	3.17
				May 9, 2016	4.63	1074.93	-	14.43	0.22	3.67
				November 15, 2016	4.97	1074.59	-	14.38	0.27	4.50
				May 16, 2017	4.31	1075.25	-	14.40	0.25	4.17
				November 6, 2017	-	-	-	-	-	-
				May 14, 2018	4.65	1074.91	-	14.40	0.25	4.17
				November 12, 2018	4.45	1075.11	-	14.43	0.22	3.67
				May 20, 2019	4.29	1075.27	-	14.41	0.24	4.00
				November 4, 2019	4.35	1075.21	-	14.47	0.18	3.00
				June 15, 2020	4.83	1074.73	-	14.40	0.25	4.17
				November 17, 2020	4.91	1074.65	-	14.46	0.19	3.17
				May 25, 2021	4.86	1074.70	-	14.42	0.23	3.83
				November 10, 2021	4.75	1074.81	-	14.43	0.22	3.67
PMW-02*	1079.44	11.53	3.0	April 21, 2008	5.74	1074.02	-	11.73	-0.08	0.00
				May 6, 2008	6.09	1073.67	-	11.66	-0.01	0.00
				August 5, 2008	6.22	1073.54	-	11.62	0.03	1.00
				November 10, 2008	6.42	1073.34	-	11.68	-0.03	0.00
				February 17, 2009	5.50	1074.26	-	11.62	0.03	1.00
				May 11, 2009	6.04	1073.72	-	11.65	0.00	0.00
				August 5, 2009	5.63	1074.13	-	11.71	-0.06	0.00
				November 30, 2009	5.89	1073.87	-	11.55	0.10	3.33
				February 24, 2010	6.30	1073.46	-	11.66	-0.01	0.00
				May 17, 2010	5.86	1073.90	-	11.60	0.05	1.67
				November 1, 2010	5.50	1074.26	-	11.68	-0.03	0.00
				May 9, 2011	5.36	1074.40	-	11.67	-0.02	0.00
				November 7, 2011	5.90	1073.86	-	11.67	-0.02	0.00
				May 29, 2012	5.90	1073.86	-	11.70	-0.05	0.00
				November 26, 2012	6.41	1073.35	-	11.65	0.00	0.00
				May 6, 2013	5.79	1073.97	-	11.68	-0.03	0.00
				November 12, 2013	6.35	1073.41	-	11.64	0.01	0.33
				May 27, 2014	5.59	1074.17	-	11.69	-0.04	0.00
				November 17, 2014	-	-	-	-	-	-
				May 19, 2015	5.86	1073.90	-	11.60	0.05	1.67
				November 16, 2015	6.01	1073.75	-	11.63	0.02	0.67
				May 9, 2016	6.18	1073.46	-	11.51	0.02	0.67
				November 15, 2016	6.86	1072.78	-	11.50	0.03	1.00
				May 16, 2017	5.20	1074.44	-	11.53	0.00	0.00
				November 6, 2017	-	-	-	-	-	-
				May 14, 2018	5.70	1073.94	-	11.53	0.00	0.00
				November 12, 2018	5.68	1073.96	-	11.53	0.00	0.00
				May 20, 2019	5.32	1074.32	-	11.53	0.00	0.00
				November 4, 2019	-	-	-	11.52	0.01	0.33
				June 15, 2020	6.58	1073.06	-	11.54	-0.01	0.00
				November 17, 2020	6.88	1072.76	-	11.56	-0.03	0.00
				May 25, 2021	6.09	1073.55	-	11.39	0.14	4.67
				November 10, 2021	5.92	1073.52	-	11.41	0.12	4.00

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PMW-03	1079.80	14.57	9.0	April 21, 2008	5.06	1074.74	-	14.59	-0.02	0.00
				May 6, 2008	5.11	1074.69	-	14.60	-0.03	0.00
				August 5, 2008	4.99	1074.81	-	14.59	-0.02	0.00
				November 10, 2008	5.07	1074.73	-	14.59	-0.02	0.00
				February 17, 2009	4.79	1075.01	-	14.55	0.02	0.22
				May 11, 2009	4.87	1074.93	-	14.57	0.00	0.00
				August 5, 2009	4.78	1075.02	-	14.62	-0.05	0.00
				November 30, 2009	4.28	1075.52	-	14.58	-0.01	0.00
				February 24, 2010	4.89	1074.91	-	14.58	-0.01	0.00
				May 17, 2010	4.84	1074.96	-	14.53	0.04	0.44
				November 1, 2010	4.70	1075.10	-	14.58	-0.01	0.00
				May 9, 2011	4.76	1075.04	-	14.58	-0.01	0.00
				November 7, 2011	4.82	1074.98	-	14.50	0.07	0.78
				May 29, 2012	4.81	1074.99	-	14.37	0.20	2.22
				November 26, 2012	5.16	1074.64	-	14.45	0.12	1.33
				May 6, 2013	4.88	1074.92	-	14.50	0.07	0.78
				November 12, 2013	4.88	1074.92	-	14.51	0.06	0.67
				May 27, 2014	4.79	1075.01	-	14.50	0.07	0.78
				November 17, 2014	5.83	1073.97	-	14.52	0.05	0.56
				May 19, 2015	3.35	1076.45	-	14.49	0.08	0.89
				November 16, 2015	4.91	1074.89	-	14.52	0.05	0.56
				May 9, 2016	4.86	1074.94	-	14.51	0.06	0.67
				November 15, 2016	5.21	1074.59	-	14.51	0.06	0.67
				May 16, 2017	4.50	1075.30	-	14.53	0.04	0.44
				November 6, 2017	-	-	-	-	-	-
				May 14, 2018	4.80	1075.00	-	14.53	0.04	0.44
				November 12, 2018	4.65	1075.15	-	14.53	0.04	0.44
				May 20, 2019	4.46	1075.34	-	14.51	0.06	0.67
				November 4, 2019	4.75	1075.05	-	14.51	0.06	0.67
				June 15, 2020	5.04	1074.76	-	14.54	0.03	0.33
				November 17, 2020	5.09	1074.71	-	14.55	0.02	0.22
				May 25, 2021	6.01	1073.79	-	14.45	0.12	1.33
				November 10, 2021	4.96	1074.84	-	14.50	0.07	0.78
PMW-04	1080.88	14.50	9.0	April 21, 2008	6.16	1074.72	-	14.54	-0.04	0.00
				May 6, 2008	6.21	1074.67	-	14.55	-0.05	0.00
				August 5, 2008	6.05	1074.83	-	14.49	0.01	0.11
				November 10, 2008	6.15	1074.73	-	14.56	-0.06	0.00
				February 17, 2009	5.85	1075.03	-	14.49	0.01	0.11
				May 11, 2009	5.95	1074.93	-	14.53	-0.03	0.00
				August 5, 2009	5.87	1075.01	-	14.56	-0.06	0.00
				November 30, 2009	5.78	1075.10	-	14.40	0.10	1.11
				February 24, 2010	5.97	1074.91	-	14.53	-0.03	0.00
				May 17, 2010	5.93	1074.95	-	14.49	0.01	0.11
				November 1, 2010	5.77	1075.11	-	14.52	-0.02	0.00
				May 9, 2011	5.86	1075.02	-	14.52	-0.02	0.00
				November 7, 2011	5.90	1074.98	-	14.53	-0.03	0.00
				May 29, 2012	5.91	1074.97	-	14.55	-0.05	0.00
				November 26, 2012	6.24	1074.64	-	14.50	0.00	0.00
				May 6, 2013	5.96	1074.92	-	14.49	0.01	0.11
				November 12, 2013	5.92	1074.96	-	14.70	-0.20	0.00
				May 27, 2014	5.85	1075.03	-	14.46	0.04	0.44
				November 17, 2014	5.32	1075.56	-	14.45	0.05	0.56
				May 19, 2015	5.70	1075.18	-	14.42	0.08	0.89
				November 16, 2015	6.01	1074.87	-	14.45	0.05	0.56
				May 9, 2016	5.96	1074.92	-	14.47	0.03	0.33
				November 15, 2016	6.32	1074.56	-	14.48	0.02	0.22
				May 16, 2017	5.64	1075.24	-	14.45	0.05	0.56
				November 6, 2017	5.82	1075.06	-	14.45	0.05	0.56
				May 14, 2018	5.85	1075.03	-	14.45	0.05	0.56
				November 12, 2018	5.74	1075.14	-	14.47	0.03	0.33
				May 20, 2019	5.60	1075.28	-	14.46	0.04	0.44
				November 4, 2019	5.83	1075.05	-	14.49	0.01	0.11
				June 15, 2020	6.13	1074.75	-	14.50	0.00	0.00
				November 17, 2020	6.17	1074.71	-	14.48	0.02	0.22
				May 25, 2021	6.12	1074.76	-	14.46	0.04	0.44
				November 10, 2021	6.08	1074.80	-	14.48	0.02	0.22

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PMW-05	1079.79	15.50	7.0	April 21, 2008	5.02	1074.70	-	16.09	-0.59	0.00
				May 6, 2008	5.07	1074.65	-	16.09	-0.59	0.00
				August 5, 2008	4.93	1074.79	-	16.08	-0.58	0.00
				November 10, 2008	5.02	1074.70	-	16.10	-0.60	0.00
				February 17, 2009	4.68	1075.04	-	16.18	-0.68	0.00
				May 11, 2009	4.82	1074.90	-	16.10	-0.60	0.00
				August 5, 2009	4.71	1075.01	-	16.14	-0.64	0.00
				November 30, 2009	4.61	1075.11	-	16.04	-0.54	0.00
				February 24, 2010	4.83	1074.89	-	16.12	-0.62	0.00
				May 17, 2010	4.79	1074.93	-	16.07	-0.57	0.00
				November 1, 2010	4.62	1075.10	-	16.08	-0.58	0.00
				May 9, 2011	4.72	1075.00	-	16.11	-0.61	0.00
				November 7, 2011	4.75	1074.97	-	16.12	-0.62	0.00
				May 29, 2012	4.77	1074.95	-	16.14	-0.64	0.00
				November 26, 2012	5.09	1074.63	-	16.10	-0.60	0.00
				May 6, 2013	4.82	1074.90	-	16.10	-0.60	0.00
				November 12, 2013	4.78	1074.94	-	16.07	-0.57	0.00
				May 27, 2014	4.71	1075.01	-	16.09	-0.59	0.00
				November 17, 2014	4.14	1075.58	-	16.08	-0.58	0.00
				May 19, 2015	4.52	1075.27	-	16.06	-0.56	0.00
				November 16, 2015	4.86	1074.93	-	16.06	-0.56	0.00
				May 9, 2016	4.82	1074.97	-	16.07	-0.57	0.00
				November 15, 2016	5.14	1074.65	-	16.06	-0.56	0.00
				May 16, 2017	4.45	1075.34	-	16.08	-0.58	0.00
				November 6, 2017	-	-	-	-	-	-
				May 14, 2018	4.75	1075.04	-	16.08	-0.58	0.00
				November 12, 2018	4.60	1075.19	-	16.08	-0.58	0.00
				May 20, 2019	4.45	1075.34	-	16.08	-0.58	0.00
				November 4, 2019	4.68	1075.11	-	16.10	-0.60	0.00
				June 15, 2020	4.99	1074.80	-	16.12	-0.62	0.00
				November 17, 2020	5.03	1074.76	-	16.04	-0.54	0.00
				May 25, 2021	4.96	1074.83	-	16.05	-0.55	0.00
				November 10, 2021	4.91	1074.88	-	16.08	-0.58	0.00
PMW-06	1080.39	16.24	7.0	April 21, 2008	5.65	1074.73	-	16.29	-0.05	0.00
				May 6, 2008	5.71	1074.67	-	16.36	-0.12	0.00
				August 5, 2008	5.57	1074.81	-	16.25	-0.01	0.00
				November 10, 2008	5.65	1074.73	-	16.29	-0.05	0.00
				February 17, 2009	5.33	1075.05	-	16.23	0.01	0.14
				May 11, 2009	5.45	1074.93	-	16.27	-0.03	0.00
				August 5, 2009	5.37	1075.01	-	16.15	0.09	1.29
				November 30, 2009	5.27	1075.11	-	16.05	0.19	2.71
				February 24, 2010	5.46	1074.92	-	15.95	0.29	4.14
				May 17, 2010	5.43	1074.95	-	15.84	0.40	5.71
				November 1, 2010	5.27	1075.11	-	15.86	0.38	5.43
				May 9, 2011	5.35	1075.03	-	15.85	0.39	5.57
				November 7, 2011	5.39	1074.99	-	16.30	-0.06	0.00
				May 29, 2012	5.42	1074.96	-	16.29	-0.05	0.00
				November 26, 2012	5.73	1074.65	-	16.25	-0.01	0.00
				May 6, 2013	5.45	1074.93	-	16.23	0.01	0.14
				November 12, 2013	5.38	1075.00	-	16.25	-0.01	0.00
				May 27, 2014	5.34	1075.04	-	16.23	0.01	0.14
				November 17, 2014	4.78	1075.60	-	14.52	1.72	24.57
				May 19, 2015	5.15	1075.24	-	16.18	0.06	0.86
				November 16, 2015	5.51	1074.88	-	16.19	0.05	0.71
				May 9, 2016	5.45	1074.94	-	16.23	0.01	0.14
				November 15, 2016	5.80	1074.59	-	16.18	0.06	0.86
				May 16, 2017	5.12	1075.27	-	16.18	0.06	0.86
				November 6, 2017	5.30	1075.09	-	16.18	0.06	0.86
				May 14, 2018	5.35	1075.04	-	16.20	0.04	0.57
				November 12, 2018	5.19	1075.20	-	16.21	0.03	0.43
				May 20, 2019	5.11	1075.28	-	16.20	0.04	0.57
				November 4, 2019	5.33	1075.06	-	16.20	0.04	0.57
				June 15, 2020	5.64	1074.75	-	16.20	0.04	0.57
				November 17, 2020	5.67	1074.72	-	16.25	-0.01	0.00
				May 25, 2021	5.58	1074.81	-	16.15	0.09	1.29
				November 10, 2021	5.54	1074.85	-	16.14	0.10	1.43

Well ID	Measuring Point Elevation	Actual Depth to Bottom	Screen Length	Date	Depth to Water (feet TOC)	Groundwater Elevation	Depth to Product (feet TOC)	Depth to Bottom (feet TOC)	Accumulated Thickness of Sediments (feet)	Percent Screen Occluded By Sediments (%)
PMW-07	1079.56	23.60	4.0	April 21, 2008	4.29	1075.64	-	22.26	1.34	33.50
				May 6, 2008	4.70	1075.23	-	22.26	1.34	33.50
				August 5, 2008	5.26	1074.67	-	22.18	1.42	35.50
				November 10, 2008	5.59	1074.34	-	22.43	1.17	29.25
				February 17, 2009	4.67	1075.26	-	22.43	1.17	29.25
				May 11, 2009	4.93	1075.00	-	22.43	1.17	29.25
				August 5, 2009	4.49	1075.44	-	22.25	1.35	33.75
				November 30, 2009	4.89	1075.04	-	22.14	1.46	36.50
				February 24, 2010	5.25	1074.68	-	22.24	1.36	34.00
				May 17, 2010	4.58	1075.35	-	22.15	1.45	36.25
				November 1, 2010	4.29	1075.64	-	21.12	2.48	62.00
				May 9, 2011	3.63	1076.30	-	23.60	0.00	0.00
				November 7, 2011	4.68	1075.25	-	22.95	0.65	16.25
				May 29, 2012	4.51	1075.42	-	22.86	0.74	18.50
				November 26, 2012	5.56	1074.37	-	22.90	0.70	17.50
				May 6, 2013	4.53	1075.40	-	23.65	-0.05	0.00
				November 12, 2013	5.48	1074.45	-	23.49	0.11	2.75
				May 27, 2014	4.07	1075.86	-	23.35	0.25	6.25
				November 17, 2014	5.10	1074.83	-	23.28	0.32	8.00
				May 19, 2015	4.97	1074.96	-	23.28	0.32	8.00
				November 16, 2015	4.84	1075.09	-	23.33	0.27	6.75
				May 9, 2016	5.01	1074.92	-	23.25	0.35	8.75
				November 15, 2016	5.96	1073.97	-	23.21	0.39	9.75
				May 16, 2017	4.05	1075.88	-	23.20	0.40	10.00
				November 6, 2017	-	-	-	-	-	-
				May 14, 2018	4.40	1075.53	-	23.20	0.40	10.00
				November 12, 2018	4.44	1075.49	-	23.20	0.40	10.00
				May 20, 2019	3.83	1076.10	-	23.14	0.46	11.50
				November 4, 2019	4.02	1075.91	-	23.23	0.37	9.25
				June 15, 2020	5.52	1074.41	-	23.24	0.36	9.00
				November 17, 2020	5.83	1074.10	-	23.09	0.51	12.75
				May 25, 2021	4.51	1075.42	-	23.00	0.60	15.00
				November 10, 2021	4.62	1074.94	-	23.04	0.56	14.00
PMW-08	1079.54	23.04	4.0	April 21, 2008	4.46	1075.08	-	23.08	-0.04	0.00
				May 6, 2008	5.32	1074.22	-	23.08	-0.04	0.00
				August 5, 2008	5.08	1074.46	-	23.02	0.02	0.50
				November 10, 2008	5.45	1074.09	-	23.12	-0.08	0.00
				February 17, 2009	4.55	1074.99	-	23.02	0.02	0.50
				May 11, 2009	4.89	1074.65	-	23.08	-0.04	0.00
				August 5, 2009	4.55	1074.99	-	23.11	-0.07	0.00
				November 30, 2009	4.85	1074.69	-	22.99	0.05	1.25
				February 24, 2010	5.15	1074.39	-	23.09	-0.05	0.00
				May 17, 2010	4.63	1074.91	-	23.05	-0.01	0.00
				November 1, 2010	4.34	1075.20	-	23.07	-0.03	0.00
				May 9, 2011	4.03	1075.51	-	23.09	-0.05	0.00
				November 7, 2011	4.65	1074.89	-	23.10	-0.06	0.00
				May 29, 2012	4.65	1074.89	-	23.13	-0.09	0.00
				November 26, 2012	5.38	1074.16	-	23.09	-0.05	0.00
				May 6, 2013	4.62	1074.92	-	23.10	-0.06	0.00
				November 12, 2013	5.24	1074.30	-	23.05	-0.01	0.00
				May 27, 2014	4.30	1075.24	-	23.09	-0.05	0.00
				November 17, 2014	5.02	1074.52	-	23.06	-0.02	0.00
				May 19, 2015	4.94	1074.60	-	23.03	0.01	0.25
				November 16, 2015	4.72	1074.82	-	23.05	-0.01	0.00
				May 9, 2016	4.96	1074.58	-	23.05	-0.01	0.00
				November 15, 2016	5.78	1073.76	-	23.05	-0.01	0.00
				May 16, 2017	4.10	1075.44	-	23.07	-0.03	0.00
				November 6, 2017	-	-	-	-	-	-
				May 14, 2018	5.50	1074.04	-	23.07	-0.03	0.00
				November 12, 2018	4.41	1075.13	-	23.07	-0.03	0.00
				May 20, 2019	4.02	1075.52	-	23.04	0.00	0.00
				November 4, 2019	4.41	1075.13	-	23.06	-0.02	0.00
				June 15, 2020	5.42	1074.12	-	23.00	0.04	1.00
				November 17, 2020	5.82	1073.72	-	23.07	-0.03	0.00
				May 25, 2021	4.79	1074.75	-	23.04	0.00	0.00
				November 10, 2021	4.79	1074.75	-	23.06	-0.02	0.00

Table 1
Gauging Data
NYSEG
Oneonta Former MGP Site
Oneonta, New York

Well ID	Measuring Point Elevation	Actual Depth to Bottom	Screen Length	Date	Depth to Water (feet TOC)	Groundwater Elevation	Depth to Product (feet TOC)	Depth to Bottom (feet TOC)	Accumulated Thickness of Sediments (feet)	Percent Screen Occluded By Sediments (%)
PMW-09	1080.18	14.43	8.5	April 21, 2008	5.45	1074.73	-	14.45	-0.02	0.00
				May 6, 2008	5.51	1074.67	-	14.47	-0.04	0.00
				August 5, 2008	5.36	1074.82	-	14.41	0.02	0.24
				November 10, 2008	5.45	1074.73	-	14.44	-0.01	0.00
				February 17, 2009	5.14	1075.04	-	14.40	0.03	0.35
				May 11, 2009	5.25	1074.93	-	14.44	-0.01	0.00
				August 5, 2009	5.16	1075.02	-	14.47	-0.04	0.00
				November 30, 2009	5.09	1075.09	-	14.35	0.08	0.94
				February 24, 2010	5.27	1074.91	-	14.45	-0.02	0.00
				May 17, 2010	5.21	1074.97	-	14.41	0.02	0.24
				November 1, 2010	5.08	1075.10	-	14.45	-0.02	0.00
				May 9, 2011	5.16	1075.02	-	14.42	0.01	0.12
				November 7, 2011	5.20	1074.98	-	14.46	-0.03	0.00
				May 29, 2012	5.21	1074.97	-	14.47	-0.04	0.00
				November 26, 2012	5.54	1074.64	-	14.45	-0.02	0.00
				May 6, 2013	5.26	1074.92	-	14.44	-0.01	0.00
				November 12, 2013	5.20	1074.98	-	14.41	0.02	0.24
				May 27, 2014	5.15	1075.03	-	14.45	-0.02	0.00
				November 17, 2014	4.60	1075.58	-	14.42	0.01	0.12
				May 19, 2015	5.01	1075.17	-	14.40	0.03	0.35
				November 16, 2015	5.31	1074.87	-	14.42	0.01	0.12
				May 9, 2016	5.30	1074.88	-	14.41	0.02	0.24
				November 15, 2016	5.60	1074.58	-	14.42	0.01	0.12
				May 16, 2017	4.94	1075.24	-	14.42	0.01	0.12
				November 6, 2017	5.12	1075.06	-	14.42	0.01	0.12
				May 14, 2018	5.16	1075.02	-	14.42	0.01	0.12
				November 12, 2018	5.04	1075.14	-	14.41	0.02	0.24
				May 20, 2019	4.91	1075.27	-	14.40	0.03	0.35
				November 4, 2019	5.13	1075.05	-	14.43	0.00	0.00
				June 15, 2020	5.45	1074.73	-	14.43	0.00	0.00
				November 17, 2020	5.47	1074.71	-	14.43	0.00	0.00
				May 25, 2021	5.39	1074.79	-	14.40	0.03	0.35
				November 10, 2021	5.38	1074.80	-	14.42	0.01	0.12
PMW-10	1080.25	14.70	8.5	April 21, 2008	5.52	1074.73	-	14.72	-0.02	0.00
				May 6, 2008	5.55	1074.70	-	14.70	0.00	0.00
				August 5, 2008	5.44	1074.81	-	14.68	0.02	0.24
				November 10, 2008	5.51	1074.74	-	14.74	-0.04	0.00
				February 17, 2009	5.23	1075.02	-	14.67	0.03	0.35
				May 11, 2009	5.33	1074.92	-	14.70	0.00	0.00
				August 5, 2009	5.23	1075.02	-	14.76	-0.06	0.00
				November 30, 2009	5.14	1075.11	-	14.63	0.07	0.82
				February 24, 2010	5.33	1074.92	-	14.73	-0.03	0.00
				May 17, 2010	5.30	1074.95	-	14.96	-0.26	0.00
				November 1, 2010	5.14	1075.11	-	14.72	-0.02	0.00
				May 9, 2011	5.23	1075.02	-	14.72	-0.02	0.00
				November 7, 2011	5.26	1074.99	-	14.75	-0.05	0.00
				May 29, 2012	5.29	1074.96	-	14.71	-0.01	0.00
				November 26, 2012	5.60	1074.65	-	14.72	-0.02	0.00
				May 6, 2013	5.33	1074.92	-	14.71	-0.01	0.00
				November 12, 2013	5.28	1074.97	-	14.66	0.04	0.47
				May 27, 2014	5.22	1075.03	-	14.75	-0.05	0.00
				November 17, 2014	4.68	1075.57	-	14.70	0.00	0.00
				May 19, 2015	5.06	1075.19	-	14.66	0.04	0.47
				November 16, 2015	5.38	1074.87	-	14.69	0.01	0.12
				May 9, 2016	5.32	1074.93	-	14.68	0.02	0.24
				November 15, 2016	5.66	1074.59	-	14.70	0.00	0.00
				May 16, 2017	5.02	1075.23	-	14.68	0.02	0.24
				November 6, 2017	5.18	1075.07	-	14.70	0.00	0.00
				May 14, 2018	5.25	1075.00	-	14.70	0.00	0.00
				November 12, 2018	5.09	1075.16	-	14.69	0.01	0.12
				May 20, 2019	4.98	1075.27	-	14.70	0.00	0.00
				November 4, 2019	6.30	1073.95	-	14.70	0.00	0.00
				June 15, 2020	5.52	1074.73	-	14.70	0.00	0.00
				November 17, 2020	5.54	1074.71	-	14.70	0.00	0.00
				May 25, 2021	5.46	1074.79	-	14.67	0.03	0.35
				November 10, 2021	5.44	1074.81	-	14.69	0.01	0.12

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Oneonta Former MGP Site
Oneonta, New York

Well ID	Measuring Point Elevation	Actual Depth to Bottom	Screen Length	Date	Depth to Water (feet TOC)	Groundwater Elevation	Depth to Product (feet TOC)	Depth to Bottom (feet TOC)	Accumulated Thickness of Sediments (feet)	Percent Screen Occluded By Sediments (%)
PMW-11	1080.25	14.65	7.5	April 21, 2008	5.52	1074.73	-	14.68	-0.03	0.00
				May 6, 2008	5.56	1074.69	-	14.65	0.00	0.00
				August 5, 2008	5.45	1074.80	-	14.64	0.01	0.13
				November 10, 2008	5.53	1074.72	-	14.65	0.00	0.00
				February 17, 2009	5.22	1075.03	-	14.63	0.02	0.27
				May 11, 2009	5.33	1074.92	-	14.65	0.00	0.00
				August 5, 2009	5.25	1075.00	-	14.71	-0.06	0.00
				November 30, 2009	5.16	1075.09	-	14.58	0.07	0.93
				February 24, 2010	5.32	1074.93	-	14.67	-0.02	0.00
				May 17, 2010	5.31	1074.94	-	14.64	0.01	0.13
				November 1, 2010	3.13	1077.12	-	14.69	-0.04	0.00
				May 9, 2011	5.24	1075.01	-	14.67	-0.02	0.00
				November 7, 2011	5.27	1074.98	-	14.70	-0.05	0.00
				May 29, 2012	5.30	1074.95	-	14.67	-0.02	0.00
				November 26, 2012	5.60	1074.65	-	14.69	-0.04	0.00
				May 6, 2013	5.33	1074.92	-	14.64	0.01	0.13
				November 12, 2013	5.29	1074.96	-	14.62	0.03	0.40
				May 27, 2014	5.22	1075.03	-	14.69	-0.04	0.00
				November 17, 2014	4.67	1075.58	-	14.65	0.00	0.00
				May 19, 2015	5.03	1075.22	-	14.61	0.04	0.53
				November 16, 2015	5.39	1074.86	-	14.65	0.00	0.00
				May 9, 2016	5.43	1074.82	-	14.65	0.00	0.00
				November 15, 2016	5.67	1074.58	-	14.65	0.00	0.00
				May 16, 2017	5.02	1075.23	-	14.64	0.01	0.13
				November 6, 2017	5.20	1075.05	-	14.63	0.02	0.27
				May 14, 2018	5.25	1075.00	-	14.65	0.00	0.00
				November 12, 2018	5.12	1075.13	-	14.64	0.01	0.13
				May 20, 2019	4.99	1075.26	-	14.65	0.00	0.00
				November 4, 2019	5.21	1075.04	-	14.65	0.00	0.00
				June 15, 2020	5.57	1074.68	-	14.66	-0.01	0.00
				November 17, 2020	5.55	1074.70	-	14.63	0.02	0.27
				May 25, 2021	5.46	1074.79	-	14.61	0.04	0.53
				November 10, 2021	5.42	1074.83	-	14.63	0.02	0.27
PMW-12	1079.99	15.20	7.0	April 21, 2008	5.61	1074.73	-	16.43	-1.23	0.00
				May 6, 2008	5.66	1074.68	-	16.34	-1.14	0.00
				August 5, 2008	5.50	1074.84	-	16.31	-1.11	0.00
				November 10, 2008	5.60	1074.74	-	16.30	-1.10	0.00
				February 17, 2009	5.30	1075.04	-	16.30	-1.10	0.00
				May 11, 2009	5.41	1074.93	-	16.20	-1.00	0.00
				August 5, 2009	5.33	1075.01	-	16.36	-1.16	0.00
				November 30, 2009	5.22	1075.12	-	16.24	-1.04	0.00
				February 24, 2010	5.42	1074.92	-	16.23	-1.03	0.00
				May 17, 2010	5.38	1074.96	-	16.31	-1.11	0.00
				November 1, 2010	5.21	1075.13	-	16.21	-1.01	0.00
				May 9, 2011	5.31	1075.03	-	16.22	-1.02	0.00
				November 7, 2011	5.34	1075.00	-	16.32	-1.12	0.00
				May 29, 2012	5.37	1074.97	-	16.37	-1.17	0.00
				November 26, 2012	5.69	1074.65	-	16.31	-1.11	0.00
				May 6, 2013	5.41	1074.93	-	16.31	-1.11	0.00
				November 12, 2013	5.35	1074.99	-	16.35	-1.15	0.00
				May 27, 2014	5.30	1075.04	-	16.32	-1.12	0.00
				November 17, 2014	4.73	1075.61	-	16.25	-1.05	0.00
				May 19, 2015	5.10	1075.24	-	16.26	-1.06	0.00
				November 16, 2015	5.45	1074.89	-	16.25	-1.05	0.00
				May 9, 2016	5.41	1074.93	-	16.28	-1.08	0.00
				November 15, 2016	5.75	1074.59	-	16.31	-1.11	0.00
				May 16, 2017	5.08	1075.26	-	16.25	-1.05	0.00
				November 6, 2017	5.21	1075.13	-	16.25	-1.05	0.00
				May 14, 2018	5.30	1075.04	-	16.25	-1.05	0.00
				November 12, 2018	5.19	1075.15	-	16.27	-1.07	0.00
				May 20, 2019	5.05	1075.29	-	16.28	-1.08	0.00
				November 4, 2019	5.28	1075.06	-	16.28	-1.08	0.00
				June 15, 2020	5.58	1074.76	-	16.30	-1.10	0.00
				November 17, 2020	5.62	1074.72	-	16.30	-1.10	0.00
				May 25, 2021	5.32	1075.02	-	16.05	-0.85	0.00
				November 10, 2021	5.29	1074.70	-	16.08	-0.88	0.00

Table 1
Gauging Data
NYSEG
Oneonta Former MGP Site
Oneonta, New York

Well ID	Measuring Point Elevation	Actual Depth to Bottom	Screen Length	Date	Depth to Water (feet TOC)	Groundwater Elevation	Depth to Product (feet TOC)	Depth to Bottom (feet TOC)	Accumulated Thickness of Sediments (feet)	Percent Screen Occluded By Sediments (%)
PMW-13	1080.16	15.53	6.5	April 21, 2008	5.45	1074.71	-	16.13	-0.60	0.00
				May 6, 2008	5.48	1074.68	-	16.13	-0.60	0.00
				August 5, 2008	5.34	1074.82	-	16.10	-0.57	0.00
				November 10, 2008	5.41	1074.75	-	16.15	-0.62	0.00
				February 17, 2009	5.10	1075.06	-	16.07	-0.54	0.00
				May 11, 2009	5.22	1074.94	-	16.12	-0.59	0.00
				August 5, 2009	5.14	1075.02	-	16.15	-0.62	0.00
				November 30, 2009	5.03	1075.13	-	16.04	-0.51	0.00
				February 24, 2010	5.24	1074.92	-	16.12	-0.59	0.00
				May 17, 2010	5.20	1074.96	-	16.08	-0.55	0.00
				November 1, 2010	5.04	1075.12	-	16.13	-0.60	0.00
				May 9, 2011	5.13	1075.03	-	16.12	-0.59	0.00
				November 7, 2011	5.18	1074.98	-	16.16	-0.63	0.00
				May 29, 2012	5.20	1074.96	-	16.16	-0.63	0.00
				November 26, 2012	5.52	1074.64	-	16.13	-0.60	0.00
				May 6, 2013	5.23	1074.93	-	16.13	-0.60	0.00
				November 12, 2013	5.18	1074.98	-	16.08	-0.55	0.00
				May 27, 2014	5.12	1075.04	-	16.14	-0.61	0.00
				November 17, 2014	4.57	1075.59	-	16.10	-0.57	0.00
				May 19, 2015	4.92	1075.24	-	16.09	-0.56	0.00
				November 16, 2015	5.22	1074.94	-	16.09	-0.56	0.00
				May 9, 2016	5.23	1074.93	-	16.10	-0.57	0.00
				November 15, 2016	5.51	1074.65	-	16.10	-0.57	0.00
				May 16, 2017	4.89	1075.27	-	16.10	-0.57	0.00
				November 6, 2017	5.03	1075.13	-	16.09	-0.56	0.00
				May 14, 2018	5.15	1075.01	-	16.10	-0.57	0.00
				November 12, 2018	4.97	1075.19	-	16.09	-0.56	0.00
				May 20, 2019	4.87	1075.29	-	16.08	-0.55	0.00
				November 4, 2019	5.10	1075.06	-	16.10	-0.57	0.00
				June 15, 2020	5.41	1074.75	-	16.11	-0.58	0.00
				November 17, 2020	5.44	1074.72	-	16.11	-0.58	0.00
				May 25, 2021	5.34	1074.82	-	16.08	-0.55	0.00
				November 10, 2021	5.33	1074.83	-	16.09	-0.56	0.00
PMW-14	1080.03	15.90	6.0	April 21, 2008	5.30	1074.73	-	15.96	-0.06	0.00
				May 6, 2008	5.34	1074.69	-	15.96	-0.06	0.00
				August 5, 2008	5.22	1074.81	-	15.92	-0.02	0.00
				November 10, 2008	5.29	1074.74	-	16.03	-0.13	0.00
				February 17, 2009	4.97	1075.06	-	15.90	0.00	0.00
				May 11, 2009	5.10	1074.93	-	15.94	-0.04	0.00
				August 5, 2009	5.01	1075.02	-	15.99	-0.09	0.00
				November 30, 2009	4.88	1075.15	-	15.87	0.03	0.50
				February 24, 2010	5.11	1074.92	-	15.96	-0.06	0.00
				May 17, 2010	5.09	1074.94	-	15.91	-0.01	0.00
				November 1, 2010	4.88	1075.15	-	15.96	-0.06	0.00
				May 9, 2011	4.99	1075.04	-	15.96	-0.06	0.00
				November 7, 2011	5.01	1075.02	-	15.97	-0.07	0.00
				May 29, 2012	5.08	1074.95	-	15.98	-0.08	0.00
				November 26, 2012	5.37	1074.66	-	15.95	-0.05	0.00
				May 6, 2013	5.09	1074.94	-	15.95	-0.05	0.00
				November 12, 2013	5.03	1075.00	-	15.91	-0.01	0.00
				May 27, 2014	4.92	1075.11	-	15.96	-0.06	0.00
				November 17, 2014	4.47	1075.56	-	15.92	-0.02	0.00
				May 19, 2015	4.78	1075.25	-	15.90	0.00	0.00
				November 16, 2015	5.14	1074.89	-	15.92	-0.02	0.00
				May 9, 2016	5.08	1074.95	-	15.91	-0.01	0.00
				November 15, 2016	5.42	1074.61	-	15.92	-0.02	0.00
				May 16, 2017	4.74	1075.29	-	15.91	-0.01	0.00
				November 6, 2017	4.86	1075.17	-	15.90	0.00	0.00
				May 14, 2018	5.05	1074.98	-	15.91	-0.01	0.00
				November 12, 2018	4.86	1075.17	-	15.91	-0.01	0.00
				May 20, 2019	4.71	1075.32	-	15.92	-0.02	0.00
				November 4, 2019	4.95	1075.08	-	15.93	-0.03	0.00
				June 15, 2020	5.28	1074.75	-	15.95	-0.05	0.00
				November 17, 2020	5.30	1074.73	-	15.95	-0.05	0.00
				May 25, 2021	5.21	1074.82	-	15.92	-0.02	0.00
				November 10, 2021	5.21	1074.82	-	15.93	-0.03	0.00

Well ID	Measuring Point Elevation	Actual Depth to Bottom	Screen Length	Date	Depth to Water (feet TOC)	Groundwater Elevation	Depth to Product (feet TOC)	Depth to Bottom (feet TOC)	Accumulated Thickness of Sediments (feet)	Percent Screen Occluded By Sediments (%)
NRW-01*	1079.09	18.36	13.0	April 21, 2008	4.41	1074.68	-	18.42	-0.06	0.00
				May 6, 2008	-	-	-	-	-	-
				August 5, 2008	5.29	1073.80	-	18.44	-0.08	0.00
				November 10, 2008	5.52	1073.57	-	18.42	-0.06	0.00
				February 17, 2009	4.51	1074.58	-	18.44	-0.08	0.00
				May 11, 2009	5.02	1074.07	-	18.44	-0.08	0.00
				August 5, 2009	-	-	-	-	-	-
				November 30, 2009	4.95	1074.14	-	18.33	0.03	0.00
				February 24, 2010	-	-	-	-	-	-
				May 17, 2010	4.73	1074.36	-	18.39	-0.03	0.00
				November 1, 2010	4.28	1074.81	-	18.41	-0.05	0.00
				May 9, 2011	3.98	1075.11	-	18.43	-0.07	0.00
				November 7, 2011	4.79	1074.30	-	18.45	-0.09	0.00
				May 29, 2012	4.73	1074.36	-	18.44	-0.08	0.00
				November 26, 2012	5.48	1073.61	-	18.43	-0.07	0.00
				May 6, 2013	4.68	1074.41	-	18.45	-0.09	0.00
				November 12, 2013	5.43	1073.66	-	18.35	0.01	0.00
				May 27, 2014	4.31	1074.78	-	18.44	-0.08	0.00
				November 17, 2014	4.72	1074.37	-	18.40	-0.04	0.00
				May 19, 2015	4.86	1074.23	-	18.39	-0.03	0.00
				November 16, 2015	4.74	1074.35	-	18.42	-0.06	0.00
				May 9, 2016	5.09	1074.00	-	18.38	-0.02	0.00
				November 15, 2016	6.01	1073.08	-	18.40	-0.04	0.00
				May 16, 2017	3.85	1075.24	-	18.41	-0.05	0.00
				November 6, 2017	5.30	1073.79	-	18.40	-0.04	0.00
				May 14, 2018	4.54	1074.55	-	18.40	-0.04	0.00
				November 12, 2018	4.43	1074.66	-	18.38	-0.02	0.00
				May 20, 2019	3.92	1075.17	-	18.42	-0.06	0.00
				November 4, 2019	4.51	1074.58	-	18.39	-0.03	0.00
				June 15, 2020	5.69	1073.40	-	18.49	-0.13	0.00
				November 17, 2020	6.22	1072.87	-	18.43	-0.07	0.00
				May 25, 2021	4.88	1074.21	-	18.37	-0.01	0.00
				November 10, 2021	4.99	1074.10	-	18.38	-0.02	0.00
NRW-02*	1079.40	13.20	8.0	April 21, 2008	4.78	1074.72	-	13.34	-0.04	0.00
				May 6, 2008	-	-	-	-	-	-
				August 5, 2008	5.68	1073.82	-	13.25	0.05	0.00
				November 10, 2008	5.92	1073.58	-	13.35	-0.05	0.00
				February 17, 2009	4.90	1074.60	-	13.28	0.02	0.00
				May 11, 2009	5.40	1074.10	-	13.25	0.05	0.00
				August 5, 2009	-	-	-	-	-	-
				November 30, 2009	5.35	1074.15	-	13.12	0.18	0.00
				February 24, 2010	-	-	-	-	-	-
				May 17, 2010	5.10	1074.40	-	13.19	0.11	0.00
				November 1, 2010	4.46	1075.04	-	13.35	-0.05	0.00
				May 9, 2011	4.32	1075.18	-	13.35	-0.05	0.00
				November 7, 2011	5.18	1074.32	-	13.24	0.06	0.00
				May 29, 2012	5.14	1074.36	-	13.29	0.01	0.00
				November 26, 2012	5.87	1073.63	-	13.35	-0.05	0.00
				May 6, 2013	5.05	1074.45	-	13.26	0.04	0.00
				November 12, 2013	5.85	1073.65	-	13.29	0.01	0.00
				May 27, 2014	4.74	1074.76	-	13.25	0.05	0.00
				November 17, 2014	5.27	1074.23	-	13.37	-0.07	0.00
				May 19, 2015	5.31	1074.19	-	13.21	0.09	0.00
				November 16, 2015	5.20	1074.30	-	13.28	0.02	0.00
				May 9, 2016	5.43	1073.97	-	13.18	0.02	0.00
				November 15, 2016	6.35	1073.05	-	13.13	0.07	0.00
				May 16, 2017	4.22	1075.18	-	13.20	0.00	0.00
				November 6, 2017	5.61	1073.79	-	13.14	0.06	0.00
				May 14, 2018	4.95	1074.45	-	13.20	0.00	0.00
				November 12, 2018	4.82	1074.58	-	13.24	-0.04	0.00
				May 20, 2019	4.20	1075.20	-	13.21	-0.01	0.00
				November 4, 2019	4.92	1074.48	-	13.23	-0.03	0.00
				June 15, 2020	6.09	1073.31	-	13.23	-0.03	0.00
				November 17, 2020	6.62	1072.78	-	13.29	-0.09	0.00
				May 25, 2021	5.28	1074.12	-	13.20	0.00	0.00
				November 10, 2021	5.32	1074.08	-	13.22	-0.02	0.00

Well ID	Measuring Point Elevation	Actual Depth to Bottom	Screen Length	Date	Depth to Water (feet TOC)	Groundwater Elevation	Depth to Product (feet TOC)	Depth to Bottom (feet TOC)	Accumulated Thickness of Sediments (feet)	Percent Screen Occluded By Sediments (%)
NRW-03*	1080.26	17.67	18.0	April 21, 2008	4.67	1075.59	-	17.68	-0.01	0.00
				May 6, 2008	-	-	-	-	-	-
				August 5, 2008	5.89	1074.37	-	17.71	-0.04	0.00
				November 10, 2008	6.18	1074.08	-	17.74	-0.07	0.00
				February 17, 2009	5.30	1074.96	-	17.74	-0.07	0.00
				May 11, 2009	5.46	1074.80	-	17.72	-0.05	0.00
				August 5, 2009	-	-	-	-	-	-
				November 30, 2009	5.56	1074.70	-	17.72	-0.05	0.00
				February 24, 2010	-	-	-	-	-	-
				May 17, 2010	5.06	1075.20	-	17.70	-0.03	0.00
				November 1, 2010	4.76	1075.50	-	17.73	-0.06	0.00
				May 9, 2011	4.14	1076.12	-	17.78	-0.11	0.00
				November 7, 2011	5.25	1075.01	-	17.78	-0.11	0.00
				May 29, 2012	5.25	1075.01	-	17.79	-0.12	0.00
				November 26, 2012	6.22	1074.04	-	17.78	-0.11	0.00
				May 6, 2013	5.21	1075.05	-	17.79	-0.12	0.00
				November 12, 2013	6.18	1074.08	-	17.73	-0.06	0.00
				May 27, 2014	4.79	1075.47	-	17.84	-0.17	0.00
				November 17, 2014	6.25	1074.01	-	17.80	-0.13	0.00
				May 19, 2015	6.09	1074.17	-	17.85	-0.18	0.00
				November 16, 2015	5.45	1074.81	-	17.90	-0.23	0.00
				May 9, 2016	5.84	1074.42	-	17.89	-0.22	0.00
				November 15, 2016	6.92	1073.34	-	17.90	-0.23	0.00
				May 16, 2017	4.90	1075.36	-	17.96	-0.29	0.00
				November 6, 2017	6.59	1073.67	-	17.92	-0.25	0.00
				May 14, 2018	5.35	1074.91	-	17.97	-0.30	0.00
				November 12, 2018	5.14	1075.12	-	17.95	-0.28	0.00
				May 20, 2019	4.75	1075.51	-	17.65	0.02	0.00
				Location abandonded May 22, 2019						
NRW-04*	1080.55	22.60	18.0	April 21, 2008	4.94	1075.61	-	22.29	0.31	0.00
				May 6, 2008	-	-	-	-	-	-
				August 5, 2008	6.15	1074.40	-	22.24	0.36	0.00
				November 10, 2008	6.44	1074.11	-	22.38	0.22	0.00
				February 17, 2009	5.31	1075.24	-	22.38	0.22	0.00
				May 11, 2009	5.72	1074.83	-	22.23	0.37	0.00
				August 5, 2009	-	-	-	-	-	-
				November 30, 2009	5.81	1074.74	-	22.22	0.38	0.00
				February 24, 2010	-	-	-	-	-	-
				May 17, 2010	5.28	1075.27	-	22.12	0.48	0.00
				November 1, 2010	4.98	1075.57	-	22.09	0.51	0.00
				May 9, 2011	4.43	1076.12	-	22.09	0.51	0.00
				November 7, 2011	5.44	1075.11	-	22.05	0.55	0.00
				May 29, 2012	5.43	1075.12	-	22.12	0.48	0.00
				November 26, 2012	6.40	1074.15	-	22.10	0.50	0.00
				May 6, 2013	5.39	1075.16	-	22.10	0.50	0.00
				November 12, 2013	6.38	1074.17	-	22.51	0.09	0.00
				May 27, 2014	4.90	1075.65	-	22.13	0.47	0.00
				November 17, 2014	6.35	1074.20	-	22.11	0.49	0.00
				May 19, 2015	6.13	1074.42	-	22.64	-0.04	0.00
				November 16, 2015	5.51	1075.04	-	22.54	0.06	0.00
				May 9, 2016	5.92	1074.63	-	22.65	-0.05	0.00
				November 15, 2016	6.87	1073.68	-	22.55	0.05	0.00
				May 16, 2017	4.94	1075.61	-	22.68	-0.08	0.00
				November 7, 2017	6.60	1073.95	-	22.70	-0.10	0.00
				May 14, 2018	5.30	1075.25	-	22.65	-0.05	0.00
				November 12, 2018	5.12	1075.43	-	22.60	0.00	0.00
				May 20, 2019	4.74	1075.81	-	22.55	0.05	0.00
				Location abandonded May 22, 2019						

Well ID	Measuring Point Elevation	Actual Depth to Bottom	Screen Length	Date	Depth to Water (feet TOC)	Groundwater Elevation	Depth to Product (feet TOC)	Depth to Bottom (feet TOC)	Accumulated Thickness of Sediments (feet)	Percent Screen Occluded By Sediments (%)
NRW-05*	1080.76	20.74	14.0	April 21, 2008	NA	NA	-	NA	-	-
				May 6, 2008	NA	NA	-	NA	-	-
				August 5, 2008	NA	NA	-	NA	-	-
				November 10, 2008	NA	NA	-	NA	-	-
				February 17, 2009	-	-	-	-	-	-
				May 11, 2009	6.11	1074.65	-	20.03	0.71	0.00
				August 5, 2009	-	-	-	-	-	-
				November 30, 2009	6.22	1074.54	-	20.15	0.59	0.00
				February 24, 2010	-	-	-	-	-	-
				May 17, 2010	5.59	1075.17	-	20.22	0.52	0.00
				November 1, 2010	5.18	1075.58	-	20.25	0.49	0.00
				May 9, 2011	4.37	1076.39	-	20.27	0.47	0.00
				November 7, 2011	5.80	1074.96	-	20.30	0.44	0.00
				May 29, 2012	5.78	1074.98	-	20.27	0.47	0.00
				November 26, 2012	6.91	1073.85	-	20.30	0.44	0.00
				May 6, 2013	5.68	1075.08	-	20.26	0.48	0.00
				November 12, 2013	6.87	1073.89	-	20.22	0.52	0.00
				May 27, 2014	5.08	1075.68	-	20.28	0.46	0.00
				November 17, 2014	5.48	1075.28	-	20.24	0.50	0.00
				May 19, 2015	6.60	1074.16	-	20.65	0.09	0.00
				November 16, 2015	5.77	1074.99	-	20.64	0.10	0.00
				May 9, 2016	6.28	1074.48	-	20.65	0.09	0.00
				November 15, 2016	7.59	1073.17	-	20.67	0.07	0.00
				May 16, 2017	5.07	1075.69	-	20.68	0.06	0.00
				November 6, 2017	7.20	1073.56	-	20.68	0.06	0.00
				May 14, 2018	5.61	1075.15	-	20.68	0.06	0.00
				November 12, 2018	5.39	1075.37	-	20.66	0.08	0.00
				May 20, 2019	4.43	1076.33	-	20.68	0.06	0.00
				Location abandonded May 22, 2019						
PZ-0801	1078.67	15.00	11.0	April 21, 2008	3.57	1075.16	-	14.89	0.11	1.00
				May 6, 2008	-	-	-	-	-	-
				August 5, 2008	-	-	-	-	-	-
				November 10, 2008	5.36	1073.37	-	14.93	0.07	0.64
				February 17, 2009	-	-	-	-	-	-
				May 11, 2009	4.62	1074.11	-	14.88	0.12	1.09
				August 5, 2009	-	-	-	-	-	-
				November 30, 2009	4.71	1074.02	-	14.88	0.12	1.09
				February 24, 2010	5.22	1073.51	-	14.87	0.13	1.18
				May 17, 2010	4.21	1074.52	-	14.78	0.22	2.00
				November 1, 2010	3.71	1075.02	-	14.86	0.14	1.27
				May 9, 2011	2.96	1075.77	-	14.81	0.19	1.73
				November 7, 2011	4.25	1074.48	-	14.88	0.12	1.09
				May 29, 2012	4.04	1074.69	-	14.88	0.12	1.09
				November 26, 2012	5.24	1073.49	-	14.83	0.17	1.55
				May 6, 2013	3.95	1074.78	-	14.81	0.19	1.73
				November 12, 2013	5.21	1073.52	-	14.78	0.22	2.00
				May 27, 2014	3.57	1075.16	-	14.83	0.17	1.55
				November 17, 2014	-	-	-	-	-	-
				May 19, 2015	4.83	1074.07	-	13.90	1.10	10.00
				November 16, 2015	4.30	1074.60	-	13.90	1.10	10.00
				May 9, 2016	4.88	1074.02	-	13.88	1.12	10.18
				November 15, 2016	5.99	1072.91	-	13.89	1.11	10.09
				May 16, 2017	3.72	1075.18	-	13.87	1.13	10.27
				November 6, 2017	5.81	1073.09	-	13.85	1.15	10.45
				May 14, 2018	4.01	1074.89	-	13.85	1.15	10.45
				November 12, 2018	4.12	1074.78	-	13.86	1.14	10.36
				May 20, 2019	3.65	1075.25	-	13.89	1.11	10.09
				November 4, 2019	3.98	1074.92	-	13.90	1.10	10.00
				June 15, 2020	5.67	1073.23	-	13.89	1.11	10.09
				November 17, 2020	6.26	1072.64	-	13.92	1.08	9.82
				May 25, 2021	4.58	1074.32	-	13.85	1.15	10.45
				November 10, 2021	4.32	1074.35	-	13.71	1.29	11.73

Table 1
Gauging Data
NYSEG
Oneonta Former MGP Site
Oneonta, New York

Well ID	Measuring Point Elevation	Actual Depth to Bottom	Screen Length	Date	Depth to Water (feet TOC)	Groundwater Elevation	Depth to Product (feet TOC)	Depth to Bottom (feet TOC)	Accumulated Thickness of Sediments (feet)	Percent Screen Occluded By Sediments (%)
PZ-0802	1081.37	14.30	11.0	April 21, 2008	5.54	1075.88	-	14.44	-0.14	0.00
				May 6, 2008	-	-	-	-	-	-
				August 5, 2008	-	-	-	-	-	-
				November 10, 2008	6.73	1074.69	-	14.42	-0.12	0.00
				February 17, 2009	-	-	-	-	-	-
				May 11, 2009	5.78	1075.64	-	14.42	-0.12	0.00
				August 5, 2009	5.73	1075.69	-	14.45	-0.15	0.00
				November 30, 2009	6.11	1075.31	-	14.28	0.02	0.18
				February 24, 2010	6.40	1075.02	-	14.34	-0.04	0.00
				May 17, 2010	5.56	1075.86	-	14.38	-0.08	0.00
				November 1, 2010	5.58	1075.84	-	14.02	0.28	2.55
				May 9, 2011	5.17	1076.25	-	14.20	0.10	0.91
				November 7, 2011	5.75	1075.67	-	13.95	0.35	3.18
				May 29, 2012	5.72	1075.70	-	13.93	0.37	3.36
				November 26, 2012	6.70	1074.72	-	13.95	0.35	3.18
				May 6, 2013	5.83	1075.59	-	13.89	0.41	3.73
				November 12, 2013	6.42	1075.00	-	13.82	0.48	4.36
				May 27, 2014	5.63	1075.79	-	13.83	0.47	4.27
				November 17, 2014	6.42	1075.00	-	13.82	0.48	4.36
				May 19, 2015	6.29	1075.13	-	13.87	0.43	3.91
				November 16, 2015	5.95	1075.47	-	13.81	0.49	4.45
				May 9, 2016	5.32	1076.10	-	13.90	0.40	3.64
				November 15, 2016	7.80	1073.62	-	13.86	0.44	4.00
				May 16, 2017	5.50	1075.92	-	13.91	0.39	3.55
				November 6, 2017	6.09	1075.33	-	13.80	0.50	4.55
				May 14, 2018	4.48	1076.94	-	13.80	0.50	4.55
				November 12, 2018	5.71	1075.71	-	13.94	0.36	3.27
				May 20, 2019	5.45	1075.97	-	13.90	0.40	3.64
				November 4, 2019	5.61	1075.81	-	13.92	0.38	3.45
				June 15, 2020	6.71	1074.71	-	13.92	0.38	3.45
				November 17, 2020	7.22	1074.20	-	13.90	0.40	3.64
				May 25, 2021	6.16	1075.26	-	13.93	0.37	3.36
				November 10, 2021	5.98	1075.39	-	13.80	0.50	4.55
PZ-0803	1081.84	21.50	18.0	April 21, 2008	6.35	1075.49	-	21.55	-0.05	0.00
				May 6, 2008	-	-	-	-	-	-
				August 5, 2008	-	-	-	-	-	-
				November 10, 2008	7.01	1074.83	-	21.56	-0.06	0.00
				February 17, 2009	-	-	-	-	-	-
				May 11, 2009	6.48	1075.36	-	21.49	0.01	0.06
				August 5, 2009	6.15	1075.69	-	21.58	-0.08	0.00
				November 30, 2009	7.49	1074.35	-	21.49	0.01	0.06
				February 24, 2010	6.70	1075.14	-	21.46	0.04	0.22
				May 17, 2010	6.25	1075.59	-	21.45	0.05	0.28
				November 1, 2010	6.15	1075.69	-	21.51	-0.01	0.00
				May 9, 2011	5.74	1076.10	-	21.50	0.00	0.00
				November 7, 2011	6.30	1075.54	-	21.52	-0.02	0.00
				May 29, 2012	6.19	1075.65	-	21.54	-0.04	0.00
				November 26, 2012	6.92	1074.92	-	21.48	0.02	0.11
				May 6, 2013	6.27	1075.57	-	21.51	-0.01	0.00
				November 12, 2013	6.74	1075.10	-	21.45	0.05	0.28
				May 27, 2014	5.93	1075.91	-	21.46	0.04	0.22
				November 17, 2014	6.62	1075.22	-	21.45	0.05	0.28
				May 19, 2015	6.39	1075.45	-	21.43	0.07	0.39
				November 16, 2015	6.42	1075.42	-	21.46	0.04	0.22
				May 9, 2016	6.39	1075.45	-	21.45	0.05	0.28
				November 15, 2016	7.15	1074.69	-	21.47	0.03	0.17
				May 16, 2017	5.98	1075.86	-	21.46	0.04	0.22
				November 6, 2017	6.82	1075.02	-	21.42	0.08	0.44
				May 14, 2018	6.09	1075.75	-	21.46	0.04	0.22
				November 12, 2018	6.06	1075.78	-	21.43	0.07	0.39
				May 20, 2019	5.76	1076.08	-	21.43	0.07	0.39
				November 4, 2019	6.12	1075.72	-	21.47	0.03	0.17
				June 15, 2020	6.76	1075.08	-	21.45	0.05	0.28
				November 17, 2020	7.02	1074.82	-	21.48	0.02	0.11
				May 25, 2021	6.33	1075.51	-	21.42	0.08	0.44
				November 10, 2021	6.46	1075.38	-	21.47	0.03	0.17

Table 1
Gauging Data
NYSEG
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Oneonta, New York

Well ID	Measuring Point Elevation	Actual Depth to Bottom	Screen Length	Date	Depth to Water (feet TOC)	Groundwater Elevation	Depth to Product (feet TOC)	Depth to Bottom (feet TOC)	Accumulated Thickness of Sediments (feet)	Percent Screen Occluded By Sediments (%)
PZ-105*	1077.23	6.10	5.0	April 21, 2008	5.29	1071.94	-	5.68	0.42	6.40
				May 6, 2008	-	-	-	-	-	-
				August 5, 2008	-	-	-	-	-	-
				November 10, 2008	-	-	-	5.69	0.41	6.20
				February 17, 2009	-	-	-	-	-	-
				May 11, 2009	4.92	1072.31	-	5.68	0.42	6.40
				August 5, 2009	-	-	-	5.68	0.42	6.40
				November 30, 2009	-	-	-	5.68	0.42	6.40
				February 24, 2010	-	-	-	5.71	0.39	5.80
				May 17, 2010	-	-	-	5.71	0.39	5.80
				November 1, 2010	-	-	-	5.74	0.36	5.20
				May 9, 2011	-	-	-	5.74	0.36	5.20
				November 7, 2011	5.67	1071.56	-	5.72	0.38	5.60
				May 29, 2012	5.03	1072.20	-	5.76	0.34	4.80
				November 26, 2012	-	-	-	5.69	0.41	6.20
				May 6, 2013	4.86	1072.37	-	5.69	0.41	6.20
				November 12, 2013	5.64	1071.59	-	5.71	0.39	5.80
				May 27, 2014	5.28	1071.95	-	5.68	0.42	6.40
				November 17, 2014	-	-	-	6.03	0.07	0.00
				May 19, 2015	-	-	-	5.71	0.39	5.80
				November 16, 2015	5.57	1071.66	-	5.71	0.39	5.80
				May 9, 2016	-	-	-	5.71	0.39	5.80
				November 15, 2016	5.56	1071.67	-	5.71	0.39	5.80
				May 16, 2017	4.85	1072.38	-	5.72	0.38	5.60
				November 6, 2017	-	-	-	5.71	0.39	5.80
				May 14, 2018	5.08	1072.15	-	5.72	0.38	5.60
				November 12, 2018	5.50	1071.73	-	5.72	0.38	5.60
				May 20, 2019	5.10	1072.13	-	5.70	0.40	6.00
				November 4, 2019	5.04	1072.19	-	5.71	0.39	5.80
				June 15, 2020	5.54	1071.69	-	5.70	0.40	6.00
				November 17, 2020	-	-	-	-	-	-
				May 25, 2021	5.58	1071.65	-	5.70	0.40	6.00
				November 10, 2021	Dry	-	-	5.71	0.39	5.80
SG-107	1081.96	-	-	April 21, 2008	8.90	1073.06	-	-	-	-
				May 6, 2008	-	-	-	-	-	-
				August 5, 2008	-	-	-	-	-	-
				November 10, 2008	7.04	1074.92	-	-	-	-
				February 17, 2009	6.38	1075.58	-	-	-	-
				May 11, 2009	6.59	1075.37	-	-	-	-
				August 5, 2009	6.52	1075.44	-	-	-	-
				November 30, 2009	6.63	1075.33	-	-	-	-
				February 24, 2010	6.82	1075.14	-	-	-	-
				May 17, 2010	6.54	1075.42	-	-	-	-
				November 1, 2010	6.51	1075.45	-	-	-	-
				May 9, 2011	6.60	1075.36	-	-	-	-
				November 7, 2011	6.58	1075.38	-	-	-	-
				May 29, 2012	6.74	1075.22	-	-	-	-
				November 26, 2012	6.82	1075.14	-	-	-	-
				May 6, 2013	6.74	1075.22	-	-	-	-
				November 12, 2013	6.85	1075.11	-	-	-	-
				May 27, 2014	6.68	1075.28	-	-	-	-
				November 17, 2014	6.85	1075.11	-	-	-	-
				May 19, 2015	6.79	1075.17	-	-	-	-
				November 16, 2015	6.81	1075.15	-	-	-	-
				May 9, 2016	6.72	1075.24	-	-	-	-
				November 15, 2016	6.91	1075.05	-	-	-	-
				May 16, 2017	6.66	1075.30	-	-	-	-
				November 6, 2017	6.80	1075.16	-	-	-	-
				May 14, 2018	6.77	1075.19	-	-	-	-
				November 12, 2018	6.33	1075.63	-	-	-	-
				May 20, 2019	6.60	1075.36	-	-	-	-
				November 4, 2019	6.61	1075.35	-	-	-	-
				June 15, 2020	6.83	1075.13	-	-	-	-
				November 17, 2020	7.03	1074.93	-	-	-	-
				May 25, 2021	6.82	1075.14	-	-	-	-
				November 10, 2021	6.93	1075.03	-	-	-	-

Table 1
Gauging Data
NYSEG
Oneonta Former MGP Site
Oneonta, New York

Well ID	Measuring Point Elevation	Actual Depth to Bottom	Screen Length	Date	Depth to Water (feet TOC)	Groundwater Elevation	Depth to Product (feet TOC)	Depth to Bottom (feet TOC)	Accumulated Thickness of Sediments (feet)	Percent Screen Occluded By Sediments (%)
SG-105	1079.45	-	-	April 21, 2008	3.96	1075.49	-	-	-	-
				May 6, 2008	-	-	-	-	-	-
				August 5, 2008	-	-	-	-	-	-
				November 10, 2008	-	-	-	-	-	-
				February 17, 2009	-	-	-	-	-	-
				May 11, 2009	-	-	-	-	-	-
				August 5, 2009	-	-	-	-	-	-
				November 30, 2009	-	-	-	-	-	-
				February 24, 2010	-	-	-	-	-	-
				May 17, 2010	4.31	1075.14	-	-	-	-
				November 1, 2010	4.39	1075.06	-	-	-	-
				May 9, 2011	4.05	1075.40	-	-	-	-
				November 7, 2011	3.94	1075.51	-	-	-	-
				May 29, 2012	3.29	1076.16	-	-	-	-
				November 26, 2012	3.89	1075.56	-	-	-	-
				May 6, 2013	3.65	1075.80	-	-	-	-
				November 12, 2013	3.86	1075.59	-	-	-	-
				May 27, 2014	4.18	1075.27	-	-	-	-
				November 17, 2014	4.79	1074.66	-	-	-	-
				May 19, 2015	4.19	1075.26	-	-	-	-
				November 16, 2015	4.11	1075.34	-	-	-	-
				May 9, 2016	4.18	1075.27	-	-	-	-
				November 15, 2016	3.86	1075.59	-	-	-	-
				May 16, 2017	3.51	1075.94	-	-	-	-
				November 6, 2017	4.72	1074.73	-	-	-	-
				May 14, 2018	4.24	1075.21	-	-	-	-
				November 12, 2018	4.37	1075.08	-	-	-	-
				May 20, 2019	4.27	1075.18	-	-	-	-
				November 4, 2019	4.37	1075.08	-	-	-	-
				June 15, 2020	4.32	1075.13	-	-	-	-
				November 17, 2020	-	-	-	-	-	-
				May 25, 2021	4.35	1075.10	-	-	-	-
				November 10, 2021	4.81	1074.64	-	-	-	-
SG-110	1081.30	-	-	April 21, 2008	4.60	1076.21	-	-	-	-
				May 6, 2008	-	-	-	-	-	-
				August 5, 2008	-	-	-	-	-	-
				November 10, 2008	4.49	1076.32	-	-	-	-
				February 17, 2009	4.12	1076.69	-	-	-	-
				May 11, 2009	4.39	1076.42	-	-	-	-
				August 5, 2009	4.40	1076.41	-	-	-	-
				November 30, 2009	-	-	-	-	-	-
				February 24, 2010	-	-	-	-	-	-
				May 17, 2010	5.05	1075.76	-	-	-	-
				November 1, 2010	-	-	-	-	-	-
				May 9, 2011	-	-	-	-	-	-
				November 7, 2011	5.34	-	-	-	-	-
				May 29, 2012	5.41	1076.84	-	-	-	-
				November 26, 2012	-	-	-	-	-	-
				May 6, 2013	5.20	-	-	-	-	-
				November 12, 2013	5.19	-	-	-	-	-
				May 27, 2014	5.19	-	-	-	-	-
				November 17, 2014	5.05	-	-	-	-	-
				May 19, 2015	5.25	1076.50	-	-	-	-
				November 16, 2015	5.44	1076.31	-	-	-	-
				May 9, 2016	5.41	1076.34	-	-	-	-
				November 15, 2016	5.50	1076.25	-	-	-	-
				May 16, 2017	4.95	1076.80	-	-	-	-
				November 6, 2017	5.36	1076.39	-	-	-	-
				May 14, 2018	5.65	1076.10	-	-	-	-
				November 12, 2018	4.90	1076.85	-	-	-	-
				May 20, 2019	5.10	1076.65	-	-	-	-
				November 4, 2019	5.21	1076.54	-	-	-	-
				June 15, 2020	5.67	1076.08	-	-	-	-
				November 17, 2020	5.52	1076.23	-	-	-	-
				May 25, 2021	5.68	1076.07	-	-	-	-
				November 10, 2021	5.32	1075.98	-	-	-	-

Table 1
Gauging Data
NYSEG
Oneonta Former MGP Site
Oneonta, New York

Well ID	Measuring Point Elevation	Actual Depth to Bottom	Screen Length	Date	Depth to Water (feet TOC)	Groundwater Elevation	Depth to Product (feet TOC)	Depth to Bottom (feet TOC)	Accumulated Thickness of Sediments (feet)	Percent Screen Occluded By Sediments (%)
SG-111	1078.40	-	-	April 21, 2008	4.22	1074.14	-	-	-	-
				May 6, 2008	-	-	-	-	-	-
				August 5, 2008	-	-	-	-	-	-
				November 10, 2008	4.18	1074.18	-	-	-	-
				February 17, 2009	3.80	1074.56	-	-	-	-
				May 11, 2009	3.97	1074.39	-	-	-	-
				August 5, 2009	3.86	1074.50	-	-	-	-
				November 30, 2009	3.89	1074.47	-	-	-	-
				February 24, 2010	-	-	-	-	-	-
				May 17, 2010	3.98	1074.42	-	-	-	-
				November 1, 2010	3.82	1074.58	-	-	-	-
				May 9, 2011	4.09	1074.31	-	-	-	-
				November 7, 2011	4.15	1074.25	-	-	-	-
				May 29, 2012	4.30	1074.10	-	-	-	-
				November 26, 2012	4.42	1073.98	-	-	-	-
				May 6, 2013	4.30	1074.10	-	-	-	-
				November 12, 2013	4.15	1074.25	-	-	-	-
				May 27, 2014	4.28	1074.12	-	-	-	-
				November 17, 2014	4.05	1074.35	-	-	-	-
				May 19, 2015	4.35	1074.05	-	-	-	-
				November 16, 2015	4.42	1073.98	-	-	-	-
				May 9, 2016	4.49	1073.91	-	-	-	-
				November 15, 2016	5.65	1072.75	-	-	-	-
				May 16, 2017	5.45	1072.95	-	-	-	-
				November 6, 2017	5.37	1073.03	-	-	-	-
				May 14, 2018	5.70	1072.70	-	-	-	-
				November 12, 2018	5.45	1072.95	-	-	-	-
				May 20, 2019	5.40	1073.00	-	-	-	-
				Novemebr 4, 2019	5.47	1072.93	-	-	-	-
				June 15, 2020	5.80	1072.60	-	-	-	-
				November 17, 2020	5.71	1072.69	-	-	-	-
				May 25, 2021	5.80	1072.60	-	-	-	-
				November 10, 2021	5.68	1072.72	-	-	-	-

Notes:

1. All measurements from Top of Casing (TOC).
2. "-" Indicates measurement not taken or not available.
3. Elevations in feet above mean sea level (ft amsl), 1929 National Geodetic Vertical Datum (NGVD).
4. NA - indicates NRW not installed at time of gauging event.
5. Staff gauge SG-105 re-installed Apr 2008 and missing on Nov 2008 gauging event.
6. During the Nov 2009 gauging event SG-105 and SG-110 were destroyed.
7. During the Feb 2010 gauging event SG-111 was not accessible.
8. During the May 2010 site activities;
    - SG-110 and SG-105 were replaced and resurveyed at a later date.
    - the riser height for MW-9502S, AW-01, AW-04, AW-08, AW-11 was adjusted and the wells resurveyed May 9, 2011.
    - MW-0203, MW-0301, MW-8806S, MW-8807S, MW-8808S, MW-9110S, AW-03, AW-04, AW-05, AW-14 and AW-16 were redeveloped. Depth to bottom measurements for these wells list the depth to bottom recorded after redevelopment.
9. During the May 2011 site activities;
    - SG-105, SG-111, MW-9502S, AW-01, AW-04, AW-08, AW-11 locations and elevations resurveyed May 9, 2011.
    - AW-06, AW-09, AW-AW-14, PMW-07 were redeveloped May 31, 2011. Depth to bottom measurements for these wells list depth to bottom recorded after redevelopment.
10. Staff gauge SG-110 missing during November 2010 and May 2011 gauging events.
11. Staff gauge SG-110 reinstalled during November 2011 site visit and discovered missing before it could be resurveyed.
12. Staff gauge SG-110 reinstalled during May 2012 site visit and resurveyed May 30, 2012.
13. Staff gauge SG-110 reinstalled during November 2012 site visit. Survey information not available for inclusion in this report.
14. * Indicates location was installed with a sump. Refer to well construction log for respective sump length.
15. Calculations of percent screen occluded are based on total screen length installed and do not take into consideration length of saturated screen.
16. Gauging data could not be collected from locations PMW-02 and PZ-0801 November 17, 2014 due to standing surface water at time of gauging.
17. Staff Gauge SG-110, Piezometer PZ-0801, and Performance Monitoring Wells PMW-05 and PMW-06 were resurveyed May 20, 2015.
18. Removed 0.12 feet of riser from PMW-02 after the November 16, 2015 gauging event.
19. Removed 0.10 feet of riser from NRW-02 after the November 16, 2015 gauging event.
20. Gauging data could not be collected on November 6, 2018 from locations PMW-01, PMW-02, PMW-03, PMW-05, PMW-07 and PMW-08 due to standing surface water at time of gauging.
21. Due to standing surface water at the time of the November 6, 2017 gauging event, NRW-04 was gauged November 7, 2017.
22. NRW-03, NRW-04, and NRW-05 were abandoned during the May 2019 Annual Site Visit.
23. MW-8806S could not be located during the November 4, 2019 gauging event and was located and gauged on November 6, 2019.
24. Depth to water measurement recorded at PMW-02 on November 4, 2019 was erroneous and omitted from the gauging table.
25. MW-0203 could not be located on May 5, 2021. It was located on May 27, 2021 and observed damaged.
26. On May 25, 2021 the following locations were re-surveyed PMW-02, PMW-07, PMW-12, PZ-0801, PZ-0802, MW-9502S and SG-110.

Table 2
Groundwater Quality Data
NYSEG
Oneonta Former MGP Site
Oneonta, New York

Location ID:	NYSDEC GW Stds & GVs	Units	MW-0201												
Date Collected:			05/29/03	04/22/08	11/11/08	05/12/09	12/02/09	05/20/10	11/02/10	05/10/11	11/08/11	05/30/12	11/29/12	05/09/13	11/14/13
BTEX															
Benzene	1	µg/L	**2,500**	**1,300 D**	**1,700**	**930 D**	**1,900 D**	**1,200**	**2,200 DJ**	**270**	**1,400 D**	**850 J**	**670**	**690**	**500**
Ethylbenzene	5	µg/L	**500**	**550 D**	**660**	**290 D**	**670 D**	**380**	**810 DJ**	**100**	**640 D**	**290 J**	**480**	**350**	**390**
m/p-Xylenes	- -	µg/L	NA	**100**	NA	**36**	**93**	**26 J**	**86**	**6.7 J**	**83**	**28**	**39**	**40**	**24**
o-Xylene	- -	µg/L	NA	**180 D**	NA	**87 D**	**200 D**	**110**	**240 D**	**32**	**200 D**	**110**	**150**	**150**	**120**
Toluene	5	µg/L	**28 J**	**19**	**18 J**	**9.9**	**17**	**11 J**	**16**	**3.3 J**	**15**	**9.6 J**	**9.6 J**	**11**	**8.1 J**
Xylenes (total)	5	µg/L	**530**	NA	**310**	**110 D**	**290 D**	**140**	**350 D**	**39**	**280 D**	**140**	**190**	**190**	**140**
Total BTEX	- -	µg/L	**3,558**	**2,149**	**2,688 J**	**1,340**	**2,877**	**1,731 J**	**3,376**	**412 J**	**2,335**	**1,290 J**	**1,350 J**	**1,241**	**1,038 J**
PAHs															
Acenaphthene	20	µg/L	10 U	0.50 U	0.50 U	0.48 U	0.47 U	0.94 U	0.49 U	4.8 U	4.8 U	4.8 U	4.7 U	4.7 U	4.8 U
Acenaphthylene	- -	µg/L	10 U	0.50 U	0.50 U	0.48 U	0.47 U	0.94 U	0.49 U	4.8 U	4.8 U	4.8 U	4.7 U	4.7 U	4.8 U
Anthracene	50	µg/L	10 U	0.50 U	0.50 U	0.48 U	0.47 U	0.94 U	0.49 U	4.8 U	4.8 U	4.8 U	4.7 U	4.7 U	4.8 U
Benzo(a)anthracene	0.002	µg/L	1.0 U	0.50 U	0.50 U	0.48 U	0.47 U	0.94 U	0.49 U	4.8 U	**0.34 J**	4.8 U	4.7 U	4.7 U	4.8 U
Benzo(a)pyrene	0	µg/L	1.0 U	0.50 U	0.50 U	0.48 U	0.47 U	0.94 U	0.49 U	4.8 U	4.8 U	4.8 U	4.7 U	4.7 U	4.8 U
Benzo(b)fluoranthene	0.002	µg/L	1.0 U	0.50 U	0.50 U	0.48 U	0.47 U	0.94 U	0.49 U	4.8 U	4.8 U	4.8 U	4.7 U	4.7 U	4.8 U
Benzo(g,h,i)perylene	- -	µg/L	10 U	0.50 U	0.50 U	0.48 U	0.47 U	0.94 U	0.49 U	4.8 U	4.8 U	4.8 U	4.7 U	4.7 U	4.8 U
Benzo(k)fluoranthene	0.002	ug/L	1 U	0.5 UJ	0.5 U	0.48 U	0.47 U	0.94 U	0.49 U	4.8 U	4.8 U	4.8 U	4.7 U	4.7 U	4.8 U
Chrysene	0.002	µg/L	10 U	0.50 U	0.50 U	0.48 U	0.47 U	0.94 U	0.49 U	4.8 U	4.8 U	4.8 U	4.7 U	4.7 U	4.8 U
Dibenzo(a,h)anthracene	- -	ug/L	1 U	0.5 U	0.5 U	0.48 U	0.47 U	0.94 U	0.49 U	4.8 U	4.8 U	4.8 U	4.7 U	4.7 U	4.8 U
Fluoranthene	50	µg/L	10 U	0.50 U	0.50 U	0.48 U	0.47 U	0.94 U	0.49 U	4.8 U	4.8 U	4.8 U	4.7 U	4.7 U	4.8 U
Fluorene	50	µg/L	10 U	0.50 U	0.50 U	0.48 U	0.47 U	0.94 U	0.49 U	4.8 U	4.8 U	4.8 U	4.7 U	4.7 U	4.8 U
Indeno(1,2,3-cd)pyrene	0.002	µg/L	1.0 U	0.50 U	0.50 U	0.48 U	0.47 U	0.94 U	0.49 U	4.8 U	4.8 U	4.8 U	4.7 U	4.7 U	4.8 U
Naphthalene	10	µg/L	**7.8 J**	**460 D**	**470 D**	**54**	**390 D**	**160**	**260 D**	4.8 U	**560 D**	**270 D**	**530 D**	**390**	**400 D**
Phenanthrene	50	µg/L	10 U	0.50 U	0.50 U	0.48 U	0.47 U	0.94 U	0.49 U	4.8 U	4.8 U	4.8 U	4.7 U	4.7 U	4.8 U
Pyrene	50	µg/L	10 U	0.50 U	0.50 U	0.48 U	0.47 U	0.94 U	0.49 U	4.8 U	4.8 U	4.8 U	4.7 U	4.7 U	4.8 U
Total PAHs	- -	µg/L	**7.8**	**460 J**	**470 J**	**54**	**390 J**	**160**	**260 J**	ND	**560 J**	**270 D**	**530 D**	**390**	**400 D**

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Table 2
Groundwater Quality Data
NYSEG
Oneonta Former MGP Site
Oneonta, New York

Location ID:	NYSDEC GW Stds & GVs	Units	MW-0201												
Date Collected:			05/28/14	11/18/14	05/19/15	11/17/15	05/10/16	11/15/16	05/16/17	11/07/17	05/15/18	11/13/18	05/21/19	11/05/19	06/16/20
BTEX															
Benzene	1	µg/L	**310**	**430**	**110**	**180**	**190**	**470**	**250**	**120**	**94**	**290 D**	**140**	**210**	**92 D**
Ethylbenzene	5	µg/L	**180**	**290**	**46**	**91**	**63**	**250**	**91**	**64**	**24**	**140 D**	**55**	**180**	**60**
m/p-Xylenes	- -	µg/L	**13**	**28**	10 U	**4.8 J**	**6.1 J**	**44**	**12**	**3.7**	**3**	**21**	**8**	**32**	**9.7**
o-Xylene	- -	µg/L	**79**	**120**	**31**	**68**	**54**	**140**	**75**	**54**	**31**	**99 D**	**46**	**94**	**46**
Toluene	5	µg/L	**4.8 J**	**8.3**	5 U	**3.2 J**	**3.3 J**	**8.2**	**4.7 J**	**2.8**	**1.7**	10 U	**2.5 J**	**5.3 J**	**2.4**
Xylenes (total)	5	µg/L	**92**	**150**	**31**	**73**	**60**	**180**	**87**	**58**	**34**	**120 D**	**54**	**130**	**56**
Total BTEX	- -	µg/L	**587 J**	**878**	**187**	**347 J**	**316 J**	**908**	**433 J**	**245**	**154**	**550 D**	**252 J**	**525 J**	**210 D**
PAHs															
Acenaphthene	20	µg/L	4.5 U	270 U	4.9 U	4.8 U	4.8 U	4.8 U	5 U	50 U	5 U	5 U	5 U	5 U	110 U
Acenaphthylene	- -	µg/L	4.5 U	270 U	4.9 U	4.8 U	4.8 U	4.8 U	5 U	50 U	5 U	5 U	5 U	5 U	110 U
Anthracene	50	µg/L	4.5 U	270 U	4.9 U	4.8 U	4.8 U	4.8 U	5 U	50 U	5 U	5 U	5 U	5 U	110 U
Benzo(a)anthracene	0.002	µg/L	4.5 U	270 U	4.9 U	4.8 U	4.8 U	4.8 U	5 U	50 U	5 U	5 U	5 U	5 U	110 U
Benzo(a)pyrene	0	µg/L	4.5 U	270 U	4.9 U	4.8 U	4.8 U	4.8 U	5 U	50 U	5 U	5 U	5 U	5 U	110 U
Benzo(b)fluoranthene	0.002	µg/L	4.5 U	270 U	4.9 U	4.8 U	4.8 U	4.8 U	5 U	50 U	5 U	5 U	5 U	5 U	110 U
Benzo(g,h,i)perylene	- -	µg/L	4.5 U	270 U	4.9 U	4.8 U	4.8 U	4.8 U	5 U	50 U	5 U	5 U	5 U	5 U	110 U
Benzo(k)fluoranthene	0.002	ug/L	4.5 U	270 U	4.9 U	4.8 U	4.8 U	4.8 U	5 U	50 U	5 U	5 U	5 U	5 U	110 U
Chrysene	0.002	µg/L	4.5 U	270 UJ	4.9 U	4.8 U	4.8 U	4.8 U	5 U	50 U	5 U	5 U	5 U	5 U	110 U
Dibenzo(a,h)anthracene	- -	ug/L	4.5 U	270 U	4.9 U	4.8 U	4.8 U	4.8 U	5 U	50 U	5 U	5 U	5 U	5 U	110 U
Fluoranthene	50	µg/L	4.5 U	270 U	4.9 U	4.8 U	4.8 U	4.8 U	5 U	50 U	5 U	5 U	5 U	5 U	110 U
Fluorene	50	µg/L	4.5 U	270 U	4.9 U	4.8 U	4.8 U	4.8 U	5 U	50 U	5 U	5 U	5 U	5 U	110 U
Indeno(1,2,3-cd)pyrene	0.002	µg/L	4.5 U	270 UJ	4.9 U	4.8 U	4.8 U	4.8 U	5 U	50 U	5 U	5 U	5 U	5 U	110 U
Naphthalene	10	µg/L	**230 D**	**460**	**4.3 J**	**280 D**	**120**	**580 D**	**210 D**	**390**	5 U	**360 D**	5 U	**380 D**	110 U
Phenanthrene	50	µg/L	4.5 U	270 U	4.9 U	4.8 U	4.8 U	4.8 U	5 U	50 U	5 U	5 U	5 U	5 U	110 U
Pyrene	50	µg/L	4.5 U	270 U	4.9 U	4.8 U	4.8 U	4.8 U	5 U	50 U	5 U	5 U	5 U	5 U	110 U
Total PAHs	- -	µg/L	**230 D**	**460**	**4.3 J**	**280**	**120**	**580**	**210**	**390**	ND	**360 D**	ND	**380 D**	ND

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Table 2
Groundwater Quality Data
NYSEG
Oneonta Former MGP Site
Oneonta, New York

Location ID:	NYSDEC GW Stds & GVs	Units	MW-0201			MW-0203									
Date Collected:			11/18/20	05/26/21	11/11/21	05/29/03	04/23/08	11/11/08	05/12/09	12/01/09	05/18/10	11/02/10	11/02/10	05/10/11	11/08/11
BTEX															
Benzene	1	µg/L	**120**	**64**	**82**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	5	µg/L	**92**	**45**	**97**	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m/p-Xylenes	- -	µg/L	**18**	**6.9**	**13**	NA	2.0 U	NA	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
o-Xylene	- -	µg/L	**55**	**35**	**63**	NA	1.0 U	NA	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	5	µg/L	**3**	**2**	**3.3**	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Xylenes (total)	5	µg/L	**73**	**42**	**76**	5.0 U	NA	3.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Total BTEX	- -	µg/L	**288**	**153**	**258**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PAHs															
Acenaphthene	20	µg/L	5 U	5 U	5 U	10 U	0.50 U	0.50 U	0.47 U	0.47 U	0.50 U	0.48 U	0.48 U	4.8 U	4.7 U
Acenaphthylene	- -	µg/L	5 U	5 U	5 U	10 U	0.50 U	0.50 U	0.47 U	0.47 U	0.50 U	0.48 U	0.48 U	4.8 U	4.7 U
Anthracene	50	µg/L	5 U	5 U	5 U	10 U	0.50 U	0.50 U	0.47 U	0.47 U	0.50 U	0.48 U	0.48 U	4.8 U	4.7 U
Benzo(a)anthracene	0.002	µg/L	5 U	5 U	5 U	1.0 U	0.50 U	0.50 U	0.47 U	0.47 UB	0.50 U	0.48 U	0.48 U	4.8 U	4.7 U
Benzo(a)pyrene	0	µg/L	5 U	5 U	5 U	1.0 U	0.50 U	0.50 U	0.47 U	**0.37 J**	0.50 U	0.48 U	0.48 U	4.8 U	4.7 U
Benzo(b)fluoranthene	0.002	µg/L	5 U	5 U	5 U	1.0 U	0.50 U	0.50 U	0.47 U	0.47 U	0.50 U	0.48 U	0.48 U	4.8 U	4.7 U
Benzo(g,h,i)perylene	- -	µg/L	5 U	5 U	5 U	10 U	0.50 U	0.50 U	0.47 U	**0.24 J**	0.50 U	0.48 U	0.48 U	4.8 U	4.7 U
Benzo(k)fluoranthene	0.002	ug/L	5 U	5 U	5 U	1 U	0.5 UJ	0.5 U	0.47 U	0.47 U	0.5 U	0.48 U	0.48 U	4.8 U	4.7 U
Chrysene	0.002	µg/L	5 U	5 U	5 U	10 U	0.50 U	0.50 U	0.47 U	0.47 UB	0.50 U	0.48 U	0.48 U	4.8 U	4.7 U
Dibenzo(a,h)anthracene	- -	ug/L	5 U	5 U	5 U	1 U	0.5 U	0.5 U	0.47 U	0.47 U	0.5 U	0.48 U	0.48 U	4.8 U	4.7 U
Fluoranthene	50	µg/L	5 U	5 U	5 U	10 U	0.50 U	0.50 U	0.47 U	0.47 U	0.50 U	0.48 U	0.48 U	4.8 U	4.7 U
Fluorene	50	µg/L	5 U	5 U	5 U	10 U	0.50 U	0.50 U	0.47 U	0.47 U	0.50 U	0.48 U	0.48 U	4.8 U	4.7 U
Indeno(1,2,3-cd)pyrene	0.002	µg/L	5 U	5 U	5 U	1.0 U	0.50 U	0.50 U	0.47 U	0.47 U	0.50 U	0.48 U	0.48 U	4.8 U	4.7 U
Naphthalene	10	µg/L	**0.9 J**	5 U	**190 D**	10 U	0.50 U	0.50 U	0.47 U	0.47 U	0.50 U	0.48 U	0.48 U	4.8 U	4.7 U
Phenanthrene	50	µg/L	5 U	5 U	5 U	10 U	0.50 U	0.50 U	0.47 U	0.47 U	0.50 U	0.48 U	0.48 U	4.8 U	4.7 U
Pyrene	50	µg/L	5 U	5 U	5 U	10 U	0.50 U	0.50 U	0.47 U	0.47 U	0.50 U	0.48 U	0.48 U	4.8 U	4.7 U
Total PAHs	- -	µg/L	**0.9 J**	ND	**190 D**	ND	ND	ND	ND	**0.61 J**	ND	ND	ND	ND	ND

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Table 2
Groundwater Quality Data
NYSEG
Oneonta Former MGP Site
Oneonta, New York

Location ID:	NYSDEC GW Stds & GVs	Units	MW-0203												
Date Collected:			05/31/12	11/29/12	05/10/13	11/14/13	05/29/14	11/18/14	05/19/15	11/18/15	05/10/16	11/15/16	05/17/17	11/07/17	05/15/18
BTEX															
Benzene	1	µg/L	1.0 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	1.0 U	**0.9 J**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
m/p-Xylenes	- -	µg/L	2.0 U	**0.72 J**	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
o-Xylene	- -	µg/L	1.0 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	1.0 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	µg/L	2.0 U	**0.72 J**	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	3 U	2 U
Total BTEX	- -	µg/L	ND	**1.62 J**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PAHs															
Acenaphthene	20	µg/L	4.7 U	4.7 U	4.8 U	5.2 U	4.6 U	4.8 U	5 U	4.8 U	4.8 U	4.6 U	5 U	5 U	5 U
Acenaphthylene	- -	µg/L	4.7 U	4.7 U	4.8 U	5.2 U	4.6 U	4.8 U	5 U	4.8 U	4.8 U	4.6 U	5 U	5 U	5 U
Anthracene	50	µg/L	4.7 U	4.7 U	4.8 U	5.2 U	4.6 U	4.8 U	5 U	4.8 U	4.8 U	4.6 U	5 U	5 U	5 U
Benzo(a)anthracene	0.002	µg/L	4.7 U	4.7 U	4.8 U	5.2 U	4.6 U	4.8 U	5 U	4.8 U	4.8 U	4.6 U	5 U	5 U	5 U
Benzo(a)pyrene	0	µg/L	4.7 U	4.7 U	4.8 U	5.2 U	4.6 U	4.8 U	5 U	4.8 U	4.8 U	4.6 U	5 U	5 U	5 U
Benzo(b)fluoranthene	0.002	µg/L	4.7 U	4.7 U	4.8 U	5.2 U	4.6 U	4.8 U	5 U	4.8 U	4.8 U	4.6 U	5 U	5 U	5 U
Benzo(g,h,i)perylene	- -	µg/L	4.7 U	4.7 U	4.8 U	5.2 U	4.6 U	4.8 U	5 U	4.8 U	4.8 U	4.6 U	5 U	5 U	5 U
Benzo(k)fluoranthene	0.002	ug/L	4.7 U	4.7 U	4.8 U	5.2 U	4.6 U	4.8 U	5 U	4.8 U	4.8 U	4.6 U	5 U	5 U	5 U
Chrysene	0.002	µg/L	4.7 U	4.7 U	4.8 U	5.2 U	4.6 U	4.8 UJ	5 U	4.8 U	4.8 U	4.6 U	5 U	5 U	5 U
Dibenzo(a,h)anthracene	- -	ug/L	4.7 U	4.7 U	4.8 U	5.2 U	4.6 U	4.8 U	5 U	4.8 U	4.8 U	4.6 U	5 U	5 U	5 U
Fluoranthene	50	µg/L	4.7 U	4.7 U	4.8 U	5.2 U	4.6 U	4.8 U	5 U	4.8 U	4.8 U	4.6 U	5 U	5 U	5 U
Fluorene	50	µg/L	4.7 U	4.7 U	4.8 U	5.2 U	4.6 U	4.8 U	5 U	4.8 U	4.8 U	4.6 U	5 U	5 U	5 U
Indeno(1,2,3-cd)pyrene	0.002	µg/L	4.7 U	4.7 U	4.8 U	5.2 U	4.6 U	4.8 UJ	5 U	4.8 U	4.8 U	4.6 U	5 U	5 U	5 U
Naphthalene	10	µg/L	4.7 U	**1.4 J**	4.8 U	5.2 U	4.6 U	4.8 U	5 U	4.8 U	4.8 U	4.6 U	5 U	5 U	5 U
Phenanthrene	50	µg/L	4.7 U	4.7 U	4.8 U	5.2 U	4.6 U	4.8 U	5 U	4.8 U	4.8 U	4.6 U	5 U	5 U	5 U
Pyrene	50	µg/L	4.7 U	4.7 U	4.8 U	5.2 U	4.6 U	4.8 U	5 U	4.8 U	4.8 U	4.6 U	5 U	5 U	5 U
Total PAHs	- -	µg/L	ND	**1.4 J**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

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Location ID:	NYSDEC GW Stds & GVs	Units	MW-0203					MW-0301							
Date Collected:			11/13/18	05/21/19	11/05/19	06/16/20	11/18/20	05/29/03	04/22/08	11/12/08	05/12/09	12/01/09	05/18/10	11/02/10	05/10/11
BTEX															
Benzene	1	µg/L	1 U	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	5	µg/L	1 U	1 U	1 U	1 U	1 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m/p-Xylenes	- -	µg/L	2 U	2 U	2 U	2 U	2 U	NA	2.0 U	NA	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
o-Xylene	- -	µg/L	1 U	1 U	1 U	1 U	1 U	NA	1.0 U	NA	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	5	µg/L	1 U	1 U	1 U	1 U	1 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Xylenes (total)	5	µg/L	2 U	2 U	2 U	2 U	2 U	5.0 U	NA	3.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Total BTEX	- -	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PAHs															
Acenaphthene	20	µg/L	5 U	5 U	5 U	5.4 U	5 U	10 U	0.50 U	0.50 U	0.48 U	0.48 U	0.52 U	0.47 U	4.7 U
Acenaphthylene	- -	µg/L	5 U	5 U	5 U	5.4 U	5 U	10 U	0.50 U	0.50 U	0.48 U	0.48 U	0.52 U	0.47 U	4.7 U
Anthracene	50	µg/L	5 U	5 U	5 U	5.4 U	5 U	10 U	0.50 U	0.50 U	0.48 U	0.48 U	0.52 U	0.47 U	4.7 U
Benzo(a)anthracene	0.002	µg/L	5 U	5 U	5 U	5.4 U	5 U	1.0 U	0.50 U	0.50 U	0.48 U	0.48 U	0.52 U	0.47 U	4.7 U
Benzo(a)pyrene	0	µg/L	5 U	5 U	5 U	5.4 U	5 U	1.0 U	0.50 U	0.50 U	0.48 U	0.48 U	0.52 U	0.47 U	4.7 U
Benzo(b)fluoranthene	0.002	µg/L	5 U	5 U	5 U	5.4 U	5 U	1.0 U	0.50 U	0.50 U	0.48 U	0.48 U	0.52 U	0.47 U	4.7 U
Benzo(g,h,i)perylene	- -	µg/L	5 U	5 U	5 U	5.4 U	5 U	10 U	0.50 U	0.50 U	0.48 U	0.48 U	0.52 U	0.47 U	4.7 U
Benzo(k)fluoranthene	0.002	ug/L	5 U	5 U	5 U	5.4 U	5 U	1 U	0.5 UJ	0.5 U	0.48 U	0.48 U	0.52 U	0.47 U	4.7 U
Chrysene	0.002	µg/L	5 U	5 U	5 U	5.4 U	5 U	10 U	0.50 U	0.50 U	0.48 U	0.48 U	0.52 U	0.47 U	4.7 U
Dibenzo(a,h)anthracene	- -	ug/L	5 U	5 U	5 U	5.4 U	5 U	1 U	0.5 U	0.5 U	0.48 U	0.48 U	0.52 U	0.47 U	4.7 U
Fluoranthene	50	µg/L	5 U	5 U	5 U	5.4 U	5 U	10 U	0.50 U	0.50 U	0.48 U	0.48 U	0.52 U	0.47 U	4.7 U
Fluorene	50	µg/L	5 U	5 U	5 U	5.4 U	5 U	10 U	0.50 U	0.50 U	0.48 U	0.48 U	0.52 U	0.47 U	4.7 U
Indeno(1,2,3-cd)pyrene	0.002	µg/L	5 U	5 U	5 U	5.4 U	5 U	1.0 U	0.50 U	0.50 U	0.48 U	0.48 U	0.52 U	0.47 U	4.7 U
Naphthalene	10	µg/L	5 U	5 U	5 U	5.4 U	**1.1 J**	10 U	0.50 U	0.50 U	0.48 U	0.48 U	0.52 U	0.47 U	4.7 U
Phenanthrene	50	µg/L	5 U	5 U	5 U	5.4 UB	5 U	10 U	0.50 U	0.50 U	0.48 U	0.48 U	0.52 U	0.47 U	4.7 U
Pyrene	50	µg/L	5 U	5 U	5 U	5.4 U	5 U	10 U	0.50 U	0.50 U	0.48 U	0.48 U	0.52 U	0.47 U	4.7 U
Total PAHs	- -	µg/L	ND	ND	ND	ND	**1.1 J**	ND	ND	ND	ND	ND	ND	ND	ND

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Table 2
Groundwater Quality Data
NYSEG
Oneonta Former MGP Site
Oneonta, New York

Location ID:	NYSDEC GW Stds & GVs	Units	MW-0301						MW-8604S						
Date Collected:			11/08/11	05/30/12	11/29/12	05/09/13	11/15/13	05/29/14	05/23/03	04/22/08	11/11/08	05/13/09	12/01/09	05/20/10	11/03/10
BTEX															
Benzene	1	µg/L	1.0 U	1.0 U	1 U	1 U	1 U	1 U	**360**	**22**	**33**	**43**	**24**	**20**	**31**
Ethylbenzene	5	µg/L	1.0 U	1.0 U	1 U	1 U	1 U	1 U	**230**	**31**	**35**	**62**	**35**	**21**	**18**
m/p-Xylenes	- -	µg/L	2.0 U	2.0 U	2 U	2 U	2 U	2 U	NA	**1.9 J**	NA	**6.8**	**2.8**	**2.3**	**2.0**
o-Xylene	- -	µg/L	1.0 U	1.0 U	1 U	1 U	1 U	1 U	NA	**9.3**	NA	**17**	**11**	**10**	**5.2**
Toluene	5	µg/L	1.0 U	1.0 U	1 U	1 U	1 U	1 U	**3.7 J**	**0.55 J**	**0.78 J**	**1.4**	**0.86 J**	**0.87 J**	1.0 U
Xylenes (total)	5	µg/L	2.0 U	2.0 U	2 U	2 U	2 U	2 U	**32**	NA	**10**	**24**	**14**	**13**	**7.1**
Total BTEX	- -	µg/L	ND	ND	ND	ND	ND	ND	**626 J**	**54 J**	**79 J**	**130**	**74 J**	**55 J**	**56**
PAHs															
Acenaphthene	20	µg/L	4.8 U	4.7 U	4.8 U	4.7 U	4.7 U	5.1 U	**3.3 J**	**9.0**	**41**	**22**	**24**	**4.0 J**	**20**
Acenaphthylene	- -	µg/L	4.8 U	4.7 U	4.8 U	4.7 U	4.7 U	5.1 U	**0.80 J**	**0.80**	**2.0**	**1.2**	**0.81**	**0.21 J**	**0.44 J**
Anthracene	50	µg/L	4.8 U	4.7 U	4.8 U	4.7 U	4.7 U	5.1 U	10 U	0.50 U	**1.0**	0.47 U	**0.31 J**	0.50 U	**0.22 J**
Benzo(a)anthracene	0.002	µg/L	4.8 U	4.7 U	4.8 U	4.7 U	4.7 U	5.1 U	1.0 U	0.50 U	0.50 U	0.47 U	0.47 UB	0.50 U	0.47 U
Benzo(a)pyrene	0	µg/L	4.8 U	4.7 U	4.8 U	4.7 U	4.7 UJ	5.1 U	1.0 U	0.50 U	0.50 U	0.47 U	0.47 U	0.50 U	0.47 U
Benzo(b)fluoranthene	0.002	µg/L	4.8 U	4.7 U	4.8 U	4.7 U	4.7 UJ	5.1 U	1.0 U	0.50 U	0.50 U	0.47 U	0.47 U	0.50 U	0.47 U
Benzo(g,h,i)perylene	- -	µg/L	4.8 U	4.7 U	4.8 U	4.7 U	4.7 UJ	5.1 U	10 U	0.50 U	0.50 U	0.47 U	0.47 U	0.50 U	0.47 U
Benzo(k)fluoranthene	0.002	ug/L	4.8 U	4.7 U	4.8 U	4.7 U	4.7 UJ	5.1 U	1 U	0.5 UJ	0.5 U	0.47 U	0.47 U	0.5 U	0.47 U
Chrysene	0.002	µg/L	4.8 U	4.7 U	4.8 U	4.7 U	NA	NA	10 U	0.50 U	0.50 U	0.47 U	0.47 UB	0.50 U	0.47 U
Dibenzo(a,h)anthracene	- -	ug/L	4.8 U	4.7 U	4.8 U	4.7 U	4.7 UJ	5.1 U	1 U	0.5 U	0.5 U	0.47 U	0.47 U	0.5 U	0.47 U
Fluoranthene	50	µg/L	4.8 U	4.7 U	4.8 U	4.7 U	4.7 U	5.1 U	10 U	0.50 U	**0.90**	0.47 U	**0.24 J**	0.50 U	**0.18 J**
Fluorene	50	µg/L	4.8 U	4.7 U	4.8 U	4.7 U	4.7 U	5.1 U	**2.0 J**	**2.0**	**7.0**	**3.9**	**3.6**	**0.61**	**3.4**
Indeno(1,2,3-cd)pyrene	0.002	µg/L	4.8 U	4.7 U	4.8 U	4.7 U	4.7 UJ	5.1 U	1.0 U	0.50 U	0.50 U	0.47 U	0.47 U	0.50 U	0.47 U
Naphthalene	10	µg/L	4.8 U	4.7 U	4.8 U	4.7 U	4.7 U	5.1 U	**53**	**14**	**34**	**33**	**32 J**	**7.2 J**	**24**
Phenanthrene	50	µg/L	4.8 U	4.7 U	4.8 U	4.7 U	4.7 U	5.1 U	**0.70 J**	**0.40 J**	**5.0**	**1.3**	**1.7**	**0.22 J**	**1.6**
Pyrene	50	µg/L	4.8 U	4.7 U	4.8 U	4.7 U	4.7 U	5.1 U	10 U	0.50 U	**0.70**	0.47 U	**0.19 J**	0.50 U	**0.14 J**
Total PAHs	- -	µg/L	ND	ND	ND	ND	ND	ND	**60 J**	**26 J**	**92 J**	**62 J**	**63 J**	**12 J**	**50 J**

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Table 2
Groundwater Quality Data
NYSEG
Oneonta Former MGP Site
Oneonta, New York

Location ID:	NYSDEC GW Stds & GVs	Units	MW-8604S												
Date Collected:			05/11/11	11/08/11	05/31/12	11/30/12	05/10/13	11/14/13	05/29/14	11/19/14	05/21/15	11/17/15	05/10/16	11/15/16	05/16/17
BTEX															
Benzene	1	µg/L	**14**	**3.2**	**5.8**	**0.67 J**	**2.5**	**0.72 J**	**3.9**	**2.1**	**2.2**	**2.1**	**2.6**	**3.1**	**1.6**
Ethylbenzene	5	µg/L	1.0 U	**1.1**	**1.7**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**5.5**	1 U	1 U
m/p-Xylenes	- -	µg/L	2.0 U	2.0 U	2.0 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	**0.7 J**	2 U	2 U
o-Xylene	- -	µg/L	**0.83 J**	**2.0**	**1.9**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**2.4**	1 U	1 U
Toluene	5	µg/L	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Xylenes (total)	5	µg/L	**0.83 J**	**2.0**	**1.9 J**	2 U	2 U	2 U	2 U	2 U	2 U	2 U	**3.1**	2 U	2 U
Total BTEX	- -	µg/L	**15 J**	**6.3**	**9.4 J**	**0.67 J**	**2.5**	**0.72 J**	**3.9**	**2.1**	**2.2**	**2.1**	**11.2**	**3.1**	**1.6**
PAHs															
Acenaphthene	20	µg/L	**2.3 J**	**7.9**	**7.3**	**7.9**	**1.5 J**	**16**	**6.1**	**14**	**8.8**	**11**	**3.7 J**	**12**	**5.3**
Acenaphthylene	- -	µg/L	4.8 U	**0.52 J**	4.7 U	**1.2 J**	4.7 U	**2 J**	**0.42 J**	**1.8 J**	**0.73 J**	**1 J**	**0.49 J**	**0.75 J**	5 U
Anthracene	50	µg/L	4.8 U	4.7 U	4.7 U	4.8 U	4.7 U	4.7 U	4.9 U	4.8 U	5.1 U	4.7 U	5 U	4.8 U	5 U
Benzo(a)anthracene	0.002	µg/L	4.8 U	4.7 U	4.7 U	4.8 U	4.7 U	4.7 U	4.9 U	4.8 U	5.1 U	4.7 U	5 U	4.8 U	5 U
Benzo(a)pyrene	0	µg/L	4.8 U	4.7 U	4.7 U	4.8 U	4.7 U	4.7 U	4.9 U	4.8 U	5.1 U	4.7 U	5 U	4.8 U	5 U
Benzo(b)fluoranthene	0.002	µg/L	4.8 U	4.7 U	4.7 U	4.8 U	4.7 U	4.7 U	4.9 U	4.8 U	5.1 U	4.7 U	5 U	4.8 U	5 U
Benzo(g,h,i)perylene	- -	µg/L	4.8 U	4.7 U	4.7 U	4.8 U	4.7 U	4.7 U	4.9 U	4.8 U	5.1 U	4.7 U	5 UJ	4.8 U	5 U
Benzo(k)fluoranthene	0.002	ug/L	4.8 U	4.7 U	4.7 U	4.8 U	4.7 U	4.7 U	4.9 U	4.8 U	5.1 U	4.7 U	5 U	4.8 U	5 U
Chrysene	0.002	µg/L	4.8 U	4.7 U	4.7 U	4.8 U	4.7 U	4.7 U	4.9 U	4.8 UJ	5.1 U	4.7 U	5 U	4.8 U	5 U
Dibenzo(a,h)anthracene	- -	ug/L	4.8 U	4.7 U	4.7 U	4.8 U	4.7 U	4.7 U	4.9 U	4.8 U	5.1 U	4.7 U	5 U	4.8 U	5 U
Fluoranthene	50	µg/L	4.8 U	4.7 U	4.7 U	4.8 U	4.7 U	**0.45 J**	4.9 U	**0.39 J**	5.1 U	4.7 U	5 U	**0.6 J**	5 U
Fluorene	50	µg/L	4.8 U	**1.3 J**	**1.4 J**	**1.5 J**	4.7 U	**2.4 J**	**1.2 J**	**2.3 J**	**1.6 J**	**2.1 J**	**0.99 J**	**1.4 J**	**1.1 J**
Indeno(1,2,3-cd)pyrene	0.002	µg/L	4.8 U	4.7 U	4.7 U	4.8 U	4.7 U	4.7 U	4.9 U	4.8 UJ	5.1 U	4.7 U	5 UJ	4.8 U	5 U
Naphthalene	10	µg/L	**1.6 J**	**3.6 J**	4.7 U	4.8 U	4.7 U	4.7 U	4.9 U	4.8 U	5.1 U	4.7 U	**2.6 J**	4.8 U	5 U
Phenanthrene	50	µg/L	4.8 U	**0.61 J**	**0.63 J**	4.8 U	4.7 U	4.7 U	4.9 U	4.8 U	5.1 U	4.7 U	5 U	4.8 U	5 U
Pyrene	50	µg/L	4.8 U	4.7 U	4.7 U	**0.34 J**	4.7 U	**0.42 J**	4.9 U	**0.34 J**	5.1 U	4.7 U	5 U	**0.54 J**	5 U
Total PAHs	- -	µg/L	**3.9 J**	**14 J**	**9.3 J**	**11 J**	**1.5 J**	**21.3 J**	**7.72 J**	**18.8 J**	**11.1 J**	**14.1 J**	**7.78 J**	**15.3 J**	**6.4 J**

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Table 2
Groundwater Quality Data
NYSEG
Oneonta Former MGP Site
Oneonta, New York

Location ID:	NYSDEC GW Stds & GVs	Units	MW-8604S									MW-8806S			
Date Collected:			11/08/17	05/15/18	11/13/18	05/21/19	11/06/19	06/16/20	11/18/20	05/26/21	11/11/21	05/23/03	04/23/08	11/12/08	05/12/09
BTEX															
Benzene	1	µg/L	**1.6**	**1.1**	**2.4**	**0.8 J**	1 U	**1.3**	1 U	1 U	1 U	**580**	1.0 U	**150 D**	1.0 U
Ethylbenzene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**1.8 J**	1.0 U	**26**	1.0 U
m/p-Xylenes	- -	µg/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	NA	2.0 U	NA	2.0 U
o-Xylene	- -	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	1.0 U	NA	1.0 U
Toluene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**2.1 J**	1.0 U	**4.4**	1.0 U
Xylenes (total)	5	µg/L	3 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	**74**	NA	**52**	2.0 U
Total BTEX	- -	µg/L	**1.6**	**1.1**	**2.4**	**0.8 J**	ND	**1.3**	ND	ND	ND	**658**	ND	**232**	ND
PAHs															
Acenaphthene	20	µg/L	**15**	**5.5**	7.6	**3.2 J**	5 U	**11**	**3.6 J**	**1.2 J**	**1.8 J**	**2.8**	0.50 U	**10**	0.48 U
Acenaphthylene	- -	µg/L	**1.4 J**	**0.5 J**	**1.1 J**	5 U	**0.4 J**	**0.78 J**	**0.6 J**	5.2 U	**0.59 J**	**1.6 J**	0.50 U	**0.90**	0.48 U
Anthracene	50	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5.2 U	5 U	10 U	0.50 U	0.50 U	0.48 U
Benzo(a)anthracene	0.002	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5.2 U	5 U	1.0 U	0.50 U	0.50 U	0.48 U
Benzo(a)pyrene	0	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5.2 U	5 U	1.0 U	0.50 U	0.50 U	0.48 U
Benzo(b)fluoranthene	0.002	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5.2 U	5 U	1.0 U	0.50 U	0.50 U	0.48 U
Benzo(g,h,i)perylene	- -	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5.2 U	5 U	10 U	0.50 U	0.50 U	0.48 U
Benzo(k)fluoranthene	0.002	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5.2 U	5 U	1 U	0.5 UJ	0.5 U	0.48 U
Chrysene	0.002	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5.2 U	5 U	10 U	0.50 U	0.50 U	0.48 U
Dibenzo(a,h)anthracene	- -	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5.2 U	5 U	1 U	0.5 U	0.5 U	0.48 U
Fluoranthene	50	µg/L	**0.66 J**	**5 U**	**0.52 J**	5 U	5 U	**0.45 J**	**0.55 J**	5.2 U	5 U	10 U	0.50 U	0.50 U	0.48 U
Fluorene	50	µg/L	**1.7 J**	**0.97 J**	**0.92 J**	**0.44 J**	5 U	**1.6 J**	5 U	5.2 U	5 U	**0.20 J**	0.50 U	**0.30 J**	0.48 U
Indeno(1,2,3-cd)pyrene	0.002	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5.2 U	5 U	1.0 U	0.50 U	0.50 U	0.48 U
Naphthalene	10	µg/L	5 U	5 U	5 U	5 U	5 U	**3.1 J**	5 U	5.2 U	5 U	**130**	0.50 U	**7.0**	0.48 U
Phenanthrene	50	µg/L	5 U	5 U	5 U	5 U	5 U	5 UB	5 U	5.2 U	5 U	**0.40 J**	0.50 U	**0.60**	0.48 U
Pyrene	50	µg/L	**0.62 J**	**5 U**	**0.46 J**	5 U	**0.56 J**	5 U	**0.57 J**	5.2 U	5 U	10 U	0.50 U	0.50 U	0.48 U
Total PAHs	- -	µg/L	**19.4 J**	**7.0 J**	**10.6 J**	**3.64 J**	**0.96 J**	**16.9 J**	**5.32 J**	**1.2 J**	**2.39 J**	**140 J**	ND	**19 J**	ND

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Table 2
Groundwater Quality Data
NYSEG
Oneonta Former MGP Site
Oneonta, New York

Location ID:	NYSDEC GW Stds & GVs	Units	MW-8806S												
Date Collected:			12/01/09	05/18/10	11/02/10	05/10/11	11/09/11	05/31/12	11/28/12	05/08/13	11/15/13	05/28/14	11/19/14	05/19/15	11/17/15
BTEX															
Benzene	1	µg/L	**14**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**4.5 J**	1 U	**810 DJ**	1 U	**120 D**	1 U	1 U
Ethylbenzene	5	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**4**	1 U	**200 D**	1 U	**49**	1 U	1 U
m/p-Xylenes	- -	µg/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	**0.92 J**	2 U	**100**	2 U	**28**	2 U	2 U
o-Xylene	- -	µg/L	**1.4**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**1.3**	1 U	**220 D**	1 U	**49**	1 U	1 U
Toluene	5	µg/L	**0.52 J**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	**18**	1 U	**8.1**	1 U	1 U
Xylenes (total)	5	µg/L	**2.0**	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	**2.2**	2 U	**310 D**	2 U	**77**	2 U	2 U
Total BTEX	- -	µg/L	**17 J**	ND	ND	ND	ND	ND	**11 J**	ND	**1,338 J**	ND	**254**	ND	ND
PAHs															
Acenaphthene	20	µg/L	0.47 U	0.48 U	0.47 U	4.8 U	4.8 U	5.2 U	**1.2 J**	4.8 U	**36**	4.5 U	250 U	4.6 U	5.1 U
Acenaphthylene	- -	µg/L	0.47 U	0.48 U	0.47 U	4.8 U	4.8 U	5.2 U	4.8 U	4.8 U	**3.3 J**	4.5 U	250 U	4.6 U	5.1 U
Anthracene	50	µg/L	0.47 U	0.48 U	0.47 U	4.8 U	4.8 U	5.2 U	4.8 U	4.8 U	**0.44 J**	4.5 U	250 U	4.6 U	5.1 U
Benzo(a)anthracene	0.002	µg/L	0.47 U	0.48 U	**0.37 J**	4.8 U	4.8 U	5.2 U	4.8 U	4.8 U	4.7 U	4.5 U	250 U	4.6 U	5.1 U
Benzo(a)pyrene	0	µg/L	0.47 U	0.48 U	**0.38 J**	4.8 U	4.8 U	5.2 U	4.8 U	4.8 U	4.7 UJ	4.5 U	250 U	4.6 U	5.1 U
Benzo(b)fluoranthene	0.002	µg/L	0.47 U	0.48 U	**0.32 J**	4.8 U	4.8 U	5.2 U	4.8 U	4.8 U	4.7 UJ	4.5 U	250 U	4.6 U	5.1 U
Benzo(g,h,i)perylene	- -	µg/L	0.47 U	0.48 U	0.47 U	4.8 U	4.8 U	5.2 U	4.8 U	4.8 U	4.7 UJ	4.5 U	250 U	4.6 U	5.1 U
Benzo(k)fluoranthene	0.002	ug/L	0.47 U	0.48 U	0.47 U	4.8 U	4.8 U	5.2 U	4.8 U	4.8 U	4.7 UJ	4.5 U	250 U	4.6 U	5.1 U
Chrysene	0.002	µg/L	0.47 U	0.48 U	**0.24 J**	4.8 U	4.8 U	5.2 U	4.8 U	4.8 U	4.7 U	4.5 U	250 UJ	4.6 U	5.1 U
Dibenzo(a,h)anthracene	- -	ug/L	0.47 U	0.48 U	0.47 U	4.8 U	4.8 U	5.2 U	4.8 U	4.8 U	4.7 UJ	4.5 U	250 U	4.6 U	5.1 U
Fluoranthene	50	µg/L	0.47 U	0.48 U	**0.31 J**	4.8 U	4.8 U	5.2 U	4.8 U	4.8 U	4.7 U	4.5 U	250 U	4.6 U	5.1 U
Fluorene	50	µg/L	0.47 U	0.48 U	0.47 U	4.8 U	4.8 U	5.2 U	4.8 U	4.8 U	**2.3 J**	4.5 U	250 U	4.6 U	5.1 U
Indeno(1,2,3-cd)pyrene	0.002	µg/L	0.47 U	0.48 U	**0.12 J**	4.8 U	4.8 U	5.2 U	4.8 U	4.8 U	4.7 UJ	4.5 U	250 UJ	4.6 U	5.1 U
Naphthalene	10	µg/L	**2.0**	0.48 U	0.47 U	4.8 U	4.8 U	5.2 U	**9.9**	4.8 U	**1,400 DJ**	4.5 U	**260**	4.6 U	5.1 U
Phenanthrene	50	µg/L	0.47 U	0.48 U	0.47 U	4.8 U	4.8 U	5.2 U	4.8 U	4.8 U	**2.3 J**	4.5 U	250 U	4.6 U	5.1 U
Pyrene	50	µg/L	0.47 U	0.48 U	**0.30 J**	4.8 U	4.8 U	5.2 U	4.8 U	4.8 U	**0.43 J**	4.5 U	250 U	4.6 U	5.1 U
Total PAHs	- -	µg/L	**2.0**	ND	**2.0 J**	ND	ND	ND	**11 J**	ND	**1,445 J**	ND	**260**	ND	ND

See notes on last page

Table 2
Groundwater Quality Data
NYSEG
Oneonta Former MGP Site
Oneonta, New York

Location ID:	NYSDEC GW Stds & GVs	Units	MW-8806S												MW-8807S
Date Collected:			05/11/16	11/16/16	05/17/17	11/07/17	05/15/18	11/13/18	05/22/19	11/06/19	06/16/20	11/18/20	05/26/21	11/11/21	05/28/03
BTEX															
Benzene	1	µg/L	1 U	**100**	1 U	**24**	1 U	1 U	1 U	1 U	**0.60 J**	**23**	1 U	1 U	**96**
Ethylbenzene	5	µg/L	1 U	**31**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**13**	1 U	1 U	**24**
m/p-Xylenes	- -	µg/L	2 U	**7.7**	2 U	2 U	2 U	2 U	2 U	2 U	2 U	**1.4 J**	2 U	2 U	NA
o-Xylene	- -	µg/L	1 U	**19**	1 U	**5.5**	1 U	1 U	1 U	1 U	1 U	**6.7**	1 U	1 U	NA
Toluene	5	µg/L	1 U	**2.6**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**0.75 J**	1 U	1 U	**0.40 J**
Xylenes (total)	5	µg/L	2 U	**27**	2 U	**5.5**	2 U	2 U	2 U	2 U	2 U	**8.1**	2 U	2 U	**2.6 J**
Total BTEX	- -	µg/L	ND	**161**	ND	**29.5**	ND	ND	ND	ND	**0.60 J**	**44.9 J**	ND	ND	**123**
PAHs															
Acenaphthene	20	µg/L	4.8 U	**4.9**	5 U	**1.7 J**	5 U	5 U	5 U	5 U	5 U	**3.3 J**	5 U	5 U	**2.9 J**
Acenaphthylene	- -	µg/L	4.8 U	**0.42 J**	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	**0.30 J**
Anthracene	50	µg/L	4.8 U	4.8 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U
Benzo(a)anthracene	0.002	µg/L	4.8 U	4.8 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	1.0 U
Benzo(a)pyrene	0	µg/L	4.8 U	4.8 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	1.0 U
Benzo(b)fluoranthene	0.002	µg/L	4.8 U	4.8 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	1.0 U
Benzo(g,h,i)perylene	- -	µg/L	4.8 U	4.8 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U
Benzo(k)fluoranthene	0.002	ug/L	4.8 U	4.8 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	1 U
Chrysene	0.002	µg/L	4.8 U	4.8 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U
Dibenzo(a,h)anthracene	- -	ug/L	4.8 U	4.8 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	1 U
Fluoranthene	50	µg/L	4.8 U	4.8 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U
Fluorene	50	µg/L	4.8 U	4.8 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U
Indeno(1,2,3-cd)pyrene	0.002	µg/L	4.8 U	4.8 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	1.0 U
Naphthalene	10	µg/L	4.8 U	**73 D**	5 U	**15**	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	**3.0 J**
Phenanthrene	50	µg/L	4.8 U	4.8 U	5 U	5 U	5 U	5 U	5 U	5 U	5 UB	5 U	5 U	5 U	10 U
Pyrene	50	µg/L	4.8 U	4.8 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U
Total PAHs	- -	µg/L	ND	**78.3 J**	ND	**16.7 J**	ND	ND	ND	ND	ND	**3.3 J**	ND	ND	**6.2**

See notes on last page

Table 2
Groundwater Quality Data
NYSEG
Oneonta Former MGP Site
Oneonta, New York

Location ID: Date Collected:	NYSDEC GW Stds & GVs	Units	MW-8807S												
			04/22/08	11/11/08	05/12/09	12/02/09	05/18/10	11/02/10	05/10/11	11/08/11	05/30/12	11/29/12	05/09/13	11/14/13	05/28/14
BTEX															
Benzene	1	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	**8.5**	1.0 U	1.0 U	**16**	1.0 U	1.0 U	1 U	1 U	1 U
Ethylbenzene	5	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U
m/p-Xylenes	- -	µg/L	2.0 U	NA	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2 U	2 U	2 U
o-Xylene	- -	µg/L	1.0 U	NA	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U
Toluene	5	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U
Xylenes (total)	5	µg/L	NA	3.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2 U	2 U	2 U
Total BTEX	- -	µg/L	ND	ND	ND	ND	**8.5**	ND	ND	**16**	ND	ND	ND	ND	ND
PAHs															
Acenaphthene	20	µg/L	**0.90**	0.50 U	0.48 U	0.47 U	0.48 U	0.48 U	4.9 U	4.7 U	4.7 U	4.8 U	5 U	4.9 U	4.5 U
Acenaphthylene	- -	µg/L	0.50 U	0.50 U	0.48 U	0.47 U	0.48 U	0.48 U	4.9 U	4.7 U	4.7 U	4.8 U	5 U	4.9 U	4.5 U
Anthracene	50	µg/L	0.50 U	0.50 U	0.48 U	0.47 U	0.48 U	0.48 U	4.9 U	4.7 U	4.7 U	4.8 U	5 U	4.9 U	4.5 U
Benzo(a)anthracene	0.002	µg/L	0.50 U	0.50 U	0.48 U	0.47 U	0.48 U	0.48 U	4.9 U	4.7 U	4.7 U	4.8 U	5 U	4.9 U	4.5 U
Benzo(a)pyrene	0	µg/L	0.50 U	0.50 U	0.48 U	0.47 U	0.48 U	0.48 U	4.9 U	4.7 U	4.7 U	4.8 U	5 U	4.9 U	4.5 U
Benzo(b)fluoranthene	0.002	µg/L	0.50 U	0.50 U	0.48 U	0.47 U	0.48 U	0.48 U	4.9 U	4.7 U	4.7 U	4.8 U	5 U	4.9 U	4.5 U
Benzo(g,h,i)perylene	- -	µg/L	0.50 U	0.50 U	0.48 U	0.47 U	0.48 U	0.48 U	4.9 U	4.7 U	4.7 U	4.8 U	5 U	4.9 U	4.5 U
Benzo(k)fluoranthene	0.002	ug/L	0.5 UJ	0.5 U	0.48 U	0.47 U	0.48 U	0.48 U	4.9 U	4.7 U	4.7 U	4.8 U	5 U	4.9 U	4.5 U
Chrysene	0.002	µg/L	0.50 U	0.50 U	0.48 U	0.47 U	0.48 U	0.48 U	4.9 U	4.7 U	4.7 U	4.8 U	5 U	4.9 U	4.5 U
Dibenzo(a,h)anthracene	- -	ug/L	0.5 U	0.5 U	0.48 U	0.47 U	0.48 U	0.48 U	4.9 U	4.7 U	4.7 U	4.8 U	5 U	4.9 U	4.5 U
Fluoranthene	50	µg/L	0.50 U	0.50 U	0.48 U	0.47 U	0.48 U	0.48 U	4.9 U	4.7 U	4.7 U	4.8 U	5 U	4.9 U	4.5 U
Fluorene	50	µg/L	0.50 U	0.50 U	0.48 U	0.47 U	0.48 U	0.48 U	4.9 U	4.7 U	4.7 U	4.8 U	5 U	4.9 U	4.5 U
Indeno(1,2,3-cd)pyrene	0.002	µg/L	0.50 U	0.50 U	0.48 U	0.47 U	0.48 U	0.48 U	4.9 U	4.7 U	4.7 U	4.8 U	5 U	4.9 U	4.5 U
Naphthalene	10	µg/L	**13**	0.50 U	0.48 U	0.47 U	0.48 U	0.48 U	4.9 U	4.7 U	4.7 U	4.8 U	5 U	4.9 U	4.5 U
Phenanthrene	50	µg/L	0.50 U	0.50 U	0.48 U	0.47 U	0.48 U	0.48 U	4.9 U	4.7 U	4.7 U	4.8 U	5 U	4.9 U	4.5 U
Pyrene	50	µg/L	0.50 U	0.50 U	0.48 U	0.47 U	0.48 U	0.48 U	4.9 U	4.7 U	4.7 U	4.8 U	5 U	4.9 U	4.5 U
Total PAHs	- -	µg/L	**14**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

See notes on last page

Table 2
Groundwater Quality Data
NYSEG
Oneonta Former MGP Site
Oneonta, New York

Location ID:	NYSDEC GW Stds & GVs	Units	MW-8807S									MW-8808S			
Date Collected:			11/18/14	05/19/15	11/17/15	05/10/16	11/15/16	05/16/17	11/07/17	05/15/18	11/14/18	05/29/03	04/22/08	11/11/08	05/12/09
BTEX															
Benzene	1	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	1.0 U	1.0 U	1.0 U	**0.82 J**
Ethylbenzene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	4.0 U	1.0 U	1.0 U	**0.49 J**
m/p-Xylenes	- -	µg/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 UJ	2 U	NA	2.0 U	NA	2.0 U
o-Xylene	- -	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	NA	1.0 U	NA	1.0 U
Toluene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	5.0 U	1.0 U	1.0 U	1.0 U
Xylenes (total)	5	µg/L	2 U	2 U	2 U	2 U	2 U	2 U	3 U	2 UJ	2 U	5.0 U	NA	3.0 U	2.0 U
Total BTEX	- -	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**1.3 J**
PAHs															
Acenaphthene	20	µg/L	4.8 U	4.8 U	5.2 U	4.8 U	4.8 U	5 U	5 U	5 U	5 U	10 U	0.50 U	0.50 U	0.47 U
Acenaphthylene	- -	µg/L	4.8 U	4.8 U	5.2 U	4.8 U	4.8 U	5 U	5 U	5 U	5 U	10 U	0.50 U	0.50 U	0.47 U
Anthracene	50	µg/L	4.8 U	4.8 U	5.2 U	4.8 U	4.8 U	5 U	5 U	5 U	5 U	10 U	0.50 U	0.50 U	0.47 U
Benzo(a)anthracene	0.002	µg/L	4.8 U	4.8 U	5.2 U	4.8 U	4.8 U	5 U	5 U	5 U	5 U	1.0 U	0.50 U	0.50 U	0.47 U
Benzo(a)pyrene	0	µg/L	4.8 U	4.8 U	5.2 U	4.8 U	4.8 U	5 U	5 U	5 U	5 U	1.0 U	0.50 U	0.50 U	0.47 U
Benzo(b)fluoranthene	0.002	µg/L	4.8 U	4.8 U	5.2 U	4.8 U	4.8 U	5 U	5 U	5 U	5 U	1.0 U	0.50 U	0.50 U	0.47 U
Benzo(g,h,i)perylene	- -	µg/L	4.8 U	4.8 U	5.2 U	4.8 U	4.8 U	5 U	5 U	5 U	5 U	10 U	0.50 U	0.50 U	0.47 U
Benzo(k)fluoranthene	0.002	ug/L	4.8 U	4.8 U	5.2 U	4.8 U	4.8 U	5 U	5 U	5 U	5 U	1 U	0.5 UJ	0.5 U	0.47 U
Chrysene	0.002	µg/L	4.8 UJ	4.8 U	5.2 U	4.8 U	4.8 U	5 U	5 U	5 U	5 U	10 U	0.50 U	0.50 U	0.47 U
Dibenzo(a,h)anthracene	- -	ug/L	4.8 U	4.8 U	5.2 U	4.8 U	4.8 U	5 U	5 U	5 U	5 U	1 U	0.5 U	0.5 U	0.47 U
Fluoranthene	50	µg/L	4.8 U	4.8 U	5.2 U	4.8 U	4.8 U	5 U	5 U	5 U	5 U	10 U	0.50 U	0.50 U	0.47 U
Fluorene	50	µg/L	4.8 U	4.8 U	5.2 U	4.8 U	4.8 U	5 U	5 U	5 U	5 U	10 U	0.50 U	0.50 U	0.47 U
Indeno(1,2,3-cd)pyrene	0.002	µg/L	4.8 UJ	4.8 U	5.2 U	4.8 U	4.8 U	5 U	5 U	5 U	5 U	1.0 U	0.50 U	0.50 U	0.47 U
Naphthalene	10	µg/L	4.8 U	4.8 U	5.2 U	4.8 U	4.8 U	5 U	5 U	5 U	5 U	10 U	0.50 U	0.50 U	0.47 U
Phenanthrene	50	µg/L	4.8 U	4.8 U	5.2 U	4.8 U	4.8 U	5 U	5 U	5 U	5 U	10 U	0.50 U	0.50 U	0.47 U
Pyrene	50	µg/L	4.8 U	4.8 U	5.2 U	4.8 U	4.8 U	5 U	5 U	5 U	5 U	10 U	0.50 U	0.50 U	0.47 U
Total PAHs	- -	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

See notes on last page

Table 2
Groundwater Quality Data
NYSEG
Oneonta Former MGP Site
Oneonta, New York

Location ID:	NYSDEC GW Stds & GVs	Units	MW-8808S												
Date Collected:			12/01/09	05/18/10	11/02/10	05/10/11	11/08/11	05/30/12	11/29/12	05/09/13	11/14/13	05/29/14	11/19/14	05/19/15	11/17/15
BTEX															
Benzene	1	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	5	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
m/p-Xylenes	- -	µg/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
o-Xylene	- -	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Toluene	5	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Xylenes (total)	5	µg/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 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
PAHs															
Acenaphthene	20	µg/L	0.48 U	0.48 U	0.47 U	4.7 U	4.7 U	4.7 U	4.8 U	4.7 U	4.9 U	4.7 U	5.1 U	5 U	5 U
Acenaphthylene	- -	µg/L	0.48 U	0.48 U	0.47 U	4.7 U	4.7 U	4.7 U	4.8 U	4.7 U	4.9 U	4.7 U	5.1 U	5 U	5 U
Anthracene	50	µg/L	0.48 U	0.48 U	0.47 U	4.7 U	4.7 U	4.7 U	4.8 U	4.7 U	4.9 U	4.7 U	5.1 U	5 U	5 U
Benzo(a)anthracene	0.002	µg/L	0.48 U	0.48 U	0.47 U	4.7 U	4.7 U	4.7 U	4.8 U	4.7 U	4.9 U	4.7 U	5.1 U	5 U	5 U
Benzo(a)pyrene	0	µg/L	0.48 U	0.48 U	0.47 U	4.7 U	4.7 U	4.7 U	4.8 U	4.7 U	4.9 U	4.7 U	5.1 U	5 U	5 U
Benzo(b)fluoranthene	0.002	µg/L	0.48 U	0.48 U	0.47 U	4.7 U	4.7 U	4.7 U	4.8 U	4.7 U	4.9 U	4.7 U	5.1 U	5 U	5 U
Benzo(g,h,i)perylene	- -	µg/L	0.48 U	0.48 U	0.47 U	4.7 U	4.7 U	4.7 U	4.8 U	4.7 U	4.9 U	4.7 U	5.1 U	5 U	5 U
Benzo(k)fluoranthene	0.002	ug/L	0.48 U	0.48 U	0.47 U	4.7 U	4.7 U	4.7 U	4.8 U	4.7 U	4.9 U	4.7 U	5.1 U	5 U	5 U
Chrysene	0.002	µg/L	0.48 U	0.48 U	0.47 U	4.7 U	4.7 U	4.7 U	4.8 U	4.7 U	4.9 U	4.7 U	5.1 UJ	5 U	5 U
Dibenzo(a,h)anthracene	- -	ug/L	0.48 U	0.48 U	0.47 U	4.7 U	4.7 U	4.7 U	4.8 U	4.7 U	4.9 U	4.7 U	5.1 U	5 U	5 U
Fluoranthene	50	µg/L	0.48 U	0.48 U	0.47 U	4.7 U	4.7 U	4.7 U	4.8 U	4.7 U	4.9 U	4.7 U	5.1 U	5 U	5 U
Fluorene	50	µg/L	0.48 U	0.48 U	0.47 U	4.7 U	4.7 U	4.7 U	4.8 U	4.7 U	4.9 U	4.7 U	5.1 U	5 U	5 U
Indeno(1,2,3-cd)pyrene	0.002	µg/L	0.48 U	0.48 U	0.47 U	4.7 U	4.7 U	4.7 U	4.8 U	4.7 U	4.9 U	4.7 U	5.1 UJ	5 U	5 U
Naphthalene	10	µg/L	0.48 U	0.48 U	0.47 U	4.7 U	4.7 U	4.7 U	4.8 U	4.7 U	4.9 U	4.7 U	5.1 U	5 U	5 U
Phenanthrene	50	µg/L	0.48 U	0.48 U	0.47 U	4.7 U	4.7 U	4.7 U	4.8 U	4.7 U	4.9 U	4.7 U	5.1 U	5 U	5 U
Pyrene	50	µg/L	0.48 U	0.48 U	0.47 U	4.7 U	4.7 U	4.7 U	4.8 U	4.7 U	4.9 U	4.7 U	5.1 U	5 U	5 U
Total PAHs	- -	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

See notes on last page

Table 2
Groundwater Quality Data
NYSEG
Oneonta Former MGP Site
Oneonta, New York

Location ID:	NYSDEC GW Stds & GVs	Units	MW-8808S						MW-9109S						
Date Collected:			05/10/16	11/15/16	05/16/17	11/07/17	05/15/18	11/13/18	05/20/03	04/22/08	11/11/08	05/12/09	12/01/09	05/20/10	11/02/10
BTEX															
Benzene	1	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m/p-Xylenes	- -	µg/L	2 U	2 U	2 U	2 U	2 U	2 U	NA	2.0 U	NA	2.0 U	2.0 U	2.0 U	2.0 U
o-Xylene	- -	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	NA	1.0 U	NA	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Xylenes (total)	5	µg/L	2 U	2 U	2 U	3 U	2 U	2 U	5.0 U	NA	3.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Total BTEX	- -	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PAHs															
Acenaphthene	20	µg/L	4.8 U	4.8 U	5 U	5 U	5 U	5 U	10 U	0.50 U	0.50 U	0.47 U	0.48 U	0.48 U	0.48 U
Acenaphthylene	- -	µg/L	4.8 U	4.8 U	5 U	5 U	5 U	5 U	10 U	0.50 U	0.50 U	0.47 U	0.48 U	0.48 U	0.48 U
Anthracene	50	µg/L	4.8 U	4.8 U	5 U	5 U	5 U	5 U	10 U	0.50 U	0.50 U	0.47 U	0.48 U	0.48 U	0.48 U
Benzo(a)anthracene	0.002	µg/L	4.8 U	4.8 U	5 U	5 U	5 U	5 U	1.0 U	0.50 U	0.50 U	0.47 U	0.48 UB	0.48 U	0.48 U
Benzo(a)pyrene	0	µg/L	4.8 U	4.8 U	5 U	5 U	5 U	5 U	1.0 U	0.50 U	0.50 U	0.47 U	0.48 U	0.48 U	0.48 U
Benzo(b)fluoranthene	0.002	µg/L	4.8 U	4.8 U	5 U	5 U	5 U	5 U	1.0 U	0.50 U	0.50 U	0.47 U	0.48 U	0.48 U	0.48 U
Benzo(g,h,i)perylene	- -	µg/L	4.8 U	4.8 U	5 U	5 U	5 U	5 U	10 U	0.50 U	0.50 U	0.47 U	0.48 U	0.48 U	0.48 U
Benzo(k)fluoranthene	0.002	ug/L	4.8 U	4.8 U	5 U	5 U	5 U	5 U	1 U	0.5 UJ	0.5 U	0.47 U	0.48 U	0.48 U	0.48 U
Chrysene	0.002	µg/L	4.8 U	4.8 U	5 U	5 U	5 U	5 U	10 U	0.50 U	0.50 U	0.47 U	0.48 UB	0.48 UJ	0.48 U
Dibenzo(a,h)anthracene	- -	ug/L	4.8 U	4.8 U	5 U	5 U	5 U	5 U	1 U	0.5 U	0.5 U	0.47 U	0.48 U	0.48 U	0.48 U
Fluoranthene	50	µg/L	4.8 U	4.8 U	5 U	5 U	5 U	5 U	10 U	0.50 U	0.50 U	0.47 U	0.48 U	0.48 U	0.48 U
Fluorene	50	µg/L	4.8 U	4.8 U	5 U	5 U	5 U	5 U	10 U	0.50 U	0.50 U	0.47 U	0.48 U	0.48 U	0.48 U
Indeno(1,2,3-cd)pyrene	0.002	µg/L	4.8 U	4.8 U	5 U	5 U	5 U	5 U	1.0 U	0.50 U	0.50 U	0.47 U	0.48 U	0.48 U	0.48 U
Naphthalene	10	µg/L	4.8 U	4.8 U	5 U	5 U	5 U	5 U	10 U	0.50 U	0.50 U	0.47 U	0.48 U	0.48 U	0.48 U
Phenanthrene	50	µg/L	4.8 U	4.8 U	5 U	5 U	5 U	5 U	10 U	0.50 U	0.50 U	0.47 U	0.48 U	0.48 U	0.48 U
Pyrene	50	µg/L	4.8 U	4.8 U	5 U	5 U	5 U	5 U	10 U	0.50 U	0.50 U	0.47 U	0.48 U	0.48 U	0.48 U
Total PAHs	- -	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

See notes on last page

Table 2
Groundwater Quality Data
NYSEG
Oneonta Former MGP Site
Oneonta, New York

Location ID:	NYSDEC GW Stds & GVs	Units	MW-9109S							MW-9110S					
Date Collected:			05/10/11	11/08/11	05/30/12	11/30/12	05/10/13	11/15/13	05/29/14	05/28/03	04/22/08	11/11/08	05/12/09	12/02/09	05/18/10
BTEX															
Benzene	1	µg/L	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	5	µg/L	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m/p-Xylenes	- -	µg/L	2.0 U	2.0 U	2.0 U	2 U	2 U	2 U	2 U	NA	2.0 U	NA	2.0 U	2.0 U	2.0 U
o-Xylene	- -	µg/L	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	NA	1.0 U	NA	1.0 U	1.0 U	1.0 U
Toluene	5	µg/L	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Xylenes (total)	5	µg/L	2.0 U	2.0 U	2.0 U	2 U	2 U	2 U	2 U	5.0 U	NA	3.0 U	2.0 U	2.0 U	2.0 U
Total BTEX	- -	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PAHs															
Acenaphthene	20	µg/L	4.8 U	4.7 U	4.8 U	4.7 U	4.7 U	5.4 U	4.6 U	10 U	0.50 U	0.50 U	0.47 U	0.47 U	0.48 U
Acenaphthylene	- -	µg/L	4.8 U	4.7 U	4.8 U	4.7 U	4.7 U	5.4 U	4.6 U	10 U	0.50 U	0.50 U	0.47 U	0.47 U	0.48 U
Anthracene	50	µg/L	4.8 U	4.7 U	4.8 U	4.7 U	4.7 U	5.4 U	4.6 U	10 U	0.50 U	0.50 U	0.47 U	0.47 U	0.48 U
Benzo(a)anthracene	0.002	µg/L	4.8 U	4.7 U	4.8 U	4.7 U	4.7 U	5.4 U	4.6 U	1.0 U	0.50 U	0.50 U	0.47 U	0.47 U	0.48 U
Benzo(a)pyrene	0	µg/L	4.8 U	4.7 U	4.8 U	4.7 U	4.7 U	5.4 UJ	4.6 U	1.0 U	0.50 U	0.50 U	0.47 U	0.47 U	0.48 U
Benzo(b)fluoranthene	0.002	µg/L	4.8 U	4.7 U	4.8 U	4.7 U	4.7 U	5.4 UJ	4.6 U	1.0 U	0.50 U	0.50 U	0.47 U	0.47 U	0.48 U
Benzo(g,h,i)perylene	- -	µg/L	4.8 U	4.7 U	4.8 U	4.7 U	4.7 U	5.4 UJ	4.6 U	10 U	0.50 U	0.50 U	0.47 U	0.47 U	0.48 U
Benzo(k)fluoranthene	0.002	ug/L	4.8 U	4.7 U	4.8 U	4.7 U	4.7 U	5.4 UJ	4.6 U	1 U	0.5 UJ	0.5 U	0.47 U	0.47 U	0.48 U
Chrysene	0.002	µg/L	4.8 U	4.7 U	4.8 U	4.7 U	4.7 U	NA	NA	10 U	0.50 U	0.50 U	0.47 U	0.47 U	0.48 U
Dibenzo(a,h)anthracene	- -	ug/L	4.8 U	4.7 U	4.8 U	4.7 U	4.7 U	5.4 UJ	4.6 U	1 U	0.5 U	0.5 U	0.47 U	0.47 U	0.48 U
Fluoranthene	50	µg/L	4.8 U	4.7 U	4.8 U	4.7 U	4.7 U	5.4 U	4.6 U	10 U	0.50 U	0.50 U	0.47 U	0.47 U	0.48 U
Fluorene	50	µg/L	4.8 U	4.7 U	4.8 U	4.7 U	4.7 U	5.4 U	4.6 U	10 U	0.50 U	0.50 U	0.47 U	0.47 U	0.48 U
Indeno(1,2,3-cd)pyrene	0.002	µg/L	4.8 U	4.7 U	4.8 U	4.7 U	4.7 U	5.4 UJ	4.6 U	1.0 U	0.50 U	0.50 U	0.47 U	0.47 U	0.48 U
Naphthalene	10	µg/L	4.8 U	4.7 U	4.8 U	4.7 U	4.7 U	5.4 U	4.6 U	10 U	0.50 U	0.50 U	0.47 U	**0.11 J**	0.48 U
Phenanthrene	50	µg/L	4.8 U	4.7 U	4.8 U	4.7 U	4.7 U	5.4 U	4.6 U	10 U	0.50 U	0.50 U	0.47 U	0.47 U	0.48 U
Pyrene	50	µg/L	4.8 U	4.7 U	4.8 U	4.7 U	4.7 U	5.4 U	4.6 U	10 U	0.50 U	0.50 U	0.47 U	0.47 U	0.48 U
Total PAHs	- -	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**0.11 J**	ND

See notes on last page

Table 2
Groundwater Quality Data
NYSEG
Oneonta Former MGP Site
Oneonta, New York

Location ID:	NYSDEC GW Stds & GVs	Units	MW-9110S												
Date Collected:			11/02/10	05/10/11	11/08/11	05/30/12	11/29/12	05/09/13	11/14/13	05/28/14	11/18/14	05/19/15	11/17/15	05/10/16	11/15/16
BTEX															
Benzene	1	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	5	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
m/p-Xylenes	- -	µg/L	2.0 U	2.0 U	2.0 U	2.0 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
o-Xylene	- -	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Toluene	5	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Xylenes (total)	5	µg/L	2.0 U	2.0 U	2.0 U	2.0 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
PAHs															
Acenaphthene	20	µg/L	0.48 U	5.0 U	4.8 U	4.7 U	4.8 U	4.8 U	4.6 U	5.1 U	5 U	4.6 U	4.9 U	4.8 U	4.8 U
Acenaphthylene	- -	µg/L	0.48 U	5.0 U	4.8 U	4.7 U	4.8 U	4.8 U	4.6 U	5.1 U	5 U	4.6 U	4.9 U	4.8 U	4.8 U
Anthracene	50	µg/L	0.48 U	5.0 U	4.8 U	4.7 U	4.8 U	4.8 U	4.6 U	5.1 U	5 U	4.6 U	4.9 U	4.8 U	4.8 U
Benzo(a)anthracene	0.002	µg/L	0.48 U	5.0 U	4.8 U	4.7 U	4.8 U	4.8 U	4.6 U	5.1 U	5 U	4.6 U	4.9 U	4.8 U	4.8 U
Benzo(a)pyrene	0	µg/L	0.48 U	5.0 U	4.8 U	4.7 U	4.8 U	4.8 U	4.6 U	5.1 U	5 U	4.6 U	4.9 U	4.8 U	4.8 U
Benzo(b)fluoranthene	0.002	µg/L	0.48 U	5.0 U	4.8 U	4.7 U	4.8 U	4.8 U	4.6 U	5.1 U	5 U	4.6 U	4.9 U	4.8 U	4.8 U
Benzo(g,h,i)perylene	- -	µg/L	0.48 U	5.0 U	4.8 U	4.7 U	4.8 U	4.8 U	4.6 U	5.1 U	5 U	4.6 U	4.9 U	4.8 U	4.8 UJ
Benzo(k)fluoranthene	0.002	ug/L	0.48 U	5 U	4.8 U	4.7 U	4.8 U	4.8 U	4.6 U	5.1 U	5 U	4.6 U	4.9 U	4.8 U	4.8 U
Chrysene	0.002	µg/L	0.48 U	5.0 U	4.8 U	4.7 U	4.8 U	4.8 U	4.6 U	5.1 U	5 UJ	4.6 U	4.9 U	4.8 U	4.8 U
Dibenzo(a,h)anthracene	- -	ug/L	0.48 U	5 U	4.8 U	4.7 U	4.8 U	4.8 U	4.6 U	5.1 U	5 U	4.6 U	4.9 U	4.8 U	4.8 U
Fluoranthene	50	µg/L	0.48 U	5.0 U	4.8 U	4.7 U	4.8 U	4.8 U	4.6 U	5.1 U	5 U	4.6 U	4.9 U	4.8 U	4.8 U
Fluorene	50	µg/L	0.48 U	5.0 U	4.8 U	4.7 U	4.8 U	4.8 U	4.6 U	5.1 U	5 U	4.6 U	4.9 U	4.8 U	4.8 U
Indeno(1,2,3-cd)pyrene	0.002	µg/L	0.48 U	5.0 U	4.8 U	4.7 U	4.8 U	4.8 U	4.6 U	5.1 U	5 UJ	4.6 U	4.9 U	4.8 U	4.8 UJ
Naphthalene	10	µg/L	0.48 U	5.0 U	4.8 U	4.7 U	4.8 U	4.8 U	4.6 U	5.1 U	5 U	4.6 U	4.9 U	4.8 U	4.8 U
Phenanthrene	50	µg/L	0.48 U	5.0 U	4.8 U	4.7 U	4.8 U	4.8 U	4.6 U	5.1 U	5 U	4.6 U	4.9 U	4.8 U	4.8 U
Pyrene	50	µg/L	0.48 U	5.0 U	4.8 U	4.7 U	4.8 U	4.8 U	4.6 U	5.1 U	5 U	4.6 U	4.9 U	4.8 U	4.8 U
Total PAHs	- -	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

See notes on last page

Table 2
Groundwater Quality Data
NYSEG
Oneonta Former MGP Site
Oneonta, New York

Location ID:	NYSDEC GW Stds & GVs	Units	MW-9110S				MW-9111S								
Date Collected:			05/16/17	11/07/17	05/15/18	11/14/18	05/28/03	04/23/08	11/11/08	05/12/09	12/01/09	05/20/10	11/02/10	05/10/11	11/09/11
BTEX															
Benzene	1	µg/L	1 U	1 U	1 U	1 U	**2.4**	1.0 U	**57**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	5	µg/L	1 U	1 U	1 U	1 U	4.0 U	1.0 U	**2.0**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m/p-Xylenes	- -	µg/L	2 U	2 U	2 U	2 U	NA	2.0 U	NA	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
o-Xylene	- -	µg/L	1 U	1 U	1 U	1 U	NA	1.0 U	NA	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	5	µg/L	1 U	1 U	1 U	1 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Xylenes (total)	5	µg/L	2 U	3 U	2 U	2 U	5.0 U	NA	**1.4 J**	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Total BTEX	- -	µg/L	ND	ND	ND	ND	**2.4**	ND	**60 J**	ND	ND	ND	ND	ND	ND
PAHs															
Acenaphthene	20	µg/L	5 U	5 U	5 U	5 U	**11**	**5.0**	**10**	**4.5**	**7.8**	**4.5**	**6.1**	**3.8 J**	**5.6**
Acenaphthylene	- -	µg/L	5 U	5 U	5 U	5 U	10 U	0.50 U	0.50 U	0.47 U	0.47 U	0.50 U	0.47 U	4.8 U	4.7 U
Anthracene	50	µg/L	5 U	5 U	5 U	5 U	10 U	0.50 U	0.50 U	0.47 U	0.47 U	**0.099 J**	0.47 U	4.8 U	4.7 U
Benzo(a)anthracene	0.002	µg/L	5 U	5 U	5 U	5 U	1.0 U	0.50 U	0.50 U	0.47 U	0.47 U	0.50 U	0.47 UJ	4.8 U	4.7 U
Benzo(a)pyrene	0	µg/L	5 U	5 U	5 U	5 U	1.0 U	0.50 U	0.50 U	0.47 U	0.47 U	0.50 U	0.47 U	4.8 U	4.7 U
Benzo(b)fluoranthene	0.002	µg/L	5 U	5 U	5 U	5 U	1.0 U	0.50 U	0.50 U	0.47 U	0.47 U	0.50 U	0.47 UJ	4.8 U	4.7 U
Benzo(g,h,i)perylene	- -	µg/L	5 U	5 U	5 U	5 U	10 U	0.50 U	0.50 U	0.47 U	0.47 U	0.50 U	0.47 UJ	4.8 U	4.7 U
Benzo(k)fluoranthene	0.002	ug/L	5 U	5 U	5 U	5 U	1 U	0.5 UJ	0.5 U	0.47 U	0.47 U	0.5 U	0.47 UJ	4.8 U	4.7 U
Chrysene	0.002	µg/L	5 U	5 U	5 U	5 U	10 U	0.50 U	0.50 U	0.47 U	0.47 U	**0.11 J**	0.47 UJ	4.8 U	4.7 U
Dibenzo(a,h)anthracene	- -	ug/L	5 U	5 U	5 U	5 U	1 U	0.5 U	0.5 U	0.47 U	0.47 U	0.5 U	0.47 UJ	4.8 U	4.7 U
Fluoranthene	50	µg/L	5 U	5 U	5 U	5 U	10 U	0.50 U	0.50 U	0.47 U	0.47 U	0.50 U	0.47 U	4.8 U	4.7 U
Fluorene	50	µg/L	5 U	5 U	5 U	5 U	**0.80 J**	**0.50**	**1.0**	**0.42 J**	**0.77**	**0.35 J**	**0.58**	4.8 U	**0.51 J**
Indeno(1,2,3-cd)pyrene	0.002	µg/L	5 U	5 U	5 U	5 U	1.0 U	0.50 U	0.50 U	0.47 U	0.47 U	0.50 U	0.47 UJ	4.8 U	4.7 U
Naphthalene	10	µg/L	5 U	5 U	5 U	5 U	**0.40 J**	0.50 U	**5.0**	0.47 U	**0.32 J**	**0.19 J**	0.47 U	4.8 U	4.7 U
Phenanthrene	50	µg/L	5 U	5 U	5 U	5 U	10 U	0.50 U	**0.20 J**	0.47 U	**0.17 J**	0.50 U	0.47 U	4.8 U	4.7 U
Pyrene	50	µg/L	5 U	5 U	5 U	5 U	10 U	0.50 U	0.50 U	0.47 U	0.47 U	0.50 U	0.47 U	4.8 U	4.7 U
Total PAHs	- -	µg/L	ND	ND	ND	ND	**12 J**	**5.5**	**16 J**	**4.9 J**	**9.1 J**	**5.3 J**	**6.7**	**3.8 J**	**6.1 J**

See notes on last page

Table 2
Groundwater Quality Data
NYSEG
Oneonta Former MGP Site
Oneonta, New York

Location ID:	NYSDEC GW Stds & GVs	Units	MW-9111S												
Date Collected:			05/30/12	11/30/12	05/10/13	11/14/13	05/29/14	11/19/14	05/21/15	11/17/15	05/10/16	11/15/16	05/16/17	11/08/17	05/15/18
BTEX															
Benzene	1	µg/L	1.0 U	**2.1**	1 U	1 U	1 U	**1.6**	1 U	1 U	**2.2**	1 U	1 U	**18**	**0.68 J**
Ethylbenzene	5	µg/L	1.0 U	**0.79 J**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**0.45 J**	1 U
m/p-Xylenes	- -	µg/L	2.0 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
o-Xylene	- -	µg/L	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**0.21 J**	1 U
Toluene	5	µg/L	1.0 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	µg/L	2.0 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	3 U	2 U
Total BTEX	- -	µg/L	ND	**2.9 J**	ND	ND	ND	**1.6**	ND	ND	**2.2**	ND	ND	**18.5 J**	**0.68 J**
PAHs															
Acenaphthene	20	µg/L	**4.2 J**	**5.3**	**3.1 J**	**5.8**	**3.8 J**	**3.7 J**	**3.4 J**	**3.7 J**	**4 J**	**4.7**	**2.5 J**	**4.4 J**	**2.5 J**
Acenaphthylene	- -	µg/L	5.2 U	4.7 U	**0.68 J**	5.2 U	4.6 U	4.7 U	5 U	5 U	4.9 U	4.6 U	5 U	5 U	5 U
Anthracene	50	µg/L	5.2 U	4.7 U	4.7 U	5.2 U	4.6 U	4.7 U	5 U	5 U	4.9 U	4.6 U	5 U	5 U	5 U
Benzo(a)anthracene	0.002	µg/L	5.2 U	4.7 U	4.7 U	5.2 U	4.6 U	4.7 U	5 U	5 U	4.9 U	4.6 U	5 U	5 U	5 U
Benzo(a)pyrene	0	µg/L	5.2 U	4.7 U	4.7 U	5.2 U	4.6 U	4.7 U	5 U	5 U	4.9 U	4.6 U	5 U	5 U	5 U
Benzo(b)fluoranthene	0.002	µg/L	5.2 U	4.7 U	4.7 U	5.2 U	4.6 U	4.7 U	5 U	5 U	4.9 U	4.6 U	5 U	5 U	5 U
Benzo(g,h,i)perylene	- -	µg/L	5.2 U	4.7 U	4.7 U	5.2 U	4.6 U	4.7 U	5 U	5 U	4.9 U	4.6 U	5 U	5 U	5 U
Benzo(k)fluoranthene	0.002	ug/L	5.2 U	4.7 U	4.7 U	5.2 U	4.6 U	4.7 U	5 U	5 U	4.9 U	4.6 U	5 U	5 U	5 U
Chrysene	0.002	µg/L	5.2 U	4.7 U	4.7 U	5.2 U	4.6 U	4.7 UJ	5 U	5 U	4.9 U	4.6 U	5 U	5 U	5 U
Dibenzo(a,h)anthracene	- -	ug/L	5.2 U	4.7 U	4.7 U	5.2 U	4.6 U	4.7 U	5 U	5 U	4.9 U	4.6 U	5 U	5 U	5 U
Fluoranthene	50	µg/L	5.2 U	4.7 U	4.7 U	5.2 U	4.6 U	4.7 U	5 U	5 U	4.9 U	4.6 U	5 U	5 U	5 U
Fluorene	50	µg/L	5.2 U	**0.42 J**	4.7 U	**0.54 J**	4.6 U	4.7 U	5 U	5 U	4.9 U	4.6 U	5 U	5 U	5 U
Indeno(1,2,3-cd)pyrene	0.002	µg/L	5.2 U	4.7 U	4.7 U	5.2 U	4.6 U	4.7 UJ	5 U	5 U	4.9 U	4.6 U	5 U	5 U	5 U
Naphthalene	10	µg/L	5.2 U	**1.2 J**	4.7 U	5.2 U	4.6 U	4.7 U	5 U	5 U	4.9 U	4.6 U	5 U	**1.6 J**	5 U
Phenanthrene	50	µg/L	5.2 U	4.7 U	4.7 U	5.2 U	4.6 U	4.7 U	5 U	5 U	4.9 U	4.6 U	5 U	5 U	5 U
Pyrene	50	µg/L	5.2 U	4.7 U	4.7 U	5.2 U	4.6 U	4.7 U	5 U	5 U	4.9 U	4.6 U	5 U	5 U	5 U
Total PAHs	- -	µg/L	**4.2 J**	**6.9 J**	**3.8 J**	**6.34 J**	**3.8 J**	**3.7 J**	**3.4 J**	**3.7 J**	**4 J**	**4.7**	**2.5 J**	**6 J**	**2.5 J**

See notes on last page

Table 2
Groundwater Quality Data
NYSEG
Oneonta Former MGP Site
Oneonta, New York

Location ID:	NYSDEC GW Stds & GVs	Units	MW-9111S							MW-9112D					
Date Collected:			11/13/18	05/21/19	11/05/19	06/17/20	11/18/20	05/26/21	11/11/21	05/22/03	09/18/07	12/17/07	11/11/08	05/12/09	12/01/09
BTEX															
Benzene	1	µg/L	1 U	1 U	**0.55 J**	1 U	**6.8**	1 U	1 U	1.0 U	0.50 U	0.50 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	4.0 U	0.50 U	0.50 U	1.0 U	1.0 U	1.0 U
m/p-Xylenes	- -	µg/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U	NA	NA	NA	NA	2.0 U	2.0 U
o-Xylene	- -	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	NA	NA	NA	1.0 U	1.0 U
Toluene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5.0 U	0.50 U	0.50 U	1.0 U	1.0 U	1.0 U
Xylenes (total)	5	µg/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U	5.0 U	1.5 U	1.5 U	3.0 U	2.0 U	2.0 U
Total BTEX	- -	µg/L	ND	ND	**0.55 J**	ND	**6.8**	ND	ND	ND	ND	ND	ND	ND	ND
PAHs															
Acenaphthene	20	µg/L	**4.5 J**	**2.4 J**	**5.4**	**4.7 J**	**3.7 J**	**3.4 J**	**4.6 J**	10 U	NA	NA	0.50 U	0.52 U	9.6 U
Acenaphthylene	- -	µg/L	5 U	5.4 U	5 U	5 U	5 U	5 U	5 U	10 U	NA	NA	0.50 U	0.52 U	9.6 U
Anthracene	50	µg/L	5 U	5.4 U	5 U	5 U	5 U	5 U	5 U	10 U	NA	NA	0.50 U	0.52 U	9.6 U
Benzo(a)anthracene	0.002	µg/L	5 U	5.4 U	5 U	5 U	5 U	5 U	5 U	1.0 U	NA	NA	0.50 U	0.52 U	9.6 U
Benzo(a)pyrene	0	µg/L	5 U	5.4 U	5 U	5 U	5 U	5 U	5 U	1.0 U	NA	NA	0.50 U	0.52 U	9.6 U
Benzo(b)fluoranthene	0.002	µg/L	5 U	5.4 U	5 U	5 U	5 U	5 U	5 U	1.0 U	NA	NA	0.50 U	0.52 U	9.6 U
Benzo(g,h,i)perylene	- -	µg/L	5 U	5.4 U	5 U	5 U	5 U	5 U	5 U	10 U	NA	NA	0.50 U	0.52 U	9.6 U
Benzo(k)fluoranthene	0.002	ug/L	5 U	5.4 U	5 U	5 U	5 U	5 U	5 U	1 U	NA	NA	0.5 U	0.5 U	9.6 U
Chrysene	0.002	µg/L	5 U	5.4 U	5 U	5 U	5 U	5 U	5 U	10 U	NA	NA	0.50 U	0.52 U	9.6 U
Dibenzo(a,h)anthracene	- -	ug/L	5 U	5.4 U	5 U	5 U	5 U	5 U	5 U	1 U	NA	NA	0.5 U	0.5 U	9.6 U
Fluoranthene	50	µg/L	5 U	5.4 U	5 U	**0.48 J**	5 U	5 U	5 U	10 U	NA	NA	0.50 U	0.52 U	9.6 U
Fluorene	50	µg/L	5 U	5.4 U	5 U	5 U	5 U	5 U	5 U	10 U	NA	NA	0.50 U	0.52 U	9.6 U
Indeno(1,2,3-cd)pyrene	0.002	µg/L	5 U	5.4 U	5 U	5 U	5 U	5 U	5 U	1.0 U	NA	NA	0.50 U	0.52 U	9.6 U
Naphthalene	10	µg/L	5 U	5.4 U	5 U	5 U	5 U	5 U	5 U	10 U	NA	NA	0.50 U	0.52 U	9.6 U
Phenanthrene	50	µg/L	5 U	5.4 U	5 U	5 UB	5 U	5 U	5 U	10 U	NA	NA	0.50 U	0.52 U	9.6 U
Pyrene	50	µg/L	5 U	5.4 U	5 U	5 U	5 U	5 U	5 U	10 U	NA	NA	0.50 U	0.52 U	9.6 U
Total PAHs	- -	µg/L	**4.5 J**	**2.4 J**	**5.4**	**5.2 J**	**3.7 J**	**3.4 J**	**4.6 J**	ND	NA	NA	ND	ND	ND

See notes on last page

Table 2
Groundwater Quality Data
NYSEG
Oneonta Former MGP Site
Oneonta, New York

Location ID:	NYSDEC GW Stds & GVs	Units	MW-9112D												
Date Collected:			05/19/10	11/03/10	05/10/11	11/08/11	05/30/12	11/29/12	05/09/13	11/13/13	05/28/14	11/18/14	05/19/15	11/18/15	05/11/16
BTEX															
Benzene	1	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	5	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**0.75 J**	1 U	1 U	1 U	1 U	1 U	1 U	1 U
m/p-Xylenes	- -	µg/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
o-Xylene	- -	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Toluene	5	µg/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Xylenes (total)	5	µg/L	2.0 U	2.0 U	2.0 U	2.0 U	2.0 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	**0.75 J**	ND	ND	ND	ND	ND	ND	ND
PAHs															
Acenaphthene	20	µg/L	0.47 U	0.47 U	4.8 U	4.9 U	5.6 U	4.7 U	4.8 U	4.8 U	4.6 U	4.7 U	4.8 U	4.9 U	4.9 U
Acenaphthylene	- -	µg/L	0.47 U	0.47 U	4.8 U	4.9 U	5.6 U	4.7 U	4.8 U	4.8 U	4.6 U	4.7 U	4.8 U	4.9 U	4.9 U
Anthracene	50	µg/L	0.47 U	0.47 U	4.8 U	4.9 U	5.6 U	4.7 U	4.8 U	4.8 U	4.6 U	4.7 U	4.8 U	4.9 U	4.9 U
Benzo(a)anthracene	0.002	µg/L	0.47 U	0.47 U	4.8 U	4.9 U	5.6 U	4.7 U	4.8 U	4.8 U	4.6 U	4.7 U	4.8 U	4.9 U	4.9 U
Benzo(a)pyrene	0	µg/L	0.47 U	0.47 U	4.8 U	4.9 U	5.6 U	4.7 U	4.8 U	4.8 U	4.6 U	4.7 UJ	4.8 U	4.9 U	4.9 U
Benzo(b)fluoranthene	0.002	µg/L	0.47 U	0.47 U	4.8 U	4.9 U	5.6 U	4.7 U	4.8 U	4.8 U	4.6 U	4.7 U	4.8 U	4.9 U	4.9 U
Benzo(g,h,i)perylene	- -	µg/L	0.47 U	0.47 U	4.8 U	4.9 U	5.6 U	4.7 U	4.8 U	4.8 U	4.6 U	4.7 UJ	4.8 U	4.9 U	4.9 U
Benzo(k)fluoranthene	0.002	ug/L	0.47 U	0.47 U	4.8 U	4.9 U	5.6 U	4.7 U	4.8 U	4.8 U	4.6 U	4.7 U	4.8 U	4.9 U	4.9 U
Chrysene	0.002	µg/L	0.47 U	0.47 U	4.8 U	4.9 U	5.6 U	4.7 U	4.8 U	4.8 U	4.6 U	4.7 UJ	4.8 U	4.9 U	4.9 U
Dibenzo(a,h)anthracene	- -	ug/L	0.47 U	0.47 U	4.8 U	4.9 U	5.6 U	4.7 U	4.8 U	4.8 U	4.6 U	4.7 UJ	4.8 U	4.9 U	4.9 U
Fluoranthene	50	µg/L	0.47 U	0.47 U	4.8 U	4.9 U	5.6 U	4.7 U	4.8 U	4.8 U	4.6 U	4.7 U	**0.41 J**	4.9 U	4.9 U
Fluorene	50	µg/L	0.47 U	0.47 U	4.8 U	4.9 U	5.6 U	4.7 U	4.8 U	4.8 U	4.6 U	4.7 U	4.8 U	4.9 U	4.9 U
Indeno(1,2,3-cd)pyrene	0.002	µg/L	0.47 U	0.47 U	4.8 U	4.9 U	5.6 U	4.7 U	4.8 U	4.8 U	4.6 U	4.7 UJ	4.8 U	4.9 U	4.9 U
Naphthalene	10	µg/L	0.47 U	0.47 U	4.8 U	4.9 U	5.6 U	**1.2 J**	4.8 U	4.8 U	4.6 U	4.7 U	4.8 U	4.9 U	4.9 U
Phenanthrene	50	µg/L	0.47 U	0.47 U	4.8 U	4.9 U	5.6 U	4.7 U	4.8 U	4.8 U	4.6 U	4.7 U	**0.54 J**	4.9 U	4.9 U
Pyrene	50	µg/L	0.47 U	0.47 U	4.8 U	4.9 U	5.6 U	4.7 U	4.8 U	4.8 U	4.6 U	4.7 U	4.8 U	4.9 U	4.9 U
Total PAHs	- -	µg/L	ND	ND	ND	ND	ND	**1.2 J**	ND	ND	ND	ND	**0.95 J**	ND	ND

See notes on last page

Table 2
Groundwater Quality Data
NYSEG
Oneonta Former MGP Site
Oneonta, New York

ARCADIS

Location ID:	NYSDEC GW Stds & GVs	Units	MW-9112D											MW-9112S	
Date Collected:			11/15/16	05/16/17	11/07/17	05/16/18	11/13/18	05/21/19	11/05/19	06/16/20	11/18/20	05/26/21	11/11/21	05/22/03	09/18/07
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	1.0 U	0.50 U
Ethylbenzene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	4.0 U	0.50 U
m/p-Xylenes	- -	µg/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	NA	NA
o-Xylene	- -	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	NA
Toluene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5.0 U	0.50 U
Xylenes (total)	5	µg/L	2 U	2 U	3 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	5.0 U	1.5 U
Total BTEX	- -	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PAHs															
Acenaphthene	20	µg/L	4.6 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	NA
Acenaphthylene	- -	µg/L	4.6 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	NA
Anthracene	50	µg/L	4.6 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	NA
Benzo(a)anthracene	0.002	µg/L	4.6 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	1.0 U	NA
Benzo(a)pyrene	0	µg/L	4.6 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	1.0 U	NA
Benzo(b)fluoranthene	0.002	µg/L	4.6 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	1.0 U	NA
Benzo(g,h,i)perylene	- -	µg/L	4.6 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	NA
Benzo(k)fluoranthene	0.002	ug/L	4.6 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	1 U	NA
Chrysene	0.002	µg/L	4.6 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	NA
Dibenzo(a,h)anthracene	- -	ug/L	4.6 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	1 U	NA
Fluoranthene	50	µg/L	4.6 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	NA
Fluorene	50	µg/L	4.6 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	NA
Indeno(1,2,3-cd)pyrene	0.002	µg/L	4.6 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	1.0 U	NA
Naphthalene	10	µg/L	4.6 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	NA
Phenanthrene	50	µg/L	4.6 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	NA
Pyrene	50	µg/L	4.6 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	NA
Total PAHs	- -	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA

See notes on last page

Table 2
Groundwater Quality Data
NYSEG
Oneonta Former MGP Site
Oneonta, New York

Location ID:	NYSDEC GW Stds & GVs	Units	MW-9112S												
Date Collected:			12/17/07	04/23/08	11/11/08	05/12/09	12/01/09	05/19/10	11/03/10	05/10/11	11/08/11	05/30/12	11/29/12	05/09/13	11/13/13
BTEX															
Benzene	1	µg/L	0.50 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**0.42 J**	1 U	1 U
Ethylbenzene	5	µg/L	0.50 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**1.2**	1 U	1 U
m/p-Xylenes	- -	µg/L	NA	2.0 U	NA	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2 U	2 U	2 U
o-Xylene	- -	µg/L	NA	1.0 U	NA	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U
Toluene	5	µg/L	0.50 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1 U	1 U	1 U
Xylenes (total)	5	µg/L	1.5 U	NA	3.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2 U	2 U	2 U
Total BTEX	- -	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**1.6 J**	ND	ND
PAHs															
Acenaphthene	20	µg/L	NA	0.50 U	0.50 U	0.48 U	0.48 U	0.47 U	0.47 U	4.8 U	4.7 U	5.6 U	4.7 U	4.8 U	5.6 U
Acenaphthylene	- -	µg/L	NA	0.50 U	0.50 U	0.48 U	0.48 U	0.47 U	0.47 U	4.8 U	4.7 U	5.6 U	4.7 U	4.8 U	5.6 U
Anthracene	50	µg/L	NA	0.50 U	0.50 U	0.48 U	0.48 U	0.47 U	0.47 U	4.8 U	4.7 U	5.6 U	4.7 U	4.8 U	5.6 U
Benzo(a)anthracene	0.002	µg/L	NA	0.50 U	0.50 U	0.48 U	0.48 U	0.47 U	0.47 U	4.8 U	4.7 U	5.6 U	4.7 U	4.8 U	5.6 U
Benzo(a)pyrene	0	µg/L	NA	0.50 U	0.50 U	0.48 U	0.48 U	0.47 U	0.47 U	4.8 U	4.7 U	5.6 U	4.7 U	4.8 U	5.6 U
Benzo(b)fluoranthene	0.002	µg/L	NA	0.50 UJ	0.50 U	0.48 U	0.48 U	0.47 U	0.47 U	4.8 U	4.7 U	5.6 U	4.7 U	4.8 U	5.6 U
Benzo(g,h,i)perylene	- -	µg/L	NA	0.50 U	0.50 U	0.48 U	0.48 U	0.47 U	0.47 U	4.8 U	4.7 U	5.6 U	4.7 U	4.8 U	5.6 U
Benzo(k)fluoranthene	0.002	ug/L	NA	0.5 UJ	0.5 U	0.48 U	0.48 U	0.47 U	0.47 U	4.8 U	4.7 U	5.6 U	4.7 U	4.8 U	5.6 U
Chrysene	0.002	µg/L	NA	0.50 U	0.50 U	0.48 U	0.48 U	0.47 U	0.47 U	4.8 U	4.7 U	5.6 U	4.7 U	4.8 U	5.6 U
Dibenzo(a,h)anthracene	- -	ug/L	NA	0.5 UJ	0.5 U	0.48 U	0.48 U	0.47 U	0.47 U	4.8 U	4.7 U	5.6 U	4.7 U	4.8 U	5.6 U
Fluoranthene	50	µg/L	NA	0.50 U	0.50 U	0.48 U	0.48 U	0.47 U	0.47 U	4.8 U	4.7 U	5.6 U	4.7 U	4.8 U	5.6 U
Fluorene	50	µg/L	NA	0.50 U	0.50 U	0.48 U	0.48 U	0.47 U	0.47 U	4.8 U	4.7 U	5.6 U	4.7 U	4.8 U	5.6 U
Indeno(1,2,3-cd)pyrene	0.002	µg/L	NA	0.50 UJ	0.50 U	0.48 U	0.48 U	0.47 U	0.47 U	4.8 U	4.7 U	5.6 U	4.7 U	4.8 U	5.6 U
Naphthalene	10	µg/L	NA	**0.50**	0.50 U	0.48 U	0.48 U	0.47 U	0.47 U	4.8 U	4.7 U	5.6 U	**1.8 J**	4.8 U	5.6 U
Phenanthrene	50	µg/L	NA	0.50 U	0.50 U	0.48 U	0.48 U	0.47 U	0.47 U	4.8 U	4.7 U	5.6 U	4.7 U	4.8 U	5.6 U
Pyrene	50	µg/L	NA	0.50 U	0.50 U	0.48 U	0.48 U	0.47 U	0.47 U	4.8 U	4.7 U	5.6 U	4.7 U	4.8 U	5.6 U
Total PAHs	- -	µg/L	NA	**0.50**	ND	ND	ND	ND	ND	ND	ND	ND	**1.8 J**	ND	ND

See notes on last page

Table 2
Groundwater Quality Data
NYSEG
Oneonta Former MGP Site
Oneonta, New York

Location ID:	NYSDEC GW Stds & GVs	Units	MW-9112S												
Date Collected:			05/28/14	11/18/14	05/19/15	11/18/15	05/11/16	11/15/16	05/16/17	11/07/17	05/15/18	11/13/18	05/21/19	11/06/19	06/16/20
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
Ethylbenzene	5	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
m/p-Xylenes	- -	µg/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
o-Xylene	- -	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
Toluene	5	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
Xylenes (total)	5	µg/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U	3 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
PAHs															
Acenaphthene	20	µg/L	4.6 U	5.5 U	5.2 U	4.8 U	4.8 U	4.6 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Acenaphthylene	- -	µg/L	4.6 U	5.5 U	5.2 U	4.8 U	4.8 U	4.6 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Anthracene	50	µg/L	4.6 U	5.5 U	5.2 U	4.8 U	4.8 U	4.6 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Benzo(a)anthracene	0.002	µg/L	4.6 U	5.5 U	5.2 U	4.8 U	4.8 U	4.6 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Benzo(a)pyrene	0	µg/L	4.6 U	5.5 U	5.2 U	4.8 U	4.8 U	4.6 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Benzo(b)fluoranthene	0.002	µg/L	4.6 U	5.5 U	5.2 U	4.8 U	4.8 U	4.6 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Benzo(g,h,i)perylene	- -	µg/L	4.6 U	5.5 U	5.2 U	4.8 U	4.8 U	4.6 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Benzo(k)fluoranthene	0.002	ug/L	4.6 U	5.5 U	5.2 U	4.8 U	4.8 U	4.6 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chrysene	0.002	µg/L	4.6 U	5.5 UJ	5.2 U	4.8 U	4.8 U	4.6 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Dibenzo(a,h)anthracene	- -	ug/L	4.6 U	5.5 U	5.2 U	4.8 U	4.8 U	4.6 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Fluoranthene	50	µg/L	4.6 U	5.5 U	5.2 U	4.8 U	4.8 U	4.6 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Fluorene	50	µg/L	4.6 U	5.5 U	5.2 U	4.8 U	4.8 U	4.6 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Indeno(1,2,3-cd)pyrene	0.002	µg/L	4.6 U	5.5 UJ	5.2 U	4.8 U	4.8 U	4.6 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Naphthalene	10	µg/L	4.6 U	5.5 U	5.2 U	4.8 U	4.8 U	4.6 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Phenanthrene	50	µg/L	4.6 U	5.5 U	5.2 U	4.8 U	4.8 U	4.6 U	5 U	5 U	5 U	5 U	5 U	5 U	5 UB
Pyrene	50	µg/L	4.6 U	5.5 U	5.2 U	4.8 U	4.8 U	4.6 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Total PAHs	- -	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

See notes on last page

Table 2
Groundwater Quality Data
NYSEG
Oneonta Former MGP Site
Oneonta, New York

Location ID:	NYSDEC GW Stds & GVs	Units	MW-9112S			MW-9114S									
Date Collected:			11/18/20	05/26/21	11/11/21	05/21/03	04/23/08	11/11/08	05/12/09	12/02/09	05/19/10	11/02/10	05/11/11	11/08/11	05/30/12
BTEX															
Benzene	1	µg/L	1 U	1 U	1 U	1.0 U	1.0 U	1.0 U	1.0 U	**0.42 J**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	5	µg/L	1 U	1 U	1 U	4.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
m/p-Xylenes	- -	µg/L	2 U	2 U	2 U	NA	2.0 U	NA	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
o-Xylene	- -	µg/L	1 U	1 U	1 U	NA	1.0 U	NA	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	5	µg/L	1 U	1 U	1 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Xylenes (total)	5	µg/L	2 U	2 U	2 U	5.0 U	NA	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Total BTEX	- -	µg/L	ND	ND	ND	ND	ND	ND	ND	**0.42 J**	ND	ND	ND	ND	ND
PAHs															
Acenaphthene	20	µg/L	5 U	5 U	5 U	10 U	0.50 U	0.50 U	0.47 U	0.47 U	0.49 U	0.47 U	4.9 U	0.47 U	5.3 U
Acenaphthylene	- -	µg/L	5 U	5 U	5 U	10 U	0.50 U	0.50 U	0.47 U	0.47 U	0.49 U	0.47 U	4.9 U	0.47 U	5.3 U
Anthracene	50	µg/L	5 U	5 U	5 U	10 U	0.50 U	0.50 U	0.47 U	0.47 U	0.49 U	0.47 U	4.9 U	0.47 U	5.3 U
Benzo(a)anthracene	0.002	µg/L	5 U	5 U	5 U	1.0 U	0.50 U	0.50 U	0.47 U	0.47 U	0.49 U	0.47 U	4.9 U	0.47 U	5.3 U
Benzo(a)pyrene	0	µg/L	5 U	5 U	5 U	1.0 U	0.50 U	0.50 U	0.47 U	0.47 U	0.49 U	0.47 U	4.9 U	0.47 U	5.3 U
Benzo(b)fluoranthene	0.002	µg/L	5 U	5 U	5 U	1.0 U	0.50 U	0.50 U	0.47 U	0.47 U	0.49 U	0.47 U	4.9 U	0.47 U	5.3 U
Benzo(g,h,i)perylene	- -	µg/L	5 U	5 U	5 U	10 U	0.50 U	0.50 U	0.47 U	0.47 U	0.49 U	0.47 U	4.9 U	0.47 U	5.3 U
Benzo(k)fluoranthene	0.002	ug/L	5 U	5 U	5 U	1 U	0.5 UJ	0.5 U	0.47 U	0.47 U	0.49 U	0.47 U	4.9 U	4.7 U	5.3 U
Chrysene	0.002	µg/L	5 U	5 U	5 U	10 U	0.50 U	0.50 U	0.47 U	0.47 U	0.49 U	0.47 U	4.9 U	0.47 U	5.3 U
Dibenzo(a,h)anthracene	- -	ug/L	5 U	5 U	5 U	1 U	0.5 U	0.5 U	0.47 U	0.47 U	0.49 U	0.47 U	4.9 U	4.7 U	5.3 U
Fluoranthene	50	µg/L	5 U	5 U	5 U	10 U	0.50 U	0.50 U	0.47 U	0.47 U	0.49 U	0.47 U	4.9 U	0.47 U	5.3 U
Fluorene	50	µg/L	5 U	5 U	5 U	10 U	0.50 U	0.50 U	0.47 U	0.47 U	0.49 U	0.47 U	4.9 U	0.47 U	5.3 U
Indeno(1,2,3-cd)pyrene	0.002	µg/L	5 U	5 U	5 U	1.0 U	0.50 U	0.50 U	0.47 U	0.47 U	0.49 U	0.47 U	4.9 U	0.47 U	5.3 U
Naphthalene	10	µg/L	5 U	5 U	5 U	10 U	**1.0**	0.50 U	0.47 U	0.47 U	0.49 U	0.47 U	4.9 U	0.47 U	5.3 U
Phenanthrene	50	µg/L	5 U	5 U	5 U	10 U	0.50 U	0.50 U	0.47 U	0.47 U	0.49 U	0.47 U	4.9 U	0.47 U	5.3 U
Pyrene	50	µg/L	5 U	5 U	5 U	10 U	0.50 U	0.50 U	0.47 U	0.47 U	0.49 U	0.47 U	4.9 U	0.47 U	5.3 U
Total PAHs	- -	µg/L	ND	ND	ND	ND	**1.2 J**	ND	ND	ND	ND	ND	ND	ND	ND

See notes on last page

Table 2
Groundwater Quality Data
NYSEG
Oneonta Former MGP Site
Oneonta, New York

Location ID:	NYSDEC GW Stds & GVs	Units	MW-9114S												
Date Collected:			11/29/12	05/09/13	11/14/13	05/28/14	11/18/14	05/19/15	11/17/15	05/11/16	11/16/16	05/16/17	11/07/17	05/16/18	11/14/18
BTEX															
Benzene	1	µg/L	**0.76 J**	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	**1.9**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
m/p-Xylenes	- -	µg/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
o-Xylene	- -	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
Toluene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	**1.9**	1 U	1 U	**25**	1 U	**0.55 J**	1 U
Xylenes (total)	5	µg/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	3 U	2 U	2 U
Total BTEX	- -	µg/L	**2.7 J**	ND	ND	ND	ND	ND	**1.9**	ND	ND	**25**	ND	**0.55 J**	ND
PAHs															
Acenaphthene	20	µg/L	4.7 U	4.7 U	5.4 U	4.6 U	4.7 U	5 U	5.1 U	4.8 U	4.5 U	5 U	5 U	5 U	5 U
Acenaphthylene	- -	µg/L	4.7 U	4.7 U	5.4 U	4.6 U	4.7 U	5 U	5.1 U	4.8 U	4.5 U	5 U	5 U	5 U	5 U
Anthracene	50	µg/L	4.7 U	4.7 U	5.4 U	4.6 U	4.7 U	5 U	5.1 U	4.8 U	4.5 U	5 U	5 U	5 U	5 U
Benzo(a)anthracene	0.002	µg/L	4.7 U	4.7 U	5.4 U	4.6 U	4.7 U	5 U	5.1 U	4.8 U	4.5 U	5 U	5 U	5 U	5 U
Benzo(a)pyrene	0	µg/L	4.7 U	4.7 U	5.4 U	4.6 U	4.7 U	5 U	5.1 U	4.8 U	4.5 U	5 U	5 U	5 U	5 U
Benzo(b)fluoranthene	0.002	µg/L	4.7 U	4.7 U	5.4 U	4.6 U	4.7 U	5 U	5.1 U	4.8 U	4.5 U	5 U	5 U	5 U	5 U
Benzo(g,h,i)perylene	- -	µg/L	4.7 U	4.7 U	5.4 U	4.6 UJ	4.7 U	5 U	5.1 U	4.8 U	4.5 U	5 U	5 U	5 U	5 U
Benzo(k)fluoranthene	0.002	ug/L	4.7 U	4.7 U	5.4 U	4.6 U	4.7 U	5 U	5.1 U	4.8 U	4.5 U	5 U	5 U	5 U	5 U
Chrysene	0.002	µg/L	4.7 U	4.7 U	5.4 U	4.6 U	4.7 UJ	5 U	5.1 U	4.8 U	4.5 U	5 U	5 U	5 U	5 U
Dibenzo(a,h)anthracene	- -	ug/L	4.7 U	4.7 U	5.4 U	4.6 UJ	4.7 U	5 U	5.1 U	4.8 U	4.5 U	5 U	5 U	5 U	5 U
Fluoranthene	50	µg/L	4.7 U	4.7 U	5.4 U	4.6 U	4.7 U	5 U	5.1 U	4.8 U	4.5 U	5 U	5 U	5 U	5 U
Fluorene	50	µg/L	4.7 U	4.7 U	5.4 U	4.6 U	4.7 U	5 U	5.1 U	4.8 U	4.5 U	5 U	5 U	5 U	5 U
Indeno(1,2,3-cd)pyrene	0.002	µg/L	4.7 U	4.7 U	5.4 U	4.6 UJ	4.7 UJ	5 U	5.1 U	4.8 U	4.5 U	5 U	5 U	5 U	5 U
Naphthalene	10	µg/L	**2.3 J**	4.7 U	5.4 U	4.6 U	4.7 U	5 U	5.1 U	4.8 U	4.5 U	5 U	5 U	5 U	5 U
Phenanthrene	50	µg/L	4.7 U	4.7 U	5.4 U	4.6 U	4.7 U	5 U	5.1 U	4.8 U	4.5 U	5 U	5 U	5 U	5 U
Pyrene	50	µg/L	4.7 U	4.7 U	5.4 U	4.6 U	4.7 U	5 U	5.1 U	4.8 U	4.5 U	5 U	5 U	5 U	5 U
Total PAHs	- -	µg/L	**2.3 J**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

See notes on last page

Location ID:	NYSDEC GW Stds & GVs	Units	MW-9114S						MW-9502S						
Date Collected:			05/22/19	11/05/19	06/16/20	11/18/20	05/26/21	11/11/21	05/21/03	09/18/07	12/17/07	12/01/09	05/20/10	11/02/10	05/10/11
BTEX															
Benzene	1	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1.0 U	0.50 U	0.50 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	4.0 U	**0.94**	0.50 U	1.0 U	1.0 U	1.0 U	1.0 U
m/p-Xylenes	- -	µg/L	2 U	2 U	2 U	2 U	2 U	2 U	NA	NA	NA	2.0 U	2.0 U	2.0 U	2.0 U
o-Xylene	- -	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	NA	NA	NA	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	5	µg/L	**19**	**1.9**	1U	1U	**1.1**	1 U	5.0 U	0.50 U	0.50 U	1.0 U	1.0 U	1.0 U	1.0 U
Xylenes (total)	5	µg/L	2 U	2 U	2 U	2 U	2 U	2 U	5.0 U	**1.4 J**	1.5 U	2.0 U	2.0 U	2.0 U	2.0 U
Total BTEX	- -	µg/L	**19**	**1.9**	ND	ND	**1.1**	ND	ND	**2.3 J**	ND	ND	ND	ND	ND
PAHs															
Acenaphthene	20	µg/L	5 U	5 U	5 U	5 U	6 U	5 U	10 U	NA	NA	0.47 U	0.48 U	0.48 U	4.8 U
Acenaphthylene	- -	µg/L	5 U	5 U	5 U	5 U	6 U	5 U	10 U	NA	NA	0.47 U	0.48 U	0.48 U	4.8 U
Anthracene	50	µg/L	5 U	5 U	5 U	5 U	6 U	5 U	10 U	NA	NA	0.47 U	0.48 U	0.48 U	4.8 U
Benzo(a)anthracene	0.002	µg/L	5 U	5 U	5 U	5 U	6 U	5 U	1.0 U	NA	NA	0.47 U	0.48 U	0.48 U	4.8 U
Benzo(a)pyrene	0	µg/L	5 U	5 U	5 U	5 U	6 U	5 U	1.0 U	NA	NA	0.47 U	0.48 U	0.48 U	4.8 U
Benzo(b)fluoranthene	0.002	µg/L	5 U	5 U	5 U	5 U	6 U	5 U	1.0 U	NA	NA	0.47 U	0.48 U	0.48 U	4.8 U
Benzo(g,h,i)perylene	- -	µg/L	5 U	5 U	5 U	5 U	6 U	5 U	10 U	NA	NA	0.47 U	0.48 U	0.48 U	4.8 U
Benzo(k)fluoranthene	0.002	ug/L	5 U	5 U	5 U	5 U	6 U	5 U	1 U	NA	NA	0.47 U	0.48 U	0.48 U	4.8 U
Chrysene	0.002	µg/L	5 U	5 U	5 U	5 U	6 U	5 U	10 U	NA	NA	0.47 U	0.48 U	0.48 U	4.8 U
Dibenzo(a,h)anthracene	- -	ug/L	5 U	5 U	5 U	5 U	6 U	5 U	1 U	NA	NA	0.47 U	0.48 U	0.48 U	4.8 U
Fluoranthene	50	µg/L	5 U	5 U	**0.45 J**	5 U	6 U	5 U	10 U	NA	NA	0.47 U	0.48 U	0.48 U	4.8 U
Fluorene	50	µg/L	5 U	5 U	5 U	5 U	6 U	5 U	10 U	NA	NA	0.47 U	0.48 U	0.48 U	4.8 U
Indeno(1,2,3-cd)pyrene	0.002	µg/L	5 U	5 U	5 U	5 U	6 U	5 U	1.0 U	NA	NA	0.47 U	0.48 U	0.48 U	4.8 U
Naphthalene	10	µg/L	5 U	5 U	5 U	5 U	6 U	5 U	10 U	NA	NA	0.47 U	0.48 U	0.48 U	4.8 U
Phenanthrene	50	µg/L	5 U	5 U	5 UB	5 U	6 U	5 U	10 U	NA	NA	0.47 U	0.48 U	0.48 U	4.8 U
Pyrene	50	µg/L	5 U	5 U	5 U	5 U	6 U	5 U	10 U	NA	NA	0.47 U	0.48 U	0.48 U	4.8 U
Total PAHs	- -	µg/L	ND	ND	**0.45 J**	ND	ND	ND	ND	NA	NA	ND	ND	ND	ND

See notes on last page

Location ID:	**NYSDEC GW Stds & GVs**	**Units**	**MW-9502S**												
Date Collected:			**11/08/11**	**05/30/12**	**11/29/12**	**05/09/13**	**11/14/13**	**05/28/14**	**11/18/14**	**05/19/15**	**11/17/15**	**05/10/16**	**11/15/16**	**05/16/17**	**11/07/17**
BTEX															
Benzene	1	µg/L	1.0 U	1.0 U	**1.9**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	5	µg/L	1.0 U	1.0 U	**1.3**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
m/p-Xylenes	- -	µg/L	2.0 U	2.0 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
o-Xylene	- -	µg/L	1.0 U	1.0 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	1.0 U	1.0 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	µg/L	2.0 U	2.0 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	3 U
Total BTEX	- -	µg/L	ND	ND	**3.2**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PAHs															
Acenaphthene	20	µg/L	4.8 U	5.2 U	**0.49 J**	4.8 U	5.3 U	4.5 U	4.7 U	4.8 U	5 U	4.7 U	4.6 U	5 U	5 U
Acenaphthylene	- -	µg/L	4.8 U	5.2 U	4.7 U	4.8 U	5.3 U	4.5 U	4.7 U	4.8 U	5 U	4.7 U	4.6 U	5 U	5 U
Anthracene	50	µg/L	4.8 U	5.2 U	4.7 U	4.8 U	5.3 U	4.5 U	4.7 U	4.8 U	5 U	4.7 U	4.6 U	5 U	5 U
Benzo(a)anthracene	0.002	µg/L	4.8 U	5.2 U	4.7 U	4.8 U	5.3 U	4.5 U	4.7 U	4.8 U	5 U	4.7 U	4.6 U	5 U	5 U
Benzo(a)pyrene	0	µg/L	4.8 U	5.2 U	4.7 U	4.8 U	5.3 U	4.5 U	4.7 U	4.8 U	5 U	4.7 U	4.6 U	5 U	5 U
Benzo(b)fluoranthene	0.002	µg/L	4.8 U	5.2 U	4.7 U	4.8 U	5.3 U	4.5 U	4.7 U	4.8 U	5 U	4.7 U	4.6 U	5 U	5 U
Benzo(g,h,i)perylene	- -	µg/L	4.8 U	5.2 U	4.7 U	4.8 U	5.3 U	4.5 U	4.7 U	4.8 UJ	5 U	4.7 U	**0.38 J**	5 U	5 U
Benzo(k)fluoranthene	0.002	ug/L	4.8 U	5.2 U	4.7 U	4.8 U	5.3 U	4.5 U	4.7 U	4.8 U	5 U	4.7 U	4.6 U	5 U	5 U
Chrysene	0.002	µg/L	4.8 U	5.2 U	4.7 U	4.8 U	5.3 U	4.5 U	4.7 UJ	4.8 U	5 U	4.7 U	4.6 U	5 U	5 U
Dibenzo(a,h)anthracene	- -	ug/L	4.8 U	5.2 U	4.7 U	4.8 U	5.3 U	4.5 U	4.7 U	4.8 U	5 U	4.7 U	4.6 U	5 U	5 U
Fluoranthene	50	µg/L	4.8 U	5.2 U	4.7 U	4.8 U	5.3 U	4.5 U	4.7 U	4.8 U	5 U	4.7 U	4.6 U	5 U	5 U
Fluorene	50	µg/L	4.8 U	5.2 U	4.7 U	4.8 U	5.3 U	4.5 U	4.7 U	4.8 U	5 U	4.7 U	4.6 U	5 U	5 U
Indeno(1,2,3-cd)pyrene	0.002	µg/L	4.8 U	5.2 U	4.7 U	4.8 U	5.3 U	4.5 U	4.7 UJ	4.8 UJ	5 U	4.7 U	4.6 U	5 U	5 U
Naphthalene	10	µg/L	4.8 U	5.2 U	**2.1 J**	4.8 U	5.3 U	4.5 U	4.7 U	4.8 U	5 U	4.7 U	4.6 U	5 U	5 U
Phenanthrene	50	µg/L	4.8 U	5.2 U	4.7 U	4.8 U	5.3 U	4.5 U	4.7 U	4.8 U	5 U	4.7 U	4.6 U	5 U	5 U
Pyrene	50	µg/L	4.8 U	5.2 U	4.7 U	4.8 U	5.3 U	4.5 U	4.7 U	4.8 U	5 U	4.7 U	4.6 U	5 U	5 U
Total PAHs	- -	µg/L	ND	ND	**2.6 J**	ND	ND	ND	ND	ND	ND	ND	**0.38 J**	ND	ND

See notes on last page

Table 2
Groundwater Quality Data
NYSEG
Oneonta Former MGP Site
Oneonta, New York

Location ID:	NYSDEC GW Stds & GVs	Units	MW-9502S								PTMW-0202				
Date Collected:			05/15/18	11/14/18	05/21/19	11/05/19	06/17/20	11/18/20	05/26/21	11/11/21	05/28/03	12/01/09	05/20/10	11/02/10	05/10/11
BTEX															
Benzene	1	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**22**	**12**	**7.1**	**33**	1.0 U
Ethylbenzene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**7.7**	1.0 U	1.0 U	1.0 U	1.0 U
m/p-Xylenes	- -	µg/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	NA	2.0 U	2.0 U	**1.4 J**	2.0 U
o-Xylene	- -	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	NA	**2.4**	1.0 U	**3.2**	1.0 U
Toluene	5	µg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Xylenes (total)	5	µg/L	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	**1.6 J**	**2.9**	2.0 U	**4.6**	2.0 U
Total BTEX	- -	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	**31 J**	**15**	**7.1**	**38 J**	ND
PAHs															
Acenaphthene	20	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	**52**	**39**	**34**	**42**	**23**
Acenaphthylene	- -	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	**1.2 J**	0.47 U	0.48 U	**0.40 J**	4.8 U
Anthracene	50	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	**0.60 J**	**0.27 J**	**0.12 J**	**0.23 J**	4.8 U
Benzo(a)anthracene	0.002	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	1.0 U	0.47 U	0.48 U	0.48 U	4.8 U
Benzo(a)pyrene	0	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	1.0 U	0.47 U	0.48 U	0.48 U	4.8 U
Benzo(b)fluoranthene	0.002	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	1.0 U	0.47 U	0.48 U	0.48 U	4.8 U
Benzo(g,h,i)perylene	- -	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	0.47 U	0.48 U	0.48 U	4.8 U
Benzo(k)fluoranthene	0.002	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	1 U	0.47 U	0.48 U	0.48 U	4.8 U
Chrysene	0.002	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10 U	0.47 U	0.48 U	0.48 U	4.8 U
Dibenzo(a,h)anthracene	- -	ug/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	1 U	0.47 U	0.48 U	0.48 U	4.8 U
Fluoranthene	50	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	**0.50 J**	**0.56**	**0.45 J**	**0.88**	4.8 U
Fluorene	50	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	**6.9 J**	**3.1**	**5.2**	**9.8**	4.8 U
Indeno(1,2,3-cd)pyrene	0.002	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	1.0 U	0.47 U	0.48 U	0.48 U	4.8 U
Naphthalene	10	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	**0.70 J**	**16**	**0.36 J**	**48**	4.8 U
Phenanthrene	50	µg/L	5 U	5 U	5 U	5 U	5 UB	5 U	5 U	5 U	**5.2 J**	**0.38 J**	0.48 U	**0.42 J**	4.8 U
Pyrene	50	µg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	**0.50 J**	**0.55**	**0.45 J**	**0.85**	4.8 U
Total PAHs	- -	µg/L	ND	ND	ND	ND	ND	ND	ND	ND	**68 J**	**60 J**	**41 J**	**100 J**	**23**

See notes on last page

Table 2
Groundwater Quality Data
NYSEG
Oneonta Former MGP Site
Oneonta, New York

Location ID:	NYSDEC GW Stds & GVs	Units	PTMW-0202												
Date Collected:			11/09/11	05/30/12	11/30/12	05/09/13	11/14/13	05/29/14	11/19/14	05/21/15	11/17/15	05/10/16	11/15/16	05/16/17	11/08/17
BTEX															
Benzene	1	µg/L	1.0 U	**32**	**320 D**	**120**	**30**	**53**	**290 D**	**90**	**230**	**97**	1 U	**40**	**380**
Ethylbenzene	5	µg/L	1.0 U	1.0 U	**12**	2 U	1 U	1 U	**0.92 J**	1 U	**21**	4 U	1 U	1 U	**43**
m/p-Xylenes	- -	µg/L	2.0 U	2.0 U	**1.2 J**	4 U	2 U	2 U	**2.6**	2 U	8 U	8 U	2 U	2 U	**3.8**
o-Xylene	- -	µg/L	1.0 U	1.0 U	**12**	**6.2**	1 U	**1.6**	**7.5**	**1.9**	**7.2**	4 U	1 U	**2.7**	**17**
Toluene	5	µg/L	1.0 U	1.0 U	**0.67 J**	2 U	1 U	1 U	1 U	1 U	4 U	4 U	1 U	**0.52 J**	**0.86 J**
Xylenes (total)	5	µg/L	2.0 U	2.0 U	**13**	**6.2**	2 U	**1.6 J**	**10**	**1.9 J**	**7.2 J**	8 U	2 U	**2.7**	**21**
Total BTEX	- -	µg/L	ND	**32**	**346 J**	**126**	**30**	**54.6 J**	**301 J**	**91.9 J**	**258 J**	**97**	ND	**43.2 J**	**445 J**
PAHs															
Acenaphthene	20	µg/L	**41**	**35**	**55**	**43 J**	**20**	**43**	**61 J**	**40**	**20**	**39**	4.6 U	**57**	**86 D**
Acenaphthylene	- -	µg/L	**0.46 J**	5.3 U	**0.41 J**	R	5.5 U	**0.4 J**	230 U	**0.43 J**	4.7 U	4.8 U	4.6 U	5 U	**0.8 J**
Anthracene	50	µg/L	4.7 U	5.3 U	**0.33 J**	R	5.5 U	**0.34 J**	230 U	5.1 U	**0.27 J**	**0.56 J**	4.6 U	**0.63 J**	**1.2 J**
Benzo(a)anthracene	0.002	µg/L	4.7 U	5.3 U	4.7 U	**0.34 J**	5.5 U	4.6 U	230 U	5.1 U	4.7 U	4.8 U	4.6 U	5 U	5 U
Benzo(a)pyrene	0	µg/L	4.7 U	5.3 U	4.7 U	R	5.5 U	4.6 U	230 U	5.1 U	4.7 U	4.8 U	4.6 U	5 U	5 U
Benzo(b)fluoranthene	0.002	µg/L	4.7 U	5.3 U	4.7 U	**0.32 J**	5.5 U	4.6 U	230 U	5.1 U	4.7 U	4.8 U	4.6 U	5 U	5 U
Benzo(g,h,i)perylene	- -	µg/L	4.7 U	5.3 U	4.7 U	R	5.5 U	4.6 U	230 U	5.1 U	4.7 U	4.8 U	4.6 U	5 U	5 U
Benzo(k)fluoranthene	0.002	ug/L	4.7 U	5.3 U	4.7 U	R	5.5 U	4.6 U	230 U	5.1 U	4.7 U	4.8 U	4.6 U	5 U	5 U
Chrysene	0.002	µg/L	4.7 U	5.3 U	4.7 U	R	5.5 U	4.6 U	230 UJ	5.1 U	4.7 U	4.8 U	4.6 U	5 U	5 U
Dibenzo(a,h)anthracene	- -	ug/L	4.7 U	5.3 U	4.7 U	R	5.5 U	4.6 U	230 U	5.1 U	4.7 U	4.8 U	4.6 U	5 U	5 U
Fluoranthene	50	µg/L	4.7 U	5.3 U	**0.41 J**	R	**0.5 J**	**0.56 J**	230 U	5.1 U	**0.44 J**	**0.6 J**	4.6 U	**0.63 J**	**0.93 J**
Fluorene	50	µg/L	**4.7**	**5.2 J**	**7.8**	**3.9 J**	**2.2 J**	**8.4**	230 U	**3.4 J**	**3.5 J**	**5.9**	4.6 U	**8**	**16**
Indeno(1,2,3-cd)pyrene	0.002	µg/L	4.7 U	5.3 U	4.7 U	R	5.5 U	4.6 U	230 UJ	5.1 U	4.7 U	4.8 U	4.6 U	5 U	5 U
Naphthalene	10	µg/L	4.7 U	5.3 U	**69**	**R**	**1.3 J**	4.6 U	**120 J**	5.1 U	**18**	**12**	4.6 U	5 U	**290 D**
Phenanthrene	50	µg/L	4.7 U	5.3 U	**2.4 J**	**1.7 J**	5.5 U	**1.5 J**	230 U	**0.89 J**	**1.1 J**	**2.4 J**	4.6 U	**2.6 J**	**4.8 J**
Pyrene	50	µg/L	**0.85 J**	5.3 U	**0.44 J**	**0.71 J**	**0.53 J**	**0.68 J**	230 U	5.1 U	4.7 U	**0.59 J**	4.6 U	**0.61 J**	**1 J**
Total PAHs	- -	µg/L	**47 J**	**40 J**	**136 J**	**50 J**	**24.5 J**	**54.9 J**	**181 J**	**44.7 J**	**43.3 J**	**61.1 J**	ND	**69.5 J**	**401 J**

See notes on last page

Table 2
Groundwater Quality Data
NYSEG
Oneonta Former MGP Site
Oneonta, New York

Location ID:	NYSDEC GW Stds & GVs	Units	PTMW-0202							
Date Collected:			05/15/18	11/13/18	05/21/19	11/05/19	06/16/20	11/18/20	05/26/21	11/11/21
BTEX										
Benzene	1	µg/L	**260**	**160**	**18**	**390**	**54**	**580 D**	**56 J**	**64**
Ethylbenzene	5	µg/L	4 U	4 U	1 U	4 U	1 U	**0.98 J**	1 U	1 U
m/p-Xylenes	- -	µg/L	8 U	8 U	2 U	**2.9 J**	2 U	**2.9**	2 U	**1.1 J**
o-Xylene	- -	µg/L	**4.9**	**5.3**	**1.8**	**8.3**	**0.97 J**	**11**	**2**	**2.8**
Toluene	5	µg/L	4 U	4 U	1 U	4 U	1 U	**0.64 J**	1 U	1 U
Xylenes (total)	5	µg/L	**4.9 J**	**5.3 J**	**1.8 J**	**11**	**0.97 J**	**14**	**2**	**3.9**
Total BTEX	- -	µg/L	**265 J**	**165 J**	**19.8 J**	**401**	**55.0 J**	**596 DJ**	**58 J**	**67.9 J**
PAHs										
Acenaphthene	20	µg/L	**63**	**88**	**40**	**77 D**	**41**	**73**	**41 J**	**51**
Acenaphthylene	- -	µg/L	**0.62 J**	5 U	5 U	5 U	25 U	25 U	25 U	25 U
Anthracene	50	µg/L	**0.64 J**	**1.7 J**	**0.71 J**	**1.3 J**	25 U	25 U	25 U	25 U
Benzo(a)anthracene	0.002	µg/L	5 U	5 U	5 U	5 U	25 U	25 U	25 U	25 U
Benzo(a)pyrene	0	µg/L	5 U	5 U	5 U	5 U	25 U	25 U	25 U	25 U
Benzo(b)fluoranthene	0.002	µg/L	5 U	5 U	5 U	5 U	25 U	25 U	25 U	25 U
Benzo(g,h,i)perylene	- -	µg/L	5 U	5 U	5 U	5 U	25 U	25 U	25 U	25 U
Benzo(k)fluoranthene	0.002	ug/L	5 U	5 U	5 U	5 U	25 U	25 U	25 U	25 U
Chrysene	0.002	ug/L	5 U	5 U	5 U	5 U	25 U	25 U	25 U	25 U
Dibenzo(a,h)anthracene	- -	ug/L	5 U	5 U	5 U	5 U	25 U	25 U	25 U	25 U
Fluoranthene	50	µg/L	**0.55 J**	**1.6 J**	**0.81 J**	**1.2 J**	25 U	25 U	25 U	25 U
Fluorene	50	µg/L	**11**	**21**	**9.7**	**18**	**4.1 J**	**15 J**	**5.2 J**	**11 J**
Indeno(1,2,3-cd)pyrene	0.002	ug/L	5 U	5 U	5 U	5 U	25 U	25 U	25 U	25 U
Naphthalene	10	µg/L	**7.8**	**99 D**	5 U	**90 D**	25 U	**110**	25 U	**15 J**
Phenanthrene	50	µg/L	**2.1 J**	**7.8**	**0.93 J**	**2.3 J**	25 U	**3.2 J**	25 U	**2.8 J**
Pyrene	50	µg/L	**0.51 J**	**1.5 J**	**0.87 J**	**1.7 J**	25 U	25 U	25 U	25 U
Total PAHs	- -	µg/L	**86.2 J**	**221 DJ**	**53 J**	**192 J**	**45.1 J**	**201 J**	**46.2 J**	**79.8 J**

See notes on last page

Table 2
Groundwater Quality Data
NYSEG
Oneonta Former MGP Site
Oneonta, New York

Notes:

1. Samples were submitted to Eurofins TestAmerica, Amherst, New York for analysis using USEPA SW-846 Methods 8260B (VOCs) and 8270C (SVOCs).
2. D - Compound quantitated using a secondary dilution.
3. J - Indicates that the analyte was detected at a concentration less than the practical quantitation limit (PQL).
4. U - Indicates the constituent was not detected at the PQL. The value preceding the U indicates the PQL.
5. B - Indicates an estimated values between the instrument detection limit (IDL) and the PQL.
6. ND - not detected
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. Only detected Benzene, Ethlybenzene, Toluene, Xylenes [BTEX] and Polycyclic Aromatic Hydrocarbons [PAH] are presented.
10. NA - not analyzed
11. For groundwater samples where the laboratory reported both the individual congeners for xylenes (m/p- & o-) plus a value for total xylenes, total BTEX calculations used the laboratory reported value for total xylenes.

Table 3
Inspection, Monitoring, and Sampling Schedule
NYSEG
Oneonta Former MGP Site
Oneonta, New York

Event	Schedule	Activities Completed/Scheduled			
		Effectiveness Monitoring[1]	NAPL Gauging[2]	O&M	
				Site Inspection	Well Inspections
Q44 (Annual)	May 2019	X	X		X
Q46 (Semi-Annual)	November 2019	X	X	X	X
Q48 (Annual)	May 2020	X	X		X
Q50 (Semi-Annual)	November 2020	X	X	X	X
Q52 (Annual)	May 2021	X	X		X
Q54 (Semi-Annual)	November 2021	X	X	X	X
Q56 (Annual)	May 2022	X	X		X
Q58 (Semi-Annual)	November 2022	X	X	X	X
Q60 (Semi-Annual)	May 2023	X	X		X
Q62 (Semi-Annual)	November 2023	X	X	X	X

Notes:

1. Effectiveness Monitoring includes:
    - Gauging 14 PMWs (PMW-01 through PMW-14).
    - Gauging 14 MWs (MW-8604S, MW-8806S, MW-8807S, MW-8808S, MW-9109S, MW-9110S, MW-9111S, MW-9112S, MW-9114S, MW-9502S, MW-0201, MW-0203, PTMW-0202, and MW-0301).
    - Gauging 4 Staff Gauges (SG-105, SG-107, SG-110, and SG-111).
    - Gauging 4 PZs (PZ-0801, PZ-0802, PZ-0803, and PZ-105).
    - Sampling 10 MWs (MW-0201, MW-0203, MW-8604S, MW-8806S, MW-9111S, MW-9112S, MW-9112D, MW-9114S, MW-9502S, and PTMW-0202) for laboratory analysis of BTEX by USEPA SW-846 Method 8260 and PAHs by USEPA SW-846 Method 8270C.
    - Triennial sampling (sampling every three years) MW-9111S for laboratory analysis of per- and polyfluoroalkyl substances (PFAS) by USEPA modified Method 537. The first sampling event will occur in May 2022 with the next event in May 2025.
2. NAPL Gauging includes gauging of 2 NRWs (NRW-01 and NRW-02) and AW-12, and removal of recoverable NAPL, if existing.

Table 4
Sampling and Analysis Summary
NYSEG
Oneonta Former MGP Site
Oneonta, New York

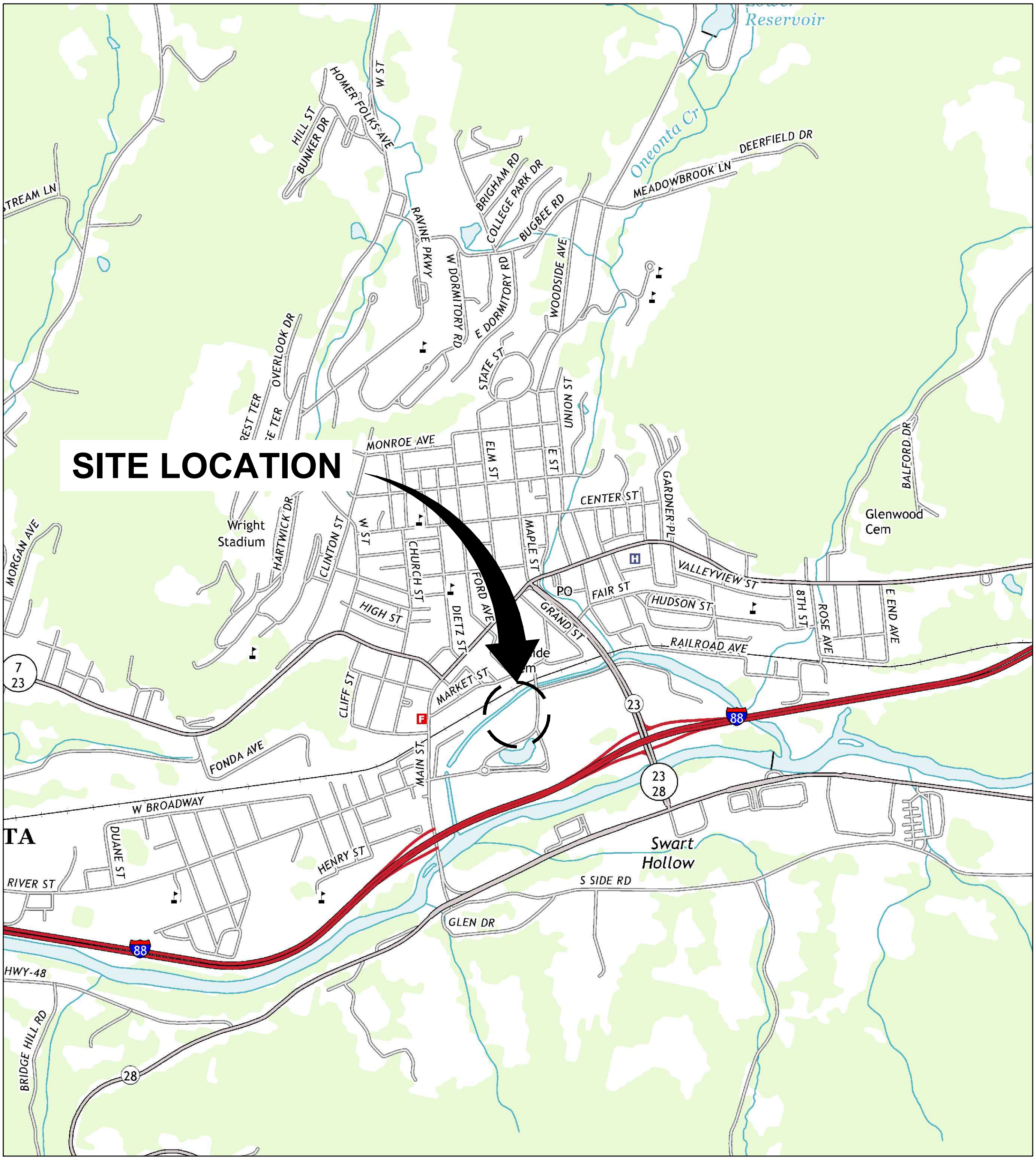
Event	Schedule	Laboratory Analysis[1]	Quantity of Samples	Field QA/QC Samples				Laboratory QA/QC Samples		Total
				Trip Blanks[2]	Equip Rinse Blanks[3]	Field Blank[4]	Field Duplicate[5]	MS/MSD	MSB/LCS	
Q44 (Annual)	May 2019	BTEX	10	2	0	0	1	1 / 1	0	15
		PAHs	10	0	0	0	1	1 / 1	0	13
Q46 (Semi-Annual)	November 2019	BTEX	10	2	0	0	1	1 / 1	0	15
		PAHs	10	0	0	0	1	1 / 1	0	13
Q48 (Annual)	May 2020	BTEX	10	2	0	0	1	1 / 1	0	15
		PAHs	10	0	0	0	1	1 / 1	0	13
Q50 (Semi-Annual)	November 2020	BTEX	10	2	0	0	1	1 / 1	0	15
		PAHs	10	0	0	0	1	1 / 1	0	13
Q52 (Annual)	May 2021	BTEX	10	2	0	0	1	1 / 1	0	15
		PAHs	10	0	0	0	1	1 / 1	0	13
Q54 (Semi-Annual)	November 2021	BTEX	10	2	0	0	1	1 / 1	0	15
		PAHs	10	0	0	0	1	1 / 1	0	13
Q56 (Annual)	May 2022	BTEX	10	2	0	0	1	1 / 1	0	15
		PAHs	10	0	0	0	1	1 / 1	0	13
		PFAS	1	0	0	1	1	1 / 1	0	5
Q58 (Semi-Annual)	November 2022	BTEX	10	2	0	0	1	1 / 1	0	15
		PAHs	10	0	0	0	1	1 / 1	0	13
Q60 (Semi-Annual)	May 2023	BTEX	10	2	0	0	1	1 / 1	0	15
		PAHs	10	0	0	0	1	1 / 1	0	13
Q62 (Semi-Annual)	November 2023	BTEX	10	2	0	0	1	1 / 1	0	15
		PAHs	10	0	0	0	1	1 / 1	0	13

Table 4
Sampling and Analysis Summary
NYSEG
Oneonta Former MGP Site
Oneonta, New York

Notes:

1. BTEX analysis by USEPA SW-846 Method 8260; PAH analysis by USEPA SW-846 Method 8270C; PFAS analysis by USEPA modified Method 537.
2. One trip blank will be collected per cooler per day of samples for BTEX analysis (assume 2 days).
3. Equipment rinse blanks will be collected at a frequency of 1 per 20 if non-dedicated, non-disposable equipment is used; not required if using disposable equipment (table assumes disposable equipment will be used for sample collection).
4. One field blank will be collected during triennial sampling of MW-9111S for analysis of PFAS.
5. Field Duplicates will be collected at a frequency of 1 per 20 and sent to the laboratory for analysis.

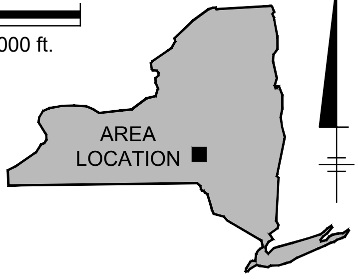
Figures



REFERENCE: BASE MAP USGS 7.5. MIN. TOPO. QUAD., ONEONTA, NY, 2013

0 2000' 4000'

Approximate Scale: 1 in. = 2000 ft.



NEW YORK

NYSEG
ONEONTA FORMER MGP SITE
ONEONTA, NEW YORK
SITE MANAGEMENT PLAN

SITE LOCATION MAP

ARCADIS

FIGURE
1

C:\Users\ekrahmer\OneDrive - ARCADIS\BIM360 - OneDrive Sync Location\AUS-NYSEG-FORMER MGP SITE-ONEONTA New York\2021\01-In Progress\01-DWG\SMP_2021_Fig1-SLM.dwg LAYOUT: 1 SAVED: 1/11/2022 10:29 AM ACADVER: 24.0S (LMS TECH) PAGESETUP: --- PLOTSTYLETABLE:
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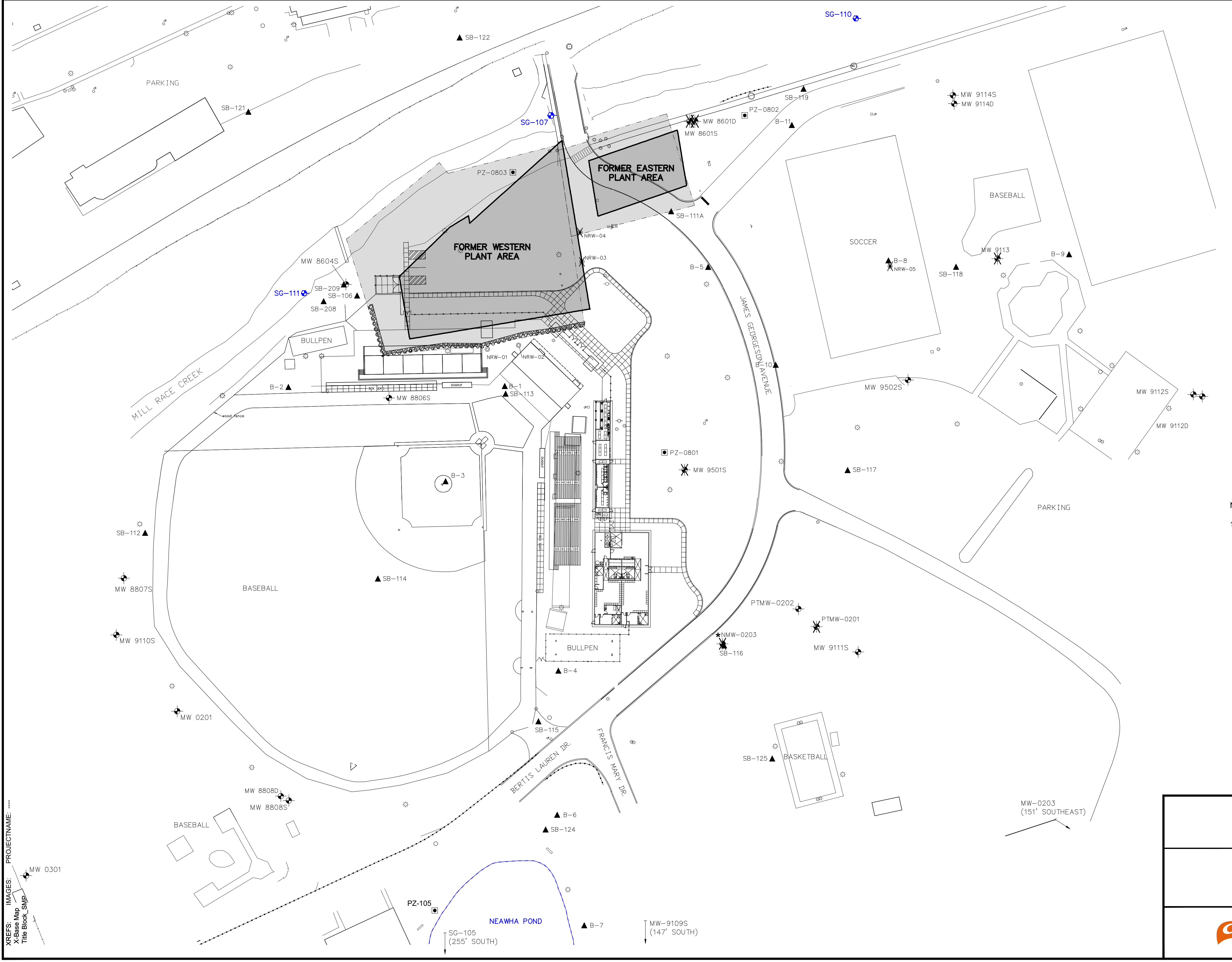
NY_Oneonta_20130213_TM_geo.png



LEGEND:

☼	HIGH MAST LIGHT POLE
▨	PERMEABLE WALL LOCATION (APPROXIMATE)
▒	FORMER MGP EXCAVATION LIMITS (PROVIDED BY NYSEG)
◎	NAPL RECOVERY WELL
⊕	STAFF GAUGE
⊕	MONITORING WELL
▲	SOIL BORING
*	WELL EQUIPPED WITH SUMP
▣	PIEZOMETER
✕	MONITORING WELL THAT NO LONGER EXISTS
✕	LNAPL RECOVERY WELL THAT NO LONGER EXISTS

NOTES:

1. BASE MAP PROVIDED IN ELECTRONIC FORMAT FROM NYSEG, DRAWING TITLE "MONITORING WELL LOCATIONS ONEONTA FORMER MGP SITE AND SURROUNDING AREA, OTSEGO COUNTY, NEW YORK, AT A SCALE OF 1"=60', DATED 2/18/02.

NYSEG
ONEONTA FORMER MGP SITE
ONEONTA, NEW YORK
SITE MANAGEMENT PLAN

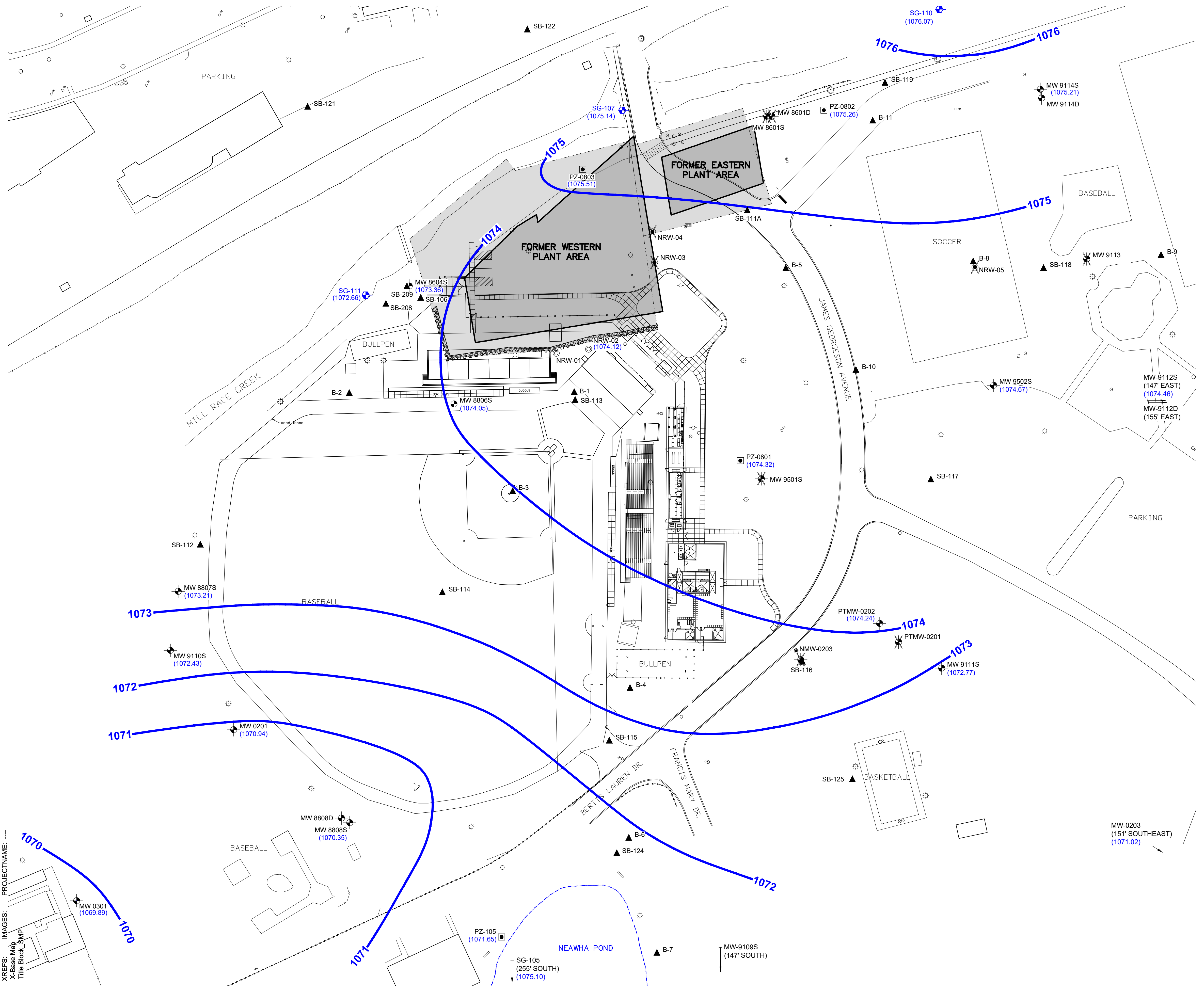
SITE MAP

ARCADIS

FIGURE
2

C:\Users\ekrahmer\OneDrive - ARCADIS\BIM360 - OneDrive Sync Location\AUS-NYSEG-FORMER MGP SITE-ONEONTA New York\2021\01-In Progress\01-DWG\SMP_2021_Fig2-Site Map.dwg LAYOUT: 2 SAVED: 1/11/2022 11:14 AM ACADVER: 24.0S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ----
PLOTTED: 1/11/2022 11:14 AM BY: KRAHMER, ERIC
XREFS: X-Base Map Title Block_SMP IMAGES: PROJECTNAME: ----

C:\Users\ekrahmer\OneDrive - ARCADIS\BIM360 - OneDrive Sync Location\AUS-NYSEG-FORMER MGP SITE-ONEONTA New York\2021\01-In Progress\01-DWG\SMP_2021_Fig3-GW Cont-May 2021.dwg LAYOUT: 3 SAVED: 1/11/2022 11:15 AM ACADVER: 24.0S (LMS TECH) PAGESETUP: ----
PLOTSTYLETABLE: ---- PLOTTED: 1/11/2022 11:15 AM BY: KRAHMER, ERIC
XREFS: IMAGES: PROJECTNAME: ----
X-Base Map
Title Block_SMP



LEGEND:

☼	HIGH MAST LIGHT POLE
▨	PERMEABLE WALL LOCATION (APPROXIMATE)
▒	FORMER MGP EXCAVATION LIMITS (PROVIDED BY NYSEG)
◎	NAPL RECOVERY WELL
⊖	STAFF GAUGE
⊕	MONITORING WELL
▲	SOIL BORING
*	WELL EQUIPPED WITH SUMP
▣	PIEZOMETER
⊗	MONITORING WELL THAT NO LONGER EXISTS
⊗	NAPL RECOVERY WELL THAT NO LONGER EXISTS
1073 ───	WATER TABLE ELEVATION (FAMSL)
(1074.67)	GROUNDWATER ELEVATION (FAMSL)

NOTES:

1. BASE MAP PROVIDED IN ELECTRONIC FORMAT FROM NYSEG, DRAWING TITLE "MONITORING WELL LOCATIONS ONEONTA FORMER MGP SITE AND SURROUNDING AREA, OTSEGO COUNTY, NEW YORK, AT A SCALE OF 1"=60', DATED 2/18/02.
2. DAMASCHKE FIELD RENOVATIONS BASED DRAWING TITLE "AIR MONITORING LOCATIONS ONEONTA MGP" FROM NYSEG DATED 6/27/07 AND AERIAL PHOTOGRAPHS.
3. ALL ELEVATIONS ARE REFERENCED TO NGVD 1929.
4. FAMSL – FEET ABOVE MEAN SEA LEVEL.

0 50' 100'
GRAPHIC SCALE

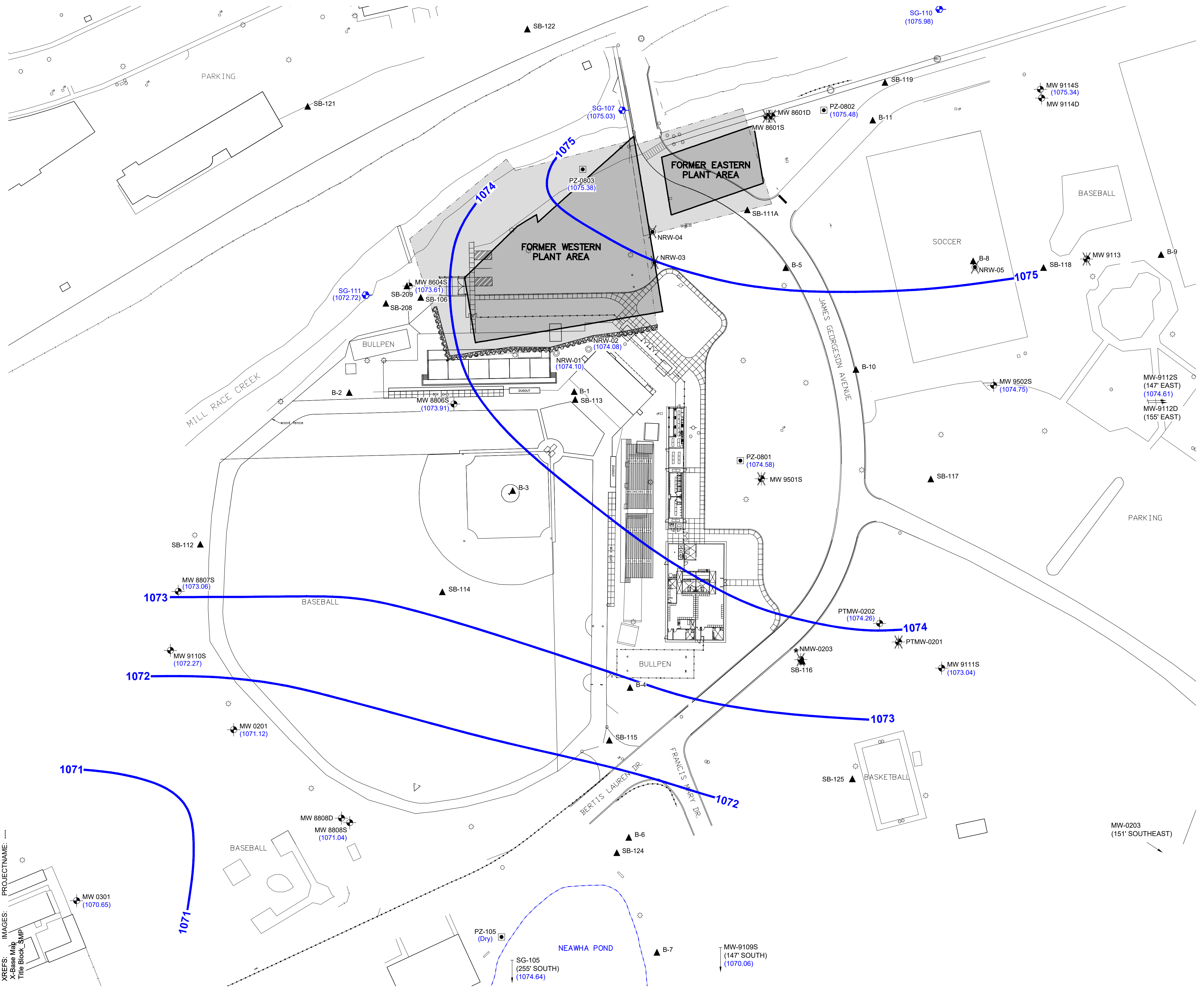
NYSEG
ONEONTA FORMER MGP SITE
ONEONTA, NEW YORK
SITE MANAGEMENT PLAN

POTENTIOMETRIC SURFACE - MAY 26, 2021

ARCADIS

FIGURE
3

C:\Users\ekrahmer\OneDrive - ARCADIS\BIM360 - OneDrive Sync Location\AUS-NYSEG-FORMER MGP SITE-ONEONTA New York\2021\01-In Progress\01-DWG\SMP_2021_Fig4-GW Cont-November 2021.dwg LAYOUT: 4 SAVED: 1/11/2022 11:16 AM ACADVER: 24.0S (LMS TECH) PAGESETUP: ----
PLOTSTYLETABLE: ---- PLOTTED: 1/11/2022 11:17 AM BY: KRAHMER, ERIC
XREFS: X-Base Map Title Block_SMP IMAGES: PROJECTNAME: ----



LEGEND:

☼	HIGH MAST LIGHT POLE
▨	PERMEABLE WALL LOCATION (APPROXIMATE)
▒	FORMER MGP EXCAVATION LIMITS (PROVIDED BY NYSEG)
◎	NAPL RECOVERY WELL
◆	STAFF GAUGE
⊕	MONITORING WELL
▲	SOIL BORING
*	WELL EQUIPPED WITH SUMP
▣	PIEZOMETER
✱	MONITORING WELL THAT NO LONGER EXISTS
✱	NAPL RECOVERY WELL THAT NO LONGER EXISTS
1073 ———	WATER TABLE ELEVATION (FAMSL)
(1074.78)	GROUNDWATER ELEVATION (FAMSL)

NOTES:

1. BASE MAP PROVIDED IN ELECTRONIC FORMAT FROM NYSEG, DRAWING TITLE "MONITORING WELL LOCATIONS ONEONTA FORMER MGP SITE AND SURROUNDING AREA, OTSEGO COUNTY, NEW YORK, AT A SCALE OF 1"=60', DATED 2/18/02.
2. DAMASCHKE FIELD RENOVATIONS BASED DRAWING TITLE "AIR MONITORING LOCATIONS ONEONTA MGP" FROM NYSEG DATED 6/27/07 AND AERIAL PHOTOGRAPHS.
3. ALL ELEVATIONS ARE REFERENCED TO NGVD 1929.
4. FAMSL – FEET ABOVE MEAN SEA LEVEL.

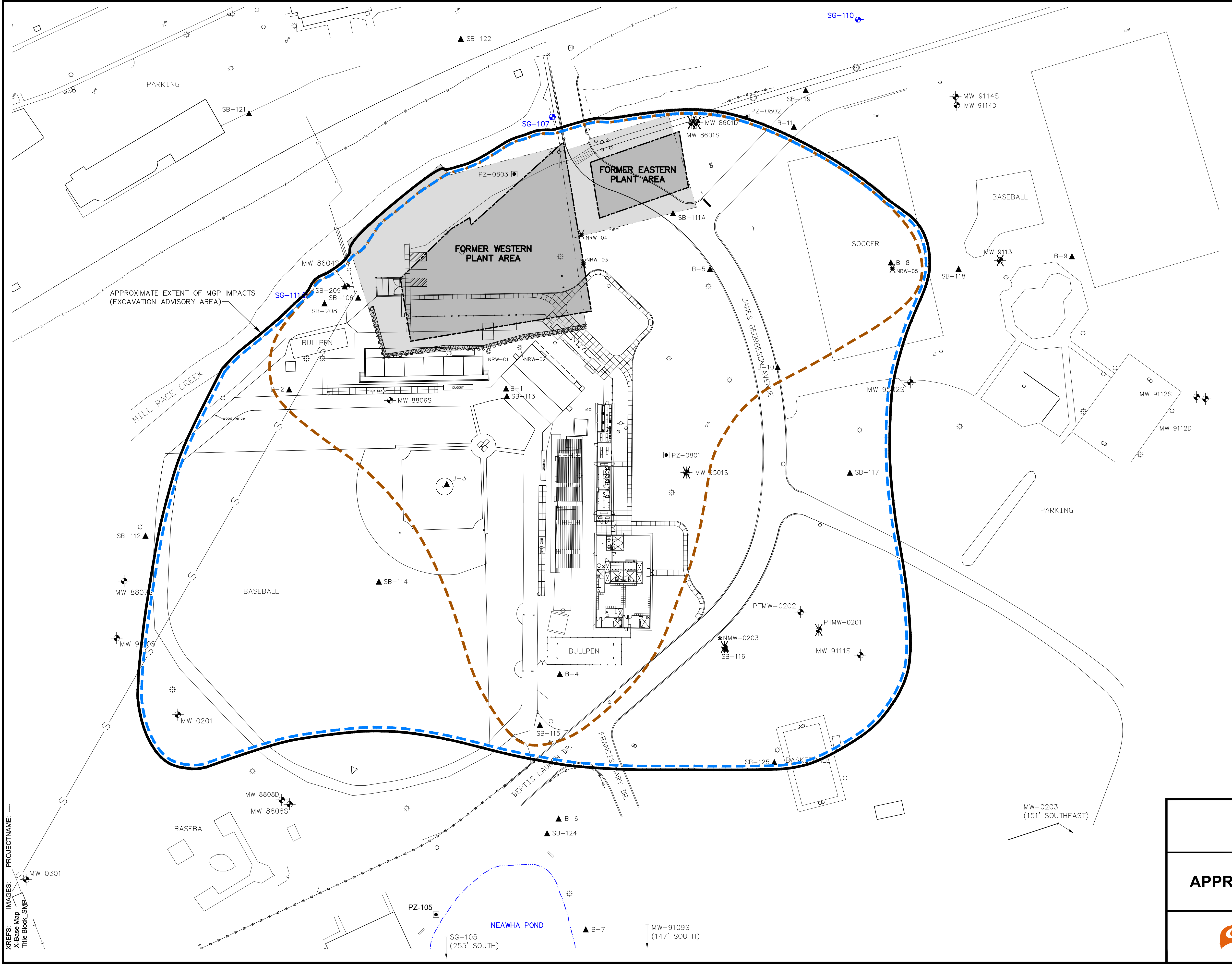
0 50' 100'
GRAPHIC SCALE

NYSEG
ONEONTA FORMER MGP SITE
ONEONTA, NEW YORK
SITE MANAGEMENT PLAN

POTENTIOMETRIC SURFACE - NOVEMBER 10, 2021

ARCADIS

FIGURE
4



LEGEND:

☼	HIGH MAST LIGHT POLE
▨	PERMEABLE WALL LOCATION (APPROXIMATE)
▨	FORMER MGP EXCAVATION LIMITS (PROVIDED BY NYSEG)
▨	FORMER EASTERN AND WESTERN PLANT AREAS
◎	NAPL RECOVERY WELL
⊕	STAFF GAUGE
⊕	MONITORING WELL
▲	SOIL BORING
*	WELL EQUIPPED WITH SUMP
▣	PIEZOMETER
⊗	MONITORING WELL THAT NO LONGER EXISTS
⊗	LNAPL RECOVERY WELL THAT NO LONGER EXISTS
- - -	APPROXIMATE EXTENT OF GROUNDWATER EXCEEDING NYSDEC CLASS GA GROUNDWATER STANDARDS AND GUIDANCE VALUES
- - -	APPROXIMATE EXTENT OF NAPL IMPACTED SOIL AND SOIL CONTAINING MGP IMPACTS
—-—-—	FORMER MGP PROPERTY BOUNDARY
———	APPROXIMATE EXTENT OF MGP IMPACTS (EXCAVATION ADVISORY AREA)

NOTES:

1. BASE MAP PROVIDED IN ELECTRONIC FORMAT FROM NYSEG, DRAWING TITLE "MONITORING WELL LOCATIONS ONEONTA FORMER MGP SITE AND SURROUNDING AREA, OTSEGO COUNTY, NEW YORK, AT A SCALE OF 1"=60', DATED 2/18/02.
2. EXTENT OF EXCAVATION LIMITS PROVIDED BY EARTH TECH, INC., DRAWING TITLE "PROPOSED SAMPLING PLAN" FROM REMEDIAL ACTION DESIGN REPORT (JUNE 2006).
3. DAMASCHKE FIELD RENOVATIONS BASED DRAWING TITLE "AIR MONITORING LOCATIONS ONEONTA MGP" FROM NYSEG DATED 6/27/07 AND AERIAL PHOTOGRAPHS.
4. FORMER MGP PROPERTY BOUNDARIES TAKEN FROM MAP BY LAWSON SURVEYING & MAPPING 2008, PROVIDED BY NYSEG.

0 50' 100'
GRAPHIC SCALE

NYSEG
ONEONTA FORMER MGP SITE
ONEONTA, NEW YORK
SITE MANAGEMENT PLAN

APPROXIMATE EXTENT OF IMPACTS

ARCADIS

FIGURE
5

C:\Users\ekrahmer\OneDrive - ARCADIS\BIM360 - OneDrive Sync Location\AUS-NYSEG-FORMER MGP SITE-ONEONTA New York\2021\01-In Progress\01-DWG\SMP_2021_Fig5-Extent of Impacts.dwg LAYOUT: 5 SAVED: 1/11/2022 11:19 AM ACADVER: 24.0S (LMS TECH) PAGESETUP: ----
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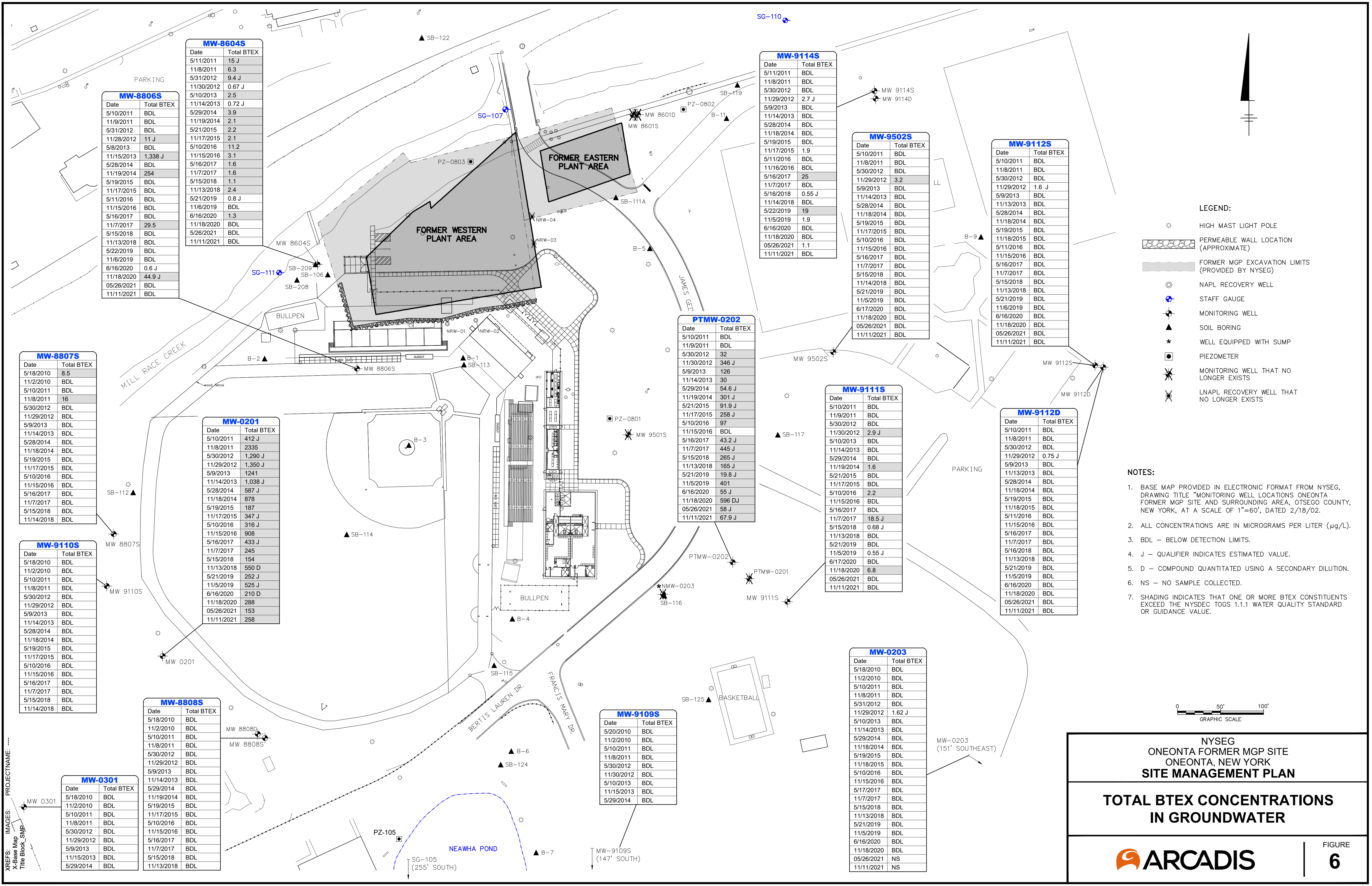
XREFS: IMAGES: PROJECTNAME: ----
X-Base Map
Title Block_SMP



MW-8604S

Date	Total BTEX
5/11/2011	15 J
11/8/2011	6.3
5/31/2012	9.4 J
11/30/2012	0.67 J
5/10/2013	2.5
11/14/2013	0.72 J
5/29/2014	3.9
11/19/2014	2.1
5/21/2015	2.2
11/17/2015	2.1
5/10/2016	11.2
11/15/2016	3.1
5/16/2017	1.6
11/7/2017	1.6
5/15/2018	1.1
11/13/2018	2.4
5/21/2019	0.8 J
11/6/2019	BDL
6/16/2020	1.3
11/18/2020	BDL
5/26/2021	BDL
11/11/2021	BDL

MW-8806S

Date	Total BTEX
5/10/2011	BDL
11/9/2011	BDL
5/31/2012	BDL
11/28/2012	11 J
5/8/2013	BDL
11/15/2013	1,338 J
5/28/2014	BDL
11/19/2014	254
5/19/2015	BDL
11/17/2015	BDL
5/11/2016	BDL
11/15/2016	BDL
5/16/2017	BDL
11/7/2017	29.5
5/15/2018	BDL
11/13/2018	BDL
5/22/2019	BDL
11/6/2019	BDL
6/16/2020	0.6 J
11/18/2020	44.9 J
05/26/2021	BDL
11/11/2021	BDL

MW-8807S

Date	Total BTEX
5/18/2010	8.5
11/2/2010	BDL
5/10/2011	BDL
11/8/2011	16
5/30/2012	BDL
11/29/2012	BDL
5/9/2013	BDL
11/14/2013	BDL
5/28/2014	BDL
11/18/2014	BDL
5/19/2015	BDL
11/17/2015	BDL
5/10/2016	BDL
11/15/2016	BDL
5/16/2017	BDL
11/7/2017	BDL
5/15/2018	BDL
11/14/2018	BDL

MW-9110S

Date	Total BTEX
5/18/2010	BDL
11/2/2010	BDL
5/10/2011	BDL
11/8/2011	BDL
5/30/2012	BDL
11/29/2012	BDL
5/9/2013	BDL
11/14/2013	BDL
5/28/2014	BDL
11/18/2014	BDL
5/19/2015	BDL
11/17/2015	BDL
5/10/2016	BDL
11/15/2016	BDL
5/16/2017	BDL
11/7/2017	BDL
5/15/2018	BDL
11/14/2018	BDL

MW-0201

Date	Total BTEX
5/10/2011	412 J
11/8/2011	2335
5/30/2012	1,290 J
11/29/2012	1,350 J
5/9/2013	1241
11/14/2013	1,038 J
5/28/2014	587 J
11/18/2014	878
5/19/2015	187
11/17/2015	347 J
5/10/2016	316 J
11/15/2016	908
5/16/2017	433 J
11/7/2017	245
5/15/2018	154
11/13/2018	550 D
5/21/2019	252 J
11/5/2019	525 J
6/16/2020	210 D
11/18/2020	288
05/26/2021	153
11/11/2021	258

MW-0301

Date	Total BTEX
5/18/2010	BDL
11/2/2010	BDL
5/10/2011	BDL
11/8/2011	BDL
5/30/2012	BDL
11/29/2012	BDL
5/9/2013	BDL
11/15/2013	BDL
5/29/2014	BDL

MW-8808S

Date	Total BTEX
5/18/2010	BDL
11/2/2010	BDL
5/10/2011	BDL
11/8/2011	BDL
5/30/2012	BDL
11/29/2012	BDL
5/9/2013	BDL
11/14/2013	BDL
5/29/2014	BDL
11/19/2014	BDL
5/19/2015	BDL
11/17/2015	BDL
5/10/2016	BDL
11/15/2016	BDL
5/16/2017	BDL
11/7/2017	BDL
5/15/2018	BDL
11/13/2018	BDL

MW-9109S

Date	Total BTEX
5/20/2010	BDL
11/2/2010	BDL
5/10/2011	BDL
11/8/2011	BDL
5/30/2012	BDL
11/30/2012	BDL
5/10/2013	BDL
11/15/2013	BDL
5/29/2014	BDL

PTMW-0202

Date	Total BTEX
5/10/2011	BDL
11/9/2011	BDL
5/30/2012	32
11/30/2012	346 J
5/9/2013	126
11/14/2013	30
5/29/2014	54.6 J
11/19/2014	301 J
5/21/2015	91.9 J
11/17/2015	258 J
5/10/2016	97
11/15/2016	BDL
5/16/2017	43.2 J
11/7/2017	445 J
5/15/2018	265 J
11/13/2018	165 J
5/21/2019	19.8 J
11/5/2019	401
6/16/2020	55 J
11/18/2020	596 DJ
05/26/2021	58 J
11/11/2021	67.9 J

MW-9114S

Date	Total BTEX
5/11/2011	BDL
11/8/2011	BDL
5/30/2012	BDL
11/29/2012	2.7 J
5/9/2013	BDL
11/14/2013	BDL
5/28/2014	BDL
11/18/2014	BDL
5/19/2015	BDL
11/17/2015	1.9
5/11/2016	BDL
11/16/2016	BDL
5/16/2017	25
11/7/2017	BDL
5/16/2018	0.55 J
11/14/2018	BDL
5/22/2019	19
11/5/2019	1.9
6/16/2020	BDL
11/18/2020	BDL
05/26/2021	1.1
11/11/2021	BDL

MW-9502S

Date	Total BTEX
5/10/2011	BDL
11/8/2011	BDL
5/30/2012	BDL
11/29/2012	3.2
5/9/2013	BDL
11/14/2013	BDL
5/28/2014	BDL
11/18/2014	BDL
5/19/2015	BDL
11/17/2015	BDL
5/10/2016	BDL
11/15/2016	BDL
5/16/2017	BDL
11/7/2017	BDL
5/15/2018	BDL
11/14/2018	BDL
5/21/2019	BDL
11/5/2019	BDL
6/17/2020	BDL
11/18/2020	BDL
05/26/2021	BDL
11/11/2021	BDL

MW-9112S

Date	Total BTEX
5/10/2011	BDL
11/8/2011	BDL
5/30/2012	BDL
11/29/2012	1.6 J
5/9/2013	BDL
11/13/2013	BDL
5/28/2014	BDL
11/18/2014	BDL
5/19/2015	BDL
11/18/2015	BDL
5/11/2016	BDL
11/15/2016	BDL
5/16/2017	BDL
11/7/2017	BDL
5/15/2018	BDL
11/13/2018	BDL
5/21/2019	BDL
11/6/2019	BDL
6/16/2020	BDL
11/18/2020	BDL
05/26/2021	BDL
11/11/2021	BDL

MW-9111S

Date	Total BTEX
5/10/2011	BDL
11/9/2011	BDL
5/30/2012	BDL
11/30/2012	2.9 J
5/10/2013	BDL
11/14/2013	BDL
5/29/2014	BDL
11/19/2014	1.6
5/21/2015	BDL
11/17/2015	BDL
5/10/2016	2.2
11/15/2016	BDL
5/16/2017	BDL
11/7/2017	18.5 J
5/15/2018	0.68 J
11/13/2018	BDL
5/21/2019	BDL
11/5/2019	0.55 J
6/17/2020	BDL
11/18/2020	6.8
05/26/2021	BDL
11/11/2021	BDL

MW-9112D

Date	Total BTEX
5/10/2011	BDL
11/8/2011	BDL
5/30/2012	BDL
11/29/2012	0.75 J
5/9/2013	BDL
11/13/2013	BDL
5/28/2014	BDL
11/18/2014	BDL
5/19/2015	BDL
11/18/2015	BDL
5/11/2016	BDL
11/15/2016	BDL
5/16/2017	BDL
11/7/2017	BDL
5/16/2018	BDL
11/13/2018	BDL
5/21/2019	BDL
11/5/2019	BDL
6/16/2020	BDL
11/18/2020	BDL
05/26/2021	BDL
11/11/2021	BDL

MW-0203

Date	Total BTEX
5/18/2010	BDL
11/2/2010	BDL
5/10/2011	BDL
11/8/2011	BDL
5/31/2012	BDL
11/29/2012	1.62 J
5/10/2013	BDL
11/14/2013	BDL
5/29/2014	BDL
11/18/2014	BDL
5/19/2015	BDL
11/18/2015	BDL
5/10/2016	BDL
11/15/2016	BDL
5/17/2017	BDL
11/7/2017	BDL
5/15/2018	BDL
11/13/2018	BDL
5/21/2019	BDL
11/5/2019	BDL
6/16/2020	BDL
11/18/2020	BDL
05/26/2021	NS
11/11/2021	NS

LEGEND:

☼	HIGH MAST LIGHT POLE
▨	PERMEABLE WALL LOCATION (APPROXIMATE)
▒	FORMER MGP EXCAVATION LIMITS (PROVIDED BY NYSEG)
◎	NAPL RECOVERY WELL
⊖	STAFF GAUGE
⊕	MONITORING WELL
▲	SOIL BORING
*	WELL EQUIPPED WITH SUMP
▣	PIEZOMETER
✗	MONITORING WELL THAT NO LONGER EXISTS
✗	LNAPL RECOVERY WELL THAT NO LONGER EXISTS

NOTES:

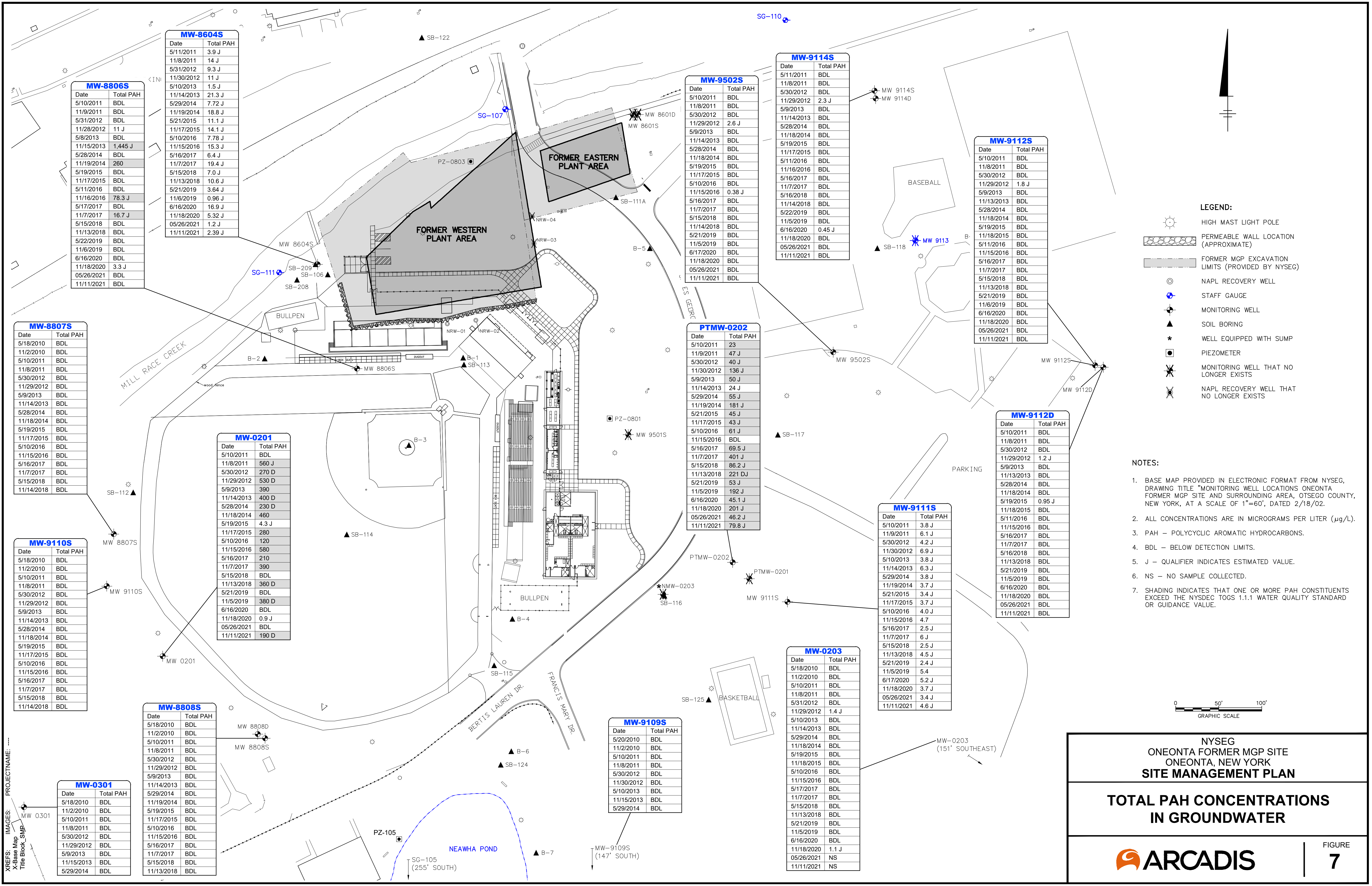
1. BASE MAP PROVIDED IN ELECTRONIC FORMAT FROM NYSEG, DRAWING TITLE "MONITORING WELL LOCATIONS ONEONTA FORMER MGP SITE AND SURROUNDING AREA, OTSEGO COUNTY, NEW YORK, AT A SCALE OF 1"=60', DATED 2/18/02.
2. ALL CONCENTRATIONS ARE IN MICROGRAMS PER LITER (μg/L).
3. BDL – BELOW DETECTION LIMITS.
4. J – QUALIFIER INDICATES ESTIMATED VALUE.
5. D – COMPOUND QUANTITATED USING A SECONDARY DILUTION.
6. NS – NO SAMPLE COLLECTED.
7. SHADING INDICATES THAT ONE OR MORE BTEX CONSTITUENTS EXCEED THE NYSDEC TOGS 1.1.1 WATER QUALITY STANDARD OR GUIDANCE VALUE.

NYSEG
ONEONTA FORMER MGP SITE
ONEONTA, NEW YORK
SITE MANAGEMENT PLAN

TOTAL BTEX CONCENTRATIONS IN GROUNDWATER

ARCADIS

FIGURE
6



MW-8806S

Date	Total PAH
5/10/2011	BDL
11/9/2011	BDL
5/31/2012	BDL
11/28/2012	11 J
5/8/2013	BDL
11/15/2013	1,445 J
5/28/2014	BDL
11/19/2014	260
5/19/2015	BDL
11/17/2015	BDL
5/11/2016	BDL
11/16/2016	78.3 J
5/17/2017	BDL
11/7/2017	16.7 J
5/15/2018	BDL
11/13/2018	BDL
5/22/2019	BDL
11/6/2019	BDL
6/16/2020	BDL
11/18/2020	3.3 J
05/26/2021	BDL
11/11/2021	BDL

MW-8604S

Date	Total PAH
5/11/2011	3.9 J
11/8/2011	14 J
5/31/2012	9.3 J
11/30/2012	11 J
5/10/2013	1.5 J
11/14/2013	21.3 J
5/29/2014	7.72 J
11/19/2014	18.8 J
5/21/2015	11.1 J
11/17/2015	14.1 J
5/10/2016	7.78 J
11/15/2016	15.3 J
5/16/2017	6.4 J
11/7/2017	19.4 J
5/15/2018	7.0 J
11/13/2018	10.6 J
5/21/2019	3.64 J
11/6/2019	0.96 J
6/16/2020	16.9 J
11/18/2020	5.32 J
05/26/2021	1.2 J
11/11/2021	2.39 J

MW-9502S

Date	Total PAH
5/10/2011	BDL
11/8/2011	BDL
5/30/2012	BDL
11/29/2012	2.6 J
5/9/2013	BDL
11/14/2013	BDL
5/28/2014	BDL
11/18/2014	BDL
5/19/2015	BDL
11/17/2015	BDL
5/10/2016	BDL
11/15/2016	0.38 J
5/16/2017	BDL
11/7/2017	BDL
5/15/2018	BDL
11/14/2018	BDL
5/21/2019	BDL
11/5/2019	BDL
6/17/2020	BDL
11/18/2020	BDL
05/26/2021	BDL
11/11/2021	BDL

MW-9114S

Date	Total PAH
5/11/2011	BDL
11/8/2011	BDL
5/30/2012	BDL
11/29/2012	2.3 J
5/9/2013	BDL
11/14/2013	BDL
5/28/2014	BDL
11/18/2014	BDL
5/19/2015	BDL
11/17/2015	BDL
5/11/2016	BDL
11/16/2016	BDL
5/16/2017	BDL
11/7/2017	BDL
5/16/2018	BDL
11/14/2018	BDL
5/22/2019	BDL
11/5/2019	BDL
6/16/2020	0.45 J
11/18/2020	BDL
05/26/2021	BDL
11/11/2021	BDL

MW-9112S

Date	Total PAH
5/10/2011	BDL
11/8/2011	BDL
5/30/2012	BDL
11/29/2012	1.8 J
5/9/2013	BDL
11/13/2013	BDL
5/28/2014	BDL
11/18/2014	BDL
5/19/2015	BDL
11/18/2015	BDL
5/11/2016	BDL
11/15/2016	BDL
5/16/2017	BDL
11/7/2017	BDL
5/15/2018	BDL
11/13/2018	BDL
5/21/2019	BDL
11/6/2019	BDL
6/16/2020	BDL
11/18/2020	BDL
05/26/2021	BDL
11/11/2021	BDL

MW-8807S

Date	Total PAH
5/18/2010	BDL
11/2/2010	BDL
5/10/2011	BDL
11/8/2011	BDL
5/30/2012	BDL
11/29/2012	BDL
5/9/2013	BDL
11/14/2013	BDL
5/28/2014	BDL
11/18/2014	BDL
5/19/2015	BDL
11/17/2015	BDL
5/10/2016	BDL
11/15/2016	BDL
5/16/2017	BDL
11/7/2017	BDL
5/15/2018	BDL
11/14/2018	BDL

PTMW-0202

Date	Total PAH
5/10/2011	23
11/9/2011	47 J
5/30/2012	40 J
11/30/2012	136 J
5/9/2013	50 J
11/14/2013	24 J
5/29/2014	55 J
11/19/2014	181 J
5/21/2015	45 J
11/17/2015	43 J
5/10/2016	61 J
11/15/2016	BDL
5/16/2017	69.5 J
11/7/2017	401 J
5/15/2018	86.2 J
11/13/2018	221 DJ
5/21/2019	53 J
11/5/2019	192 J
6/16/2020	45.1 J
11/18/2020	201 J
05/26/2021	46.2 J
11/11/2021	79.8 J

MW-0201

Date	Total PAH
5/10/2011	BDL
11/8/2011	560 J
5/30/2012	270 D
11/29/2012	530 D
5/9/2013	390
11/14/2013	400 D
5/28/2014	230 D
11/18/2014	460
5/19/2015	4.3 J
11/17/2015	280
5/10/2016	120
11/15/2016	580
5/16/2017	210
11/7/2017	390
5/15/2018	BDL
11/13/2018	360 D
5/21/2019	BDL
11/5/2019	380 D
6/16/2020	BDL
11/18/2020	0.9 J
05/26/2021	BDL
11/11/2021	190 D

MW-9110S

Date	Total PAH
5/18/2010	BDL
11/2/2010	BDL
5/10/2011	BDL
11/8/2011	BDL
5/30/2012	BDL
11/29/2012	BDL
5/9/2013	BDL
11/14/2013	BDL
5/28/2014	BDL
11/18/2014	BDL
5/19/2015	BDL
11/17/2015	BDL
5/10/2016	BDL
11/15/2016	BDL
5/16/2017	BDL
11/7/2017	BDL
5/15/2018	BDL
11/14/2018	BDL

MW-9112D

Date	Total PAH
5/10/2011	BDL
11/8/2011	BDL
5/30/2012	BDL
11/29/2012	1.2 J
5/9/2013	BDL
11/13/2013	BDL
5/28/2014	BDL
11/18/2014	BDL
5/19/2015	0.95 J
11/18/2015	BDL
5/11/2016	BDL
11/15/2016	BDL
5/16/2017	BDL
11/7/2017	BDL
5/16/2018	BDL
11/13/2018	BDL
5/21/2019	BDL
11/5/2019	BDL
6/16/2020	BDL
11/18/2020	BDL
05/26/2021	BDL
11/11/2021	BDL

MW-9111S

Date	Total PAH
5/10/2011	3.8 J
11/9/2011	6.1 J
5/30/2012	4.2 J
11/30/2012	6.9 J
5/10/2013	3.8 J
11/14/2013	6.3 J
5/29/2014	3.8 J
11/19/2014	3.7 J
5/21/2015	3.4 J
11/17/2015	3.7 J
5/10/2016	4.0 J
11/15/2016	4.7
5/16/2017	2.5 J
11/7/2017	6 J
5/15/2018	2.5 J
11/13/2018	4.5 J
5/21/2019	2.4 J
11/5/2019	5.4
6/17/2020	5.2 J
11/18/2020	3.7 J
05/26/2021	3.4 J
11/11/2021	4.6 J

MW-0203

Date	Total PAH
5/18/2010	BDL
11/2/2010	BDL
5/10/2011	BDL
11/8/2011	BDL
5/31/2012	BDL
11/29/2012	1.4 J
5/10/2013	BDL
11/14/2013	BDL
5/29/2014	BDL
11/18/2014	BDL
5/19/2015	BDL
11/18/2015	BDL
5/10/2016	BDL
11/15/2016	BDL
5/17/2017	BDL
11/7/2017	BDL
5/15/2018	BDL
11/13/2018	BDL
5/21/2019	BDL
11/5/2019	BDL
6/16/2020	BDL
11/18/2020	1.1 J
05/26/2021	NS
11/11/2021	NS

MW-8808S

Date	Total PAH
5/18/2010	BDL
11/2/2010	BDL
5/10/2011	BDL
11/8/2011	BDL
5/30/2012	BDL
11/29/2012	BDL
5/9/2013	BDL
11/14/2013	BDL
5/29/2014	BDL
11/19/2014	BDL
5/19/2015	BDL
11/17/2015	BDL
5/10/2016	BDL
11/15/2016	BDL
5/16/2017	BDL
11/7/2017	BDL
5/15/2018	BDL
11/13/2018	BDL

MW-9109S

Date	Total PAH
5/20/2010	BDL
11/2/2010	BDL
5/10/2011	BDL
11/8/2011	BDL
5/30/2012	BDL
11/30/2012	BDL
5/10/2013	BDL
11/15/2013	BDL
5/29/2014	BDL

MW-0301

Date	Total PAH
5/18/2010	BDL
11/2/2010	BDL
5/10/2011	BDL
11/8/2011	BDL
5/30/2012	BDL
11/29/2012	BDL
5/9/2013	BDL
11/15/2013	BDL
5/29/2014	BDL

LEGEND:

☼	HIGH MAST LIGHT POLE
▨	PERMEABLE WALL LOCATION (APPROXIMATE)
▭	FORMER MGP EXCAVATION LIMITS (PROVIDED BY NYSEG)
◎	NAPL RECOVERY WELL
⬢	STAFF GAUGE
⊕	MONITORING WELL
▲	SOIL BORING
*	WELL EQUIPPED WITH SUMP
▣	PIEZOMETER
⊗	MONITORING WELL THAT NO LONGER EXISTS
⊗	NAPL RECOVERY WELL THAT NO LONGER EXISTS

NOTES:

1. BASE MAP PROVIDED IN ELECTRONIC FORMAT FROM NYSEG, DRAWING TITLE "MONITORING WELL LOCATIONS ONEONTA FORMER MGP SITE AND SURROUNDING AREA, OTSEGO COUNTY, NEW YORK, AT A SCALE OF 1"=60', DATED 2/18/02.
2. ALL CONCENTRATIONS ARE IN MICROGRAMS PER LITER (µg/L).
3. PAH – POLYCYCLIC AROMATIC HYDROCARBONS.
4. BDL – BELOW DETECTION LIMITS.
5. J – QUALIFIER INDICATES ESTIMATED VALUE.
6. NS – NO SAMPLE COLLECTED.
7. SHADING INDICATES THAT ONE OR MORE PAH CONSTITUENTS EXCEED THE NYSDEC TOGS 1.1.1 WATER QUALITY STANDARD OR GUIDANCE VALUE.

NYSEG
ONEONTA FORMER MGP SITE
ONEONTA, NEW YORK
SITE MANAGEMENT PLAN

TOTAL PAH CONCENTRATIONS IN GROUNDWATER

ARCADIS

FIGURE
7

C:\Users\ekrahmer\OneDrive - ARCADIS\BIM360 - OneDrive Sync Location\AUS-NYSEG-FORMER MGP SITE-ONEONTA New York\2021\01-In Progress\01-DWG\SMP_2021_Fig7-Total PAH.dwg LAYOUT: 7 SAVED: 1/11/2022 11:22 AM ACADVER: 24.0S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ----
PLOTTED: 1/11/2022 11:24 AM BY: KRAHMER, ERIC
PROJECTNAME: ----
XREFS: IMAGES:
X-Base Map
Title Block_SMP

Appendix A

Environmental Easement

ENVIRONMENTAL EASEMENT GRANTED PURSUANT TO ARTICLE 71, TITLE 36 OF THE NEW YORK STATE ENVIRONMENTAL CONSERVATION LAW

THIS INDENTURE made this 5th day of Septmber, 2013 between Owner(s) City of Oneonta, having an office at 258 Main Street, City Hall, Oneonta, County of Otsego, State of New York (the "Grantor"), and The People of the State of New York (the "Grantee."), acting through their Commissioner of the Department of Environmental Conservation (the "Commissioner", or "NYSDEC" or "Department" as the context requires) with its headquarters located at 625 Broadway, Albany, New York 12233,

WHEREAS, the Legislature of the State of New York has declared that it is in the public interest to encourage the remediation of abandoned and likely contaminated properties ("sites") that threaten the health and vitality of the communities they burden while at the same time ensuring the protection of public health and the environment; and

WHEREAS, the Legislature of the State of New York has declared that it is in the public interest to establish within the Department a statutory environmental remediation program that includes the use of Environmental Easements as an enforceable means of ensuring the performance of operation, maintenance, and/or monitoring requirements and the restriction of future uses of the land, when an environmental remediation project leaves residual contamination at levels that have been determined to be safe for a specific use, but not all uses, or which includes engineered structures that must be maintained or protected against damage to perform properly and be effective, or which requires groundwater use or soil management restrictions; and

WHEREAS, the Legislature of the State of New York has declared that Environmental Easement shall mean an interest in real property, created under and subject to the provisions of Article 71, Title 36 of the New York State Environmental Conservation Law ("ECL") which contains a use restriction and/or a prohibition on the use of land in a manner inconsistent with engineering controls which are intended to ensure the long term effectiveness of a site remedial program or eliminate potential exposure pathways to hazardous waste or petroleum; and

WHEREAS, Grantor, is the owner of real property located at the address of Gas Avenue (aka James Georgeson Avenue) in the City of Oneonta, County of Otsego and State of New York, known and designated on the tax map of the County Clerk of Otsego as tax map parcel numbers: Section 300.10 Block 1 Lot 34, being the same as that property conveyed to Grantor by deed dated October 27, 1966 and recorded in the Otsego County Clerk's Office November 4, 1966, in Book 575 at page 389. The property subject to this Environmental Easement (the "Controlled Property") comprises approximately 0.7 +/- acres, and is hereinafter more fully described in the Land Title Survey dated May 19, 2008 and revised on April 8, 2009 prepared by Lawson Surveying and Mapping, which will be attached to the Site Management Plan. The Controlled Property description is set forth in and attached hereto as Schedule A; and

WHEREAS, the Department accepts this Environmental Easement in order to ensure the protection of public health and the environment and to achieve the requirements for remediation established for the Controlled Property until such time as this Environmental Easement is extinguished pursuant to ECL Article 71, Title 36; and

NOW THEREFORE, in consideration of the mutual covenants contained herein and the terms and conditions of Order on Consent Index Number: D0-0002-9309, Grantor conveys to Grantee a permanent Environmental Easement pursuant to ECL Article 71, Title 36 in, on, over, under, and upon the Controlled Property as more fully described herein ("Environmental Easement").

1. Purposes. Grantor and Grantee acknowledge that the Purposes of this Environmental Easement are: to convey to Grantee real property rights and interests that will run with the land in perpetuity in order to provide an effective and enforceable means of encouraging the reuse and redevelopment of this Controlled Property at a level that has been determined to be safe for a specific use while ensuring the performance of operation, maintenance, and/or monitoring requirements; and to ensure the restriction of future uses of the land that are inconsistent with the above-stated purpose.

2. Institutional and Engineering Controls. The controls and requirements listed in the Department approved Site Management Plan ("SMP") including any and all Department approved amendments to the SMP are incorporated into and made part of this Environmental Easement. These controls and requirements apply to the use of the Controlled Property, run with the land, are binding on the Grantor and the Grantor's successors and assigns, and are enforceable in law or equity against any owner of the Controlled Property, any lessees and any person using the Controlled Property.

A. (1) The Controlled Property may be used for:

Restricted Residential as described in 6 NYCRR Part 373-1.8(g)(2)(ii), Commercial as described in 6 NYCRR Part 375-1.8(g)(2)(iii) and Industrial as described in 6 NYCRR Part 375-1.8(g)(2)(iv)

(2) All Engineering Controls must be operated and maintained as specified in the Site Management Plan (SMP);

(3) All Engineering Controls must be inspected at a frequency and in a manner defined in the SMP;

(4) Groundwater and other environmental or public health monitoring must be performed as defined in the SMP;

(5) Data and information pertinent to Site Management of the Controlled Property must be reported at the frequency and in a manner defined in the SMP;

(6) All future activities on the property that will disturb remaining contaminated material must be conducted in accordance with the SMP;

(7) Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in the SMP;

(8) Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical components of the remedy shall be performed as defined in the SMP;

(9) Access to the site must be provided to agents, employees or other representatives of the State of New York and New York State Electric and Gas Corporation with reasonable prior notice to the property owner to assure compliance with the restrictions identified by this Environmental Easement.

B. The Controlled Property shall not be used for Residential purposes, and the above-stated engineering controls may not be discontinued without an amendment or extinguishment of this Environmental Easement.

C. The SMP describes obligations that the Grantor assumes on behalf of Grantor, its successors and assigns. The Grantor's assumption of the obligations contained in the SMP which may include sampling, monitoring, and/or operating a treatment system, and providing certified reports to the NYSDEC, is and remains a fundamental element of the Department's determination that the Controlled Property is safe for a specific use, but not all uses. The SMP may be modified in accordance with the Department's statutory and regulatory authority. The Grantor and all successors and assigns, assume the burden of complying with the SMP and obtaining an up-to-date version of the SMP from:

Site Control Section
Division of Environmental Remediation
NYSDEC
625 Broadway
Albany, New York 12233
Phone: (518) 402-9553

D. Grantor must provide all persons who acquire any interest in the Controlled Property a true and complete copy of the SMP that the Department approves for the Controlled Property and all Department-approved amendments to that SMP.

E. Grantor covenants and agrees that until such time as the Environmental Easement is extinguished in accordance with the requirements of ECL Article 71, Title 36 of the ECL, the property deed and all subsequent instruments of conveyance relating to the Controlled Property shall state in at least fifteen-point bold-faced type:

This property is subject to an Environmental Easement held by the New York State Department of Environmental Conservation pursuant to Title 36 of Article 71 of the Environmental Conservation Law.

F. Grantor covenants and agrees that this Environmental Easement shall be incorporated in full or by reference in any leases, licenses, or other instruments granting a right to use the Controlled Property.

G. Grantor covenants and agrees that it shall annually, or such time as NYSDEC may allow, submit to NYSDEC a written statement by an expert the NYSDEC may find acceptable certifying under penalty of perjury, in such form and manner as the Department may require, that:

(1) the inspection of the site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under the direction of the individual set forth at 6 NYCRR Part 375-1.8(h)(3).

(2) the institutional controls and/or engineering controls employed at such site:

(i) are in-place;

(ii) are unchanged from the previous certification, or that any identified changes to the controls employed were approved b the NYSDEC and that all controls are in the Department-approved format; and

(iii) that nothing has occurred that would impair the ability of such control to protect the public health and environment;

(3) the owner will continue to allow access to such real property to evaluate the continued maintenance of such controls;

(4) nothing has occurred that would constitute a violation or failure to comply with any site management plan for such controls;

(5 the report and all attachments were prepared under the direction of, and reviewed by, the party making the certification;

(6) to the best of his/her knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted engineering practices; and

(7) the information presented is accurate and complete.

3. Right to Enter and Inspect. Grantee, its agents, employees, or other representatives of the State may enter and inspect the Controlled Property in a reasonable manner and at reasonable times to assure compliance with the above-stated restrictions.

4. Reserved Grantor's Rights. Grantor reserves for itself, its assigns, representatives, and successors in interest with respect to the Property, all rights as fee owner of the Property, including:

A. Use of the Controlled Property for all purposes not inconsistent with, or limited by the terms of this Environmental Easement;

B. The right to give, sell, assign, or otherwise transfer part or all of the underlying fee interest to the Controlled Property, subject and subordinate to this Environmental Easement;

5. Enforcement

A. This Environmental Easement is enforceable in law or equity in perpetuity by Grantor, Grantee, or any affected local government, as defined in ECL Section 71-3603, against the owner of the Property, any lessees, and any person using the land. Enforcement shall not be defeated because of any subsequent adverse possession, laches, estoppel, or waiver. It is not a defense in any action to enforce this Environmental Easement that: it is not appurtenant to an interest in real property; it is not of a character that has been recognized traditionally at common law; it imposes a negative burden; it imposes affirmative obligations upon the owner of any interest in the burdened property; the benefit does not touch or concern real property; there is no privity of estate or of contract; or it imposes an unreasonable restraint on alienation.

B. If any person violates this Environmental Easement, the Grantee may revoke the Certificate of Completion with respect to the Controlled Property.

C. Grantee shall notify Grantor of a breach or suspected breach of any of the terms of this Environmental Easement. Such notice shall set forth how Grantor can cure such breach or suspected breach and give Grantor a reasonable amount of time from the date of receipt of notice in which to cure. At the expiration of such period of time to cure, or any extensions granted by Grantee, the Grantee shall notify Grantor of any failure to adequately cure the breach or suspected breach, and Grantee may take any other appropriate action reasonably necessary to remedy any breach of this Environmental Easement, including the commencement of any proceedings in accordance with applicable law.

D. The failure of Grantee to enforce any of the terms contained herein shall not be deemed a waiver of any such term nor bar any enforcement rights.

6. Notice. Whenever notice to the Grantee (other than the annual certification) or approval from the Grantee is required, the Party providing such notice or seeking such approval shall identify the Controlled Property by referencing the following information:

County, NYSDEC Site Number, NYSDEC Brownfield Cleanup Agreement, State Assistance Contract or Order Number, and the County tax map number or the Liber and Page or computerized system identification number.

Parties shall address correspondence to:

Site Number: 439001
Office of General Counsel
NYSDEC
625 Broadway
Albany New York 12233-5500

With a copy to:

Site Control Section
Division of Environmental Remediation
NYSDEC
625 Broadway
Albany, NY 12233

All notices and correspondence shall be delivered by hand, by registered mail or by Certified mail and return receipt requested. The Parties may provide for other means of receiving and communicating notices and responses to requests for approval.

7. Recordation. Grantor shall record this instrument, within thirty (30) days of execution of this instrument by the Commissioner or her/his authorized representative in the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

8. Amendment. Any amendment to this Environmental Easement may only be executed by the Commissioner of the New York State Department of Environmental Conservation or the Commissioner's Designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property

Law.

9. Extinguishment. This Environmental Easement may be extinguished only by a release by the Commissioner of the New York State Department of Environmental Conservation, or the Commissioner's Designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

10. Joint Obligation. If there are two or more parties identified as Grantor herein, the obligations imposed by this instrument upon them shall be joint and several.

IN WITNESS WHEREOF, Grantor has caused this instrument to be signed in its name.

City of Oneonta:

By: ______________________

Print Name: Richard P. Miller, Jr.

Title: Mayor Date: ____________

Grantor's Acknowledgment

STATE OF NEW YORK)
) ss:
COUNTY OF Otsego)

On the 1st day of December, in the year 20 11, before me, the undersigned, personally appeared Richard P. Miller, Jr., personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

____
Notary Public - State of New York

JAMES R. KOURY
Notary Public, State of New York
Otsego County, Reg. No. 01KO5008978
Commission Expires 3/8/15

06/11

THIS ENVIRONMENTAL EASEMENT IS HEREBY ACCEPTED BY THE PEOPLE OF THE STATE OF NEW YORK, Acting By and Through the Department of Environmental Conservation as Designee of the Commissioner,

By: ____________________________________
Robert W. Schick, Director
Division of Environmental Remediation

Grantee's Acknowledgment

STATE OF NEW YORK)
)
COUNTY OF ALBANY) SS:

On the 5th day of September, in the year 2013, before me, the undersigned, personally appeared Robert W. Schick, personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his capacity as Designee of the Commissioner of the State of New York Department of Environmental Conservation, and that by his signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

____
Notary Public – State of New York

David J. Chiusano
Notary Public, State of New York
No. 01CH5032146
Qualified in Schenectady County
Commission Expires August 22, 2014

SCHEDULE "A" PROPERTY DESCRIPTION

PARCEL I (Environmental Easement Area 1)
On the easterly side of Gas Avenue, beginning at a point on the easterly bounds of the old Ford Farm 154.3 feet southerly from the centerline of the former Albany and Susquehanna Railroad (now the Delaware and Hudson Railroad); running thence southerly along said old Ford Farm easterly line 60 feet to a point; thence easterly, making on interior angle with said Ford Farm easterly line of 80 deg. 21 min. 100 feet to a point; thence northerly and parallel with said easterly Ford Farm line, 60 feet to a point making an interior angle of 99 deg 39 min. with the previously mentioned second course; thence westerly 100 feet making an interior angle of 80 deg 21 min. with the third course, to the place of beginning.

PARCEL II (Environmental Easement Area 2)
On the westerly side of Gas Avenue, beginning at a point in the northerly bounds of lands known as Nehawa Park, owned by the City of Oneonta, said northerly bounds being the same as those described in a deed doted July 6, 1909, recorded in the Otsego County Clerk's office in Book 273 of deeds at Page 251 by which a tract of land was conveyed by the Oneonta Light and Power Company to the City of Oneonta, said point being 24.75 feet westerly from the easterly bounds of the old Ford Farm easterly boundary line; running thence westerly along said northerly boundary line of City lands at right angles to the old Ford Farm easterly boundary line 194.7 feet to a point; thence at right angles to the aforementioned course in a northerly direction 67.5. feet along a line bounding lands owned by the City of Oneonta on the west to a point; thence in a northeasterly direction 77+/- feet to a point; thence northeasterly 25.7 feet along the southerly bounds of the former Jared Goodyear estate to a point; thence southerly on a line parallel with the easterly bounds of the old Ford Farm 20.83 feet to a point; thence northeasterly 132 feet to a point which is 24.75 feet westerly from the easterly bounds of the old Ford Farm; thence southerly, on a line parallel to and 24.75 feet distant from the said Ford Farm easterly boundary 182.22 feet to the place of beginning.

Being all the property located on the easterly and westerly sides of Gas Avenue now owned by the New York. State Electric & Gas Corporation, as successor to the Oneonta Gas Light Company and the Oneonta Light and Power Company, acquired by deeds as follows: Standard Oil Company of New York to Oneonta Light and Power Company dated May 15, 1914, recorded in Book 289 of Deeds at Page 250; B. VanSteenbergh and lone P. VanSteenbergh, his wife, to The Oneonta Gas Light Company dated June 11, 1881; recorded in Book 189 of Deeds at Page 63; William T. Russell to The Oneonta Gas Light Company dated March 1, 1888, recorded in Book 217 of Deeds at Page 309; and The City of Oneonta to Oneonta Light and Power Company dated July 6, 1909, recorded in Book 273 of Deeds at Page 290. Subject to an Agreement dated September 14, 1965 between New York State Electric & Gas Corporation and Elizabeth M. Waters of Gas Avenue, Oneonta, New York, for use of said Parcel I to install and maintain an underground water pipe line.

LOCATION MAP
Source: N.Y.S.D.O.T. Quadrangle Sheet – Oneonta, NY

Record Description

PARCEL I (Environmental Easement Area 1)

On the easterly side of Gas Avenue, beginning at a point on the easterly bounds of the old Ford Farm 154.3 feet southerly from the centerline of the former Albany and Susquehanna Railroad (now the Delaware and Hudson Railroad); running thence southerly along said old Ford Farm easterly line 60 feet to a point; thence easterly, making an interior angle with said Ford Farm easterly line of 80°21' 100 feet to a point; thence northerly and parallel with said easterly Ford Farm line, 60 feet to a point making an interior angle of 99°39' with the previously mentioned second course; thence westerly 100 feet making an interior angle of 80°21' with the third course, to the place of beginning.

PARCEL II (Environmental Easement Area 2)

On the westerly side of Gas Avenue, beginning at a point in the northerly bounds of lands known as Nehawa Park, owned by the City of Oneonta, said northerly bounds being the same as those described in a deed dated July 6, 1909, recorded in the Otsego County Clerk's office in Book 273 of deeds at Page 251 by which a tract of land was conveyed by the Oneonta Light and Power Company to the City of Oneonta, said point being 24.75 feet westerly from the easterly bounds of the old Ford Farm easterly boundary line; running thence westerly along said northerly boundary line of City lands at right angles to the old Ford Farm easterly boundary line 194.7 feet to a point; thence at right angles to the aforementioned course in a northerly direction 67.5 feet along a line bounding lands owned by the City of Oneonta on the west to a point; thence in a northeasterly direction 77+/– feet to a point; thence northeasterly 25.7 feet along the southerly bounds of the former Jared Goodyear estate to a point; thence southerly on a line parallel with the easterly bounds of the old Ford Farm 20.83 feet to a point; thence northeasterly 132 feet to a point which is 24.75 feet westerly from the easterly bounds of the old Ford Farm; thence southerly, on a line parallel to and 24.75 feet distant from the said Ford Farm easterly boundary 182.22 feet to the place of beginning.

Being all the property located on the easterly and westerly sides of Gas Avenue now owned by the New York State Electric & Gas Corporation, as successor to the Oneonta Gas Light Company and the Oneonta Light and Power Company, acquired by deeds as follows: Standard Oil Company of New York to Oneonta Light and Power Company dated May 15, 1914, recorded in Book 289 of Deeds at Page 250; B. VanSteenbergh and Ione P. VanSteenbergh, his wife, to The Oneonta Gas Light Company dated June 11, 1881; recorded in Book 189 of Deeds at Page 63; William T. Russell to The Oneonta Gas Light Company dated March 1, 1888, recorded in Book 217 of Deeds at Page 309; and The City of Oneonta to Oneonta Light and Power Company dated July 6, 1909, recorded in Book 273 of Deeds at Page 290.

Subject to an Agreement dated September 14, 1965 between New York State Electric & Gas Corporation and Elizabeth M. Waters of Gas Avenue, Oneonta, New York, for use of said Parcel I to install and maintain an underground water pipe line.

Metes and Bounds Description of Environmental Easements

All that tract or parcel of land being situate in the City of Oneonta, County of Otsego and State of New York; being bounded and described as follows:

Environmental Easement Area 1:

Beginning at a point on the easterly bounds of the old Ford Farm, said point being South 05°54'05" West a distance of 154.3 feet from the centerline of the Delaware & Hudson Railroad; running thence along the bounds of Parcel I herein described the following three courses and distances:

1) North 86°15'05" East	100.00 feet;
2) South 05°54'05" West	60.00 feet;
3) South 86°15'05" West	100.00 feet;

to a point on the easterly bounds of the old Ford Farm; running thence North 05°54'05" East along the easterly bounds of the old Ford Farm a distance of 60.00 feet to the point of beginning. Containing 0.136 acre of land. Bearings refer to Magnetic North May 2008

Environmental Easement Area 2:

Beginning at a point located South 05°54'05" West 156.21 feet along the easterly bounds of the old Ford Farm and North 84°05'55" West 24.75 feet from the northwest corner of Parcel I; running thence along the bounds of Parcel II the following seven courses and distances:

1) North 84°05'55" West	194.70 feet;
2) North 05°54'05" East	67.50 feet;
3) North 61°00'16" East	75.33 feet;
4) North 73°57'15" East	23.27 feet;
5) South 05°54'05" West	8.00 feet;
6) North 63°24'05" East	132.00 feet;
7) South 05°54'05" West	182.22 feet;

to the point of beginning. Containing 0.558 acre of land. Bearings refer to Magnetic North May 2008.

Being the same premises described in Liber 575 at Page 389 of deeds filed at the Otsego County Clerk's Office.

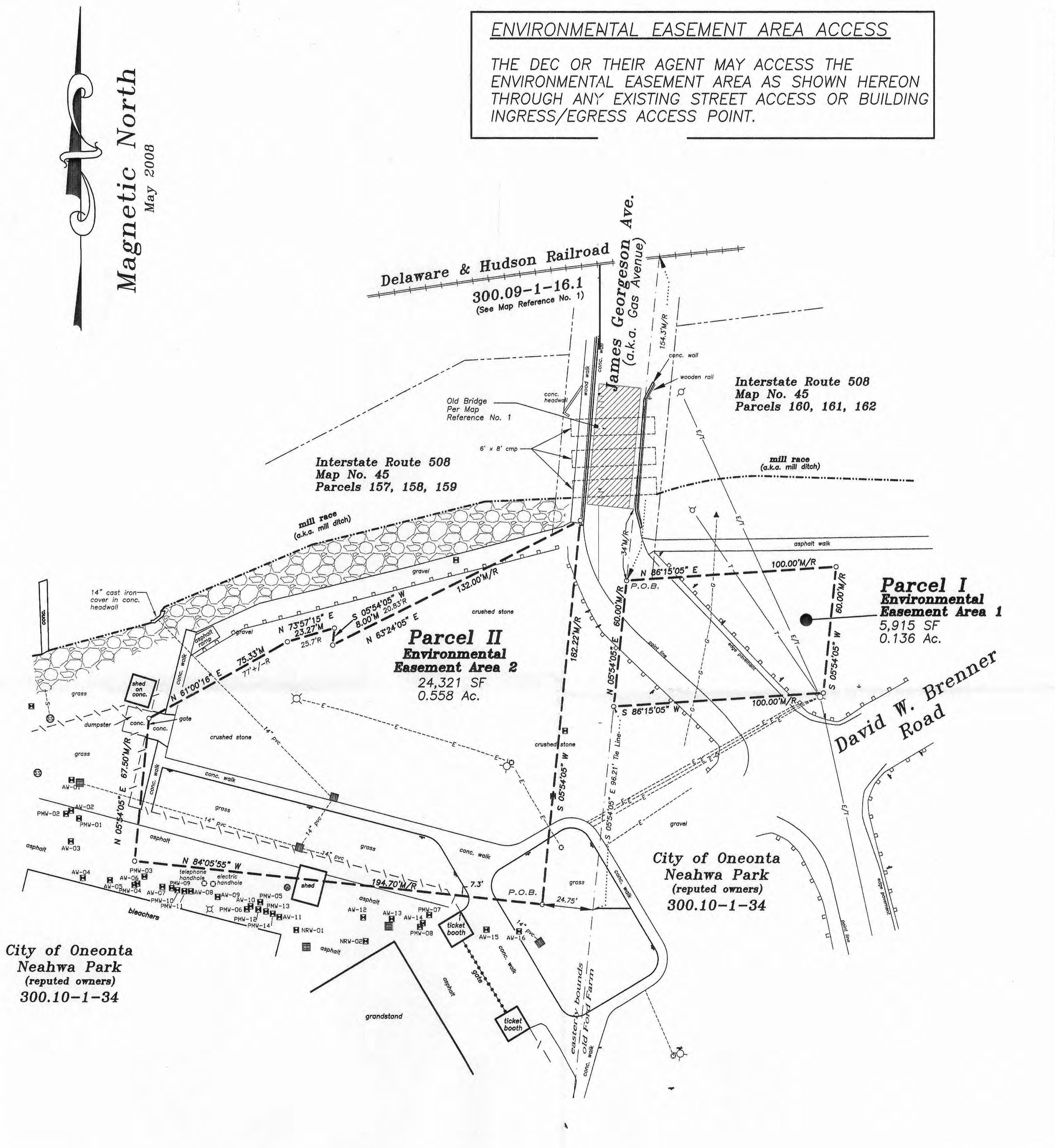
Held by the New York State Deparment of Environmental Conservation pursuant to Title 36 of Article 71 of the New York Environmental Conservation Law.

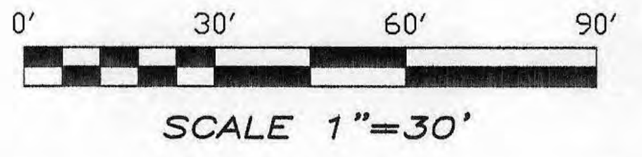
"Copies from the original of this survey map not marked with an original of the land surveyor's inked seal or embossed seal shall not be considered to be a valid true copy."

Alterations not conforming to section 7209, subdivision 2, of the State Education Law, are prohibited.

ENVIRONMENTAL EASEMENT AREA ACCESS

THE DEC OR THEIR AGENT MAY ACCESS THE ENVIRONMENTAL EASEMENT AREA AS SHOWN HEREON THROUGH ANY EXISTING STREET ACCESS OR BUILDING INGRESS/EGRESS ACCESS POINT.





SCALE 1"=30'

NOTES

1) Subject to the rights of the public over James Georgeson Ave. a.k.a. Gas Avenue.

2) Subject to any utility easements of record.

3) Site may contain protected wetlands. Contact appropriate governmental agencies prior to any site work.

4) Underground features, facilities, structures and utilities have been located from available records, field locations of associated above ground structures, and any markings provided by the client. Therefore, these locations must be considered approximate. There may be other underground features, facilities, structures and utilities, the location or existence of which is not presently known. Location of underground features, facilities, utilities and structures are not certified.

5) In the event that there is a discrepancy between the contents of the signed and sealed hard copy drawing and the corresponding digital drawing file, the hard copy with an original stamp and signature shall be the controlling document. Be sure to compare the two documents before using the digital file.

6) Subject to restrictions in Deed Liber 289, Page 250; Agreement recited in Deed liber 575, Page 389.
Subject to easements recorded in Deed Liber 729 Page 616.

7) This Survey has been revised with the benefit of Title Report No. MAC 53483, dated 02/02/2012.

LEGEND

○	Direction Change
—\—\—\—\—	Board Fence
—··—··—··—	Water Course/Edge Pond, Lake, River, Stream etc.
— — — —	Boundary Line
— - - — - - —	Parcel Lines Per Map Reference No. 6
┬─┬─┬─┬	Guide rail – Wood
	Stone Rip rap
AW-01 ☒ PMW-02	Monitoring Well
-○-	Utility Pole With Light
←	Guy Anchor
	Utility Pole
-○-	Light Pole
——E/T/C——	Utility Line, Electric/Telephone/Cable T.V.
- - - - - - - -	Underground Utility, Labeled
	Hand hole – Electric
Ⓢ	Sanitary Sewer Manhole
▲	Gas Marker
	Sign & Post
▦	Catch Basin/Drop Inlet
═╪═╪═╪═	Railroad Track
M/R	Measured/Record Distance
P.O.B.	Point of Beginning
300.10-1-34	County Tax Map Parcel I.D. Number

MAP REFERENCES

1) Ref. R.O.W. and Track Map $\frac{V4}{62}$ Delaware and Hudson Company dated June 20, 1916.

2) "Map Of A Portion Of The Lands of James Mirabito & Sons, Inc...", by Sheret Surveying & Engineering, dated June 1989; private.

3) "Map Of The Lands of James Mirabito & Sons, Inc...", by Sheret Surveying & Engineering, dated July 1989; private.

4) Map Titled "Real Estate Owned by New York State Gas & Electric Co., Oneonta, N.Y.", dated Dec. 15, 1920; private.

5) "Map of Oneonta Light & Power Co., Gas Property...." G.A. Lane, 1909..

6) N.Y.S.D.O.T. Map For Acquisition Interstate Route 508 Oneonta: Main Street to County Road 47, County of Otsego..." Map 45, Parcels 157–162.

TO: –New York State–Department of Environmental Conservation
–The People of the State of New York acting through its Commissioner of the Department of Environmental Conservation
–Stewart Title Insurance Company
–City of Oneonta

This is to certify that this map or plat and the survey on which it is based were made in accordance with the "Minimum Standard Detail Requirements for ALTA/ACSM Land Title Surveys," jointly established and adopted by ALTA and NSPS in 2005, and includes items 2,4,8,9,10,11, and 13 of Table A thereof. Pursuant to the Accuracy Standards as adopted by ALTA and NSPS and in effect on the date of this certification, undersigned further certified that in my professional opinion, as a land surveyor registered in the State of New York, the Relative Positional Accuracy of this survey does not exceed that which is specified therein.

Date: July 30, 2013

Robert J. Lawson
N.Y.S. Lic. No. 050086

ALTA/ACSM Land and Title Survey of Premises of

City of Oneonta

L 575 P 389

City of Oneonta, County of Otsego
State of New York

REVISIONS

No.	Date	Description
1	4/2/09	Added Environmental Easement Verbiage Per NYSEG
2	4/8/09	Monitoring Well Locations
3	3/28/11	Added to Certification
4	2/3/12	Revised Note #7.
5	7/25/13	Update Survey

LAWSON SURVEYING & MAPPING

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16 - 18 Reynolds Avenue ◆ Oneonta, New York 13820
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Facsimile: (607) 432-8313

1885 State Street ◆ Schenectady, New York 12304
Phone: (518) 393-3464
Facsimile: (518) 393-3510

www.lawsonsurvey.com

LSM

Robert J. Lawson, L.S.
N.Y.S. License No.: 050086

DATE: May 19, 2008
W.O. No.: 5245
SCALE: 1 inch = 30 feet
DRAWN BY: S.A.D.
CHECKED BY: R.J.L.
FIELD CHECKED BY: S.A.D.
DWG FILE: 5245.DWG
MAP No.: 24-772
SHEET No.: 1 of 1

Appendix B

Responsibilities of Owner and Responsibility Party

APPENDIX A

RESPONSIBILITIES of

OWNER and REMEDIAL PARTY

1. RESPONSIBILITIES

The responsibilities for implementing the Site Management Plan (SMP) for the Oneonta Former MGP site (site), NYSDEC Site Number 4-39-001, are shared between the site owner and a Remedial Party, as defined below. The owner is currently listed as:

Owner: City of Oneonta

Contact: Mr. Jonathon Williams
City Hall
258 Main Street
Oneonta, New York 13820
Telephone: 607.432.6465
Email: jwilliams@oneonta.ny.us

Solely for the purposes of this document and based upon the facts related to this particular site and the remedial program being carried out, the term Remedial Party (RP) refers to:

RP: New York State Electric and Gas Company (NYSEG)

Contact: Mr. John Ruspantini
18 Link Drive
Binghamton, New York 13904
Telephone: 607.725.3801
Email: jjruspantini@nyseg.com

Nothing on this page shall supersede the provisions of the Environmental Easement, Consent Order, or other legally binding document that affects rights and obligations relating to the site.

1.1. Site Owner Responsibilities

1) The owner shall follow the provisions of the SMP as they relate to future construction and excavation at the site.
2) Only in the event that the RP fails to file the site's Periodic Review Report (PRR) certification to the NYSDEC, in accordance with a periodic time frame determined by the NYSDEC, the site owner shall periodically certify, in writing, that all Institutional Controls set forth in the deed restriction remain in place and continue to be complied with. The site owner shall provide a written certification to the RP, upon the RP's request, to allow the RP to include the certification in the site's PRR certification to the NYSDEC.
3) In the event the site is delisted, the owner remains bound by the Deed Restriction and shall submit, upon request by the NYSDEC, a written certification that the Deed Restriction is still in place and, to the best of their knowledge, has been complied with.

4) The owner shall grant access to the site to the RP and the NYSDEC and its agents for the purposes of performing activities required under the SMP and assuring compliance with the SMP.

5) The owner is responsible for assuring the security of the monitoring wells located on its property to the best of its ability. The owner is responsible for maintaining the integrity of the site cover system located on its property to the best of its ability. In damage to the monitoring wells or vandalism is evident, the owner shall notify the site's RP and the NYSDEC in accordance with the timeframes indicated in Section 1.3 (Notifications) of the SMP.

6) If some action or inaction by the owner adversely impacts the site, the owner must notify the site's RP and the NYSDEC in accordance with the time frame indicated in Section 1.3 (Notifications) of the SMP, and coordinate the performance of necessary corrective actions with the RP.

7) The owner must notify the RP and the NYSDEC of any change in ownership of the site property (identifying the tax map numbers in any correspondence) and provide contact information for the new owner of the site property/ies. The SMP and 6 NYCRR Part 375-1.11(d) contain notification requirements applicable to any construction or activity changes and changes in ownership. Among the notification requirements is the following:

   - Sixty days prior written notification must be made to the NYSDEC. Notification is to be submitted to the NYSDEC Division of Environmental Remediation's Site Control Section.

   - Notification requirements for a change in use are detailed in Section 1.3 of the SMP. A change of use includes, but is not limited to, any activity that may increase direct human or environmental exposure (e.g., day care or school). A 60-Day Advance Notification Form and Instructions are found at http://www.dec.ny.gov/chemical/76250.html.

8) In accordance with the tenant notification law, within 15 days of receipt, the owner must supply a copy of any vapor intrusion data, that is produced with respect to structures and that exceeds NYSDOH or OSHA guidelines on the site, whether produced by the NYSDEC, RP, or owner, to the tenants on the property. The owner must otherwise comply with the tenant and occupant notification provisions of Environmental Conservation Law Article 27, Title 24.

1.2 Remedial Party Responsibilities

1) The RP must follow the SMP provisions regarding any construction and/or excavation it undertakes at the site.

2) The RP shall report to the NYSDEC all activities required for remediation, operation, maintenance, monitoring, and reporting. Such reporting includes, but is not limited to, periodic review reports and certifications, electronic data deliverables, corrective action work plans and reports, and updated SMPs.

3) Before accessing the site property to undertake a specific activity, the RP shall provide the owner advance notification that shall include an explanation of the work expected to be completed. The RP shall provide to (i) the owner, upon the owner's request, (ii) the NYSDEC, and (iii) other entities, if required by the SMP, a copy of any data generated during the site visit and/or any final report produced.

4) If the NYSDEC determines that an update of the SMP is necessary, the RP shall update the SMP and obtain final approval from the NYSDEC. Within 10 business days after NYSDEC approval, the RP shall submit a copy of the approved SMP to the owner(s).

5) The RP shall notify the NYSDEC and the owner of any changes in RP ownership and/or control and of any changes in the party/entity responsible for the operation, maintenance, and monitoring of and reporting with respect to any remedial system (Engineering Controls). The RP shall provide contact information for the new party/entity. Such activity constitutes a Change of Use pursuant to 375-1.11(d) and requires 60-days prior notice to the NYSDEC. A 60-Day Advance Notification Form and Instructions are found at http://www.dec.ny.gov/chemical/76250.html .

6) The RP shall notify the NYSDEC of any damage to or modification of the monitoring well network/systems as required under Section 1.3 (Notifications) of the SMP.

7) Prior to a change in use that impacts the remedial system or requirements and/or responsibilities for implementing the SMP, the RP shall submit to the NYSDEC for approval an amended SMP.

8) Any change in use, change in ownership, change in site classification (e.g., delisting), reduction or expansion of remediation, and other significant changes related to the site may result in a change in responsibilities and, therefore, necessitate an update to the SMP and/or updated legal documents. The RP shall contact the NYSDEC project manager to discuss the need to update such documents.

Change in RP ownership and/or control and/or site ownership does not affect the RP's obligations with respect to the site unless a legally binding document executed by the NYSDEC releases the RP of its obligations. Future site owners and RPs and their successors and assigns are required to carry out the activities set forth above.

Appendix C

Monitoring Well Construction Logs

Date Start/Finish: January 30, 2008
Drilling Company: ADT
Driller's Name: Roger Buley and Don Kretser
Drilling Method: HSA
Auger Size: 6.25" ID
Rig Type: Mobile B-59
Sampling Method: 3" by 2' Split Spoon

Northing: 897100.62
Easting: 1231660.40
Casing Elevation: 1079.93

Borehole Depth: 15.7 feet bgs
Surface Elevation: 1050.19

Descriptions By: Nicholas (Klaus) Beyrle

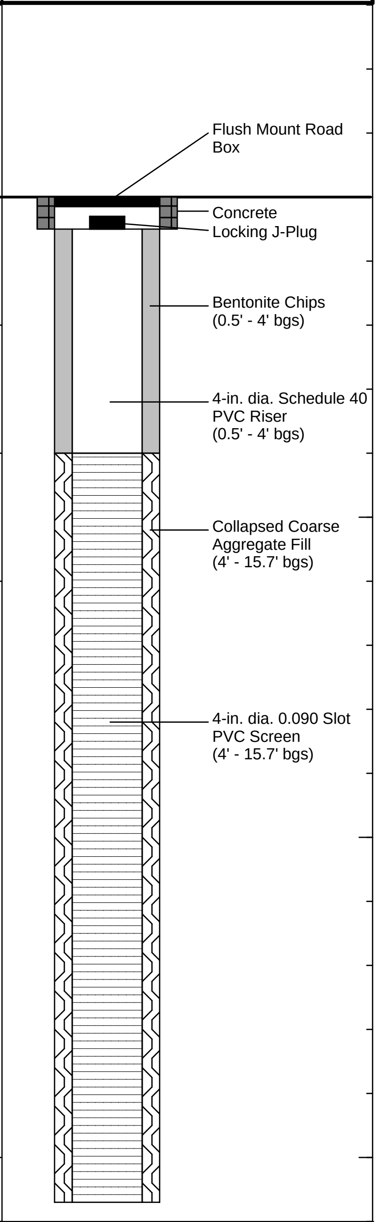
Well/Boring ID: **AW-01**

Client: New York State Electric and Gas

Location: James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
0	1080			NA	NA	NA	NA		Medium brown, GRAVEL and SILT, (FILL).
		1	2-4	1.0	7 9 11 11	18	0.0		Medium GRAVEL, some Clay, little Silt, trace brick fragments, wet, (FILL).
5	1075	2	4-6	0.9	11 23 41 34	64	0.0		Medium brown, fine to very coarse GRAVEL and SILT, trace Clay, (FILL).
		3	6-8	1.0	31 44 17 19	61	0.0		Medium fine to coarse subrounded to rounded GRAVEL, wet, (Coarse Aggregate Fill).
		4	8-10	1.3	18 22 26 17	48	0.0		
10	1070	5	10-12	1.5	7 9 9 11	18	0.0		
		6	12-14	0.4	14 19 26 38	45	0.0		
15	1065	7	14-16	1.3	6 9 9 16	18	7.6		Medium gray, SILT, trace Clay, moist.

Well/Boring Construction



ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

Description for 0' - 2' bgs recorded from cuttings.

Project Number:B0013077 Template:G:\Div 11\Rockware\LogPlot 2001\LogFiles\NYSEG - Oneonta\13077\NYSEG MGP - AW.ldf
Data File:AW-01.dat Date:4/2/2008 Nicholas (Klaus) Beyrle

Date Start/Finish: January 30, February 4-5, 2008
Drilling Company: ADT
Driller's Name: Les Darrow and Bryan Lyon
Drilling Method: HSA
Auger Size: 6.25" ID
Rig Type: CME-75
Sampling Method: 3" by 2' Split Spoon

Northing: 897086.37
Easting: 1231664.11
Casing Elevation: 1079.57

Borehole Depth: 16 feet bgs
Surface Elevation: 1079.82

Descriptions By: Levia Terrell

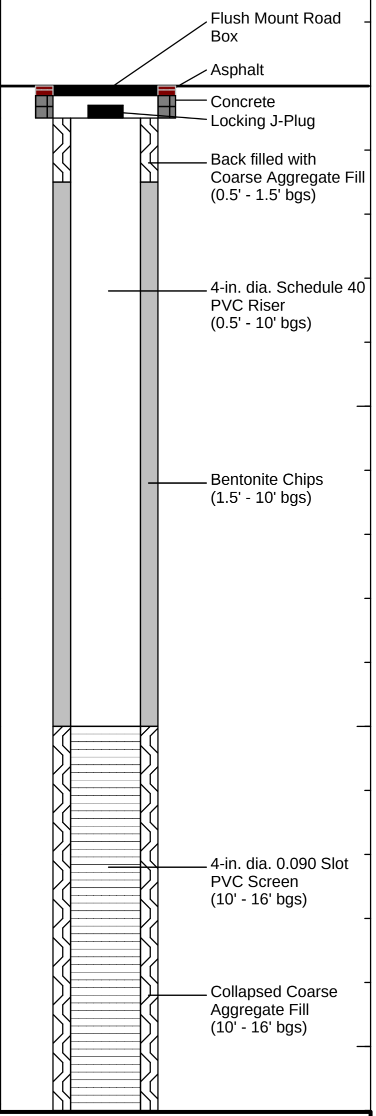
Well/Boring ID: **AW-02**

Client: New York State Electric and Gas

Location: James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
0	1080	1	0-2	1.6	NA 10 14 9	24	0.0		Asphalt. Brown, SILT and fine to coarse GRAVEL, moist.
		2	2-4	1.4	8 11 14 10	25	5.7		
5	1075	3	4-6	1.5	12 32 16 10	45	25.9		Gray-brown, fine to coarse GRAVEL and SILT, trace Clay, mild coal tar-like odor, wet.
		4	6-8	1.5	6 6 8 7	14	36.9		
		5	8-10	2.0	9 10 12 15	24	0.0		Gray, SILT, some subrounded to rounded Gravel, trace sheen, mild MGP-like odor, wet, (Coarse Aggregate Fill). Geotextile fabric in tip of spoon.
10	1070	6	10-12	<0.1	28 25 28 38	53	0.0		Gray, fine subrounded GRAVEL, trace Silt, mild coal tar-like odor, wet, (Coarse Aggregate Fill).
		7	12-14	<0.1	35 32 23 20	55	0.0		Gray, fine subrounded GRAVEL, trace Silt, trace sheen, mild coal tar-like odor, wet, (Coarse Aggregate Fill).
15	1065	8	14-16	0.4	3 5 10 9	15	1.2		Gray, SILT, trace Clay, wet. Geotextile fabric in tip of spoon.

Well/Boring Construction



ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

0.0 - 0.5 feet bgs was augered without sampling to get below asphalt.

Project Number:B0013077 Template:G:\Div 11\Rockware\LogPlot 2001\LogFiles\NYSEG - Oneonta\13077\NYSEG MGP - AW.ldf *Page: 1 of 1*
Data File:AW-02.dat Date:4/2/2008 Nicholas (Klaus) Beyrle

Date Start/Finish: January 30 and February 4, 2008
Drilling Company: ADT
Driller's Name: Les Darrow and Bryan Lyon
Drilling Method: HSA
Auger Size: 6.25" ID
Rig Type: CME-75
Sampling Method: 3" by 2' Split Spoon

Northing: 897072.68
Easting: 1231667.92
Casing Elevation: 1079.69

Borehole Depth: 18 feet bgs
Surface Elevation: 1080.14

Descriptions By: Levia Terrell

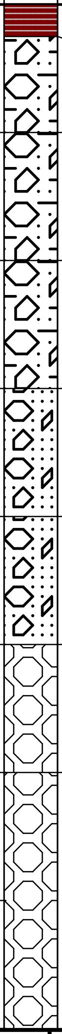
Well/Boring ID: AW-03

Client: New York State Electric and Gas

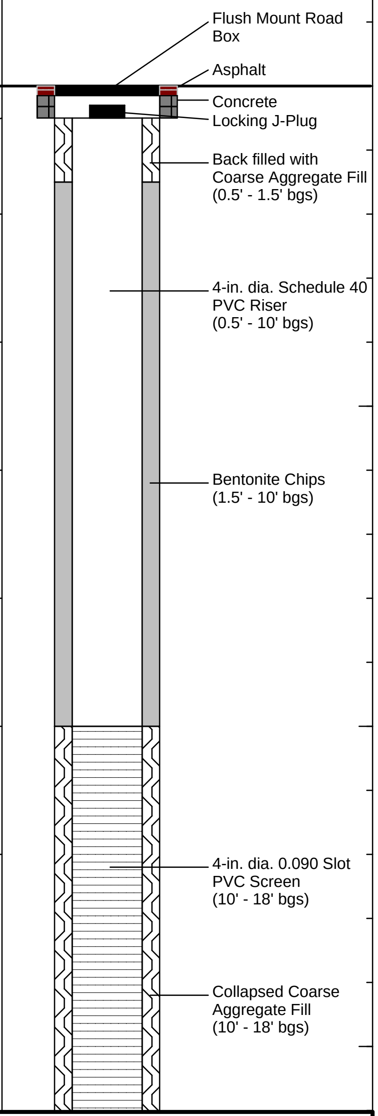
Location: James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Stratigraphic Description
0	1080							Asphalt.
		1	0-2	1.0	NA 16 22 15	38	0.0	Brown, fine to coarse subrounded GRAVEL and SILT, moist.
		2	2-4	1.5	12 32 15 25	47	0.0	Brown, fine to coarse subrounded GRAVEL and SILT, trace plastic blue sheet, wet.
5	1075	3	4-6	1.8	3 15 15 11	30	0.0	Brown, fine to coarse subrounded GRAVEL and SILT, wet.
		4	6-8	1.8	8 7 14 13	21	0.0	Brown, fine to coarse subrounded GRAVEL and fine SAND, trace Silt, mild coal tar-like odor, wet.
		5	8-10	1.5	2 17 17 25	34	0.0	Brown-gray, fine to coarse GRAVEL, little Sand, trace Silt, wet. Geotextile fabric in tip of spoon.
10	1070	6	10-12	1.5	6 11 11 12	22	0.0	Gray, fine subrounded GRAVEL, little Silt, wet, (Coarse Aggregate Fill).
		7	12-14	1.5	10 14 17 17	31	0.0	Gray, fine subrounded GRAVEL, trace Silt, wet, (Coarse Aggregate Fill).
15	1065	8	14-16	1.0	11 12 17 18	29	0.0	

Geologic Column



Well/Boring Construction



ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

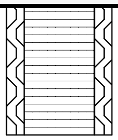
0.0 - 0.5 feet bgs was augered without sampling to get below asphalt.

Client: New York State Electric and Gas

Well/Boring ID: **AW-03**

Borehole Depth: 18 feet bgs

Site Location:
James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
		9	16-18	2.0	15 15 16 14	31	0.0		Gray, fine subrounded GRAVEL, trace Silt, wet, (Coarse Aggregate Fill). Gray, SILT, trace Clay, wet. Geotextile fabric in tip of spoon.	
20	1060									
25	1055									
30	1050									
35	1045									

ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

0.0 - 0.5 feet bgs was augered without sampling to get below asphalt.

Date Start/Finish: February 5-6, 2008
Drilling Company: ADT
Driller's Name: Les Darrow and Bryan Lyon
Drilling Method: HSA
Auger Size: 6.25" ID
Rig Type: CME-75
Sampling Method: 3" by 2' Split Spoon

Northing: 897057.72
Easting: 1231677.64
Casing Elevation: 1081.74

Borehole Depth: 20 feet bgs
Surface Elevation: 1081.94

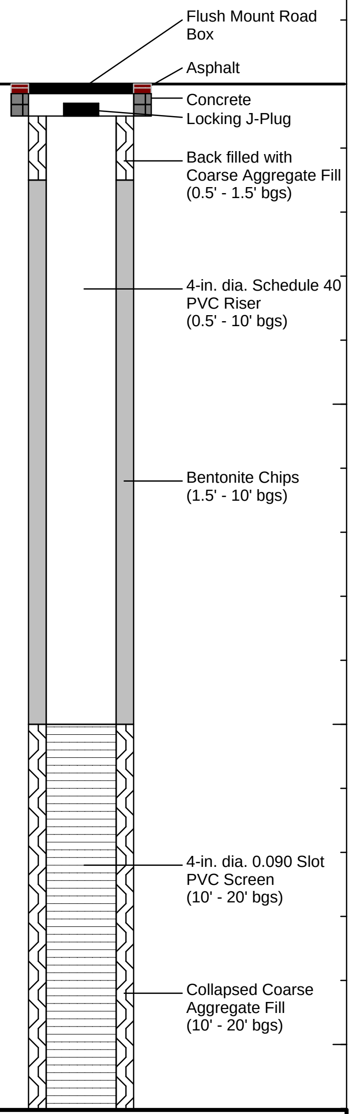
Descriptions By: Levia Terrell

Well/Boring ID: AW-04

Client: New York State Electric and Gas

Location: James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
0		1	0-2	2.0	NA 15 15 27	30	0.0		Asphalt. Brown-gray, fine to coarse subrounded to rounded GRAVEL, some Silt, moist.	
	1080	2	2-4	1.8	18 27 35 65	62	1.8			
5		3	4-6	1.0	25 11 17 14	28	1.0			
	1075	4	6-8	1.3	7 11 14 8	25	0.0			
		5	8-10	1.3	7 11 14 8	25	0.0			
10		6	10-12	<0.1	12 12 10 10	22	0.0		Gray, fine to coarse subrounded to rounded GRAVEL, trace Silt, wet (Coarse Aggregate Fill). Geotextile fabric at 9.8'bgs.	
	1070	7	12-14	1.8	6 7 6 8	13	0.0		Brown-gray, fine subrounded GRAVEL, trace fine to coarse Sand, wet, (Coarse Aggregate Fill).	
15		8	14-16	1.1	4 4 5 5	9	0.0			



ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

0.0 - 0.5 feet bgs was augered without sampling to get below asphalt.

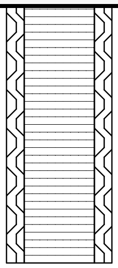
Client: New York State Electric and Gas

Well/Boring ID: **AW-04**

Borehole Depth: 20 feet bgs

Site Location:
James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
	1065	9	16-18	1.5	4 4 5 7	9	0.0		Brown-gray, fine subrounded GRAVEL, trace Silt, wet, (Coarse Aggregate Fill).	
		10	18-20	1.0	6 9 7 9	16	0.0		Gray-brown, subrounded GRAVEL, trace fine to coarse Sand, wet, (Coarse Aggregate Fill).	
									Gray, SILT, trace Clay, wet.	
20										
	1060									
25										
	1055									
30										
	1050									
35										



ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

0.0 - 0.5 feet bgs was augered without sampling to get below asphalt.

Date Start/Finish: February 6, 2008
Drilling Company: ADT
Driller's Name: Les Darrow and Bryan Lyon
Drilling Method: HSA
Auger Size: 6.25" ID
Rig Type: CME-75
Sampling Method: 3" by 2' Split Spoon

Northing: 897059.56
Easting: 1231690.38
Casing Elevation: 1081.00

Borehole Depth: 17.5 feet bgs
Surface Elevation: 1081.55

Descriptions By: Levia Terrell

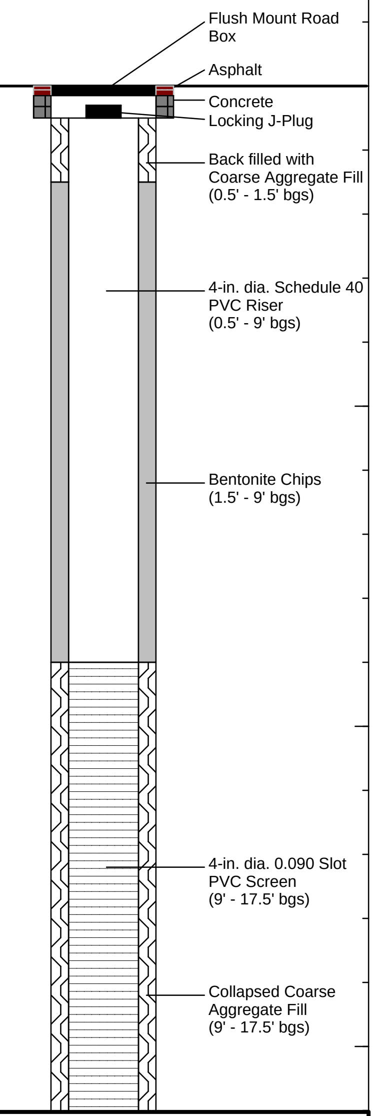
Well/Boring ID: **AW-05**

Client: New York State Electric and Gas

Location: James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
0	1080	1	0-2	1.7	NA 8 18 22	26	0.0		Asphalt. Brown-gray, fine to coarse subrounded GRAVEL, some Silt, trace red brick and asphalt fragments, moist.
		2	2-4	1.9	15 30 50 36	80	0.0		
5		3	4-6	1.9	10 40 22 15	62	0.0		Brown-gray, fine to coarse subrounded GRAVEL, some Silt, trace red brick and asphalt fragments, trace organics, moist.
	1075	4	6-8	1.9	9 4 5 16	9	0.0		Brown-gray, fine to coarse subrounded GRAVEL, some Silt, trace Clay, trace red brick and asphalt fragments, trace organics, wet.
		5	8-10	1.0	47 12 10 11	22	0.0		Brown-gray, fine to coarse subrounded GRAVEL, trace Silt, wet. Gray, fine subrounded GRAVEL, trace Silt, wet. Geotextile Fabric at 9.0' bgs.
10	1070	6	10-12	0.3	28 18 17 12	35	0.0		Gray, COBBLE, wet.
		7	12-14	1.9	12 10 10 12	20	0.0		Gray-brown, fine subrounded GRAVEL, trace Silt, wet, (Coarse Aggregate Fill).
15		8	14-16	1.8	20 27 12 10	39	0.3		Gray-brown, fine subrounded GRAVEL, trace Silt, mild coal tar-like odor, wet, (Coarse Aggregate Fill).

Well/Boring Construction



ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

0.0 - 0.5 feet bgs was augered without sampling to get below asphalt.

Project Number:B0013077 Template:G:\Div 11\Rockware\LogPlot 2001\LogFiles\NYSEG - Oneonta\13077\NYSEG MGP - AW.ldf
Data File:AW-05.dat Date:4/2/2008 Nicholas (Klaus) Beyrle

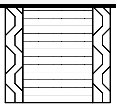
Client: New York State Electric and Gas

Well/Boring ID: **AW-05**

Site Location:
James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

Borehole Depth: 17.5 feet bgs

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
	1065	9	16-18	2.0	8 14 12 14	26	0.0		Brown-gray, fine subrounded GRAVEL, trace Silt, wet, (Coarse Aggregate Fill). Geotextile fabric at 17.5' bgs. Gray, SILT, trace clay, wet.	
20										
	1060									
25										
	1055									
30										
	1050									
35										



ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

0.0 - 0.5 feet bgs was augered without sampling to get below asphalt.

Date Start/Finish: February 7-8, 2008
Drilling Company: ADT
Driller's Name: Roger Buley and Don Kretser
Drilling Method: HSA
Auger Size: 6.25" ID
Rig Type: Mobile B-59
Sampling Method: 3" by 2' Split Spoon

Northing: 897061.89
Easting: 1231703.40
Casing Elevation: 1080.72

Borehole Depth: 16 feet bgs
Surface Elevation: 1081.09

Descriptions By: Nicholas (Klaus) Beyrle

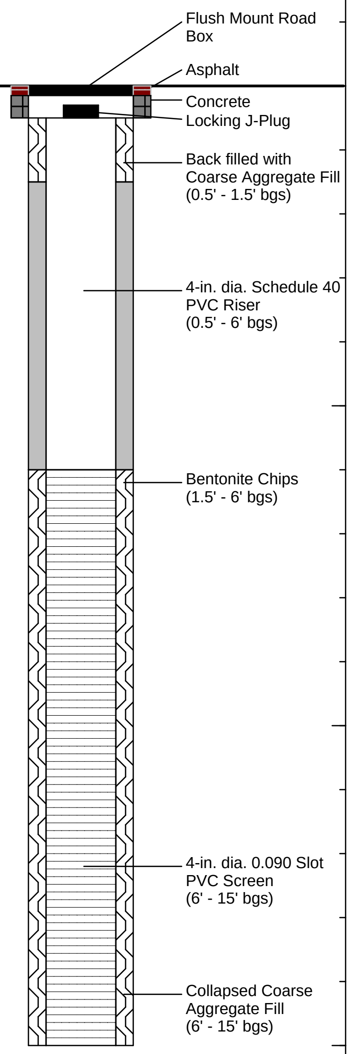
Well/Boring ID: **AW-06**

Client: New York State Electric and Gas

Location: James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
0	1080			NA	NA	NA	NA		Asphalt. Medium to very coarse GRAVEL and SILT, some Cobbles, dry.
		1	2-4	0.5	5 5 4 5	9	0.0		
5		2	4-6	0.5	18 50/0.4	68	0.0		
	1075	3	6-8	1.0	14 17 9 12	26	0.0		Very fine to fine, GRAVEL. Fine to medium GRAVEL, little Silt, wet, (Coarse Aggregate Fill). Geotextile fabric at 7' bgs.
		4	8-10	0.0	16 50/0.4	NA	NA		NO RECOVERY.
10	1070	5	10-12	1.3	10 14 18 20	32	0.0		Fine to medium GRAVEL, little Silt, wet, (Coarse Aggregate Fill).
		6	12-14	0.2	15 15 23 25	38	0.0		Fine to medium GRAVEL and coarse to medium SAND, some Silt, wet, (Coarse Aggregate Fill).
15		7	14-15	NA	18 50/0.4	68	0.0		Geotextile fabric at 15' bgs.
		8	15-17	1.8	21 26	53	0.0		Medium gray grading to dark gray, SILT, wet.

Well/Boring Construction



ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

0.0 - 2.0 feet bgs was augered without sampling to get below asphalt. Descriptions are from drill cuttings.

Client: New York State Electric and Gas

Well/Boring ID: **AW-06**

Borehole Depth: 16 feet bgs

Site Location:
James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
	1065				27 31			▨	Medium gray grading to dark gray, SILT, wet.	
20										
	1060									
25										
	1055									
30										
	1050									
35										

ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

0.0 - 2.0 feet bgs was augered without sampling to get below asphalt. Descriptions are from drill cuttings.

Project Number:B0013077 Template:G:\Div 11\Rockware\LogPlot 2001\LogFiles\NYSEG - Oneonta\13077\NYSEG MGP - AW.ldf
Data File:AW-06.dat Date:4/2/2008 Nicholas (Klaus) Beyrle

Date Start/Finish: February 7, 2008
Drilling Company: ADT
Driller's Name: Roger Buley and Don Kretser
Drilling Method: HSA
Auger Size: 6.25" ID
Rig Type: Mobile B-59
Sampling Method: 3" by 2' Split Spoon

Northing: 897063.27
Easting: 1231716.07
Casing Elevation: 1080.38

Borehole Depth: 15.5 feet bgs
Surface Elevation: 1080.90

Descriptions By: Nicholas (Klaus) Beyrle

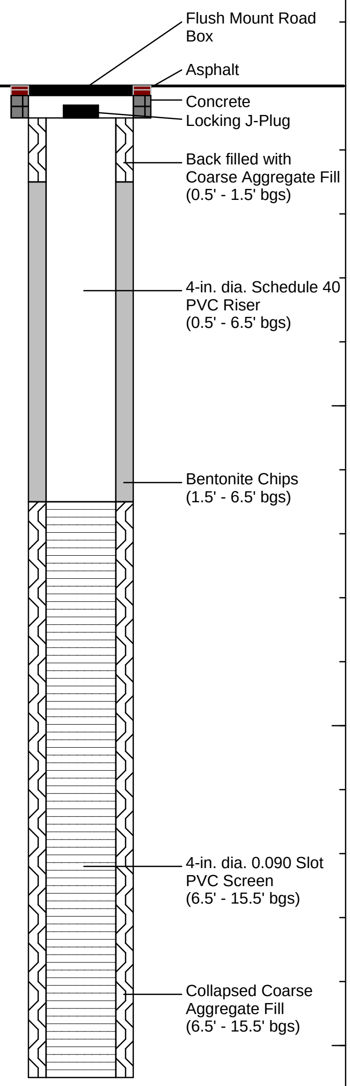
Well/Boring ID: **AW-07**

Client: New York State Electric and Gas

Location: James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
0									Asphalt.
	1080			NA	NA	NA	NA		Medium brown, medium to very coarse GRAVEL and SILT, dry (FILL).
		1	2-4	0.5	4 4 6 5	10	0.2		Medium brown, medium to very coarse subrounded to rounded GRAVEL and SILT, trace asphalt fragments at top of spoon, moist, (FILL).
5		2	4-6	0.0	14 50/0.2	50	NA		NO RECOVERY.
	1075	3	6-8	1.5	3 9 9 12	18	1.1		Fine to medium, GRAVEL, subrounded to rounded, trace Silt, wet, (Coarse Aggregate Fill). Geotextile fabric at 6.5' bgs.
		4	8-10	1.3	7 8 7 9	15	0.4		
10	1070	5	10-12	1.8	8 12 8 9	20	5.0		
		6	12-14	1.5	8 13 11 13	24	0.5		
15	1065	7	14-16	1.9	14 14 12 16	26	2.4		Medium gray SILT, trace Clay, wet, trace sheen in spoon tip. Geotextile fabric at 15.5' bgs.

Well/Boring Construction



ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

0.0 - 2.0 feet bgs was augered without sampling to get below asphalt. Descriptions are from drill cuttings.

Date Start/Finish: February 6-7, 2008
Drilling Company: ADT
Driller's Name: Roger Buley and Don Kretser
Drilling Method: HSA
Auger Size: 6.25" ID
Rig Type: Mobile B-59
Sampling Method: 3" by 2' Split Spoon

Northing: 897065.15
Easting: 1231728.85
Casing Elevation: 1080.26

Borehole Depth: 16 feet bgs
Surface Elevation: 1080.55

Descriptions By: Nicholas (Klaus) Beyrle

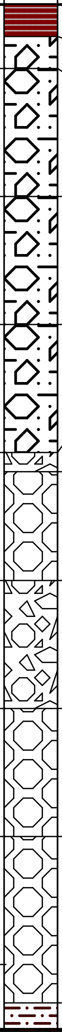
Well/Boring ID: **AW-08**

Client: New York State Electric and Gas

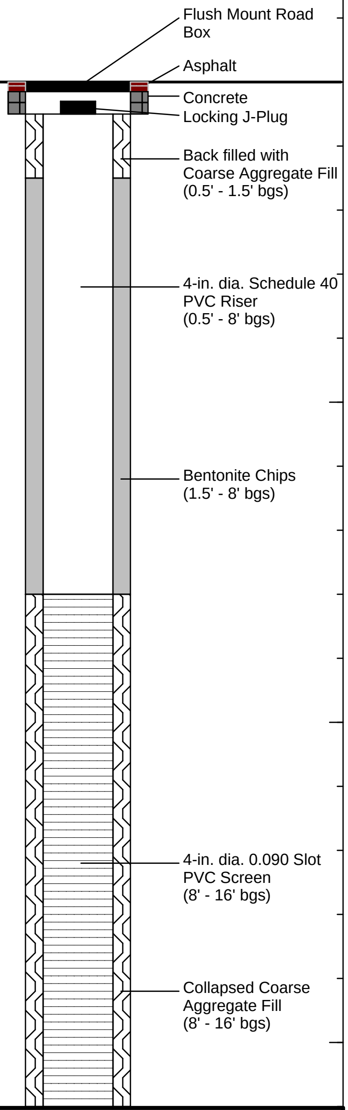
Location: James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Stratigraphic Description
0	1080			NA	NA	NA	NA	Asphalt. Medium brown, medium to very coarse GRAVEL and SILT, dry (FILL).
		1	1-3	0.2	11 16 50/0.2	66	0.0	Medium brown, fine to medium GRAVEL and SILT, little asphalt fragments, moist, (FILL).
		2	3-5	0.5	21 50/0.4	50	0.0	Medium brown, fine to medium GRAVEL and SILT, little asphalt fragments, moist, very coarse rock in spoon tip, (FILL).
5	1075	3	5-7	0.8	34 50/0.4	50	0.0	Medium brown, fine to medium GRAVEL and SILT, very coarse rock fragments from 5.4 - 5.8' bgs, wet, (FILL). Very coarse angular GRAVEL, wet, (Rock Fragments).
		4	7-9	1.8	19 28 26 31	54	0.0	Fine to medium, subrounded to rounded GRAVEL, trace Silt, wet, (Coarse Aggregate Fill). Geotextile fabric present at 7.3' bgs.
10	1070	5	9-11	0.8	21 26 27 34	53	5.6	Very coarse rock fragments, wet.
		6	11-13	2.0	17 19 24 14	43	1.3	Fine to medium subrounded to rounded GRAVEL, little Silt, wet, (Coarse Aggregate Fill).
		7	13-15	0.3	21 17 19 26	36	1.1	Very fine to medium subrounded to rounded GRAVEL and SILT, wet, (Coarse Aggregate Fill).
15	1065	8	15-17	1.6	14 16	16	12.8	Medium gray, SILT, trace Clay, wet. Geotextile fabric present at 16.0' bgs.

Geologic Column



Well/Boring Construction



ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

0.0 - 1.0 feet bgs was augeredwithout sampling to get below asphalt.

Client: New York State Electric and Gas

Well/Boring ID: **AW-08**

Borehole Depth: 16 feet bgs

Site Location:

James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
					19 23				Medium gray, SILT, trace Clay, wet.	
20	1060									
25	1055									
30	1050									
35	1045									

ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

0.0 - 1.0 feet bgs was augeredwithout sampling to get below asphalt.

Date Start/Finish: February 5-6, 2008
Drilling Company: ADT
Driller's Name: Roger Buley and Don Kretser
Drilling Method: HSA
Auger Size: 3.25" ID, 6.25" ID
Rig Type: Mobile B-59
Sampling Method: 2" by 2' and 3" by 2' Split Spoon

Northing: 897066.09
Easting: 1231741.93
Casing Elevation: 1080.15

Borehole Depth: 17 feet bgs
Surface Elevation: 1080.60

Descriptions By: Nicholas (Klaus) Beyrle

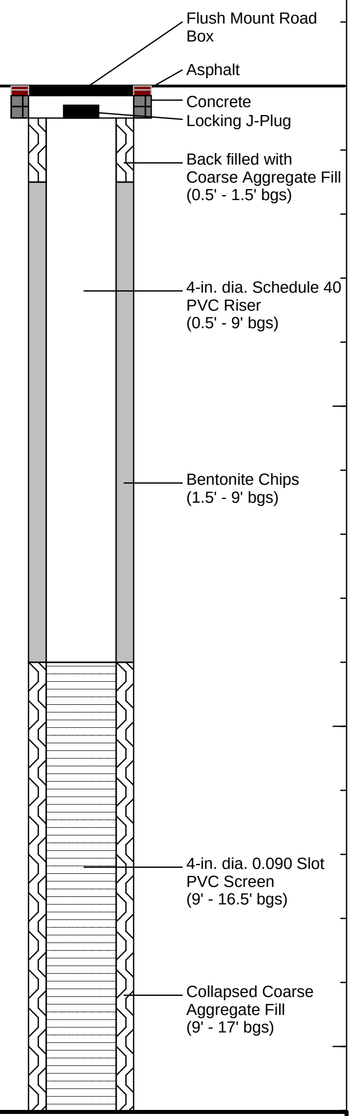
Well/Boring ID: **AW-09**

Client: New York State Electric and Gas

Location: James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
0	1080			NA	NA	NA	NA		Asphalt. Medium brown, fine to very coarse angular to subrounded GRAVEL and SILT, some rock fragments present, dry, (FILL).
		1	1-3	0.5	12 12 22 17	34	0.0		
		2	3-5	0.8	10 11 14 17	25	0.0		
5	1075	3	5-7	0.0	22 50/0.4	50	NA		NO RECOVERY.
		4	7-9	1.3	17 34 50/0.5	84	0.0		Medium brown, fine to very coarse angular to subrounded GRAVEL and SILT, some rock fragments present, dry, (FILL).
10	1070	5	9-11	1.7	20 20 18 22	38	5.6		Medium brown, fine to medium rounded GRAVEL, some very fine rounded Gravel, little Silt, wet, (Coarse Aggregate Fill).
		6	11-13	1.5	12 14 21 26	35	1.1		
		7	13-15	2.0	19 22 12 12	34	0.0		Medium brown, fine to medium rounded to subrounded GRAVEL, little Silt, wet, (Coarse Aggregate Fill).
15	1065	8	15-17	2.0	14 17	26	1.0		

Well/Boring Construction



ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

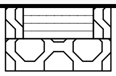
0.0 - 1.0 feet bgs was augered without sampling to get below asphalt.
At 13 feet bgs the drillers re-drilled down with 6.25" ID HSA and continued sampling with 3" split spoons.
The hole collapsed from 16.5 to 17 feet bgs before able to set well.

Client: New York State Electric and Gas

Well/Boring ID: **AW-09**

Borehole Depth: 17 feet bgs

Site Location:
James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
					9 8			▨	Gray, SILT and CLAY, little very coarse Gravel, wet. Geotextile fabric present at 15.8' bgs.	
20	1060									
25	1055									
30	1050									
35	1045									

ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

0.0 - 1.0 feet bgs was augered without sampling to get below asphalt.
At 13 feet bgs the drillers re-drilled down with 6.25" ID HSA and continued sampling with 3" split spoons.
The hole collapsed from 16.5 to 17 feet bgs before able to set well.

Project Number:B0013077 Template:G:\Div 11\Rockware\LogPlot 2001\LogFiles\NYSEG - Oneonta\13077\NYSEG MGP - AW.ldf
Data File:AW-09.dat Date:4/2/2008 Nicholas (Klaus) Beyrle

Date Start/Finish: February 4-5, 2008
Drilling Company: ADT
Driller's Name: Roger Buley and Don Kretser
Drilling Method: HSA
Auger Size: 3.25" ID, 6.25" ID
Rig Type: Mobile B-59
Sampling Method: 2" by 2' and 3" by 2' Split Spoon

Northing: 897065.96
Easting: 1231758.17
Casing Elevation: 1079.78

Borehole Depth: 17 feet bgs
Surface Elevation: 1080.48

Descriptions By: Nicholas (Klaus) Beyrle

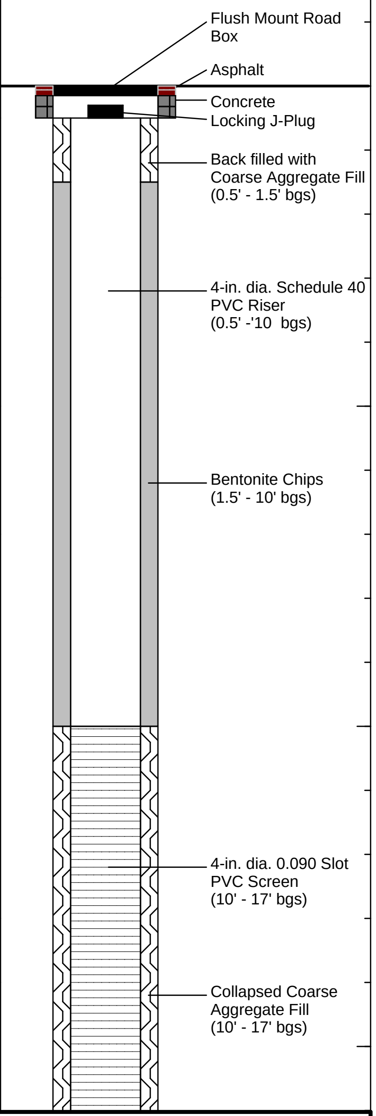
Well/Boring ID: **AW-10**

Client: New York State Electric and Gas

Location: James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
0	1080			NA	NA	NA	NA		Asphalt. Medium brown, fine to coarse GRAVEL and SILT, rock fragments present, dry, (FILL).
		1	1-3	0.5	6 17 50/0.3	67	0.0		Medium brown, medium to very coarse GRAVEL and SILT, dry, (FILL).
		2	3-5	0.5	12 9 10 9	19	0.0		Pink and gray rock fragments, dry, (FILL). Medium brown, medium to very coarse GRAVEL and SILT, dry, (FILL).
5	1075	3	5-7	0.3	5 9 7 14	16	3.1		Medium brown fine to coarse GRAVEL and SILT, moist, (FILL).
		4	7-9	1.5	11 9 13 16	22	7.0		Fine to medium subrounded to rounded GRAVEL, wet, (Coarse Aggregate Fill).
10	1070	5	9-11	1.0	3 8 8 7	16	10.9		
		6	11-13	0.8	11 12 14 12	26	6.1		
		7	13-14	0.0	27 34	NA	NA		NO RECOVERY.
15	1065	8	14-16	1.7	12 16 19 27	35	0.4		Fine to medium subrounded to rounded GRAVEL, wet, (Coarse Aggregate Fill).

Well/Boring Construction



ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

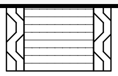
0.0 - 1.0 feet bgs was augered without sampling to get below asphalt. At 13 feet bgs the drillers re-drilled down with 6.25 ID HSA and continued sampling with 3" split spoons.

Client: New York State Electric and Gas

Well/Boring ID: **AW-10**

Borehole Depth: 17 feet bgs

Site Location:
James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
		9	16-18	1.5	12 12 16 24	28	30.0		Medium gray, SILTY CLAY, some brown mottling, wet.	
20	1060									
25	1055									
30	1050									
35	1045									

ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

0.0 - 1.0 feet bgs was augered without sampling to get below asphalt. At 13 feet bgs the drillers re-drilled down with 6.25 ID HSA and continued sampling with 3" split spoons.

Date Start/Finish: January 31 - February 5, 2008
Drilling Company: ADT
Driller's Name: Roger Buley and Don Kretser
Drilling Method: HSA
Auger Size: 3.25" ID, 6.25" ID
Rig Type: Mobile B-59
Sampling Method: 2" by 2' Split Spoon

Northing: 897064.83
Easting: 1231772.57
Casing Elevation: 1080.74

Borehole Depth: 18 feet bgs
Surface Elevation: 1080.99

Descriptions By: Nicholas (Klaus) Beyrle

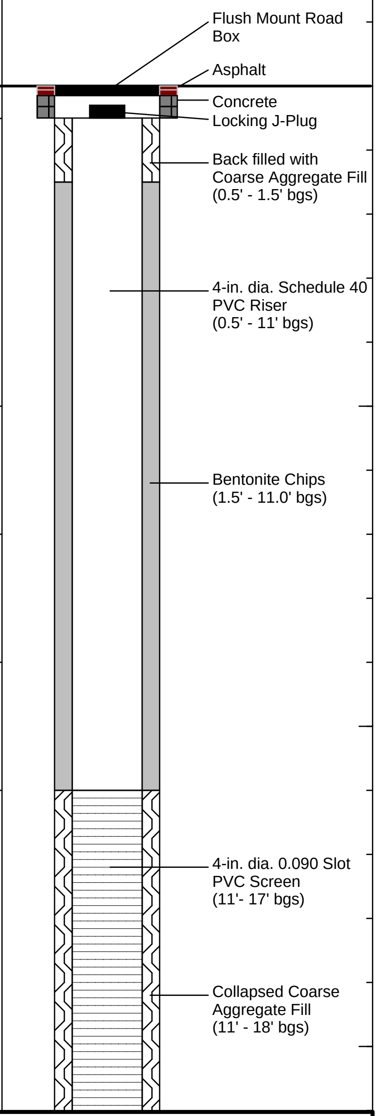
Well/Boring ID: **AW-11**

Client: New York State Electric and Gas

Location: James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
0				NA	NA	NA	NA		Asphalt.
	1080			NA	NA	NA	NA		Medium brown, fine to very coarse angular GRAVEL and SILT, dry, (FILL).
5	1075	1	5-7	0.5	4 12 14 17	26	0.5		Gray, SILT, little Clay, trace asphalt in spoon, moist, (FILL).
		2	7-9	0.5	11 19 38 50	58	0.0		Medium brown SILT, some fine to medium Gravel, little Clay, moist, (FILL).
10	1070	3	9-11	0.4	12 14 9 7	23	0.8		Rock fragments with some Silt, trace Clay, (FILL), Coarse Aggregate Fill in bottom of spoon.
		4	11-13	1.5	10 7 12 14	19	1.3		Fine to medium subrounded to rounded GRAVEL, wet, (Coarse Aggregate Fill).
		5	13-15	1.5	9 12 10 12	22	9.7		
15	1065	6	15-17	0.5	5 6	11	14		

Well/Boring Construction



Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

Description for 0' - 5' bgs not sampled because split spoon would not recover very coarse angular fill. Descriptions are from cuttings. After drilling with 3.25 ID HSA and sampling the Silt layer with 2" split spoons, the drillers re-drilled with 6.25 ID HSA to bottom of bore hole. The hole collapsed from 17 to 18 feet bgs before able to set well.

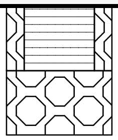
Client: New York State Electric and Gas

Well/Boring ID: **AW-11**

Borehole Depth: 18 feet bgs

Site Location:
James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
					5 7				Medium to fine subrounded to rounded GRAVEL, wet, (Pea Gravel).	
		7	17-19	1.3	5 5 5 7	10	1.3		Gray, SILT and CLAY. Geotextile fabric present.	
20										
	1060									
25										
	1055									
30										
	1050									
35										



Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

Description for 0' - 5' bgs not sampled because split spoon would not recover very coarse angular fill. Descriptions are from cuttings. After drilling with 3.25 ID HSA and sampling the Silt layer with 2" split spoons, the drillers re-drilled with 6.25 ID HSA to bottom of bore hole. The hole collapsed from 17 to 18 feet bgs before able to set well.

ARCADIS
Infrastructure, environment, facilities

Project Number:B0013077 Template:G:\Div 11\Rockware\LogPlot 2001\LogFiles\NYSEG - Oneonta\13077\NYSEG MGP - AW.ldf *Page: 2 of 2*
Data File:AW-11.dat Date:4/2/2008 Nicholas (Klaus) Beyrle

Date Start/Finish: February 11, 2008
Drilling Company: ADT
Driller's Name: Les Darrow and Bryan Lyon
Drilling Method: HSA
Auger Size: 6.25" ID
Rig Type: CME-75
Sampling Method: 3" by 2' Split Spoon

Northing: 897075.44
Easting: 1231811.31
Casing Elevation: 1079.47

Borehole Depth: 23 feet bgs
Surface Elevation: 1079.79

Descriptions By: Levia Terrell

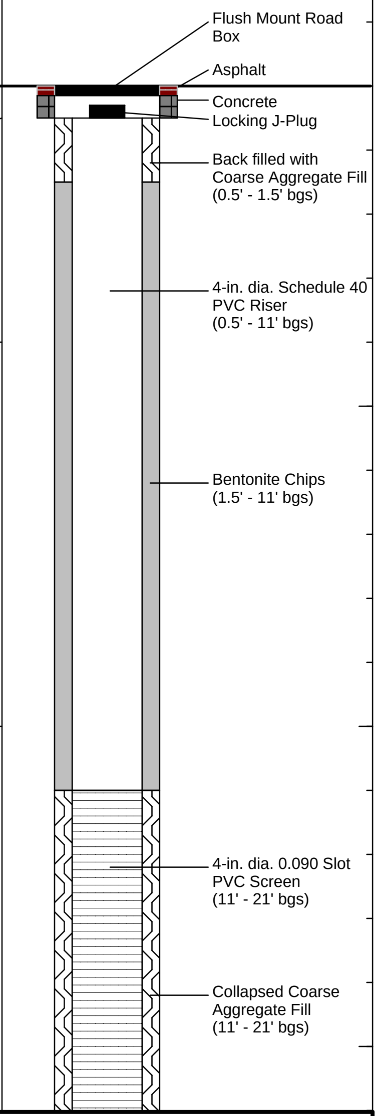
Well/Boring ID: AW-12

Client: New York State Electric and Gas

Location: James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Stratigraphic Description
0	1080	1	0-2	1.9	NA 7 18 19	25	0.0	Asphalt. Brown-gray fine to coarse subrounded GRAVEL and Silt, moist.
		2	2-4	1.7	17 29 21 18	50	0.0	
5	1075	3	4-6	1.8	10 12 12 14	24	0.0	Brown-gray fine to coarse subrounded GRAVEL and Silt, wet.
		4	6-8	1.2	20 20 18 24	38	0.0	
		5	8-10	1.5	21 19 18 19	37	0.0	
10	1070	6	10-12	1.0	4 4 6 7	10	0.0	Gray-brown, fine subrounded GRAVEL, trace Silt, wet, (Coarse Aggregate Fill). Geotextile fabric at 11' bgs.
		7	12-14	1.4	6 7 6 7	13	0.0	
15	1065	8	14-16	1.0	5 7 6 8	13	0.0	

Well/Boring Construction



ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

0.0 - 0.5 feet bgs was augered without sampling to get below asphalt.

Client: New York State Electric and Gas

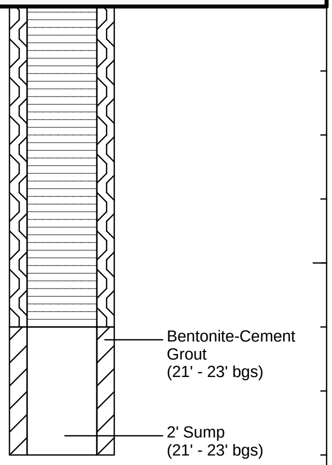
Well/Boring ID: **AW-12**

Borehole Depth: 23 feet bgs

Site Location:
James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Stratigraphic Description
		9	16-18	1.5	7 6 6 8	12	0.0	Gray-brown, fine subrounded GRAVEL, trace Silt, wet, (Pea Gravel)
		10	18-20	1.5	5 7 7 9	14	0.0	
20	1060	11	20-22	1.0	4 8 7 18	15	47.0	Gray-brown, fine subrounded GRAVEL, trace Silt, black oily MGP-like material present, wet, (Coarse Aggregate Fill). Gray, SILT, trace Clay, wet. Geotextile fabric at 21' bgs.
25	1055							
30	1050							
35	1045							

Well/Boring Construction



ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

0.0 - 0.5 feet bgs was augered without sampling to get below asphalt.

Project Number:B0013077
Data File:AW-12.dat
Template:G:\Div 11\Rockware\LogPlot 2001\LogFiles\NYSEG - Oneonta\13077\NYSEG MGP - AW.ldf
Date:4/2/2008 Nicholas (Klaus) Beyrle

Date Start/Finish: February 7-8, 2008
Drilling Company: ADT
Driller's Name: Les Darrow and Bryan Lyon
Drilling Method: HSA
Auger Size: 6.25" ID
Rig Type: CME-75
Sampling Method: 3" by 2' Split Spoon

Northing: 897078.41
Easting: 1231824.39
Casing Elevation: 1079.39

Borehole Depth: 22 feet bgs
Surface Elevation: 1079.85

Descriptions By: Levia Terrell

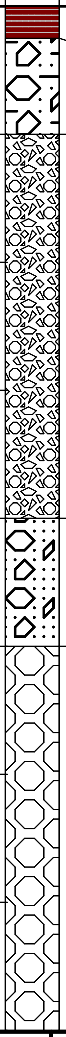
Well/Boring ID: **AW-13**

Client: New York State Electric and Gas

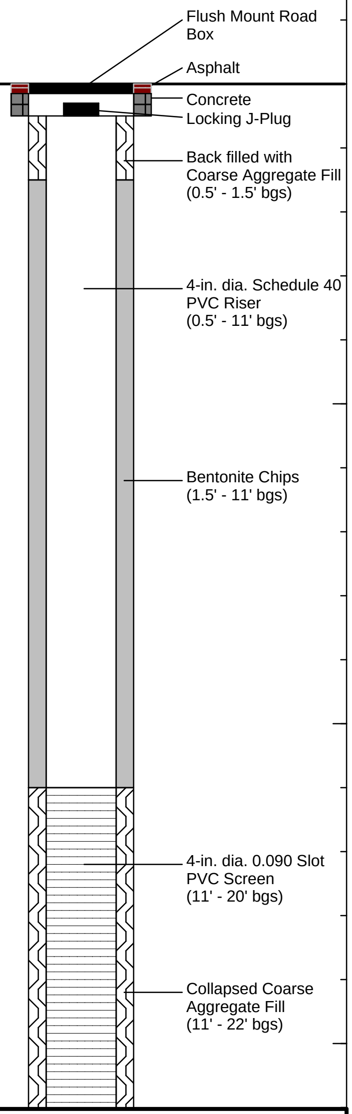
Location: James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Stratigraphic Description
0	1080				NA			Asphalt.
		1	0-2	1.5	10 24 9	34	0.0	Brown, SILT and fine to coarse subrounded GRAVEL, trace fine to coarse Sand, moist.
		2	2-4	1.4	3 3 4 3	7	0.0	Gray, fine to medium subrounded GRAVEL, little Silt, moist.
5	1075	3	4-6	1.0	2 4 6 10	10	0.0	
		4	6-8	1.7	8 11 23 33	34	0.0	
		5	8-10	0.6	26 26 21 10	47	0.0	Brown, fine to coarse SAND and fine to coarse subrounded GRAVEL, trace Silt and Clay, wet.
10	1070	6	10-12	0.6	3 3 5 5	8	0.0	Gray-brown, fine subrounded GRAVEL, little coarse Sand, wet, (Coarse Aggregate Fill). Geotextile fabric at 11' bgs.
		7	12-14	1.0	5 7 7 6	14	0.0	
15	1065	8	14-16	1.4	3 7 9 7	16	0.0	

Geologic Column



Well/Boring Construction



ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

0.0 - 0.5 feet bgs was augered without sampling to get below asphalt.

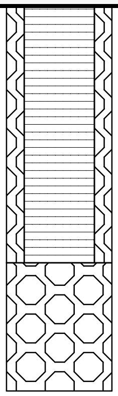
Client: New York State Electric and Gas

Well/Boring ID: **AW-13**

Borehole Depth: 22 feet bgs

Site Location:
James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
		9	16-18	2.0	6 12 8 9	20	0.0		Gray-brown fine subrounded GRAVEL, trace Silt, wet, (Coarse Aggregate Fill). Gray, SILT and CLAY, wet. Geotextile fabric at 17.8' bgs in tip of spoon.	
		10	18-20	0.7	5 6 7 10	13	0.0		Gray-brown, fine subrounded GRAVEL, trace Silt, wet, (Coarse Aggregate Fill).	
20	1060	11	20-22	1.0	7 8 6 8	14	0.0		Gray SILT, coarse Gravel at 21' bgs, wet.	
25	1055									
30	1050									
35	1045									



ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

0.0 - 0.5 feet bgs was augered without sampling to get below asphalt.

Date Start/Finish: February 7, 2008
Drilling Company: ADT
Driller's Name: Les Darrow and Bryan Lyon
Drilling Method: HSA
Auger Size: 6.25" ID
Rig Type: CME-75
Sampling Method: 3" by 2' Split Spoon

Northing: 897080.30
Easting: 1231839.14
Casing Elevation: 1079.60

Borehole Depth: 26 feet bgs
Surface Elevation: 1080.18

Descriptions By: Levia Terrell

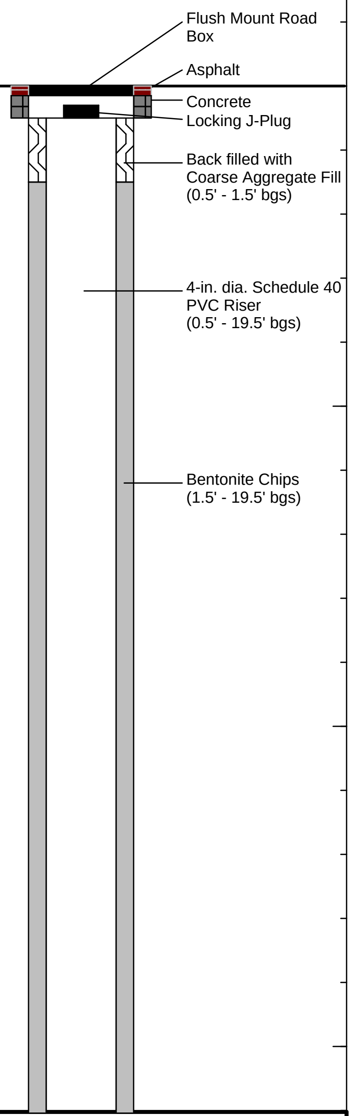
Well/Boring ID: **AW-14**

Client: New York State Electric and Gas

Location: James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
0	1080	1	0-2	1.8	NA 8 15 15	23	0.0		Asphalt. Brown, SILT, some fine to coarse rounded Gravel, trace red brick and asphalt fragments, moist.
		2	2-4	1.5	10 15 14 15	29	0.0		
5	1075	3	4-6	0.7	3 4 5 9	9	0.0		
		4	6-8	0.5	8 9 4 5	13	0.0		Brown, SILT, some fine to coarse rounded Gravel, trace Clay, trace red brick and asphalt fragments, moist.
		5	8-10	0.0	6 4 4 4	8	NA		NO RECOVERY.
10	1070	6	10-12	0.7	2 2 3 6	5	0.0		Brown SILT, little fine to medium Sand, trace coarse subrounded Gravel, moist.
		7	12-14	0.9	2 7 4 4	11	0.0		Brown SILT, some fine to coarse subrounded Gravel, wet.
15	1065	8	14-16	0.0	7 8 8 10	16	NA		NO RECOVERY.

Well/Boring Construction



ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

0.0 - 0.5 feet bgs was augered without sampling to get below asphalt.

Client: New York State Electric and Gas

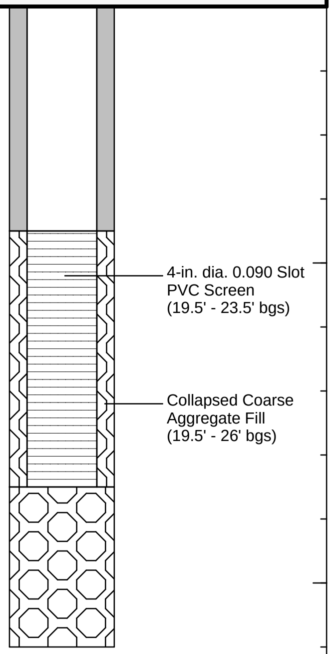
Well/Boring ID: **AW-14**

Borehole Depth: 26 feet bgs

Site Location:
James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
		9	16-18	1.0	5 6 6 6	12	0.0		Brown, SILT and fine to medium SAND, trace fine to coarse subrounded Gravel, wet.
		10	18-20	1.0	7 7 7 10	14	0.0		Brown, SILT and fine to coarse SAND, little fine to coarse subrounded Gravel, wet. Brown-gray, fine subrounded GRAVEL, little fine to coarse Sand, wet, (Coarse Aggregate Fill). Geotextile fabric at 19.5' bgs.
20	1060	11	20-22	<0.1	35 45 35 50	80	0.0		Brown-gray, fine subrounded GRAVEL, little Sand, wet, (Coarse Aggregate Fill).
		12	22-24	<0.1	24 30 38 48	68	0.0		
25	1055	13	24-26	1.6	4 11 14 12	25	0.0		Gray, SILT, trace Clay, wet.
30	1050								
35	1045								

Well/Boring Construction



ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

0.0 - 0.5 feet bgs was augered without sampling to get below asphalt.

Date Start/Finish: February 20, 2008
Drilling Company: ADT
Driller's Name: Roger Buley and Don Kretser
Drilling Method: HSA
Auger Size: 6.25" ID
Rig Type: Mobile B-59
Sampling Method: 3" by 2' Split Spoon

Northing: 897085.51
Easting: 1231869.17
Casing Elevation: 1079.85

Borehole Depth: 20 feet bgs
Surface Elevation: 1080.32

Descriptions By: Nicholas (Klaus) Beyrle

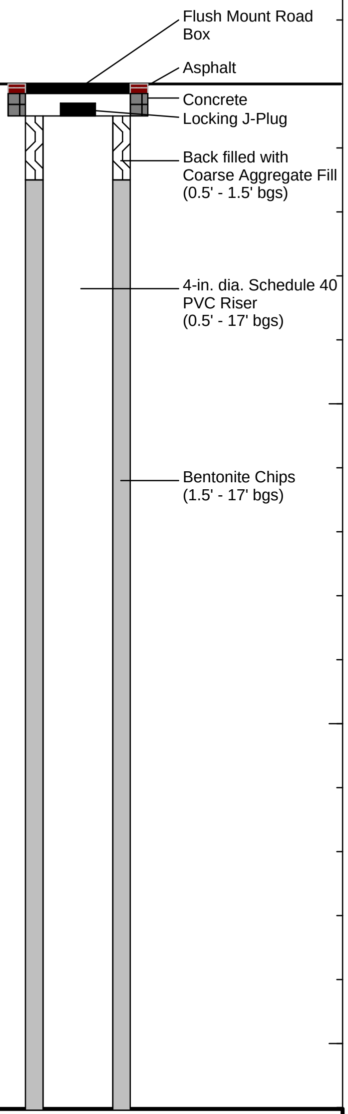
Well/Boring ID: **AW-15**

Client: New York State Electric and Gas

Location: James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
0	1080								Asphalt.
				NA	NA	NA	NA		Dark brown, SILT and rounded GRAVEL, moist.
		1	2-4	2.0	7 9 9 12	18	0.0		Medium brown SILT, little fine Sand, little medium to coarse rounded Gravel, moist.
5	1075	2	4-6	1.0	18 12 9 9	21	0.0		
		3	6-8	0.2	12 9 8 9	17	0.0		
		4	8-10	1.5	7 9 8 9	17	0.0		
10	1070	5	10-12	0.0	5 7 8 5	15	NA		NO RECOVERY.
		6	12-14	1.8	6 7 6 7	13	0.0		Medium brown SILT, little fine Sand, little medium to coarse rounded Gravel, trace wood fragments, moist.
15	1065	7	14-16	0.5	7 9 8 8	17	0.0		

Well/Boring Construction



ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

0.0 - 2.0 feet bgs was augered without sampling to get below asphalt. Descriptions are from drill cuttings.

Client: New York State Electric and Gas

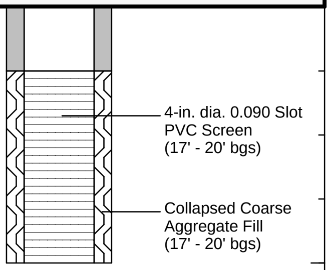
Well/Boring ID: **AW-15**

Borehole Depth: 20 feet bgs

Site Location:
James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
		8	16-18	1.0	7 9 11 14	20	0.0		Fine to medium subrounded to rounded GRAVEL, trace Silt, wet, (Coarse Aggregate Fill). Geotextile fabric at 17' bgs.
		9	18-20	0.0	50/0.2	50	NA		NO RECOVERY.
20	1060	10	20-22	0.2	18 14 17 17	31	37.0		Medium gray, SILT, trace Clay, wet.
25	1055								
30	1050								
35	1045								

Well/Boring Construction



ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

0.0 - 2.0 feet bgs was augered without sampling to get below asphalt. Descriptions are from drill cuttings.

Date Start/Finish: February 19, 2008
Drilling Company: ADT
Driller's Name: Roger Buley and Don Kretser
Drilling Method: HSA
Auger Size: 6.25" ID
Rig Type: Mobile B-59
Sampling Method: 3" by 2' Split Spoon

Northing: 897088.47
Easting: 1231884.23
Casing Elevation: 1079.61

Borehole Depth: 20.5 feet bgs
Surface Elevation: 1080.19

Descriptions By: Nicholas (Klaus) Beyrle

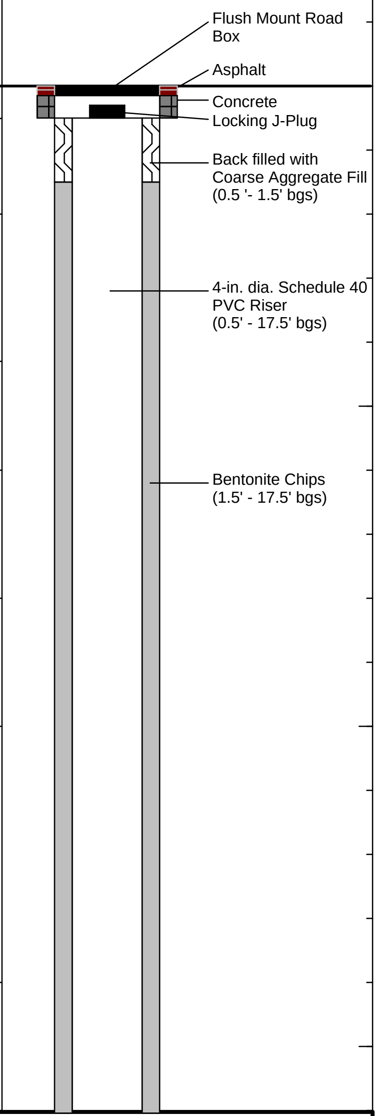
Well/Boring ID: **AW-16**

Client: New York State Electric and Gas

Location: James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
0	1080								Asphalt.
				NA	NA	NA	NA		Dark brown, SILT, little Clay, little medium to very coarse rounded GRAVEL, moist. (Topsoil)
		1	2-4	2.0	9 9 11 11	18	0.0		Dark brown, SILT, little Clay, little medium to very coarse angular Gravel, trace broken glass fragments, moist.
5	1075	2	4-6	1.8	9 10 10 9	20	0.0		Fine to medium angular GRAVEL, little Silt, moist.
		3	6-8	1.8	5 4 6 7	10	0.0		Medium brown-gray, SILT, little medium to very coarse Gravel, trace Clay, trace wood, asphalt and glass fragments, trace roots present, moist.
		4	8-10	1.7	4 4 4 4	8	0.0		Medium brown, SILT, some fine Sand, trace angular to rounded fine to medium Gravel, moist.
10	1070	5	10-12	1.5	4 4 4 4	8	0.0		Medium brown, SILT, some fine Sand, trace angular to rounded fine to medium Gravel, trace very coarse rounded Gravel, moist.
		6	12-14	1.3	4 5 5 4	10	0.0		
15	1065	7	14-16	0.0	4 7 14 13	21	NA		NO RECOVERY.

Well/Boring Construction



ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

0.0 - 2.0 feet bgs was augered without sampling to get below asphalt. Descriptions are from drill cuttings.

Client: New York State Electric and Gas

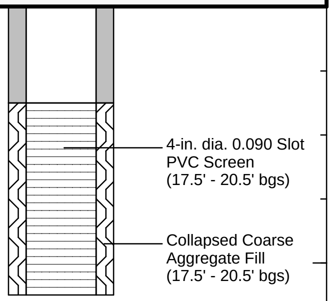
Well/Boring ID: **AW-16**

Borehole Depth: 20.5 feet bgs

Site Location:
James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
		8	16-18	1.5	10 9 12 9	21	0.0		Medium brown, SILT, some fine Sand, trace angular to rounded fine to medium Gravel, trace very coarse rounded Gravel, moist. Fine to medium subrounded to rounded GRAVEL, trace Silt, wet, (Coarse Aggregate Fill). Fabric at 18' bgs.
		9	18-20	0.5	32 30 31 30	61	0.0		Fine to medium, subrounded GRAVEL, little Silt, trace like sheen, wet, (Coarse Aggregate Fill).
20	1060	10	20-22	2.0	19 17 14 42	31	37.0		Medium gray, SILT, wet.
25	1055								
30	1050								
35	1045								

Well/Boring Construction



ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

0.0 - 2.0 feet bgs was augered without sampling to get below asphalt. Descriptions are from drill cuttings.

Date Start/Finish: January 31 and February 18, 2008
Drilling Company: ADT
Driller's Name: Roger Buley and Les Darrow
Drilling Method: HSA
Auger Size: 4.25" ID
Rig Type: CME-75 and Mobile B-59
Sampling Method: 2" by 2' Split Spoon

Northing: 897084.04
Easting: 1231668.87
Casing Elevation: 1079.56

Borehole Depth: 16 feet bgs
Surface Elevation: 1079.93

Descriptions By: Levia Terrell and Nicholas (Klaus) Beyrle

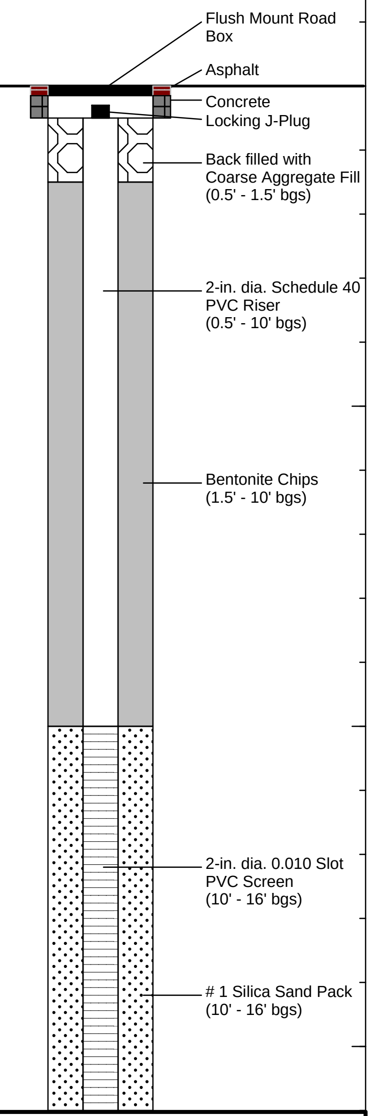
Well/Boring ID: **PMW-01**

Client: New York State Electric and Gas

Location: James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
0	1080	1	0-2	0.8	NA 16 17 10	33	0.0		Asphalt. Gray, fine to coarse, GRAVEL and SILT, moist.
		2	2-4	0.8	12 15 10 18	25	0.0		
5	1075	3	4-6	1.0	7 10 10 8	20	0.0		Gray-brown, fine to coarse GRAVEL, some Silt, moist.
		4	6-8	1.5	5 11 9 7	20	0.0		Gray-brown, fine to coarse GRAVEL, little Silt, trace coal tar-like odor, wet.
		5	8-10	1.2	10 9 9 11	18	0.0		Medium brown, medium to very coarse angular to subangular GRAVEL and SILT, wet.
10	1070	6	10-12	0.7	14 11 12 13	23	0.0		Very fine to coarse GRAVEL, trace Silt, wet, grading to medium brown, GRAVEL and SILT.
		7	12-14	1.0	7 9 12 21	21	0.0		Medium to very coarse GRAVEL and SILT, grading to medium gray SILT, some Gravel, wet. Broken rock fragments from 12.5' - 12.7' bgs.
15	1065	8	14-16	1.0	5 7 6 9	13	0.0		

Well/Boring Construction



ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

0.0 - 0.5 feet bgs was augered without sampling to get below asphalt.

Date Start/Finish: February 18, 2008
Drilling Company: ADT
Driller's Name: Roger Buley and Don Kretser
Drilling Method: HSA
Auger Size: 4.25" ID
Rig Type: Mobile B-59
Sampling Method: 2" by 2' Split Spoon

Northing: 897084.58
Easting: 1231662.29
Casing Elevation: 1079.76

Borehole Depth: 16 feet bgs
Surface Elevation: 1079.88

Descriptions By: Nicholas (Klaus) Beyrle

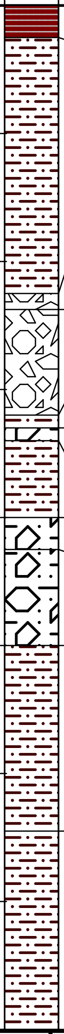
Well/Boring ID: PMW-02

Client: New York State Electric and Gas

Location: James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)
0	1080			NA	NA	NA	NA
		1	2-4	1.5	7 9 9 8	18	0.0
5	1075	2	4-6	1.0	5 7 9 50/0.3	16	0.0
		3	6-8	1.5	17 29 37 50/0.4	66	9.8
		4	8-10	1.5	14 19 31 34	50	4.6
10	1070	5	10-12	1.6	17 19 32 37	51	21.0
		6	12-14	1.8	10 12 12 9	24	58.4
15	1065	7	14-16	1.0	9 10 12 10	22	2.3

Geologic Column



Stratigraphic Description

Asphalt.

Medium brown, SILT, some very coarse GRAVEL, dry.

Medium red, broken brick fragments and very fine SAND and SILTSTONE fragments.

Medium gray, broken rock fragments, very fine SAND and SILTSTONE fragments.

Medium brown, SILT, some medium to coarse rounded Gravel.

Medium red-brown, SILT and fine to medium GRAVEL, trace sheen, wet.

Medium gray, SILT, some medium to very coarse subrounded to rounded Gravel, trace 5mm oily MGP-like stain in spoon tip.

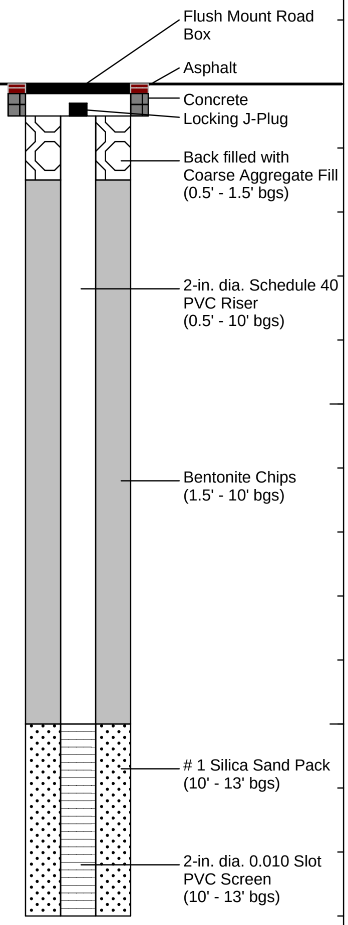
Medium brown, SILT, some Gravel, sheen present, wet.

Medium gray, SILT and fine to medium GRAVEL grading to SILT, some medium to coarse Gravel, little to trace oily MGP-like blebs 1-2mm, wet.

Medium gray, SILT, some medium to coarse Gravel, trace sheen, wet.

Medium gray, SILT, moist.

Well/Boring Construction



ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

0.0 - 2.0 feet bgs was augered without sampling to get below asphalt. Descriptions are from drill cuttings.

Date Start/Finish: February 15, 2008
Drilling Company: ADT
Driller's Name: Roger Buley and Don Kretser
Drilling Method: HSA
Auger Size: 4.25" ID
Rig Type: Mobile B-59
Sampling Method: 2" by 2' Split Spoon

Northing: 897065.92
Easting: 1231705.91
Casing Elevation: 1079.80

Borehole Depth: 15 feet bgs
Surface Elevation: 1080.48

Descriptions By: Nicholas (Klaus) Beyrle

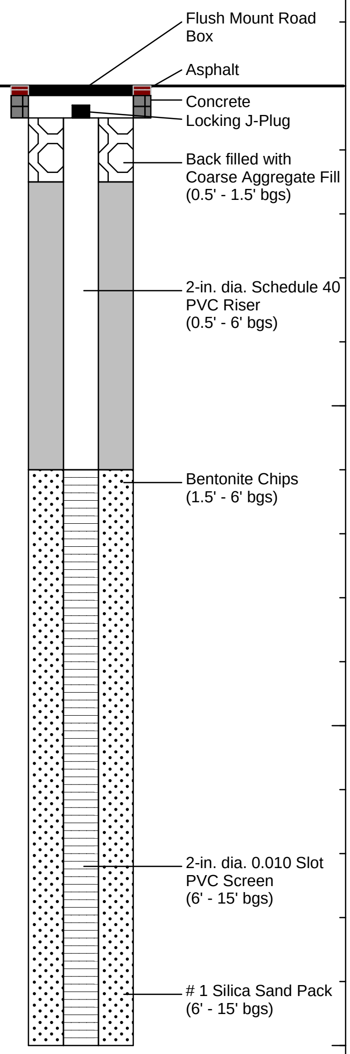
Well/Boring ID: **PMW-03**

Client: New York State Electric and Gas

Location: James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Stratigraphic Description
0	1080			NA	NA	NA	NA	Asphalt. Medium to very coarse GRAVEL and SILT, dry.
		1	2-4	1.0	10 12 12 13	24	0.0	Medium gray-brown SILT, some fine to medium Gravel, trace Clay, moist.
5	1075	2	4-6	1.3	9 8 10 8	18	0.0	Very coarse GRAVEL, some Silt, little very fine Gravel, trace broken rock fragments, wet. Light brown, SILT and medium GRAVEL, wet. Broken rock fragments.
		3	6-8	1.5	9 7 8 11	15	0.0	Medium brown SILT and medium to coarse GRAVEL, trace fine Sand, moist.
		4	8-10	1.2	7 9 10 12	19	0.0	Medium brown SILT and angular to subrounded medium to very coarse GRAVEL, trace fine Sand, wet.
10	1070	5	10-12	0.0	7 9 14 16	23	NA	NO RECOVERY.
		6	12-14	1.2	6 9 12 16	21	0.0	Medium brown SILT and angular to subrounded medium to very coarse GRAVEL, trace fine Sand, wet.
15	1065	7	14-16	1.5	10 11 9 10	20	0.0	

Well/Boring Construction



ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

0.0 - 2.0 feet bgs was augered without sampling to get below asphalt. Descriptions are from drill cuttings.

Project Number:B0013077 Template:G:\Div 11\Rockware\LogPlot 2001\LogFiles\NYSEG - Oneonta\13077\NYSEG MGP - PMW.ldf
Data File:PMW-03.dat Date:4/2/2008 Nicholas (Klaus) Beyrle

Date Start/Finish: February 14-15, 2008
Drilling Company: ADT
Driller's Name: Roger Buley and Don Kretser
Drilling Method: HSA
Auger Size: 4.25" ID
Rig Type: Mobile B-59
Sampling Method: 2" by 2' Split Spoon

Northing: 897060.84
Easting: 1231702.34
Casing Elevation: 1080.88

Borehole Depth: 15 feet bgs
Surface Elevation: 1081.27

Descriptions By: Nicholas (Klaus) Beyrle

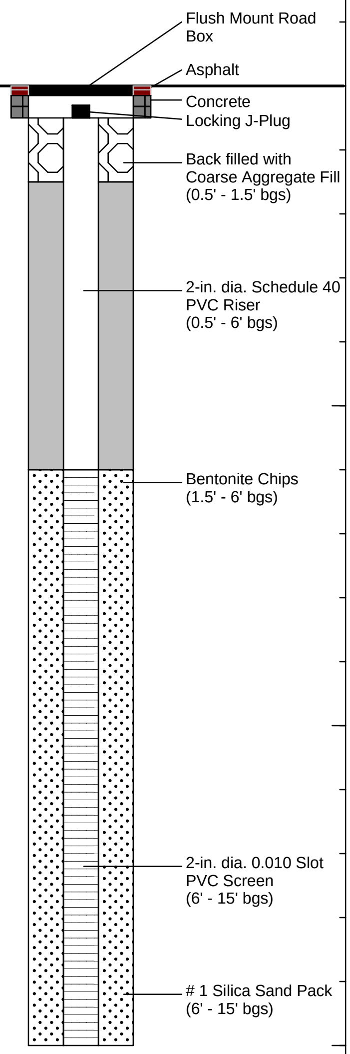
Well/Boring ID: **PMW-04**

Client: New York State Electric and Gas

Location: James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
0	1080			NA	NA	NA	NA		Asphalt. Medium brown, GRAVEL and SILT, some very coarse Gravel, dry.
		1	2-4	0.0	8 9 9 10	18	NA		NO RECOVERY.
5		2	4-6	1.3	5 5 4 5	9	0.0		Medium brown, SILT, some medium to very coarse angular to subrounded Gravel, dry.
	1075	3	6-8	1.0	7 5 7 4	12	0.0		Medium brown SILT and very coarse rounded Gravel, some very fine Gravel, wet
		4	8-10	0.3	3 3 1/1.0	4	0.0		Fine to medium subrounded to rounded GRAVEL, little very fine Gravel, wet, (Coarse Aggregate Fill). Geotextile fabric at 8' bgs.
10	1070	5	10-12	0.5	1 1 3 1	4	0.0		
		6	12-14	0.5	1 1 1 1	2	0.0		
15		7	14-16	0.5	4 4 7 7	11	0.0		

Well/Boring Construction



ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

0.0 - 2.0 feet bgs was augered without sampling to get below asphalt. Descriptions are from drill cuttings. Drillers believe low blow counts are due to proximity to AW-06.

Project Number:B0013077 Template:G:\Div 11\Rockware\LogPlot 2001\LogFiles\NYSEG - Oneonta\13077\NYSEG MGP - PMW.ldf
Data File:PMW-04.dat Date:4/2/2008 Nicholas (Klaus) Beyrle

Date Start/Finish: February 14, 2008
Drilling Company: ADT
Driller's Name: Roger Buley and Don Kretser
Drilling Method: HSA
Auger Size: 4.25" ID
Rig Type: Mobile B-59
Sampling Method: 2" by 2' Split Spoon

Northing: 897069.29
Easting: 1231762.13
Casing Elevation: 1079.72

Borehole Depth: 17 feet bgs
Surface Elevation: 1080.19

Descriptions By: Nicholas (Klaus) Beyrle

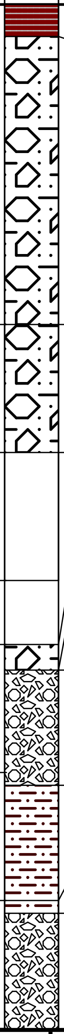
Well/Boring ID: **PMW-05**

Client: New York State Electric and Gas

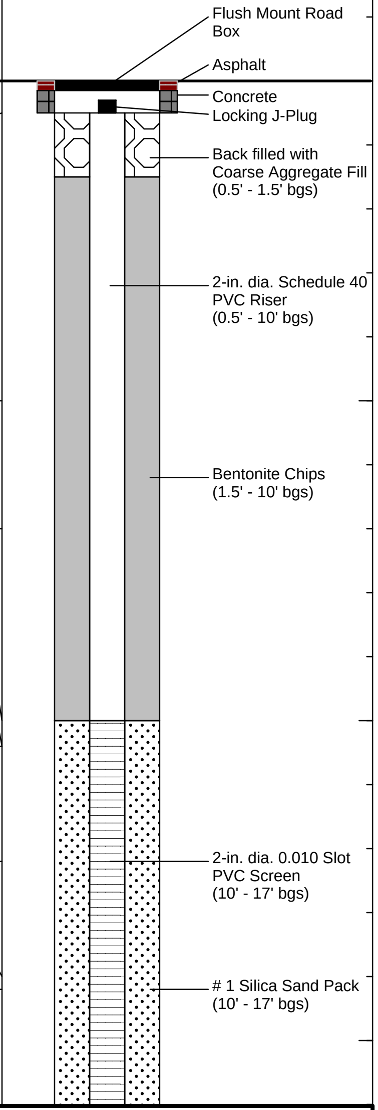
Location: James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Stratigraphic Description
0	1080		0-5	NA	Hand Cleared	NA	NA	Asphalt. Medium brown, GRAVEL and SILT, dry.
5	1075	1	5-7	1.3	5 6 6 9	12	0.0	Medium brown, GRAVEL and SILT, wet.
		2	7-9	0.0	8 10 12 50/0.2	22	NA	NO RECOVERY.
								Medium brown, GRAVEL and SILT, wet.
10	1070	3	10-12	1.2	14 13 15 16	28	0.0	Fine to medium GRAVEL, little Silt, wet. Geotextile fabric at 11' bgs.
		4	12-14	1.0	10 12 11 10	23	0.0	Medium gray-brown, SILT, some fine to medium Gravel, little red mottling, trace Clay, wet. Geotextile fabric at 13.5' bgs. Medium gray SILT, wet.
15	1065	5	14-16	1.0	7 8 9 8	17	0.0	Fine to medium GRAVEL, little Silt, wet. Geotextile fabric at 15' bgs.

Geologic Column



Well/Boring Construction



ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

0.0 - 5.0 feet bgs was hand cleared and not sampled. Descriptions are from cuttings.
9.0' - 10.0' bgs the drillers augered past obstruction rather then presumably push it deeper when taking next split spoon sample.

Client: New York State Electric and Gas

Well/Boring ID: **PMW-05**

Borehole Depth: 17 feet bgs

Site Location:
James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
					10				Medium to fine GRAVEL, little Silt, wet.	
		6	16-18	1.5	11 10 13	21	0.0		Medium gray, SILT, trace Clay, moist.	
20	1060									
25	1055									
30	1050									
35	1045									

ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

0.0 - 5.0 feet bgs was hand cleared and not sampled. Descriptions are from cuttings.
9.0' - 10.0' bgs the drillers augered past obstruction rather then presumably push it deeper when taking next split spoon sample.

Date Start/Finish: February 13-14, 2008
Drilling Company: ADT
Driller's Name: Roger Buley and Don Kretser
Drilling Method: HSA
Auger Size: 4.25" ID
Rig Type: Mobile B-59
Sampling Method: 2" by 2' Split Spoon

Northing: 897064.35
Easting: 1231756.92
Casing Elevation: 1080.38

Borehole Depth: 17 feet bgs
Surface Elevation: 1080.83

Descriptions By: Nicholas (Klaus) Beyrle

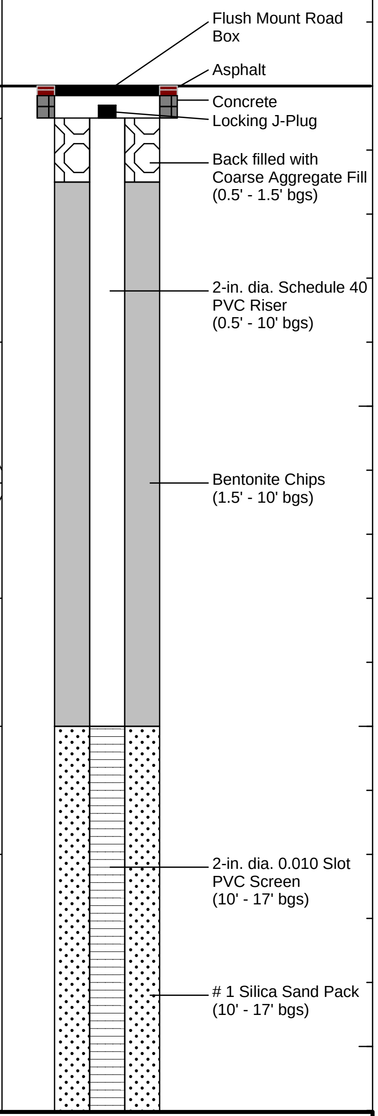
Well/Boring ID: **PMW-06**

Client: New York State Electric and Gas

Location: James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Stratigraphic Description
0	1080			NA	NA	NA	NA	Asphalt. Medium to coarse GRAVEL and SILT, dry.
		1	2-4	1.5	3 5 6 5	11	0.0	
5	1075	2	4-6	0.0	4 6 7 6	13	NA	NO RECOVERY. Medium brown, SILTY CLAY, wet
		3	6-8	1.0	4 6 8 6	14	0.0	Medium to very coarse GRAVEL, some Silt, little broken rock fragments, wet. Fine to medium GRAVEL, little Silt, wet, (Coarse Aggregate Fill). Geotextile fabric at 7.5' bgs.
		4	8-10	0.5	7 6 6 7	12	0.0	Fine to medium GRAVEL, little Silt, wet, (Coarse Aggregate Fill).
10	1070	5	10-12	0.0	8 10 7 9	17	NA	NO RECOVERY
		6	12-14	1.0	9 9 11 12	20	0.0	Fine to medium GRAVEL, little Silt, wet, (Coarse Aggregate Fill).
15	1065	7	14-16	1.0	9 9 8 9	17	0.0	

Well/Boring Construction



ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

0.0 - 2.0 feet bgs was augered without sampling to get below asphalt. Descriptions are from drill cuttings.

Client: New York State Electric and Gas

Well/Boring ID: **PMW-06**

Borehole Depth: 17 feet bgs

Site Location:
James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
		8	16-17	0.5	9 8	NA	0.0		Medium gray, SILT, trace Clay, wet. Geotextile fabric at 16.5' bgs.	
20	1060									
25	1055									
30	1050									
35	1045									

ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

0.0 - 2.0 feet bgs was augered without sampling to get below asphalt. Descriptions are from drill cuttings.

Project Number:B0013077 Template:G:\Div 11\Rockware\LogPlot 2001\LogFiles\NYSEG - Oneonta\13077\NYSEG MGP - PMW.ldf
Data File:PMW-06.dat Date:4/2/2008 Nicholas (Klaus) Beyrle

Date Start/Finish: February 13, 2008
Drilling Company: ADT
Driller's Name: Les Darrow and Bryan Lyon
Drilling Method: HSA
Auger Size: 4.25" ID
Rig Type: CME-75
Sampling Method: 2" by 2' Split Spoon

Northing: 897084.86
Easting: 1231841.20
Casing Elevation: 1079.93

Borehole Depth: 24 feet bgs
Surface Elevation: 1080.20

Descriptions By: Levia Terrell

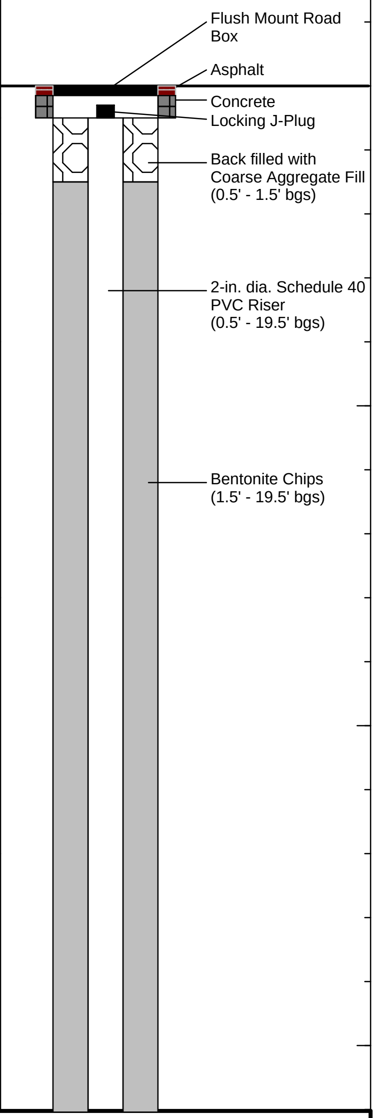
Well/Boring ID: **PMW-07**

Client: New York State Electric and Gas

Location: James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Stratigraphic Description
0	1080							Asphalt.
		1	0-2	1.0	NA 12 14 8	26	0.0	Brown, subangular fine to coarse GRAVEL and SILT, trace medium Sand, moist.
		2	2-4	0.8	7 11 7 8	18	0.0	Brown, fine SAND and fine to medium subangular GRAVEL, trace Silt, moist.
5	1075	3	4-6	1.0	2 5 5 3	10	0.0	Brown, fine SAND and fine to medium subangular to subrounded GRAVEL, little Silt, moist.
		4	6-8	1.0	4 5 4 5	9	0.0	
		5	8-10	0.5	1 2 2 6	4	0.0	Brown, fine SAND and SILT, little fine to medium subangular Gravel, moist.
10	1070	6	10-12	1.0	1 1 3 2	4	0.0	
		7	12-14	1.0	2 2 3 3	5	0.0	Brown, fine SAND and SILT, trace fine Gravel, moist.
15	1065	8	14-16	1.0	1 1 4 5	5	0.0	

Well/Boring Construction



ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

0.0 - 0.5 feet bgs was augered without sampling to get below asphalt.

Client: New York State Electric and Gas

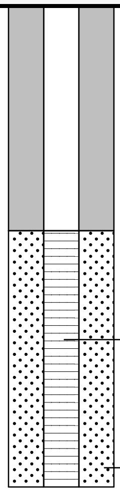
Well/Boring ID: **PMW-07**

Borehole Depth: 24 feet bgs

Site Location:
James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
		9	16-18	1.5	3 3 5 10	8	0.0		Brown, fine SAND and SILT, trace fine subrounded Gravel and Clay, rock in spoon tip, wet.
		10	18-20	0.6	4 6 4 6	10	0.0		Brown, fine to coarse SAND, little fine to medium subrounded Gravel and Silt, wet.
20	1060	11	20-22	0.6	4 5 3 5	8	0.0		Mild coal tar-like odor from 20.0' - 22.0' bgs.
		12	22-24	1.5	1 1 2 3	3	0.0		Gray SILT, trace Clay and medium subrounded Gravel, trace sheen, mild coal tar-like odor, wet.
25	1055								
30	1050								
35	1045								

Well/Boring Construction



2-in. dia. 0.010 Slot PVC Screen (19.5' - 23.5' bgs)

1 Silica Sand Pack (19.5' - 23.5' bgs)

ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

0.0 - 0.5 feet bgs was augered without sampling to get below asphalt.

Date Start/Finish: February 13, 2008
Drilling Company: ADT
Driller's Name: Les Darrow and Bryan Lyon
Drilling Method: HSA
Auger Size: 4.25" ID
Rig Type: CME-75
Sampling Method: 2" by 2' Split Spoon

Northing: 897078.28
Easting: 1231838.23
Casing Elevation: 1079.54

Borehole Depth: 24 feet bgs
Surface Elevation: 1080.13

Descriptions By: Levia Terrell

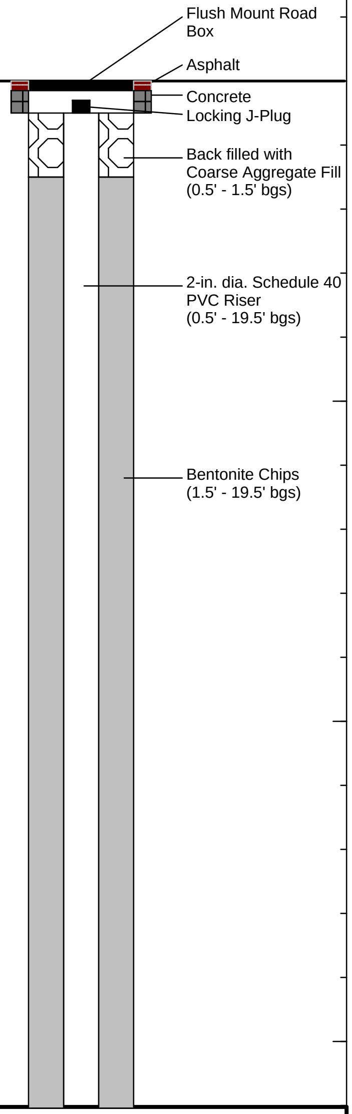
Well/Boring ID: PMW-08

Client: New York State Electric and Gas

Location: James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
0	1080	1	0-2	1.2	NA 20 25 15	45	0.0		Asphalt. Gray-brown, SILT, little fine to medium subrounded Gravel, trace asphalt, moist.
		2	2-4	1.4	7 8 6 6	14	0.0		Brown, fine SAND and SILT, some fine to medium subrounded Gravel, moist.
5	1075	3	4-6	1.4	2 2 3 4	5	0.0		Brown SILT, trace Clay, trace black cinder-like material at 5.8' bgs, moist. Brown, SILT, trace black cinder-like material, coal tar-like odor, moist.
		4	6-8	1.2	7 3 5 3	8	0.0		Brown-gray, SILT, little fine subrounded Gravel, trace Clay, moist.
		5	8-10	0.0	1 3 2 3	5	0.0		NO RECOVERY.
10	1070	6	10-12	0.4	9 4 6 4	10	NA		Brown SILT, trace fine subrounded Gravel, trace NAPL-like sheen, wet.
		7	12-14	1.0	4 4 5 4	9	0.0		Gray-brown SILT and fine subrounded Gravel, trace NAPL-like sheen, mild coal tar-like odor, wet.
15	1065	8	14-16	1.5	3 4 3 5	7	0.0		Gray-brown SILT and fine subrounded Gravel, trace NAPL-like sheen, wet.

Well/Boring Construction



ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

0.0 - 0.5 feet bgs was augered without sampling to get below asphalt.

Client: New York State Electric and Gas

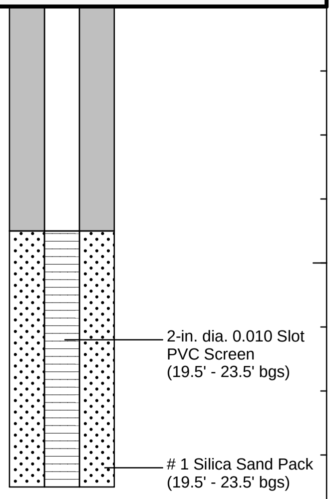
Well/Boring ID: **PMW-08**

Borehole Depth: 24 feet bgs

Site Location:
James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
		9	16-18	1.4	4 4 3 5	7	0.0		
		10	18-20	1.0	9 6 4 8	15	0.0		Gray-brown SILT, some fine to coarse subrounded Gravel, trace Clay, wet.
20	1060	11	20-22	1.2	8 7 6 9	13	0.0		
		12	22-24	1.5	10 11 9 7	20	0.0		Gray SILT, trace Clay, wet.
25	1055								
30	1050								
35	1045								

Well/Boring Construction



ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

0.0 - 0.5 feet bgs was augered without sampling to get below asphalt.

Project Number:B0013077 Template:G:\Div 11\Rockware\LogPlot 2001\LogFiles\NYSEG - Oneonta\13077\NYSEG MGP - PMW.ldf
Data File:PMW-08.dat Date:4/2/2008 Nicholas (Klaus) Beyrle

Date Start/Finish: February 12, 2008
Drilling Company: ADT
Driller's Name: Roger Buley and Don Kretser
Drilling Method: HSA
Auger Size: 4.25" ID
Rig Type: Mobile B-59
Sampling Method: 2" by 2' Split Spoon

Northing: 897063.99
Easting: 1231719.75
Casing Elevation: 1080.18

Borehole Depth: 15 feet bgs
Surface Elevation: 1080.70

Descriptions By: Nicholas (Klaus) Beyrle

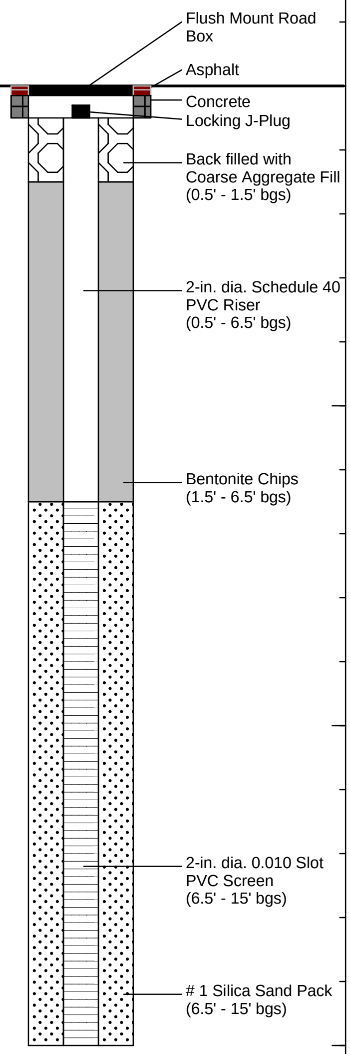
Well/Boring ID: **PMW-09**

Client: New York State Electric and Gas

Location: James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
0									Asphalt.
	1080			NA	NA	NA	NA		Medium brown, medium to very coarse GRAVEL and SILT, dry.
		1	2-4	0.3	4 5 7 9	12	0.0		Medium brown, SILT and fine to medium GRAVEL, rock in spoon tip, dry.
5	1075	2	4-6	1.3	12 14 15 12	29	0.0		Medium to very coarse, GRAVEL and SILT, some Cobble fragments, rock in spoon tip, dry.
		3	6-8	1.8	5 7 7 8	14	0.0		Fine to medium GRAVEL, some very fine Gravel, wet, (Coarse Aggregate Fill)
		4	8-10	1.5	10 12 14 10	26	0.0		
10	1070	5	10-12	1.0	7 8 9 8	17	0.0		
		6	12-14	1.5	7 9 9 15	18	0.0		
15	1065	7	14-16	1.0	7 9 9 10	18	0.0		Medium gray, SILT, some Clay. Geotextile fabric at 15' bgs.

Well/Boring Construction



ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

0.0 - 2.0 feet bgs was augered without sampling to get below asphalt. Descriptions are from drill cuttings.

Project Number:B0013077 Template:G:\Div 11\Rockware\LogPlot 2001\LogFiles\NYSEG - Oneonta\13077\NYSEG MGP - PMW.ldf
Data File:PMW-09.dat Date:4/2/2008 Nicholas (Klaus) Beyrle

Date Start/Finish: February 11-12, 2008
Drilling Company: ADT
Driller's Name: Roger Buley and Don Kretser
Drilling Method: HSA
Auger Size: 4.25" ID
Rig Type: Mobile B-59
Sampling Method: 2" by 2' Split Spoon

Northing: 897064.02
Easting: 1231722.64
Casing Elevation: 1080.25

Borehole Depth: 15.5 feet bgs
Surface Elevation: 1080.70

Descriptions By: Nicholas (Klaus) Beyrle

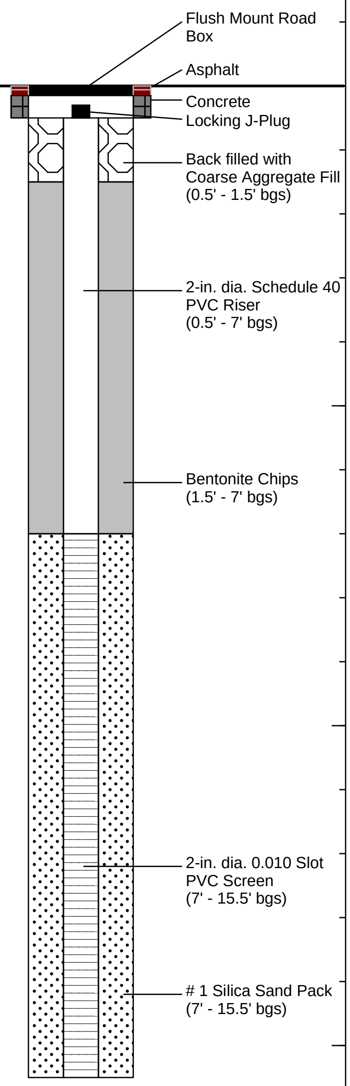
Well/Boring ID: **PMW-10**

Client: New York State Electric and Gas

Location: James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
0									Asphalt.
	1080			NA	NA	NA	NA		Medium brown, GRAVEL and SILT, dry.
		1	2-4	0.0	9 13 15 14	28	NA		NO RECOVERY.
5	1075	2	4-6	1.3	9 13 11 17	24	0.0		Medium brown, SILT and GRAVEL, little angular rock fragments, dry.
		3	6-8	1.5	11 9 9 8	18	0.0		Medium brown, SILT and GRAVEL, little angular rock fragments, wet. Fine to medium subrounded to rounded GRAVEL, little Silt, wet, (Coarse Aggregate Fill). Geotextile fabric at 7' bgs.
		4	8-10	1.5	7 9 8 11	17	0.0		
10	1070	5	10-12	<0.2	9 8 9 10	17	0.0		Rock in spoon tip.
		6	12-14	2.0	10 14 15 11	29	0.0		Fine to medium to fine GRAVEL and SILT, trace Clay, wet, (Coarse Aggregate Fill).
15	1065	7	14-16	2.0	10 11 8 9	19	0.0		Medium gray, SILT, trace Clay, wet. Geotextile Fabric at 16' bgs.

Well/Boring Construction



ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

0.0 - 2.0 feet bgs was augered without sampling to get below asphalt. Descriptions are from drill cuttings.

Project Number:B0013077 Template:G:\Div 11\Rockware\LogPlot 2001\LogFiles\NYSEG - Oneonta\13077\NYSEG MGP - PMW.ldf
Data File:PMW-10.dat Date:4/2/2008 Nicholas (Klaus) Beyrle

Date Start/Finish: February 11, 2008
Drilling Company: ADT
Driller's Name: Roger Buley and Don Kretser
Drilling Method: HSA
Auger Size: 4.25" ID
Rig Type: Mobile B-59
Sampling Method: 2" by 2' Split Spoon

Northing: 897064.43
Easting: 1231725.88
Casing Elevation: 1080.25

Borehole Depth: 15.5 feet bgs
Surface Elevation: 1080.68

Descriptions By: Nicholas (Klaus) Beyrle

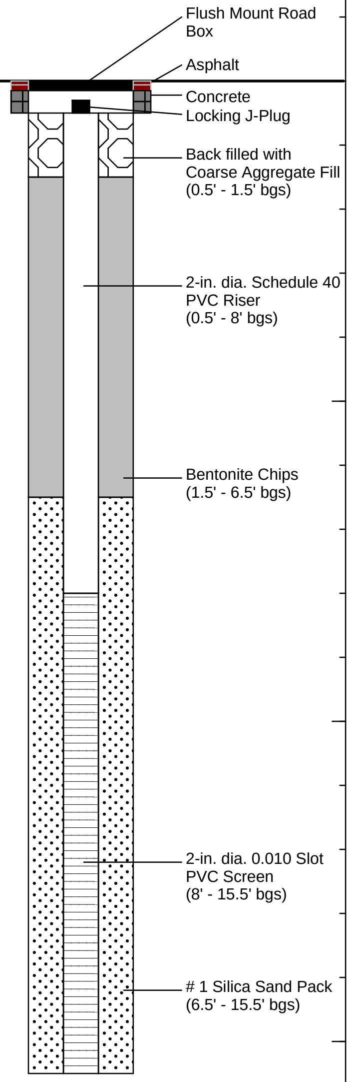
Well/Boring ID: **PMW-11**

Client: New York State Electric and Gas

Location: James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
0	1080			NA	NA	NA	NA		Asphalt. Medium to very coarse GRAVEL and SILT, dry.
		1	2-4	0.0	14 16 12 14	28	NA		NO RECOVERY.
5	1075	2	4-6	1.0	13 12 11 12	23	0.0		Fine to medium GRAVEL and SILT, some rock fragments, rock fragments in spoon tip, dry.
		3	6-8	1.0	4 4 5 6	9	0.0		Fine to medium GRAVEL, some very fine Gravel, trace Silt, wet, (Coarse Aggregate Fill).
10		4	8-10	1.0	5 9 8 9	17	0.0		Fine to medium GRAVEL and SILT, some very fine Gravel, wet, (Coarse Aggregate Fill).
	1070	5	10-12	1.7	7 8 9 8	17	0.0		
		6	12-14	1.7	9 9 9 10	18	0.0		
15	1065	7	14-16	1.5	7 9 11 14	20	0.0		Medium gray, SILT, little Clay. Geotextile fabric at 15.5' bgs.

Well/Boring Construction



ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

0.0 - 2.0 feet bgs was augered without sampling to get below asphalt. Descriptions are from drill cuttings.

Project Number:B0013077 Template:G:\Div 11\Rockware\LogPlot 2001\LogFiles\NYSEG - Oneonta\13077\NYSEG MGP - PMW.ldf
Data File:PMW-11.dat Date:4/2/2008 Nicholas (Klaus) Beyrle

Date Start/Finish: February 13, 2008
Drilling Company: ADT
Driller's Name: Roger Buley and Don Kretser
Drilling Method: HSA
Auger Size: 4.25" ID
Rig Type: Mobile B-59
Sampling Method: 2" by 2' Split Spoon

Northing: 897065.73
Easting: 1231762.00
Casing Elevation: 1080.34

Borehole Depth: 17 feet bgs
Surface Elevation: 1080.54

Descriptions By: Nicholas (Klaus) Beyrle

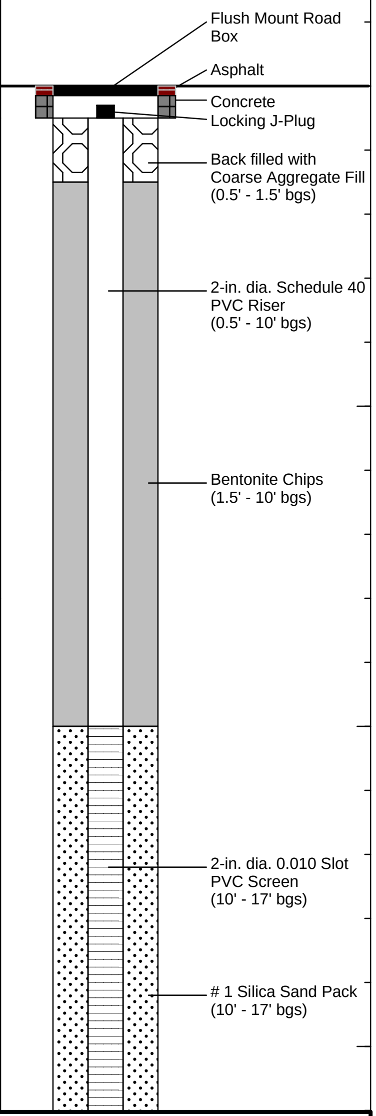
Well/Boring ID: **PMW-12**

Client: New York State Electric and Gas

Location: James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Stratigraphic Description
0	1080			NA	NA	NA	NA	Asphalt. Medium brown, medium to coarse GRAVEL and SILT, dry.
		1	2-4	0.5	7 8 9 8	17	0.0	
5	1075	2	4-6	0.8	3 6 9 7	15	0.0	Wet at 5.5' bgs.
		3	6-8	0.0	14 16 19 17	35	NA	NO RECOVERY.
		4	8-10	1.5	10 9 8 9	16	0.0	Fine to medium subrounded to rounded GRAVEL, little Silt, wet, (Coarse Aggregate Fill).
10	1070	5	10-12	1.5	7 9 8 9	17	0.0	
		6	12-14	1.0	6 8 7 8	15	0.0	
15	1065	7	14-16	1.0	4 9 8 9	16	0.0	

Well/Boring Construction



ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

0.0 - 2.0 feet bgs was augered without sampling to get below asphalt. Descriptions are from drill cuttings.

Client: New York State Electric and Gas

Well/Boring ID: **PMW-12**

Borehole Depth: 17 feet bgs

Site Location:
James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
		8	16-17	0.5	13 15	NA	0.0	▤	Medium gray, SILT, trace Clay, wet. Geotextile fabric at 16.8' bgs.	▨
20										
	1060									
25										
	1055									
30										
	1050									
35										
	1045									

ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

0.0 - 2.0 feet bgs was augered without sampling to get below asphalt. Descriptions are from drill cuttings.

Date Start/Finish: February 13, 2008
Drilling Company: ADT
Driller's Name: Roger Buley and Don Kretser
Drilling Method: HSA
Auger Size: 4.25" ID
Rig Type: Mobile B-59
Sampling Method: 2" by 2' Split Spoon

Northing: 897065.94
Easting: 1231765.8
Casing Elevation: 1080.16

Borehole Depth: 17 feet bgs
Surface Elevation: 1080.51

Descriptions By: Nicholas (Klaus) Beyrle

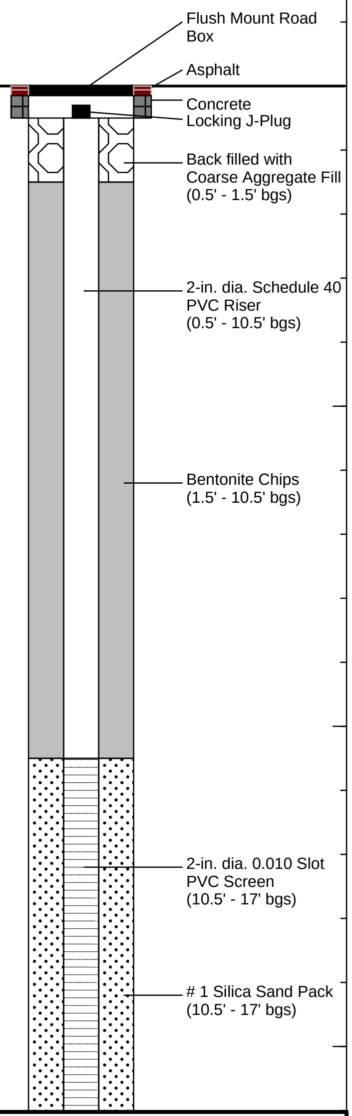
Well/Boring ID: **PMW-13**

Client: New York State Electric and Gas

Location: James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
0	1080			NA	NA	NA	NA		Asphalt. Medium brown, medium to coarse GRAVEL and SILT, dry.
		1	2-4	0.0	8 9 8 9	17	NA		NO RECOVERY.
5	1075	2	4-6	0.7	10 11 11 12	22	0.0		Medium brown SILT, little fine to medium subrounded Gravel, trace Clay, dry.
		3	6-8	1.0	20 20 20 50/0.4	40	0.0		Broken rock fragments, some Silt and fine to medium Gravel, wet.
		4	8-10	1.5	11 14 7 9	21	0.0		Fine to medium GRAVEL, little Silt, wet, (Coarse Aggregate Fill). Geotextile fabric at 9' bgs.
10	1070	5	10-12	1.0	7 8 8 11	16	0.0		
		6	12-14	1.0	5 7 9 7	16	0.0		
15	1065	7	14-16	1.0	5 7 8 7	15	0.0		

Well/Boring Construction



ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

0.0 - 2.0 feet bgs was augered without sampling to get below asphalt. Descriptions are from drill cuttings.

Client: New York State Electric and Gas

Well/Boring ID: **PMW-13**

Borehole Depth: 17 feet bgs

Site Location:
James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
		8	16-17	0.5	9 10	NA	0.0	▨	Medium gray, SILT, trace Clay. Geotextile fabric at 17' bgs.	▨
20	1060									
25	1055									
30	1050									
35	1045									

ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

0.0 - 2.0 feet bgs was augered without sampling to get below asphalt. Descriptions are from drill cuttings.

Date Start/Finish: February 12, 2008
Drilling Company: ADT
Driller's Name: Roger Buley and Don Kretser
Drilling Method: HSA
Auger Size: 4.25" ID
Rig Type: Mobile B-59
Sampling Method: 2" by 2' Split Spoon

Northing: 897065.68
Easting: 1231769.26
Casing Elevation: 1080.03

Borehole Depth: 17 feet bgs
Surface Elevation: 1080.63

Descriptions By: Nicholas (Klaus) Beyrle

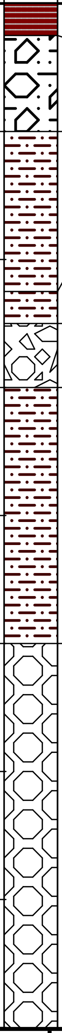
Well/Boring ID: **PMW-14**

Client: New York State Electric and Gas

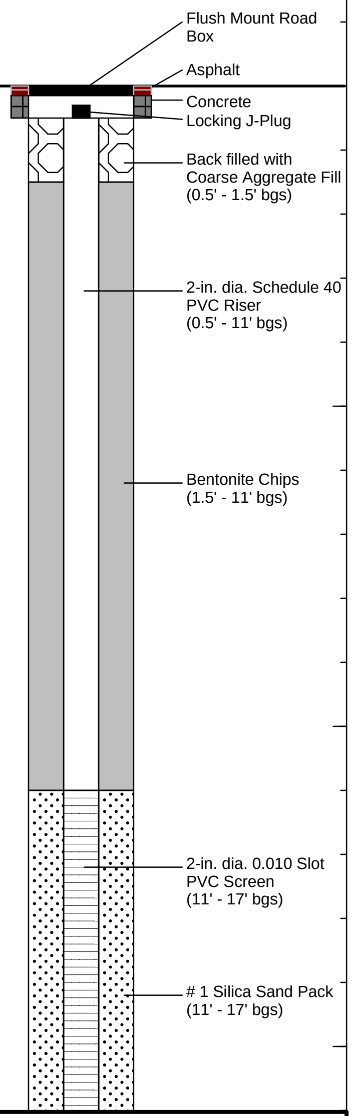
Location: James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Stratigraphic Description
0	1080			NA	NA	NA	NA	Asphalt. Medium brown, GRAVEL and SILT, dry.
		1	2-4	0.5	4 5 6 5	11	0.0	Medium brown, SILT, some fine to medium Gravel, trace Clay, rock in spoon tip, wet.
5	1075	2	4-6	1.5	9 12 16 14	28	0.0	Medium brown SILT, some fine to medium subrounded to rounded Gravel, trace Clay, wet. Broken rock fragments and SILT, rock in spoon tip.
		3	6-8	1.5	11 12 12 16	24	0.0	Medium brown, SILT and angular to sub angular GRAVEL, wet.
		4	8-10	1.0	7 10 8 10	18	0.0	
10	1070	5	10-12	1.0	5 5 6 5	11	0.0	Fine to medium GRAVEL, little very fine Gravel, wet, (Coarse Aggregate Fill). Geotextile fabric at 10' bgs.
		6	12-14	1.0	10 9 9 8	18	0.0	
15	1065	7	14-16	1.0	9 9 9 9	18	0.0	

Geologic Column



Well/Boring Construction



ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

0.0 - 2.0 feet bgs was augered without sampling to get below asphalt. Descriptions are from drill cuttings.

Client: New York State Electric and Gas

Well/Boring ID: **PMW-14**

Borehole Depth: 17 feet bgs

Site Location:
James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
		8	16-18	1.5	11 9 15 14	24	0.0		Medium to fine GRAVEL, little very fine Gravel, wet, (Coarse Aggregate Fill).	
		9	18-19	0.5	10 12	NA	0.0		Rock in spoon tip.	
20	1060									
25	1055									
30	1050									
35	1045									

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

0.0 - 2.0 feet bgs was augered without sampling to get below asphalt. Descriptions are from drill cuttings.

ARCADIS
Infrastructure, environment, facilities

Date Start/Finish: February 14, 2008
Drilling Company: ADT
Driller's Name: Les Darrow and Bryan Lyon
Drilling Method: HSA
Auger Size: 4.25" ID and 10.25" ID
Rig Type: CME-75
Sampling Method: 2" by 2' Split Spoon

Northing: 897061.06
Easting: 1231782.1
Casing Elevation: 1079.09

Borehole Depth: 19 feet bgs
Surface Elevation: 1079.76

Descriptions By: Levia Terrell

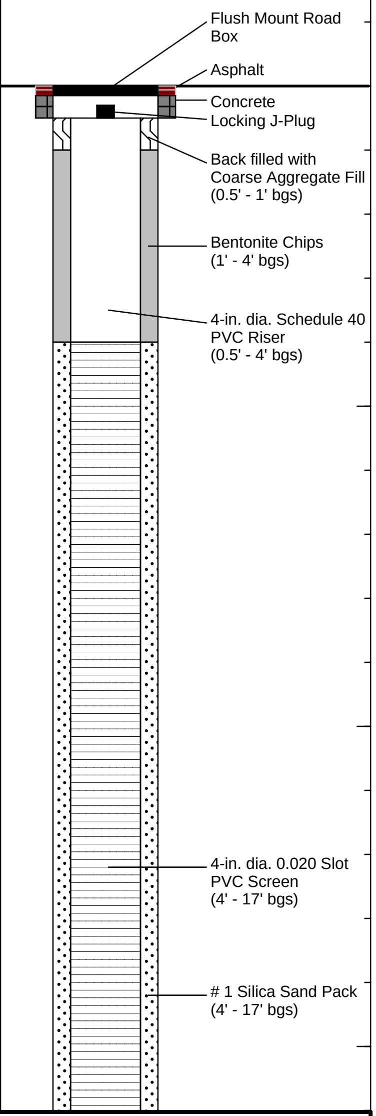
Well/Boring ID: **NRW-01**

Client: New York State Electric and Gas

Location: James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
0	1080			1.6	NA 15 15 16	30	0.0		Asphalt. Brown-gray, SILT and fine subangular to subrounded GRAVEL, trace red brick fragments, most.
		1	2-4	1.0	17 19 30 19	49	0.0		
5	1075	2	4-6	0.0	35 7 5 3	12	NA		NO RECOVERY.
		3	6-8	1.5	3 3 3 3	6	0.0		Brown, SILT, some fine Sand, trace Clay, moist.
	1070	4	8-10	0.5	4 3 3 5	6	7.6		Brown-gray, fine to coarse SAND, some fine to medium subrounded Gravel, trace black cinder-like material, heavy sheen, coal tar-like odor, wet.
10		5	10-12	0.8	3 6 6 4	12	6.9		Brown-gray fine to coarse SAND and fine to medium subangular GRAVEL, heavy sheen throughout the entire sample, trace oily MGP-like material, wet.
		6	12-14	1.4	14 17 15 2	32	94.2		
15	1065	7	14-16	1.6	2 4 6 6	10	187.4		

Well/Boring Construction



ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

0.0 - 0.5 feet bgs was augered without sampling to get below asphalt. NRW-01 was augered with the 4.25" ID augers down to 19' bgs, then redrilled with the 10.25" ID augers to 19' bgs.

Client: New York State Electric and Gas

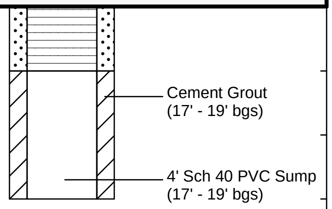
Well/Boring ID: **NRW-01**

Borehole Depth: 19 feet bgs

Site Location:
James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
		8	16-18	1.7	7 8 8 10	16	347		Brown-gray fine to coarse SAND and fine to medium subangular GRAVEL, heavy sheen throughout the entire sample, trace oily MGP-like material, wet. Gray, SILT, trace Clay, strong coal tar-like odor, wet.
		9	18-20	1.8	11 9 4 3	13	19.6		Gray, SILT, trace Clay, trace sheen, coal tar-like odor, wet.
20	1060								
25	1055								
30	1050								
35	1045								

Well/Boring Construction



Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

0.0 - 0.5 feet bgs was augered without sampling to get below asphalt. NRW-01 was augered with the 4.25" ID augers down to 19' bgs, then redrilled with the 10.25" ID augers to 19' bgs.

Infrastructure, environment, facilities

Date Start/Finish: February 15, 2008
Drilling Company: ADT
Driller's Name: Les Darrow and Bryan Lyon
Drilling Method: HSA
Auger Size: 4.25" ID and 10.25" ID
Rig Type: CME-75
Sampling Method: 2" by 2' Split Spoon

Northing: 897065.3
Easting: 1231815.37
Casing Elevation: 1079.5

Borehole Depth: 16 feet bgs
Surface Elevation: 1079.78

Descriptions By: Levia Terrell

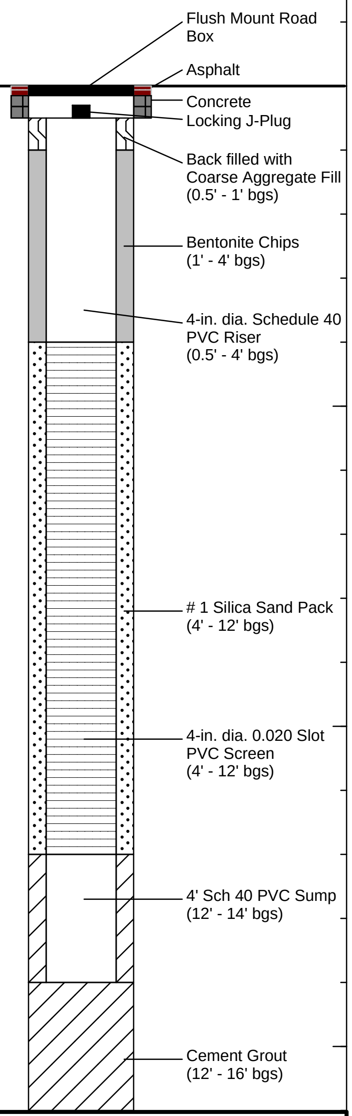
Well/Boring ID: **NRW-02**

Client: New York State Electric and Gas

Location: James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
0	1080			1.0	NA 10 13 12	23	0.0		Asphalt. Brown, SILT and fine to medium subrounded GRAVEL, trace fine Sand, trace red brick fragments, moist.
		1	2-4	1.0	7 6 2 3	6	0.0		Brown, SILT, little red brick fragments, moist.
5	1075	2	4-6	1.2	1 2 1 2	3	0.1		Brown-gray, fine SAND and SILT, trace red brick fragments, moist.
		3	6-8	1.0	3 3 4 5	7	27.4		Trace brown oily MGP-like material at 7.9' - 8.0' bgs.
	1070	4	8-10	0.8	5 6 5 8	11	19.5		Gray, SAND and fine to medium subrounded GRAVEL, heavy sheen, trace oily MGP-like material, coal tar-lik odor, moist.
10		5	10-12	<0.1	7 7 7 5	14	23.0		Gray, fine to medium subrounded GRAVEL, heavy sheen, coal tar-like odor, wet.
		6	12-14	2.0	1 1 1 1	2	12.5		Gray, SILT, trace Clay, coal tar-like odor, wet.
15	1065	7	14-16	1.7	WOR 1 1	1	11.0		

Well/Boring Construction



ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable; WOR - weight of rod.

0.0 - 0.5 feet bgs was augered without sampling to get below asphalt. NRW-02 was augered with the 4.25" ID augers down to 16' bgs, then redrilled with the 10.25" ID augers to 16' bgs.

Date Start/Finish: February 20, 2008
Drilling Company: ADT
Driller's Name: Les Darrow and Bryan Lyon
Drilling Method: HSA
Auger Size: 4.25" ID and 10.25" ID
Rig Type: CME-75
Sampling Method: 2" by 2' Split Spoon

Northing: 897154.32
Easting: 1231882.92
Casing Elevation: 1080.26

Borehole Depth: 18 feet bgs
Surface Elevation: 1080.66

Descriptions By: Levia Terrell

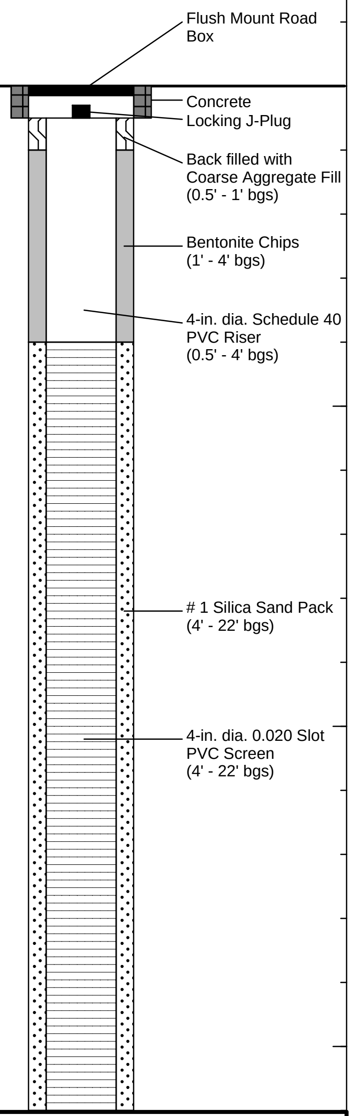
Well/Boring ID: **NRW-03**

Client: New York State Electric and Gas

Location: James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
0	1080	1	0-2	0.9	36 62 28 20	90	0.8		Gray, fine to coarse subangular to subrounded GRAVEL, some fine Sand, trace cinders in tip of spoon, coal tar-like odor, moist.
		2	2-4	1.2	17 11 8 9	19	4.0		Brown-black, fine to coarse SAND, little fine to medium subangular Gravel, some cinders, moist.
5	1075	3	4-6	0.0	8 18 6 5	24	NA		NO RECOVERY.
		4	6-8	0.4	4 5 3 5	8	3.8		Black-gray, fine SAND and fine subangular GRAVEL, moist. Gray-black, SILT and CLAY, moist
		5	8-10	1.7	2 1 1 WOR	2	22.4		Gray-black, SILT, trace Clay, trace organics (wood), moist.
10	1070	6	10-12	0.5	1 2 9 8	11	82.6		Rock in tip of 10' - 12' bgs spoon with trace brown oily MGP-like material and coal tar-like odor.
		7	12-14	0.4	9 10 7 5	17	34.4		Gray, medium to coarse SAND and fine to medium subangular GRAVEL, some brown oily MGP-like material, coal tar-like odor, wet.
15	1065	8	14-16	0.5	8 5 5 6	10	47.0		Gray, fine SAND and SILT, some medium subrounded Gravel, trace organics, oily MGP-like material, coal tar-like odor, wet.

Well/Boring Construction



ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable; WOR - weight of rod.

NRW-03 was augered with the 4.25" ID augers down to 18' bgs, then redrilled with the 10.25" ID augers to 18' bgs.

Project Number:B0013077 Template:G:\Div 11\Rockware\LogPlot 2001\LogFiles\NYSEG - Oneonta\13077\NYSEG MGP - NRW.ldf
Data File:NRW-03.dat Date:4/1/2008 Nicholas (Klaus) Beyrle

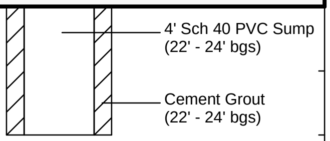
Client: New York State Electric and Gas

Well/Boring ID: **NRW-03**

Borehole Depth: 18 feet bgs

Site Location:
James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
		9	16-18	1.8	5 3 1 2	4	70.2	▨	Gray, SILT, trace Clay, trace coal tar-like material at 16' bgs, wet.	
20	1060									
25	1055									
30	1050									
35	1045									



ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable; WOR - weight of rod.

NRW-03 was augered with the 4.25" ID augers down to 18' bgs, then redrilled with the 10.25" ID augers to 18' bgs.

Date Start/Finish: February 19-20, 2008
Drilling Company: ADT
Driller's Name: Les Darrow and Bryan Lyon
Drilling Method: HSA
Auger Size: 4.25" ID and 10.25" ID
Rig Type: CME-75
Sampling Method: 2" by 2' Split Spoon

Northing: 897185.59
Easting: 1231880.85
Casing Elevation: 1080.55

Borehole Depth: 24 feet bgs
Surface Elevation: 1081.00

Descriptions By: Levia Terrell

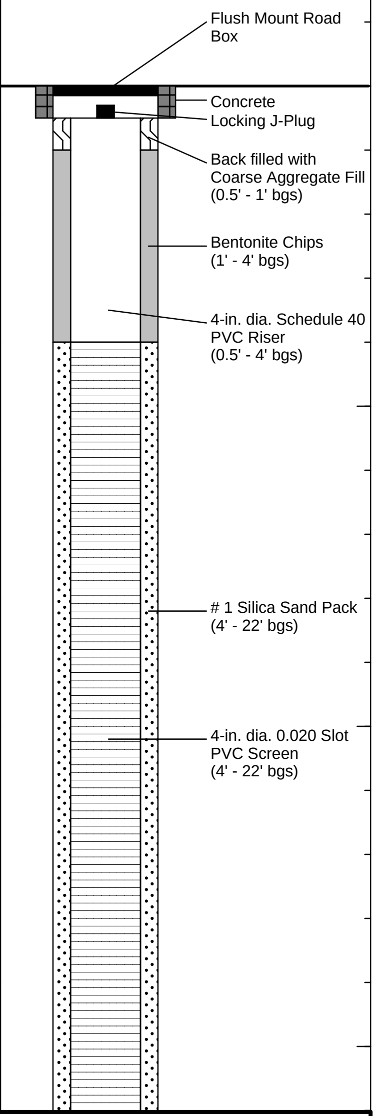
Well/Boring ID: **NRW-04**

Client: New York State Electric and Gas

Location: James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
0	1080	1	0-2	1.0	14 20 20 16	40	0.0		Crushed stone (Parking Lot). Brown, fine SAND and fine to medium subrounded Gravel, moist.
		2	2-4	0.0	15 12 8 7	20	NA		NO RECOVERY.
5		3	4-6	0.5	11 9 6 7	15	0.0		Brown-gray, fine to medium GRAVEL, little fine Sand and Silt, moist.
	1075	4	6-8	0.9	7 8 6 8	14	0.0		Brown, fine to coarse subangular GRAVEL, trace fine Sand and Silt, wet.
		5	8-10	0.6	8 5 6 7	11	0.0		Brown-gray, fine to coarse subangular to subrounded GRAVEL, trace Silt, wet.
10	1070	6	10-12	1.0	10 5 7 8	12	9.5		Brown-gray, fine to coarse subangular to subrounded GRAVEL, trace Silt, sheen, coal tar-like odor, wet.
		7	12-14	0.8	5 10 17 13	27	8.8		
15		8	14-16	0.5	15 10 15 18	25	8.4		Gray, fine to coarse subangular to subrounded GRAVEL, little fine Sand, coal tar-like odor, sheen, wet.

Well/Boring Construction



ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable; WOR - weight of rod.

NRW-04 was augered with the 4.25" ID augers down to 24' bgs, then redrilled with the 10.25" ID augers to 24' bgs.

Project Number:B0013077 Template:G:\Div 11\Rockware\LogPlot 2001\LogFiles\NYSEG - Oneonta\13077\NYSEG MGP - NRW.ldf
Data File:NRW-04.dat Date:4/1/2008 Nicholas (Klaus) Beyrle

Client: New York State Electric and Gas

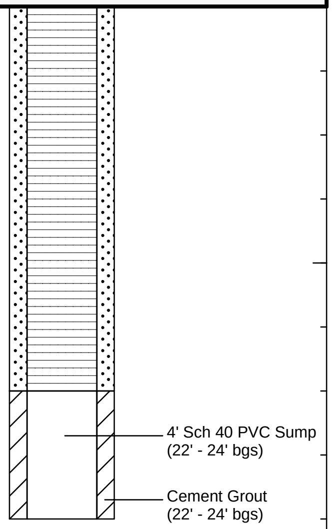
Well/Boring ID: NRW-04

Borehole Depth: 24 feet bgs

Site Location:
James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
		9	16-18	1.2	8 7 8 11	15	8.0		Gray, fine to coarse subangular to subrounded GRAVEL, little fine Sand, coal tar-like odor, sheen, wet.
		10	18-20	<0.1	30 25 12 20	42	36.4		Trace brown oily MGP-like blebs and heavy sheen in 18' - 20' bgs spoon.
20	1060	11	20-22	1.2	4 7 9 12	16	1093.0		Gray, fine to medium subangular GRAVEL and fine to coarse SAND, little brown oily MGP-like material, heavy sheen, coal tar-like odor, wet.
		12	22-24	1.6	5 6 6 5	12	47.0		Gray, SILT, sheen, caol tar-like odor.
25	1055								
30	1050								
35									

Well/Boring Construction



ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable; WOR - weight of rod.

NRW-04 was augered with the 4.25" ID augers down to 24' bgs, then redrilled with the 10.25" ID augers to 24' bgs.

Date Start/Finish: 11/12/08 - 11/14/08
Drilling Company: ADT
Driller's Name: Roger Buley
Drilling Method: HSA
Auger Size: 4.25" ID and 10.25" ID
Rig Type: Mobile B-59
Sampling Method: 2" by 2' Split Spoon

Northing: 897149.46
Easting: 1232211.5
Casing Elevation: 1080.76

Borehole Depth: 22' bgs
Surface Elevation: 1082.07

Descriptions By: Levia Terrell

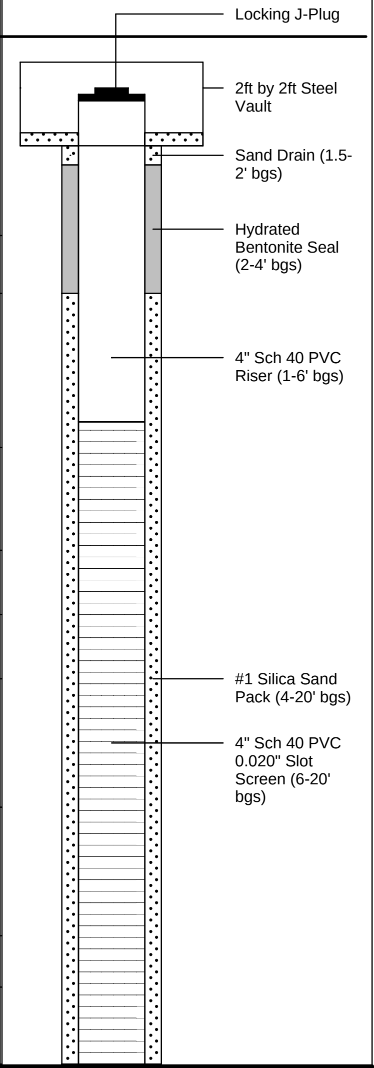
Well/Boring ID: **NRW-05**

Client: New York State Electric and Gas

Location: James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Stratigraphic Description
	1085							
0		1	0-2	1.3	8 10 22 21	32	0.0 0.0 0.0	Brown SILT, some fine Sand, trace subrounded fine to coarse Gravel, trace Organics, non-plastic, moist.
	1080	2	2-4	1.5	6 18 31 22	49	0.0 0.0 0.0	Black-red fine to coarse subangular GRAVEL, trace fine to coarse Sand, trace red Brick, non-plastic, moist.
5		3	4-6	1.0	3 5 4 4	9	0.0 0.0 0.0	Brown fine to coarse subrounded GRAVEL, some fine Sand, some Silt, trace Wood, trace red Brick in last 2 inches, non-plastic, moist. Bentonite seal in cuttings. No Wood 6.0' - 6.4' bgs.
	1075	4	6-8	1.5	11 7 7 9	14	0.0 0.5 0.5	Gray SILT, trace Clay, soft, non-plastic, moist.
		5	8-10	1.7	11 5 4 5	9	0.0 0.2 0.1	Gray fine to medium subrounded GRAVEL, trace fine to medium Sand, trace Wood, non-plastic, moist. Gray fine SAND, trace Wood, non-plastic, wet.
10		6	10-12	1.0	5 8 8 43	16	0.0 0.2 0.2	Gray fine to medium SAND, little fine to coarse subangular Gravel, trace Silt, trace Wood, mild odor, non-plastic, wet.
	1070	7	12-14	1.5	2 26 21 24	47	1.3 1.1 0.2	Gray fine to coarse subrounded to subangular GRAVEL, some fine to medium Sand, little Silt, trace coarse Sand, mild odor, non-plastic, wet.
15		8	14-16	1.0	31 26 21 27	47	0.4 0.5 0.0	Brown fine to coarse SAND, trace Silt, non-plastic, wet. Brown fine to coarse subrounded to subangular GRAVEL, trace fine to coarse Sand, trace Silt, mild odor, non-plastic, wet.

Well/Boring Construction



ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface; ID - inside diameter; NA - not applicable/not available.

NRW-05 was augered with the 4.25" ID augers down to 22' bgs, then redrilled with the 10.25" ID augers to 22' bgs. NRW-05 is completed with a steel vault buried approximately 8 inches below grade.

Top of vault elevation is 1081.49 ft. Elevations referenced to NGVD 29.

Client: New York State Electric and Gas

Well/Boring ID: **NRW-05**

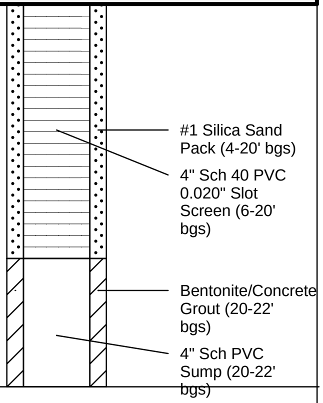
Borehole Depth: 22' bgs

Site Location:

James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
	1065	9	16-18	1.5	36 24 24 21	48	1.8 2.0 2.7		Brown-gray fine to medium subangular GRAVEL, little coarse Gravel, trace fine to medium Sand, trace Silt, mild odor, non-plastic, wet.
		10	18-20	1.7	10 7 6 7	13	1.3 0.5 0.1		Brown-gray fine SAND, some fine to medium subangular Gravel, trace Silt, trace Clay, non-plastic, wet.
20		11	20-22	2.0	9 7 9 6	16	0.5 0.3 0.1		Brown-gray fine to medium SAND and SILT, non-plastic.
	1060								
25									
	1055								
30									
	1050								
35									

Well/Boring Construction



Remarks: HSA - hollow stem auger; bgs - below ground surface; ID - inside diameter; NA - not applicable/not available.

NRW-05 was augered with the 4.25" ID augers down to 22' bgs, then redrilled with the 10.25" ID augers to 22' bgs. NRW-05 is completed with a steel vault buried approximately 8 inches below grade.

Top of vault elevation is 1081.49 ft. Elevations referenced to NGVD 29.

ARCADIS
Infrastructure, environment, facilities

Date Start/Finish: February 21, 2008
Drilling Company: ADT
Driller's Name: Roger Buley and Don Kretser
Drilling Method: HSA
Auger Size: 4.25" ID
Rig Type: Mobile B-59
Sampling Method: 2" by 2' Split Spoon

Northing: 896951.07
Easting: 1231971.1
Casing Elevation: 1078.73

Borehole Depth: 15 feet bgs
Surface Elevation: 1079.22

Descriptions By: Nicholas (Klaus) Beyrle

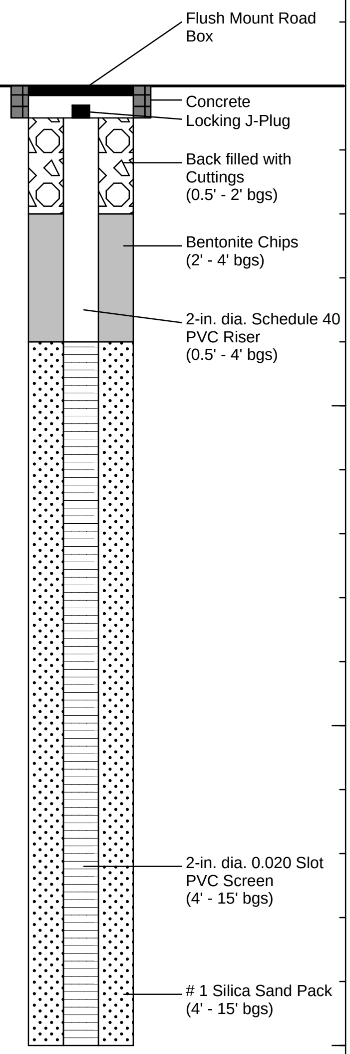
Well/Boring ID: **PZ-0801**

Client: New York State Electric and Gas

Location: James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
	1080								
0				NA	NA	NA	NA		Crushed stone (Parking Lot). Dark brown, SILT and medium to very coarse rounded GRAVEL, dry.
		1	2-4	0.5	4 3 3 4	6	0.0		Medium brown, SILT, trace fine Sand, some white ash and brick fragments, moist.
5	1075	2	4-6	1.5	1 1 1 1	2	0.0		Dark brown-black, charcoal-like fragments, moist. Medium brown, CLAY and SILT, trace red-orange mottling, moist. Medium gray, CLAY and SILT, moist. Dark black charcoal-like fragments and white ash-like fragments.
		3	6-8	1.8	1 3 5 5	8	0.0		Medium gray SILT, little Clay, moist. Dark gray, SILT, little Clay, little wood fragments, moist. Medium gray, SILT, trace Clay, little fine to medium rounded Gravel, wet.
	1070	4	8-10	1.2	8 10 10 17	20	0.0		Very fine angular GRAVEL grading to very coarse SAND, wet. Medium gray, SILT and medium to very coarse angular Gravel, wet.
10		5	10-12	1.8	10 10 9 12	19	44.0		Medium gray, SILT and medium to very coarse angular Gravel, little sheen, wet. Fine to medium Gravel and medium SAND, little sheen, wet. Medium gray SILT, trace Clay, trace sheen, 1-2mm sized orange oily MGP-like blebs in spoon tip, wet.
		6	12-14	0.5	6 5 7 7	12	33.7		Medium to coarse rounded GRAVEL and SILT, trace medium Sand, sheen present on water, rock in spoon tip, wet.
15	1065	7	14-16	1.5	2 2 2 3	4	0.7		Medium gray, SILT, trace CLAY, sheen on water, wet.

Well/Boring Construction



ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

0.0 - 2.0 feet bgs was augered without sampling to get below parking lot. Descriptions are from drill cuttings.

Client: New York State Electric and Gas

Well/Boring ID: **PZ-0801**

Borehole Depth: 15 feet bgs

Site Location:
James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
		8	16-17	0.8	2 3	NA	0.8	▨	Medium gray, SILT, trace CLAY, sheen on water, wet.	
	1060									
20										
	1055									
25										
	1050									
30										
	1045									
35										

ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

0.0 - 2.0 feet bgs was augered without sampling to get below parking lot. Descriptions are from drill cuttings.

Date Start/Finish: February 21, 2008
Drilling Company: ADT
Driller's Name: Roger Buley and Don Kretser
Drilling Method: HSA
Auger Size: 4.25" ID
Rig Type: Mobile B-59
Sampling Method: 2" by 2' Split Spoon

Northing: 897334.00
Easting: 1232056.57
Casing Elevation: 1081.42

Borehole Depth: 15 feet bgs
Surface Elevation: 1081.68

Descriptions By: Nicholas (Klaus) Beyrle

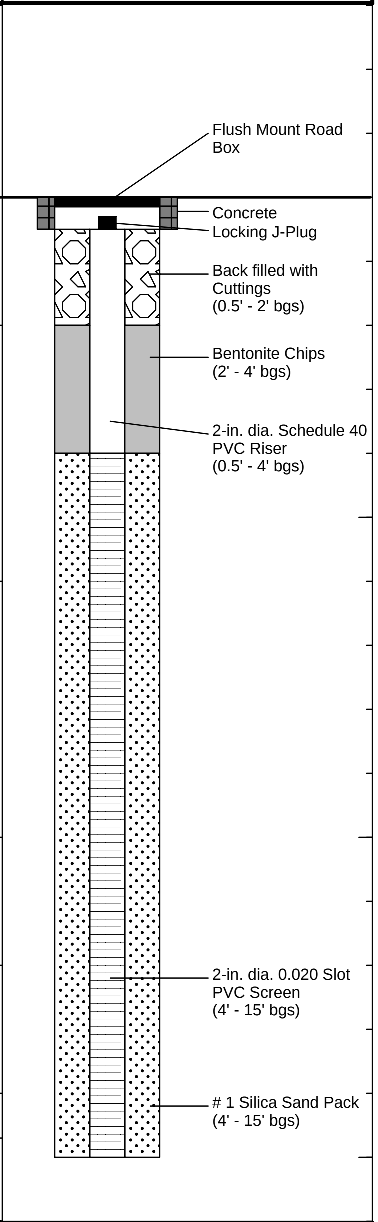
Well/Boring ID: **PZ-0802**

Client: New York State Electric and Gas

Location: James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
0	1080			NA	NA	NA	NA		Medium brown, SILT, trace fine Sand, trace very coarse angular Gravel, dry.
		1	2-4	1.2	4 5 6 5	11	0.0		Medium brown, SILT, trace fine Sand, trace fine to medium angular Gravel, dry. Trace charcoal-like material from 2.0' - 2.2' bgs and 4.0' - 4.3' bgs.
5		2	4-6	1.0	4 5 6 5	11	0.0		
	1075	3	6-8	1.0	3 3 3 7	6	0.0		Medium-dark gray, SILT, some very fine to coarse Gravel, wet.
		4	8-10	1.0	4 7 6 7	13	0.0		
10	1070	5	10-12	0.0	50/0.2	NA	NA		NO RECOVERY.
		6	12-14	0.3	50/0.3	NA	NA		Rock in spoon tip.
15		7	14-16	1.0	8 11 11 9	22	0.0		Broken rock fragments, wet. Medium gray, SILT, wet.

Well/Boring Construction



ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

0.0 - 2.0 feet bgs was augered without sampling. Descriptions are from drill cuttings.

Client: New York State Electric and Gas

Well/Boring ID: **PZ-0802**

Borehole Depth: 15 feet bgs

Site Location:
James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
	1065	8	16-17	2.0	7 8	NA	0.0		Medium brown, SILT, trace very fine Sand, wet. Medium gray, SILT, trace very fine Sand, wet.	
20										
	1060									
25										
	1055									
30										
	1050									
35										

ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

0.0 - 2.0 feet bgs was augered without sampling. Descriptions are from drill cuttings.

Project Number:B0013077
Data File:PZ-0802.dat
Template:G:\Div 11\Rockware\LogPlot 2001\LogFiles\NYSEG - Oneonta\13077\NYSEG MGP - PZ.ldf
Date:4/1/2008 Nicholas (Klaus) Beyrle

Date Start/Finish: February 20, 2008
Drilling Company: ADT
Driller's Name: Roger Buley and Don Kretser
Drilling Method: HSA
Auger Size: 4.25" ID
Rig Type: Mobile B-59
Sampling Method: 2" by 2' Split Spoon

Northing: 897249.74
Easting: 1231809.4
Casing Elevation: 1081.84

Borehole Depth: 22 feet bgs
Surface Elevation: 1082.34

Descriptions By: Nicholas (Klaus) Beyrle

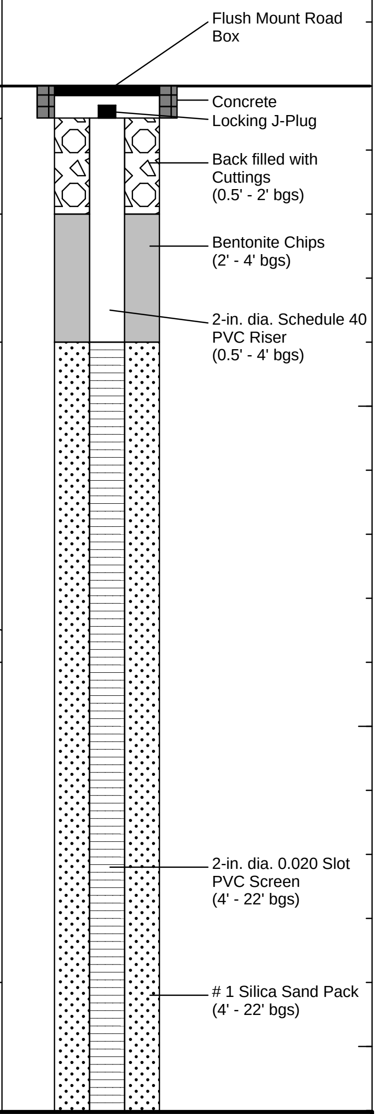
Well/Boring ID: PZ-0803

Client: New York State Electric and Gas

Location: James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
	1085								
0				NA	NA	NA	NA		Crushed stone (Parking Lot). Very coarse angular GRAVEL, dry.
	1080	1	2-4	0.0	50/0.4	NA	NA		NO RECOVERY.
5		2	4-6	1.8	5 7 7 9	14	0.0		Medium brown, SILT, little medium to very coarse angular to rounded Gravel, trace fine Sand, moist.
	1075	3	6-8	1.8	7 8 9 7	17	NA		
		4	8-10	1.5	6 6 7 7	13	0.0		Medium gray, CLAEY SILT, little fine to medium angular Gravel, moist. Medium gray-brown, SILT, little Clay, little fine to medium angular Gravel, moist.
10		5	10-12	1.3	4 4 5 5	9	0.0		
	1070	6	12-14	1.2	4 5 5 4	10	0.0		
15		7	14-16	1.2	6 8 5 7	13	0.0		Medium gray, SILT, little Clay, little fine to medium Gravel, moist.

Well/Boring Construction



Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

0.0 - 2.0 feet bgs was augered without sampling to get below parking lot. Descriptions are from drill cuttings.

Client: New York State Electric and Gas

Well/Boring ID: **PZ-0803**

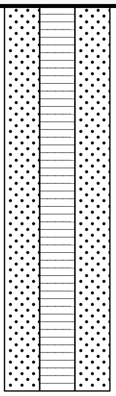
Borehole Depth: 22 feet bgs

Site Location:

James Georgeson Ave.
Oneonta Former MGP Site
Oneonta, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
	1065	8	16-18	0.8	3 5 4 5	9	0.0		Medium gray, SILT, little Clay, little fine to medium Gravel, moist.
		9	18-20	1.0	3 2 2 2	4	0.0		
20		10	20-22	0.0	4 4 4 5	8	NA		NO RECOVERY.
	1060	11	22-24	2.0	4 6 7 8	13	0.0		Medium gray, SILT, trace Clay, wet.
25									
	1055								
30									
	1050								
35									

Well/Boring Construction



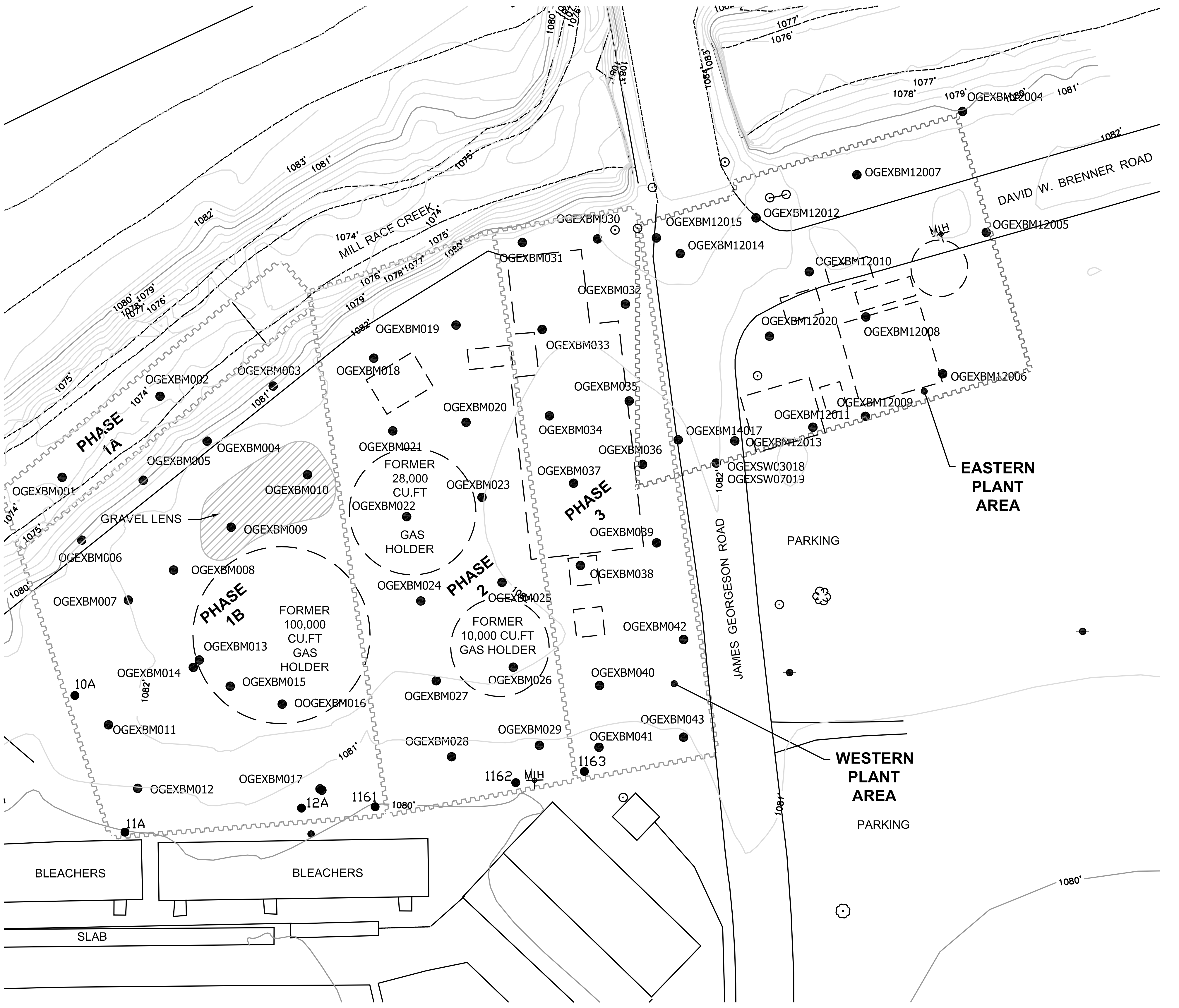
ARCADIS
Infrastructure, environment, facilities

Remarks: HSA - hollow stem auger; bgs - below ground surface;
ID - inside diameter; in. - inch; dia. - diameter;
NA - not applicable/not avaliable.

0.0 - 2.0 feet bgs was augered without sampling to get below parking lot. Descriptions are from drill cuttings.

Appendix D

Final Engineering Report Figure



Oneonta James George Avenue
Former Manufactured Gas Plant Site
2007 Western Plant Area Remediation Project

Results of WPA Excavation Confirmation Samples

Phase	Northing	Easting	Sample Identification	Collection Date	Depth Below Grade (feet)	Total PAHs (ppm)	BTEX (ppm)
1A	897183.39	1231653.02	OGEXBM001	10/16/06	8'	1.897	0.222
	897212.23	1231687.86	OGEXBM002	10/17/06	8'	3.01	0.788
1B	897215.90	1231728.13	OGEXBM003	11/03/06	16'	277.28	12.82
	897196.30	1231704.61	OGEXBM004	11/03/06	16'	19.1	3.01
	897183.04	1231682.11	OGEXBM 005	11/08/06	16'	2053	0.866
	897161.73	1231660.22	OGEXBM 006	11/08/06	16'	17.2	3.99
	897140.38	1231676.85	OGEXBM 007	11/08/06	16'	96.7	5.57
	897151.08	1231692.94	OGEXBM 008	11/08/06	16'	15.475	1.7
	897166.34	1231713.41	OGEXBM 009	11/08/06	16'	359.2	0.953
	897185.00	1231740.59	OGEXBM 010	11/08/06	16'	254.8	20.2
	897095.99	1231669.76	OGEXBM 011	11/15/06	16'	480.3	3.66
	897073.38	1231680.15	OGEXBM 012	11/15/06	16'	12.23	1.4
	897119.04	1231702.07	OGEXBM 013	11/17/06	16'	70.8	0.299
	* See Note Below		OGEXBM 014	11/17/06	16'	33.17	2.3
	897109.72	1231713.09	OGEXBM 015	11/17/06	16'	6.989	0.66
	897103.36	1231731.58	OGEXBM 016	11/30/06	16'	9.263	2.45
	897073.18	1231745.05	OGEXBM 017	11/30/06	16'	7.07	42.96
2	897226.50	1231764.16	OGEXBM 018	02/08/07	20'	76.37	15.270
	897238.29	1231793.46	OGEXBM 019	02/08/07	20'	9.98	0.350
	897203.65	1231797.01	OGEXBM 020	02/12/07	20'	1.58	0.015
	897200.61	1231770.93	OGEXBM 021	02/12/07	20'	1563.60	32.780
	897170.07	1231775.87	OGEXBM 022	02/21/07	20'	38.42	12.730
	* See Note Below		*OGEXBM 023	02/21/07	20'	14.62	3.140
	897140.07	1231780.89	OGEXBM 024	02/28/07	20'	393.54	61.3
	897146.68	1231809.8	OGEXBM 025	02/28/07	20'	27.42	9.9
	897116.49	1231813.82	OGEXBM 026	03/02/07	20'	233.60	8
	897111.69	1231786.40	OGEXBM 027	03/02/07	20'	14.52	6.690
	897084.61	1231791.86	OGEXBM 028	03/06/07	20'	2.69	0
	897088.69	1231823.10	OGEXBM 029	03/08/07	20'	91.11	0.73
	897268.95	1231843.79	OGEXBM 030	04/10/07	20'	9.40	1.060
	897267.70	1231817.03	OGEXBM 031	04/10/07	20'	0.766	0.004
3	897245.77	1231853.71	OGEXBM 032	04/12/07	20'	0.728	0
	897236.73	1231824.08	OGEXBM 033	04/12/07	20'	24.56	2.691
	897205.98	1231826.68	OGEXBM 034	04/16/07	20'	0.569	0.015
	897211.29	1231855.08	OGEXBM 035	04/16/07	20'	2.67	0.123
	897188.71	1231859.81	OGEXBM 036	04/18/07	20'	7.80	0.515
	897181.98	1231835.26	OGEXBM 037	04/18/07	20'	2.46	6.510
	897152.71	1231837.68	OGEXBM 038	04/20/07	20'	8.45	1.7
	897160.76	1231864.81	OGEXBM 039	04/20/07	20'	21.55	5170
	897110.00	1231844.53	OGEXBM 040	04/23/07	20'	1571.00	63.8
	897087.99	1231844.31	OGEXBM 041	04/23/07	20'	7441.00	466
	897126.38	1231874.44	OGEXBM 042	04/24/07	20'	251.50	70.7
	897091.59	1231874.40	OGEXBM 043	04/24/07	20'	59.21	588

* NOTE: Northing and Easting coordinates have been interperlated from the 30' X 30' sample grid.

Oneonta James George Avenue
Former Manufactured Gas Plant Site
2006 Eastern Plant Area Remediation Project

Results of EPA Excavation Confirmation Samples

Number	Northing	Easting	Sample Identification	Collection Date	Depth Below Grade (feet)	Total PAHs (ppm)	BTEX (ppm)
1	897314.32	1231973.69	OGEX-BM-12004	12/20/05	12'	12.293	0.56
2	897271.28	1231982.13	OGEX-BM-12005	12/22/05	12'	0.224	0.031
3	897220.94	1231966.61	OGEX-BM-12006	12/29/05	12'	2.92	7.065
4	897291.78	1231936.10	OGEX-BM-12007	12/30/05	12'	6.09	0.054
5	897241.18	1231939.25	OGEX-BM-12008	01/03/06	12'	2.37	0.373
6	897205.82	1231939.13	OGEX-BM-12009	01/04/06	12'	0.389	0
7	897257.28	1231919.14	OGEX-BM-12010	01/06/06	12'	1.098	0
8	897201.91	1231920.45	OGEX-BM-12011	01/09/06	12'	0.969	0.231
9	897276.44	1231900.20	OGEX-BM-12012	1/9/2006	12'	0	0.002
10	897197.05	1231892.64	OGEX-BM-12013	01/11/06	12'	14.32	0.001
11	897263.73	1231873.23	OGEX-BM-12014	01/12/06	12'	0	0
12	897269.31	1231864.76	OGEX-BM-12015	01/13/06	12'	3.821	0.049
13	897197.44	1231872.53	OGEX-BM-14017	01/20/06	12'	113.22	1.781
14	897189.15	1231886.07	OGEX-SW-03018	01/20/06	3'	346.1	0.038
15	897189.15	1231886.07	OGEX-SW-07019	01/23/06	7'	240.46	0.233
16	897234.33	1231904.99	OGEX-BM-12020	01/24/06	12'	4.916	0.964

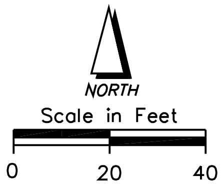
Mapping Reference:

1. Base mapping from plan titled " Sample & Test Locations, Oneonta MGP Site (Neahwa Park), Oneonta, NY" by NYSEG Engineering Services, Binghamton, NY, date 12/23/02.

2. Soil sample locations from a GPS survey performed by NYSEG.

3. Eastern Plant Area shown digitized from plan titled " Cantilevered Sheet Piling Plan & Section, & Notes, by Sevenson Environmental, dated 11/15/05.

PLAN



LEGEND

OGEXBM007 ● SOIL SAMPLE LOCATION

CAD FILE NAME: L:\work\93190\CADD\Oneonta_soil_boring\Oneonta-Conformation-Sample.dwg

NO	REVISIONS	DRN	CHK	DATE

40 BRITISH AMERICAN BOULEVARD
LATHAM, NEW YORK 12110
(518) - 951-2200

DRN	-	-
DES	-	-
CKD	-	-
APP	-	-

EarthTech
A tyco International Ltd. Company

FIGURE 5
EASTERN & WESTERN PLANT AREA
SOIL SAMPLE LOCATIONS

ONEONTA MGP
NEW YORK STATE ELECTRIC AND GAS
ONEONTA, NEW YORK

DATE DECEMBER, 2007
PROJECT NO 93190
DRAWING NO ONEONTA
SHEET NO 5

Appendix E

Excavation Work Plan

NYSEG

Excavation Work Plan

Oneonta Former MGP Site

Oneonta, New York

January 2021

Excavation Work Plan

Oneonta Former MGP Site

Oneonta, New York

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Version Control

Issue	Revision No.	Date Issued	Page No.	Description	Reviewed By

Contents

1 Scope

This Excavation Work Plan (EWP) has been prepared to support the Site Management Plan (SMP) for the former manufactured gas plant (MGP) Site located in Oneonta, New York (Site).

This section presents guidance and requirements for ground intrusive activities conducted within areas identified as potentially containing MGP impacts. Potentially impacted areas include, and the requirements established in the SMP apply, to the following areas:

- Soil within the former MGP excavation limits greater than 4 feet below ground surface (bgs), the lateral extent of which is shown on Figure 5 of the SMP document.
- The approximate lateral extent where Dense Non-Aqueous Phase Liquids (DNAPL) may be present as shown on Figure 5 of the SMP document. For the purpose of this SMP, the potential DNAPL-impacted area that exists outside the former MGP excavation limits is referred to as the “Excavation Advisory Area” (further discussed below).
- Soil outside the former MGP property (i.e., within the Excavation Advisory Area) greater than 4 feet bgs, the approximate lateral extent of which is also shown on Figure 5 of the SMP document.

Based on the above, for the purposes of this EWP, the definition of the phrase “soil within potentially impacted areas” refers to areas both within the former MGP excavation area (below the groundwater table) and within the Excavation Advisory Area (below the groundwater table).

In addition, groundwater may contain MGP-related impacts at concentrations above New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 standards or guidance values, the approximate lateral extent of which is shown on Figure 5 of the SMP document. For the purposes of this SMP, groundwater is conservatively estimated to exist at 4.5 feet bgs within the impacted area.

The Excavation Advisory Area described above and identified on Figure 5 of the SMP document is not directly subject to the requirements of the environmental easement presented in Appendix A of the SMP document. However, because this area contains potential MGP-impacted material, the requirements presented in this EWP must be followed in the event that these impacts are encountered. Additionally, adherence to the notification requirements for all intended intrusive activities within the Excavation Advisory Area is required.

2 Notification

At least 15 business days prior to the start of any intrusive activity that is anticipated or has the potential to encounter remaining MGP-related impacted soil or groundwater, the City of Oneonta as the Site Owner or their representative will notify NYSEG and the NYSDEC. As detailed below, the notification includes multiple components which may require additional time (i.e., more than 15 days) for review and approval by NYSEG and/or NYSDEC prior to commencing work. Table D-1 includes contact information for the above notification. The information on this table will be updated as necessary to provide accurate contact information. A full listing of site-related contact information is provided in Section 1 of the SMP document.

Table D-1 Notifications

Contact Name and Address	Phone Number and Email Address
Mr. John Ruspantini NYSEG, Senior Project Manager 18 Link Drive Binghamton, New York 13904	Telephone: 607.725.3801 Email: JJRuspantini@nyseg.com
Mr. Scott Deyette NYSDEC – Central Office 625 Broadway Albany, New York 12233	Telephone: 518.402.9794 Email: scott.deyette@dec.ny.gov
NYSDEC – Region 4 Office 1130 North Westcott Road Schenectady, New York 12306-2014	Telephone: 518.357.2045

Note: Notifications are subject to change and will be updated as necessary.

This notification will include:

- A detailed description of the work to be performed, including the location and areal extent of excavation, plans/drawings for site re-grading, intrusive elements or utilities to be installed below the soil cover, estimated volumes of potentially MGP-impacted soil to be excavated and any work that may impact an engineering control.
- A summary of environmental conditions anticipated to be encountered in the work areas.
- A schedule for the work, detailing the start and completion of all intrusive work.
- A summary of the applicable components of this EWP.
- A statement that the work will be performed in compliance with this EWP and 29 CFR 1910.120.
- A copy of the contractor's task-specific health and safety plan (HASP), in electronic format.
- Identification of disposal facilities for potential waste streams.
- Identification of sources of any anticipated backfill, along with all required chemical testing results.

In the event of an emergency situation (e.g., flooding, utility disruption, etc.), individuals planning to disturb potentially impacted soil or groundwater must provide proper notifications with as much advance notice prior to initiating work as reasonable and appropriate. Similar to non-emergency activities, workers must be notified of the site conditions with clear instruction regarding how the work is to proceed. If prior notification is not possible during an emergency situation, notifications should be made within 24 hours, or as soon as possible/reasonable, after the emergency has been resolved.

3 Soil Screening Methods

Visual, olfactory, and instrument-based (e.g., photoionization detector) soil screening will be performed all excavations into known or potentially MGP-impacted material (remaining MGP-impacted material). A qualified environmental professional as defined in 6 NYCRR Part 375, a PE who is licensed and registered in New York State, or a qualified person who directly reports to a PE who is licensed and registered in New York State will perform the screening. Soil screening will be performed when invasive work is done and will include all excavation and invasive work performed during development, such as excavations for foundations and utility work, after issuance of the certificate of completion (COC).

Soils will be segregated based on previous environmental data and screening results into material that potentially requires off-site disposal and material that requires testing to determine if the material can be reused on-site as soil beneath a cover or if the material can be used as cover soil. Excavated soil within potentially impacted areas (i.e., areas both within the former MGP excavation area [below the groundwater table] and within the Excavation Advisory Area [below the groundwater table]) that is potentially suitable for reuse will be sampled and analyzed (as described in Section 7 of this EWP) to evaluate if the material can be replaced or must be transported off-site for treatment and/or disposal. Further discussion of off-site disposal of materials and on-site reuse is provided in Section 5 of this Appendix.

4 Soil Staging Methods

Soil stockpiles will be continuously encircled with a berm and/or silt fence. Hay bales will be used as needed near catch basins, surface waters and other discharge points. Stockpiles will be kept covered at all times with appropriately anchored tarps. Stockpiles will be routinely inspected and damaged tarp covers will be promptly replaced. Stockpiles will be inspected by the qualified environmental professional at a minimum once each week and after every storm event. Results of inspections will be recorded in a logbook and maintained on-site during active site work and available for inspection by the NYSDEC.

5 Materials Excavation and Load-Out

A qualified environmental professional as defined in 6 NYCRR Part 375, a PE who is licensed and registered in New York State, or a qualified person who directly reports to a PE who is licensed and registered in New York State will oversee all invasive work and the excavation and load-out of all excavated material from a depth greater than 4-feet and the excavation and load-out of all excavated material from a depth less than 4 feet bgs, if required.

The City of Oneonta and NYSEG are responsible for implementation of this EWP. The contractor(s) performing the work are solely responsible for the safe execution of all invasive and other work performed under this EWP.

The presence of utilities and easements on the Site will be investigated by the qualified environmental professional. It will be determined whether a risk or impediment to the planned work under this SMP is posed by utilities or easements on the Site. A site utility stakeout will be completed for all utilities prior to any ground intrusive activities at the Site.

Loaded vehicles leaving the Site will be appropriately lined, tarped, securely covered, manifested, and placarded in accordance with appropriate Federal, State, local, and New York State Department of Transportation (NYSDOT) requirements (and all other applicable transportation requirements).

When necessary, a truck wash will be operated on-site, as appropriate. The qualified environmental professional, or designated qualified individual under his/her direction, will be responsible for ensuring that all outbound trucks will be washed (as necessary) at the truck wash before leaving the Site until the activities performed under this section are complete. Truck wash waters will be collected and disposed of off-site in an appropriate manner.

The qualified environmental professional, or designated qualified individual under his/her direction, will be responsible for ensuring that all egress points for truck and equipment transport from the Site are clean of dirt and other materials derived from the Site during intrusive excavation activities. Locations where vehicles enter or exit the Site shall be inspected daily for evidence of off-site soil tracking. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to site-derived materials. Material accumulated from the street cleaning and egress cleaning activities will be disposed off-site at a permitted landfill facility in accordance with all applicable local, State, and Federal regulations.

6 Materials Transport Off-Site

All transport of materials will be performed by licensed haulers in accordance with appropriate local, State, and Federal regulations, including 6 NYCRR Part 364. Haulers will be appropriately licensed and trucks properly placarded, as required.

Material transported by trucks exiting the Site will be secured with tight-fitting covers. Loose-fitting canvas-type truck covers will be prohibited. If loads contain wet material capable of producing free liquid, truck liners will be used.

Truck transport routes for vehicles leaving the property with material designated for off-site treatment and/or disposal are as follows:

- Follow James Georgeson Avenue north to Market Street
- Turn right onto market Street
- Follow Market Street to Grand Street
- Turn left onto Grand Street
- Turn right onto Main Street
- Turn right onto James F. Lettis Highway (Route 23)
- Take NYS Route 88 either North or South

All trucks loaded with site materials will exit the vicinity of the Site using only these approved truck routes. This is the most appropriate route and takes into account: (a) limiting transport through residential areas and past sensitive sites; (b) use of city mapped truck routes; (c) prohibiting off-site queuing of trucks entering the facility; (d) limiting total distance to major highways; (e) promoting safety in access to highways; and (f) overall safety in transport.

Trucks will be prohibited from stopping and idling in the neighborhood outside the project Site. Egress points for truck and equipment transport from the Site will be kept clean of dirt and other materials during site remediation and development. Queuing of trucks will be performed on-site to minimize off-site disturbance.

7 Materials Disposal Off-Site

All soil/fill/solid waste removed from potential impacted areas of the Site (i.e., greater than 4 feet bgs) that are not returned to the excavation will be regarded as impacted and regulated material and will be transported and disposed off-site in a permitted facility in accordance with all local, State and Federal regulations. If disposal of material from this site is proposed for unregulated off-site disposal (i.e., clean soil removed for development purposes), a formal request with an associated plan will be made to the NYSDEC project manager. Unregulated off-site management of materials from this site will not occur without formal NYSDEC approval.

Off-site disposal locations for excavated soils will be identified in the pre-excavation notification. This will include estimated quantities and a breakdown by class of disposal facility if appropriate, (e.g., hazardous waste disposal facility, solid waste landfill, petroleum treatment facility, C&D debris recovery facility) Actual disposal quantities and associated documentation will be reported to the NYSDEC in the annual Periodic Review Report (PRR). This documentation will include, but will not be limited to: waste profiles, test results, facility acceptance letters, manifests, bills of lading, and facility receipts, as appropriate.

Non-hazardous historic fill and impacted soil excavated from depths greater than 4 feet bgs taken off-site will be handled consistent with 6 NYCRR Parts 360, 361, 362, 363, 364, and 365. Material that does not meet Unrestricted SCOs is prohibited from being taken to a New York State C&D debris recovery facility (6 NYCRR Subpart 360-15 registered or permitted facility).

8 Materials Reuse On-Site

The qualified environmental professional as defined in 6 NYCRR part 375 will ensure that procedures defined for materials reuse in this SMP are followed and that unacceptable material (i.e., impacted) does not remain on-site. Impacted on-site material, including historic fill and impacted soil, that is acceptable for reuse on-site will be placed below cover materials, and will not be reused within a cover soil layer, within landscaping berms, or as backfill for subsurface utility lines. Excavated material located above potentially impacted material (e.g., clean fill material that was imported from off-site) can be reused for on-site fill.

Excavated soil/fill from any potentially impacted depth (e.g., depths greater than 4 feet bgs) that is free of visible tar or oil, sheens, and/or obvious odors shall be considered potentially suitable for on-site reuse. Material potentially suitable for on-site reuse shall be placed on polyethylene sheeting in stockpiles not to exceed 250 cubic yards (CY). The stockpiled potentially reusable material shall be covered whenever soil is not actively being placed into or removed from the stockpile, during overnight/weekend hours, during periods of precipitation, or whenever dust action levels are exceeded. This material shall be covered using polyethylene sheeting to reduce potential infiltration of precipitation, migration of wind-blown dust, and direct contact exposures.

Stockpiled potentially reusable material from potentially impacted areas will be sampled in accordance with the Generic Quality Assurance Project Plan (GQAPP), included as Appendix H to the SMP, and analyzed to verify the material can be replaced beneath cover materials or must be transported for off-site disposal. One composite sample will be collected for each 250 CY of potentially impacted soil, or as required by the disposal facility.

Concrete crushing or processing on-site will not be performed without prior NYSDEC approval. Organic matter (wood, roots, stumps, etc.) or other solid waste derived from clearing and grubbing of the site will not be reused on-site

9 Fluids Management

Efforts shall be made to minimize the amount of water that could enter an excavation (e.g., installing a berm around the excavation or covering the excavation to prevent runoff and or rain from entering during precipitation). Water accumulated in excavations shall be pumped out during or after precipitation events (as appropriate), containerized, characterized, and appropriately disposed.

All liquids to be removed from the Site, including but not limited to, excavation dewatering, decontamination waters and groundwater monitoring well purge and development waters, will be handled, transported and disposed off-site at an appropriate permitted facility, or treated on-site via a treatment system (as appropriate) and discharged to the local sewer authority (if authorized) in accordance with applicable local, State, and Federal regulations. At a minimum, water encountered in excavations shall be containerized then sampled and analyzed for the chemicals of potential concern (COPCs) known to be in the area as determined by previous analytical results, which may include certain volatile organic compounds (VOCs) and polycyclic aromatic hydrocarbons (PAHs), as well as analytes required by potential off-site treatment/disposal facilities. Dewatering, purge and development fluids will not be recharged back to the land surface or subsurface of the Site, and will be managed off-site, unless prior approval is obtained from NYSDEC.

Discharge of water generated during large-scale construction activities to surface waters (e.g., Neahwa Pond or the Mill Race) will be performed under a State Pollution Discharge Elimination System (SPDES) permit.

10 Cover System Restoration

After the completion of soil removal and any other invasive activities that require removal of site cover materials, the cover will be restored in a manner that complies with the March 2005 Record of Decision. The existing cover materials is comprised of asphalt pavement, concrete sidewalks, stone parking lots, soil/grass, and portions of the baseball stadium. The demarcation layer, consisting of orange snow fencing material, white geotextile or equivalent material will be placed above the excavation area to provide a visual reference to the top of the remaining potentially MGP-impacted zone, i.e., the zone that requires adherence to special conditions for disturbance of remaining potentially impacted soils defined in this SMP.

If the type of cover system changes from that which exists prior to the excavation (i.e., a soil cover is replaced by asphalt), this will constitute a modification of the cover element of the remedy and the upper surface of the remaining MGP Impacted areas. A figure showing the modified surface will be included in the subsequent PRR and in an updated SMP.

11 Backfill from Off-Site Sources

All materials proposed for import onto the Site will be approved by the qualified environmental professional, as defined in 6 NYCRR Part 375, and will be in compliance with provisions in this SMP prior to receipt at the Site.

A Request to Import/Reuse Fill or Soil form, which can be found at http://www.dec.ny.gov/regulations/67386.html, will be prepared and submitted to the NYSDEC project manager allowing a minimum of 5 business days for review.

Material from industrial sites, spill sites, other environmental remediation sites, or potentially contaminated sites will not be imported to the site.

All imported soils will meet the backfill and cover soil quality standards established in 6 NYCRR 375-6.7(d) and DER-10 Appendix 5 for restricted residential use. Soils that meet ‘general’ fill requirements under 6 NYCRR Part 360.13, but do not meet backfill or cover soil objectives for this Site, will not be imported onto the Site without prior approval by NYSDEC project manager. Soil material will be sampled for the full suite of analytical parameters, including Per- and Polyfluoroalkyl Substances (PFAS) and 1, 4-dioxane. Solid waste will not be imported onto the Site.

Trucks entering the Site with imported soils will be securely covered with tight fitting covers. Imported soils will be stockpiled separately from excavated materials and covered to prevent dust releases.

12 Stormwater Pollution Prevention

General storm water pollution prevention activities to be conducted in support of excavation activities include the following:

- Check dams/barriers (e.g., synthetic, stone, hay bales, etc.) will be installed and inspected once a week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by the NYSDEC. All necessary repairs shall be made immediately.
- Accumulated sediments will be removed as required to keep the barrier and/or hay bale check functional.
- Any undercutting or erosion of the silt fence toe anchor shall be repaired immediately with appropriate backfill materials.
- Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.
- Erosion and sediment control measures identified in the SMP shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters.
- Silt fencing or hay bales will be installed around the entire perimeter of the construction area sufficient to prohibit storm water from migrating off-site or to sewers.

13 Excavation Contingency Plan

If underground tanks or other previously unidentified contaminant sources are found during post-remedial subsurface excavations or development related construction, excavation activities will be suspended until sufficient equipment is mobilized to address the condition. The NYSDEC project manager will be promptly notified of the discovery.

Sampling will be performed on product, and surrounding soils, etc. as necessary to determine the nature of the material and proper disposal method. Chemical analysis will be performed for a full list of analytes [TAL metals, TCL volatiles and semi-volatiles (including 1,4-dioxane), TCL pesticides and polychlorinated biphenyls (PCBs), and PFAS], unless the Site history and previous sampling results provide sufficient justification to limit the list of analytes. In this case, a reduced list of analytes will be proposed to the NYSDEC project manager for approval prior to sampling.

Identification of unknown or unexpected contaminated media identified by screening during invasive site work will be promptly communicated by phone to the NYSDEC’s Project Manager. Reportable quantities of petroleum product will also be reported to the NYSDEC spills hotline. These findings will be also included in the PRR.

14 Community Air Monitoring Plan

Community air monitoring for VOCs and particulates will be conducted for soil disturbance activities within potentially impacted areas, in accordance with the New York State Department of Health (NYSDOH) Generic Community Air Monitoring Plan (CAMP) included as Appendix G to the SMP. The quantity and locations of community air monitoring stations will be determined in conjunction with the NYSDOH, based on the size and location of the proposed excavation and prevailing wind direction; however, at a minimum there will be one upwind and one downwind monitoring location. These locations will be adjusted daily or on a more frequent basis based on actual wind directions to provide upwind and downwind monitoring stations. Depending on the size and location of the proposed excavation area, the need for a fixed monitoring station or additional downwind monitoring stations will be evaluated.

Exceedances of action levels listed in the CAMP will be reported to NYSDEC and NYSDOH Project Managers. CAMP monitoring results will be included in the subsequent PRR.

15 Odor Control Plan

This odor control plan is capable of controlling emissions of nuisance odors from the Site. Specific odor control methods to be used on a routine basis are discussed below and included in the NYSDOH Generic CAMP included as Appendix G to the SMP. If nuisance odors are identified at the Site boundary, or if odor complaints are received, work will be halted, and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. NYSDEC and NYSDOH will be notified of all odor events and of any other complaints about the project. Implementation of all odor controls, including the halt of work, is the responsibility of NYSEG's Remediation Engineer, and any measures that are implemented will be discussed in the PRR.

All necessary means will be employed to prevent on- and off-site nuisances. At a minimum, these measures will include:

- Limiting the area of open excavations and size of soil stockpiles.
- Shrouding open excavations with tarps and other covers.
- Using foams to cover exposed odorous soil.

If nuisance odors develop and cannot be otherwise controlled, additional means to eliminate odor nuisances will include:

- Direct load-out of soil to trucks for off-site disposal.
- Use of chemical odorants in spray or misting systems.
- Use of staff to monitor odors in surrounding neighborhoods.

If nuisance odors develop during intrusive work that cannot be corrected, or where the control of nuisance odors cannot otherwise be achieved due to on-site conditions or close proximity to sensitive receptors, odor control will be achieved by sheltering the excavation and handling areas in a temporary containment structure equipped with appropriate air venting/filtering systems.

16 Dust Control Plan

Particulate monitoring will be performed in accordance with the CAMP included as Appendix G to the SMP. If particulate levels at the Site exceed the thresholds listed in the CAMP or if airborne dust is observed on the Site or leaving the Site, the dust suppression techniques listed below will be employed. The remedial party will also take measures listed below to prevent dust production on the Site. A dust suppression plan that addresses dust management during intrusive on-site work will include, at a minimum, the items listed below:

- Dust suppression will be achieved using a dedicated on-site water truck for road wetting. The truck will be equipped with a water cannon capable of spraying water directly onto off-road areas including excavations and stockpiles.
- Excavation of larger areas will be done in stages to limit the area of exposed soil vulnerable to dust production.
- Gravel will be used on unpaved construction roadways to provide a clean and dust-free road surface.
- On-site construction roads will be limited in total area to minimize the area required for water truck sprinkling.

17 Other Nuisances

A plan for rodent control will be developed and utilized by the contractor prior to and during site clearing and site grubbing, and during all remedial work.

A plan will be developed and utilized by the contractor for all remedial work to ensure compliance with local noise control ordinances.

Arcadis of New York, Inc.
100 Chestnut Street, Suite 1020
Rochester
New York 14604
Phone: 585 385 0090
Fax: 585 546 1973
www.arcadis.com

Appendix F

Generic Health and Safety Plan

General Health and Safety Plan (GHASP) Disclaimer

Any field sampling activities and/or intrusive work conducted within the Oneonta Former MGP Site located in Oneonta, New York that will potentially encounter or disturb remaining MGP residuals, including any modifications or repairs to the existing monitoring wells or ground surface cover that may disturb MGP-related residuals, will be performed in compliance with a Contractor-prepared task-specific HASP.

The Contractor shall be responsible for preparing a site-specific HASP in compliance with DER-10 and 29 CFR 1910, 29 CFR 1926, and all other applicable Federal, State and local rules and regulations. All field work must be performed in accordance with applicable federal, state, and local rules and regulations to protect worker health and safety. The Contractor's HASP will cover all personnel who will be employed by the Contractor to perform the work at the site, including direct employees, as well as Subcontractors. If the Contractor does not wish to include Subcontractors under their HASP, the Subcontractor will be responsible for developing and implementing a HASP that meets all applicable requirements. The Contractor will submit the task-specific HASP to the New York State Department of Environmental Conservation (NYSDEC) for review prior to initiating field activities. The site-specific HASPs will include information on site activities anticipated to be conducted. The Contractor shall be solely responsible for the health and safety of their own employees, subcontractors, agents and invitees, the public, and protection of property.

This GHASP presents a general guideline for Contractors preparing the task-specific HASP; however, current site conditions must be considered, and specific site activities defined and evaluated.

Inclusion of this GHASP is for illustrative purposes only; this GHASP may not be used as a substitute for a Contractor-prepared HASP. All Contractor employees who may come into contact with potentially impacted environmental media will follow the Contractor's site-specific HASP detailing the procedures that will be utilized to comply with applicable regulations. The Contractor has the sole responsibility for confirming that the worksite is safe, neat, and maintained in an orderly condition, and is free from hazards, and work tasks are performed in a safe manner. The Contractor is also solely responsible by law for compliance and regulatory reporting requirements for all workplace and employee safety issues.

Any use or adaptation of any portion of this GHASP by a Contractor will be at the sole risk of the Contractor.

All personnel must adhere to the procedures outlined in the Contractor's HASP during the performance of their work at the site. Each person is responsible for completing tasks safely and reporting any unsafe acts or conditions to their supervisor. No person may work in a manner conflicting with those procedures. After due warnings, the Contractor's Project Manager will dismiss from the site any person who violates safety procedures.

All personnel will receive training in accordance with applicable regulations and be familiar with the requirements and procedures contained in the Contractor's HASP prior to initiating site activities. In addition, all personnel will attend an initial hazard briefing prior to beginning work at the site.

Generic Health and Safety Plan

Revision 18 a

Project Name:	Oneonta Former MGP Site

Project Number:	TBD.1234
Client Name:	NYSEG
Date:	
HASP Expires	
Revision:	1

This Generic Health and Safety Plan (GHASP) presents a genera, guideline for Contractors preparing a task-specific HASP; however, current site conditions must be considered, and site-specific activites defined and evaluated by the Contractor. Inclusion of this GHASP is for illustrative purposes only; this GHASP may not be used as a substitute for a Contractor-prepared HASP.

Approvals:

HASP Developer: ______________________________

Project Manager: ______________________________

HASP Reviewer: ______________________________

Revised: 2/17/2021

Arcadis Field and Embedded Staff COVID-19 Guidance

Check the Orange Line Daily

The Arcadis Field and Embedded Staff Covid-19 Guidance document is attached in Attachment A

ARCADIS Design & Consultancy for natural and built assets

COVID-19 HEALTH AND SAFETY PROCEDURES

PROJECT SITE SAFETY MEASURES:

- ASK IF ANYONE ON THE TEAM IS OUT SICK
- ASK IF ANYONE HAS TESTED POSITIVE FOR COVID-19
- KEEP 6-FOOT SOCIAL DISTANCING WHEN INTERACTING
- PROVIDE PERSONAL HYGIENE SUPPLIES
- FREQUENTLY WIPE DOWN PPE
- WEAR FACE COVERINGS
- ON SITE INTERACTION IS DISCOURAGED
- TAKE YOUR TEMPERATURE
- ONE PERSON PER VEHICLE

PERSONAL HYGIENE BEST PRACTICES:

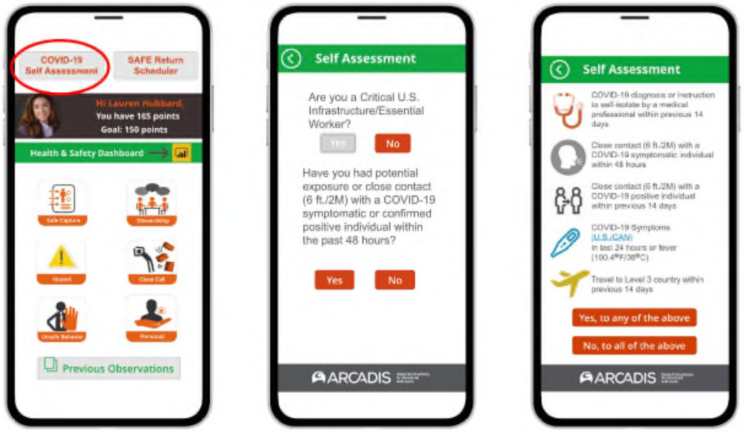
- WASH YOUR HANDS
- COUGH AND SNEEZE INTO YOUR ELBOW
- AVOID TOUCHING YOUR FACE AND EYES
- USE A DISINFECTANT ON SURFACES
- USE OF HAND SANITIZER

ARCADIS Design & Consultancy for natural and built assets

COVID-19 SELF ASSESSMENT

Arcadis staff visiting offices and project sites must complete the COVID-19 Health Screening Self-Assessment Questionnaire prior to each visit. Arcadis staff can now use the H&S App to complete their daily (or multiple times a day, if appropriate) COVID-19 Health Screening Self-Assessment. The data entered into the H&S App COVID-19 Health Screening Self-Assessment form is not stored.

QR Code for daily self-assessment.



Are you a Critical U.S. Infrastructure/Essential Worker?

Have you had potential exposure or close contact (6 ft./2M) with a COVID-19 symptomatic or confirmed positive individual within the past 48 hours?

COVID-19 diagnosis or instruction to self-isolate by a medical professional within previous 14 days

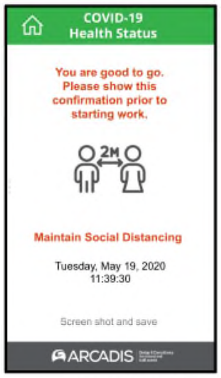
Close contact (6 ft./2M) with a COVID-19 symptomatic individual within 48 hours

Close contact (6 ft./2M) with a COVID-19 positive individual within previous 14 days

COVID-19 Symptoms (U.S./CAN) in last 24 hours or fever (100.4°F/38°C)

Travel to Level 3 country within previous 14 days

Upon completion of the COVID-19 Health Screening Self-Assessment in the H&S App, the user will receive a green, yellow or red completion message (as shown below).



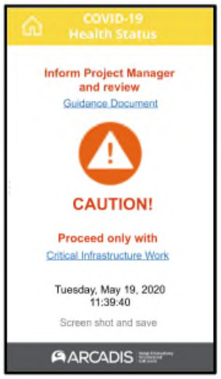
You are good to go. Please show this confirmation prior to starting work.

Maintain Social Distancing

Tuesday, May 19, 2020
11:39:30

Screen shot and save

Green – proceed to the office or project site



Inform Project Manager and review Guidance Document

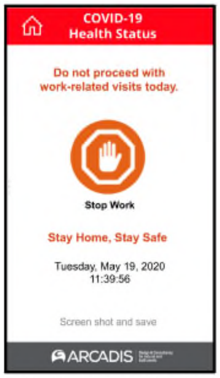
CAUTION!

Proceed only with Critical Infrastructure Work

Tuesday, May 19, 2020
11:39:40

Screen shot and save

Yellow (Caution) – critical infrastructure/essential worker must contact the Project Manager and review the "H&S App Yellow Caution Status Guidance"



Do not proceed with work-related visits today.

Stop Work

Stay Home, Stay Safe

Tuesday, May 19, 2020
11:39:56

Screen shot and save

Red – do not proceed to the office or project site

Call WorkCare if you have:

- Symptoms consistent with COVID
- Been asked to be tested for COVID
- Tested Positive for COVID
- Been directed by the H&S App to call WorkCare

Calling WorkCare is not required if you have:

- Been in close contact with a person with COVID-related symptoms.
- Been in close contact with a COVID+ person

Emergency Information

Site Address:
15 James Georgeson Avenue,
Oneonta, New York 13820

Emergency Phone Numbers:

Emergency (fire, police, ambulance)		911
Emergency (facility specific, if applicable):		
	Fire Department	607-433-3480
Emergency Other (specify):	Police	607-432-1113
Primary Client Contact:	John Ruspantini	585-484-6787
WorkCare (non-life-threatening injury/illness):		1-888-449-7787
Project H&S:		
Task Manager:		
Project Manager:		
H&S Specialist:		
Area H&S Director:		

Hospital Name and Address:
A.O. Fox Hospital
1 Norton Avenue
Oneonta, New York 13820

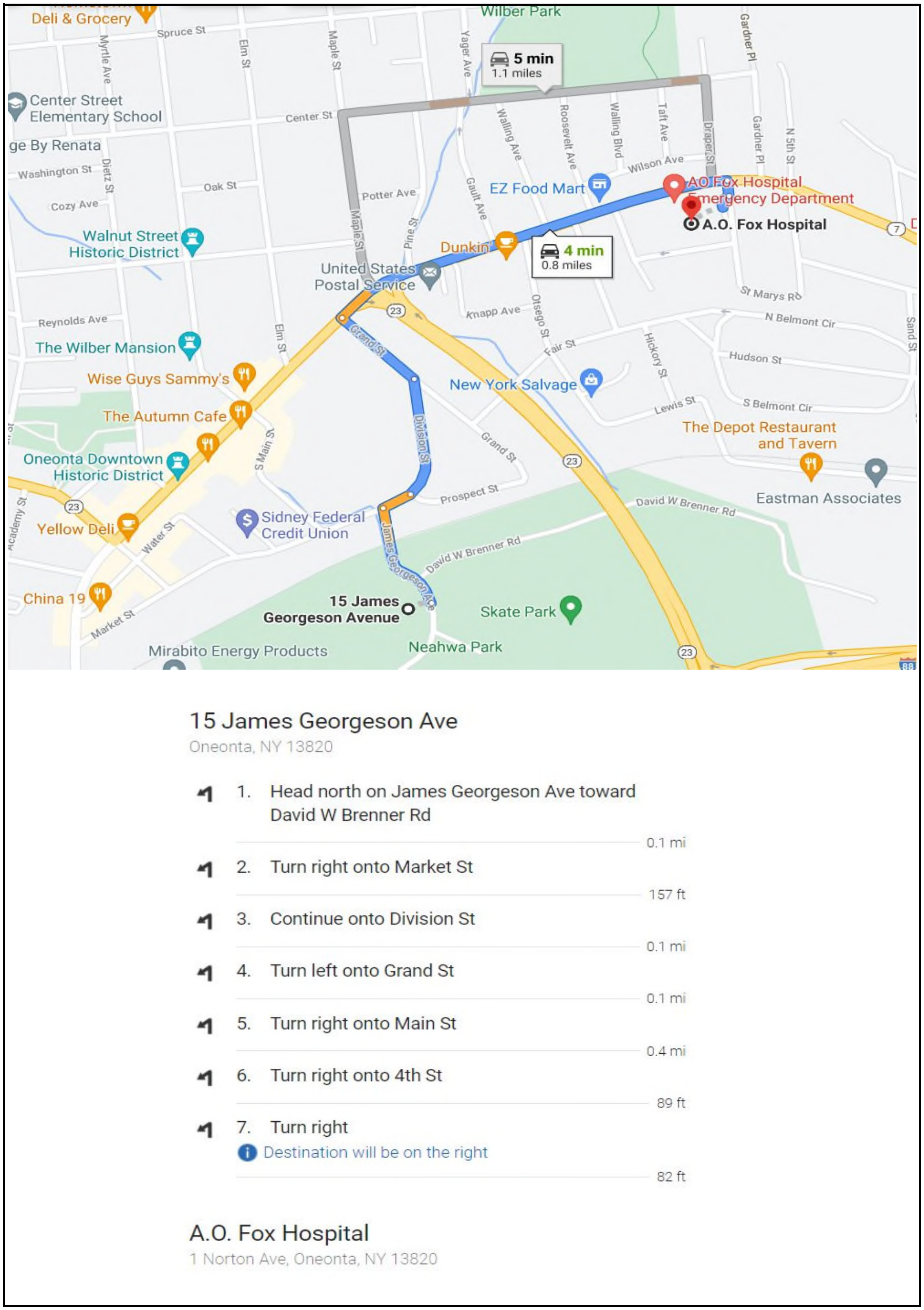
Hospital Phone Number: 607-432-2000

Supplemental Client Contact Information:

Other Important Phone Numbers:

Poison Control Center	1-800-222-1222
Nat. Response Ctr. (spills in reportable quantities)	1-800-424-8802
U.S. Coast Guard (spills to water)	1-800-424-8802

Route to the Hospital



15 James Georgeson Ave

Oneonta, NY 13820

1. Head north on James Georgeson Ave toward David W Brenner Rd — 0.1 mi
2. Turn right onto Market St — 157 ft
3. Continue onto Division St — 0.1 mi
4. Turn left onto Grand St — 0.1 mi
5. Turn right onto Main St — 0.4 mi
6. Turn right onto 4th St — 89 ft
7. Turn right — 82 ft
   ⓘ Destination will be on the right

A.O. Fox Hospital

1 Norton Ave, Oneonta, NY 13820

Site Type

The project site is an active facility with the following attributes:

Parking Lot/Private Drive (NON ROW)
City Park

Work in parking lots will require preparation of a Non-ROW Traffic Safety Plan.

Surrounding Land Use and Topography

The site is located in Neahwa Park at Damaschke Field. The site is mostly flat with very little topographic change.

Simultaneous Operations (SimOps)

Planned Arcadis site work will not be in proximity to SimOps work activities performed by non Arcadis employees or subcontractors. Arcadis will initiate stop work and evaluate the work activities through the JSA process if during the course of work a SimOps activity is identified that could reasonably affect health and safety of Arcadis employees and subcontractors.

Site Background

The site is a former Manufactured Gas Plant (MGP). The soil and sediment remedy was completed in 2007 and consisted of excavation, off-site disposal, and back-filling with imported material. The groundwater remedy involved enhancing dissolved oxygen levels by applying oxygen releasing material (ORC) in the water column. Application of ORC was suspended in November 2013. Currently the program is in a monitoring phase consisting of groundwater gauging and sampling.

Project Tasks

The following tasks are identified for this project:

1	Mobilization - Site set up and take down
2	Monitor well - Well sounding, water level or product measurements using probes, tapes or downhole wate
3	Monitor well - Well installation, development, or purging contractor oversight
4	Monitor well - Well development and purging using manual methods
5	Decontamination - Small or hand-held objects using manual methods
6	Monitor well - Well or boring abandonment contractor oversight
7	Select
8	Select
9	Select
10	Select
11	Select
12	Select
13	Select
14	Select
15	Select
16	Select
17	Select
18	Select
19	Select
20	Select

Supplemental requirements associated with the above task(s):
Not applicable

☒ Required Checklists/Work Forms

Tailgate Safety Briefing Form
Vehicle Inspection Checklist

☐ Required Permits

Not Applicable

☐ Required H&S Standards

Not applicable

Short Service Employees (SSEs)

SSEs (employees who are employed with Arcadis for less than 1 year or are Inexperienced Workers) have the potential to work on this project. If SSEs are utilized, the project team working in conjunction with the SSE's administrative supervisor will ensure requirements of ARC HSGE019 "Short Service Employees" are completed. SSE's will be identified on the project Tailgate Safety Meeting Form.

Roles and Responsibilities

	Name	Role	Short Service Employee
1	To Be Designate	Project Manager (PM)	No
2	To Be Designate	Associate Project Manager (APM)	No
3	To Be Designate	Task Manager	No
4	To Be Designate	Field Technical Lead	No
5	To Be Designate	Site Safety Officer (SSO)	No
6			
7			
8			
9			
10			

Training

All Arcadis employees are required to have the following training to be on site:

- H&S Program Orientation (non-certifica
- HAZCOM GHS/EAP (non-certificate)
- Defensive Driving - Smith On-Line
- Hazwoper 8-Hour Annual Refresher
- None
- None
- None
- None
- None
- None
- None
- None
- None

Client specific:

Other:

Selected Arcadis employees are required to have the following additional training:

	Names or Numbers from above
BBP (Bloodborne Pathogens)	4, 5
DOT HazMat #1	4, 5
First Aid/CPR	4, 5
None	
None	
None	
None	
None	
None	
None	
None	
None	
None	
None	
None	

Other:

The Arcadis Fundamental H&S Principles

Staff working on any of the task(s) listed above must utilize the six Arcadis Fundamental H&S Principles to ensure work is conducted safely. These principles include: 1) Use of TRACK, 2) H&S Planning, 3) Stop Work Authority, 4) "If Not Me Then Who", 5) Stewardship, and 6) Incident Reporting. Every project team member plays an important role in project health and safety. This is more than just having a HASP, training, or PPE. Proactive staff engagement with these principles is critical to a safe work environment.

General Task Hazard Assessment and Risk Control (HARC)

General: **Hazards Applicable to All Project Tasks**

The 12 hazard category HARC ratings are not available in this General THA. The mitigated and unmitigated ratings for the hazards presented are based on the Risk Assessment Matrix below. Modify hazards and ratings as necessary to meet project needs.

Risk Assessment Matrix		Likelihood Ratings			
Consequences Ratings		A	B	C	D
People	Property	0 Almost Impossible	1 Possible but Unlikely	2 Likely to Happen	3 Almost Certain to Happen
1-Slight or No Health Effect	Slight or No Damage	0-Low	1-Low	2-Low	3-Low
2-Minor Health Effect	Minor Damage	0-Low	2-Low	4-Medium	6-Medium
3-Major Health Effect	Local Damage	0-Low	3-Low	6-Medium	9-High
4-Fatalities	Major Damage	0-Low	4-Medium	8-High	12-High

Hazard #1

Driving - On road - Injury or vehicle damage from motor vehicle accident or incident

Suggested FHSHB Ref:	3.4	To mitigate this hazard, use TRACK and the following:
Overall Unmitigated Risk:	HIGH	Smith System (on line)
Mitigated Risk:	MEDIUM	JSAs

Comments: Use Smith System "5-Keys" when driving. See Driving JSA for details.

Hazard #2

Driving - Driver - Injury, death or property damage due to driver distraction, fatigue, etc.

Suggested FHSHB Ref:	3.4, 3.21	To mitigate this hazard, use TRACK and the following:
Overall Unmitigated Risk:	HIGH	Smith System (on line)
Mitigated Risk:	LOW	Driver awareness and use of stop work authority

Comments: Use route planning. Keep eyes moving while driving. See Driving JSA.

Hazard #3

Biological - skin/eye irritation or damage from poisonous plants

Suggested FHSHB Ref:	3.17.11	To mitigate this hazard, use TRACK and the following:
Overall Unmitigated Risk:	LOW	Job Briefing/Site Awareness
Mitigated Risk:	LOW	PPE (see HASP "PPE" section)

Comments: Use skin pre-treatment lotions when available.

Hazard #4

Biological - bites or stings from exposure to insects or arachnids

Suggested FHSHB Ref:	3.17: 2,3,7,8,9,10	To mitigate this hazard, use TRACK and the following:
Overall Unmitigated Risk:	LOW	Job Briefing/Site Awareness
Mitigated Risk:	LOW	PPE (see HASP "PPE" section)

Comments: Do body check daily.

Hazard #5

Biological - cuts, scrapes, skin/eye puncture from exposure to physically damaging plants

Suggested FHSHB Ref:	3.17.11	To mitigate this hazard, use TRACK and the following:
Overall Unmitigated Risk:	MEDIUM	Job Briefing/Site Awareness
Mitigated Risk:	LOW	PPE (see HASP "PPE" section)

Comments:

General Task HARC (continued)

Hazard #6

Environmental - Thermal stress - Injury or illness from heat or cold

Suggested FHSHB Ref:	3.16	To mitigate this hazard, use TRACK and the following:
Overall Unmitigated Risk:	MEDIUM	Field H&S Handbook (see ref. above)
Mitigated Risk:	LOW	JSAs

Comments: Use job rotation or rest breaks. Stay hydrated and eat regularly.

Hazard #7

Environmental - Inclement weather -Injury or equipment damage from inclement weather

Suggested FHSHB Ref:	3.12	To mitigate this hazard, use TRACK and the following:
Overall Unmitigated Risk:	MEDIUM	Weather Monitoring
Mitigated Risk:	LOW	Cont./Emerg. Planning

Comments: Use 30/30 rule for lightning. See FHSHB for details.

Hazard #8

Motion - Musculoskeletal - Injury from lifting, twisting , stooping, or awkward body positions

Suggested FHSHB Ref:	3.29.1	To mitigate this hazard, use TRACK and the following:
Overall Unmitigated Risk:	MEDIUM	Engineering Controls (specify in comments)
Mitigated Risk:	LOW	Admin. Controls (specify in comments)

Comments: Use proper lifting techniques. Use job rotation when applicable. See FHSHB for details.

Hazard #9

Motion - Musculoskeletal - Injury from repeated work activity or body motion

Suggested FHSHB Ref:	3.29.2	To mitigate this hazard, use TRACK and the following:
Overall Unmitigated Risk:	MEDIUM	Engineering Controls (specify in comments)
Mitigated Risk:	LOW	Admin. Controls (specify in comments)

Comments: Use proper lifting techniques. Use job rotation when applicable. See FHSHB for details.

Hazard #10

Sound - Noise - Injury or illness due to noise exposure

Suggested FHSHB Ref:	3.15	To mitigate this hazard, use TRACK and the following:
Overall Unmitigated Risk:	MEDIUM	Engineering Controls (specify in comments)
Mitigated Risk:	LOW	PPE (see HASP "PPE" section)

Comments: Increase distance from source if possible. Maintain equipment.

Hazard #11

Gravity - Falls - Injury due to slips and trips

Suggested FHSHB Ref:	3.26.4, 4.11	To mitigate this hazard, use TRACK and the following:
Overall Unmitigated Risk:	MEDIUM	Site Awareness
Mitigated Risk:	LOW	Housekeeping

Comments: Use footwear appropriate for site conditions, plan routes and do not hurry while walking.

Hazard #12

None

Suggested FHSHB Ref:	None	To mitigate this hazard, use TRACK and the following:
Overall Unmitigated Risk:	Not Ranked	Select
Mitigated Risk:	Not Ranked	Select

Comments:

Task Specific HARC

Task 1:	**Mobilization - Site set up and take down**						
HARC Unmitigated Hazard Types (H-High, M-Medium, L-Low):				FHSHB Ref:	3.9		
Biological	-	Chemical	L	Driving	-	Electrical	L
Environmental	L	Gravity	M	Mechanical	L	Motion	M
Personal Safety	L	Pressure	L	Radiation	L	Sound	L

Hazard #1

Hazards addressed in General THA

Suggested FHSHB Ref:	#N/A	To mitigate this hazard, use TRACK and the following:
Overall Unmitigated Risk:	Not Ranked	
Mitigated Risk:	Not Ranked	
Comments:		

Task Specific HARC (continued)

Task 2: **Monitor well - Well sounding, water level or product measurements using probes, t**

HARC Unmitigated Hazard Types (H-High, M-Medium, L-Low): FHSHB Ref: 3.9

Biological	L	Chemical	L	Driving	-	Electrical	-
Environmental	L	Gravity	M	Mechanical	-	Motion	L
Personal Safety	-	Pressure	L	Radiation	-	Sound	L

Hazard #1

Hazards addressed in General THA

Suggested FHSHB Ref: #N/A

To mitigate this hazard, use TRACK and the following:

Overall Unmitigated Risk: Not Ranked

Mitigated Risk: Not Ranked

Comments:

Task Specific HARC (continued)

Task 3:	**Monitor well - Well installation, development, or purging contractor oversight**

HARC Unmitigated Hazard Types (H-High, M-Medium, L-Low): FHSHB Ref: 3.9

Biological	L	Chemical	L	Driving	-	Electrical	-
Environmental	L	Gravity	M	Mechanical	L	Motion	L
Personal Safety	-	Pressure	L	Radiation	-	Sound	M

Hazard #1

Hazards addressed in General THA

Suggested FHSHB Ref: #N/A

To mitigate this hazard, use TRACK and the following:

Overall Unmitigated Risk: Not Ranked

Mitigated Risk: Not Ranked

Comments:

Task Specific HARC (continued)

Task 4:	**Monitor well - Well development and purging using manual methods**

HARC Unmitigated Hazard Types (H-High, M-Medium, L-Low): FHSHB Ref: 3.9

Biological	L	Chemical	L	Driving	-	Electrical	-
Environmental	M	Gravity	L	Mechanical	-	Motion	M
Personal Safety	L	Pressure	-	Radiation	-	Sound	L

Hazard #1

Hazards addressed in General THA

Suggested FHSHB Ref: #N/A

To mitigate this hazard, use TRACK and the following:

Overall Unmitigated Risk: Not Ranked

Mitigated Risk: Not Ranked

Comments:

Task Specific HARC (continued)

Task 5: **Decontamination - Small or hand-held objects using manual methods**

HARC Unmitigated Hazard Types (H-High, M-Medium, L-Low): FHSHB Ref: 3.10.4

Biological	L	Chemical	M	Driving	-	Electrical	-
Environmental	L	Gravity	L	Mechanical	-	Motion	L
Personal Safety	L	Pressure	L	Radiation	-	Sound	L

Hazard #1

None

Suggested FHSHB Ref:	None	To mitigate this hazard, use TRACK and the following:
Overall Unmitigated Risk:	Not Ranked	Select
Mitigated Risk:	Not Ranked	Select

Comments:

Task Specific HARC (continued)

Task 6:	**Decontamination - Small or hand-held objects using manual methods**						
HARC Unmitigated Hazard Types (H-High, M-Medium, L-Low):				FHSHB Ref:		3.9	
Biological	L	Chemical	L	Driving	-	Electrical	-
Environmental	L	Gravity	M	Mechanical	L	Motion	L
Personal Safety	-	Pressure	L	Radiation	-	Sound	M

Hazard #1

Hazards addressed in General THA

Suggested FHSHB Ref:	#N/A	To mitigate this hazard, use TRACK and the following:
Overall Unmitigated Risk:	Not Ranked	
Mitigated Risk:	Not Ranked	
Comments:		

Task Specific HARC (continued)

Task 7: **Monitor well - Well or boring abandonment contractor oversight**

HARC Unmitigated Hazard Types (H-High, M-Medium, L-Low): FHSHB Ref: 3.9

Biological	L	Chemical	L	Driving	-	Electrical	-
Environmental	L	Gravity	M	Mechanical	L	Motion	L
Personal Safety	-	Pressure	L	Radiation	-	Sound	M

Hazard #1

Hazards addressed in General THA

Suggested FHSHB Ref: #N/A

To mitigate this hazard, use TRACK and the following:

Overall Unmitigated Risk: Not Ranked

Mitigated Risk: Not Ranked

Comments:

Hazard Communication (HAZCOM)/Global Harmonization System (GHS)

☐ HAZCOM/GHS for this project is managed by the client or general contractor

List the chemicals anticipated to be used by Arcadis on this project per HAZCOM/GHS requirements.
(Modify quantities as needed)

	Preservatives	Qty
☐	Not applicable	
☒	Hydrochloric acid	<500 ml
☐	Nitric acid	<500 ml
☐	Sulfuric acid	<500 ml
☐	Sodium hydroxide	<500 ml
☐	Zinc acetate	<500 ml
☐	Ascorbic acid	<500 ml
☐	Acetic acid	<500 ml
☐	Isopropyl alcohol	< 4 gal.
☐	Formalin (<10%)	< 4 gal.
☐	Methanol	<500 ml
☐	Sodium bisulfate	<500 ml

	Decontamination	Qty
☐	Not applicable	
☒	Alconox	≤ 5 lbs
☐	Liquinox	≤ 1 gal
☐	Acetone	≤ 1 gal
☐	Methanol	≤ 1 gal
☐	Hexane	≤ 1 gal
☒	Isopropyl alcohol	≤ 4 gal
☐	Nitric acid	≤ 1 L
☐	Other:	
	______	
	______	
	______	

	Calibration	Qty.
☐	Not applicable	
☒	Isobutylene/air	1 cyl
☐	Methane/air	1 cyl
☐	Pentane/air	1 cyl
☐	Hydrogen/air	1 cyl
☐	Propane/air	1 cyl
☐	Hydrogen sulfide/air	1 cyl
☐	Carbon monoxide/air	1 cyl
☒	pH standards (4,7,10)	≤ 1 gal
☒	Conductivity standards	≤ 1 gal
☐	Other:	
	______	

	Fuels	Qty.
☒	Not applicable	
☐	Gasoline	≤ 5 gal
☐	Diesel	≤ 5 gal
☐	Kerosene	≤ 5 gal
☐	Propane	1 cyl
☐	Other:	
	______	

	Kits		Qty.
☐	Not applicable		
☐	Hach (specify):	______	1 kit
☐	DTECH (specify):	______	1 kit
☒	Other:	______	1 kit
	Chemetrics K-7501		
	Chemetrics K-7512	______	
	______	______	

	Remediation	Qty.
☒	Not applicable	
☐	______	
☐	______	
☐	______	
☐	______	
☐	______	

	Other:	Qty.
☒	Not applicable	
☐	Spray paint	≤ 6 cans
☐	WD-40	≤ 1 can
☐	Pipe cement	≤ 1 can
☐	Pipe primer	≤ 1 can
☐	Mineral spirits	≤ 1 gal
	______	

	DOT(1):	Qty.
☐	MOT eligible soils	
☐	MOT eligible water	
☐	MOT eligible solids	
☐	MOT eligible liquids	
☐	______	
☐	______	
☐	______	

(1) Attach applicable Materials of Trade (MOT) generic shipping determination. SDS not generally applicable to this category.

NA

Air Monitoring

☐ There are no atmospheric chemical, radiological, or particulate hazards on this project requiring air monitoring.
☐ Air monitoring is the responsibility of the client or subcontractor.

Constituents of Interest:

Time Weighted Averages (TWAs) are ACGIH 8-Hr Threshold Limit Values (TLVs) unless noted.

Benzene			
TWA	0.5 ppm, OSHA Reg. See Notes	LEL/UEL (%):	1.2/7.8
STEL	2.5 ppm	VD (Air = 1):	NA
IDLH	500 ppm, NIOSH	VP (mmHg):	75

Toluene			
TWA	20 ppm	LEL/UEL (%):	1.1/7.1
STEL	150 ppm, NIOSH	VD (Air = 1):	NA
IDLH	500 ppm, NIOSH	VP (mmHg):	21

Ethylbenzene			
TWA	20 ppm	LEL/UEL (%):	0.8/6.7
STEL	125 ppm	VD (Air = 1):	NA
IDLH	800 ppm, NIOSH	VP (mmHg):	7

Xylenes			
TWA	100 ppm	LEL/UEL (%):	1.1/7.0
STEL	150 ppm	VD (Air = 1):	NA
IDLH	900 ppm, NIOSH	VP (mmHg):	9

None			
TWA	NA	LEL/UEL (%):	NA
STEL	NA	VD (Air = 1):	NA
IDLH	NA	VP (mmHg):	NA

None			
TWA	NA	LEL/UEL (%):	NA
STEL	NA	RGD (Air = 1):	NA
IDLH	NA	VP (mmHg):	NA

TWA - Time Weighted Average (ACGIH TLV unless noted)
STEL - Short Term Exposure Limit
IDLH - Immediately Dangerous to Life and Health

LEL/UEL - Lower /Upper Explosive Limit
RGD - Relative Gas Density
VP - Vapor Pressure

Notes:
As noted, one or more of the above constituents is an OSHA regulated substance. If exposure is expected to be above the TWA or STEL, contact a CIH or CSP for assistance unless otherwise permitted by a substance specific plan template identified in this section.

Required Monitoring Instruments, Action Levels and Monitoring Frequency

Gray fields below are not automated. Make necessary selections from drop down menus.

Photoionization Detector

Select Lamp: 10.6 eV

Computed action levels (PID units) (1):			Computed action levels have been manually adjusted.
<	1.9	Continue working	
	1.9 - 3.7800	Levels sustained > 5 minutes, monitor continuously and review engineering controls and PPE. Proceed with caution.	
>	3.7800	Stop work and contact SSO	

(1) Computed action levels are for PIDs which have not been programmed to correct TLVs for specific constituents or mixtures.

Particulate/aerosol monitoring is not required. Re-evaluate if visible dusts or aerosols cannot be controlled.

Action levels are in mg/m3			Computed action levels have been manually adjusted.
<	NA	Continue working	
	NA	Levels sustained > 5 minutes, monitor continuously and review engineering controls and PPE. Proceed with caution.	
>	NA	Stop work and contact SSO	

Breathing zone air monitoring using the above instruments will be performed at the following frequency:

Select

Multigas (including LEL/O2 and Hg vapor) monitoring is not required.

LEL/O2 Meter	0-5% LEL	Continue work
LEL/O2 Monitoring Not Required	>5-10% LEL	Continually monitor, review engineering controls, proceed with caution
	>10% LEL	Stop work, evacuate, contact SSO
	19.5%-23.5% O2	Normal, continue work
	<19.5% O2	O2 deficient, stop work, evacuate, contact SSO
	>23.5% O2	O2 enriched, stop work, evacuate, contact SSO

Additional Gas/Vapor Monitoring is Not Required

		1/2 TLV	Stop Work Action Level	Comments
☐	Ammonia	12.5 ppm	25 ppm	
☐	Carbon dioxide	2500 ppm	5000 ppm	
☐	Carbon monoxide	12.5 ppm	25 ppm	
☐	Chlorine	0.05 ppm	0.1 ppm	
☐	Hydrogen cyanide	2.35 ppm (skin)	4.7 ppm* (skin)	
☐	Hydrogen sulfide	0.5 ppm	1 ppm	
☐	Nitrogen dioxide	0.1 ppm	0.2 ppm	
☐	Phosphine	0.025 ppm	0.05 ppm	
☐	Sulfur dioxide	0.125 ppm	0.25* ppm	
☐	Mercury vapor	0.0125 mg/m3	0.025 mg/m3	

* Ceiling or STEL value

All air-monitoring instruments must be calibration checked daily, if used, per manufacturer's instructions. Calibration checks, including calibration gases used, must be documented.

Compound specific monitoring using indicator tubes or chips is not required.

Indicator:	≤TWA	Continue work
☐ Tube ☐ Chip	>TWA	Stop work, review engineering controls and PPE, contact SSO
Compound(s):		

Indicator tube/chip monitoring frequency: Not applicable

Personal Protective Equipment (PPE)

See JSA or Permit for the task being performed for required PPE. If work is not conducted under a JSA or Permit, refer to the governing document for PPE requirements. At a minimum, the following checked PPE is required for all tasks during field work (outside of field office trailers and vehicles) not covered by a JSA or Permit on this project:

Minimum PPE required to be worn by all staff on project:

☒ Hard hat
☒ Safety glasses
☐ Safety goggles
☐ Face shield
☐ Hearing protection
☐ Rain suit
☐ Other:

☐ Snake chaps/guards
☐ Briar chaps
☐ Chainsaw chaps
☐ Sturdy boot
☒ Steel or comp. toe boot
☐ Metatarsal boot

	Specify Type:
☐ Coveralls:	
☐ Apron:	
☒ Chem. resistant gloves:	Nitrile
☐ Gloves other:	
☐ Chemical boot:	
☐ Boot other:	
☒ Traffic vest, shirt or coat:	Class II
☐ Life vest:	

Task specific PPE:
Comments:

Medical Surveillance

HAZWOPER medical surveillance applies to all Arcadis site workers on the project.

Hazardous Materials Shipping and Transportation

A shipping determination should be performed.

Traffic Safety and Traffic Safety Plans (TSPs)

All or portions of the work conducted under a TSP

Arcadis Commercial Motor Vehicles (CMVs)

This project wil not utilize CMV drivers

Site Control

Maintain an exlusion zone of 10 feet around the active work area.
Site control is integrated into the TSP for the project.

Decontamination

Wash hands and face prior to consuming food, drink or tobacco.

Sanitation

Mobile operation with access to off-site restrooms and potable water.

Safety Briefings

Safety briefing required daily.

Employee Health and Safety Engagement

The CPM or APM is responsible for reviewing and establishing H&S engagement goals for the project.
These goals are summarized below.
Hazard Observations (via H&S App or TIP) required at the following frequency on this project:

Close Call reporting (via H&S app) goals for this project:

Other (specify):

Safety Equipment and Supplies

Safety equipment/supply requirements are addressed in the JSA or Permit for the task being performed. If work is not performed under a JSA or Permit, the following safety equipment is required to be present on site in good condition unless otherwise noted (Check all that apply):

☒ First aid kit
☐ Bloodborne pathogens kit
☐ Fire extinguisher
☐ Eyewash (ANSI compliant)
☒ Eyewash (bottle)
☒ Drinking water
☐ Other: ____________________

☐ Insect repellent: ____________________
☒ Sunscreen
☐ Air horn
☒ Traffic cones
☐ 2-way radios
☐ Heat stress monitor
☐ Poisonous plant pre/post exposure lotion/soap ____________________

Control of Ticks and Poisonous Plants

Work on this project has a low tick exposure hazard. Use of inspect repellent (DEET and/or permethrin) is recommended. Wear light colored clothing to help identify presence of ticks on staff. Keep shirt tails inside pants.

Work on this project has a low poisonous plant exposure hazard. First aid kits should be equipped with post exposure soap as a precaution. Inspect work area for presence of hazard prior to initiating work at the location. Wear disposable gloves during work and while removing outer footwear.

International Travel

International travel is not required for this project.

Spill Control and Containment

Spill control and containment planning and implementation is not required for this project.

Use of Electronic Devices in Areas of Increased Safety Risk

The intent of this section is to ensure use of standard computer tablets, laptops, or cell phones (collectively referred to in this HASP as a digital device) is performed in a manner that is effective in preventing or mitigating injury to the user of the digital device.

Use of electronic devices in an active parking lot must be addressed in the Non-ROW TSP. Use of Non-ROW short-term traffic controls in situations where digital data collection or documentation is conducted should be avoided unless spotter options are utilized. When practical, use project vehicle as shield in parking lots.

Electronic device use and distractions to be discussed and documented in the job briefing/safety briefing.

Signatures

I have read, understand and agree to abide by the requirements presented in this health and safety plan. I understand that I have the absolute right to stop work if I recognize an unsafe condition affecting my work until corrected.

Printed Name	Signature	Date

Add additional sheets if necessary

You have an absolute right to STOP WORK if unsafe conditions exist!

Attachment A

Job Safety Analysis
(Example JSAs not provided in
this GHASP)

Attachment B

SDSs

(Example SDSs not provided in this GHASP)

Attachment C

Shipping Determination
(Example SD not provided in this GHASP)

Attachment D

Example Field Forms

Control Number: TSM- TBD.1234

TSM + project number plus date as follows: xxxxxxxx.xxxx.xxxxx - dd/mm/year

ARCADIS Design & Consultancy for natural and built assets

TAILGATE HEALTH & SAFETY MEETING FORM

Project Name: **Oneonta Former MGP Site**

Project Location:

Date:

Time:

Conducted by:

Signature/Title:

Issues or concerns from previous day's activities:

Task anticipated to be performed today:

The following was used to communicate H&S information in this briefing (check all that apply):

- ☐ HASP (*including THA*)
- ☐ JSAs (*specify JSA #s*): __________
- ☐ Permits (*specify type or #*): __________
- ☐ Traffic Safety Plan
- ☐ FHSHB (*specify sections*): __________
- ☐ H&S Standard (*specify number*): __________
- ☐ H&S checklist (*specify type*): __________
- ☐ Activity specific hazard analysis:

Activity: __________

Hazard Types (unmitigated ranking H-High, M-Medium, L-Low):

Biological	☐	Chemical	☐	Driving	☐	Electrical	☐
Environmental	☐	Gravity	☐	Mechanical	☐	Motion	☐
Personal Safety	☐	Pressure	☐	Radiation	☐	Sound	☐

Controls required to be used:

PPE Required (If not using JSA or Permit with PPE requirements):

- ☐ Hard hat
- ☐ Safety glasses
- ☐ Face shield
- ☐ Safety goggles
- ☐ Steel/composite toe boots
- ☐ Traffic vest (*specify II or III*): __________
- ☐ Life Vest (*specify type*): __________
- ☐ Protective Suit (*specify type*):
- ☐ Protective gloves (*specify type*):
- ☐ Other (*specify*):

Signature and Certification: I have read and understand the project specific HASP for this project.

Non-Life Threatening Injury or Illness
Call WorkCare 1-888-449-7787

SSE Employee*	Printed Name/Signature/Company	Sign In Time	Sign Out Time

I will STOP the job any time anyone is concerned or uncertain about health & safety or if anyone identifies a hazard or additional mitigation not recorded in the site, project, job or task hazard assessment.

I will be alert to any changes in personnel, conditions at the work site or hazards not covered by the original hazard assessments.

If it is necessary to **STOP THE JOB,** I will perform **TRACK**; and then amend the hazard assessments or the HASP as needed.

I will not assist a subcontractor or other party with their work unless it is absolutely necessary and then only after I have done TRACK and I have thoroughly controlled the hazard.

All site staff should arrive fit for work. If not, they should report to the supervisor any restrictions or concerns.

In the event of an injury, employees will call **WorkCare at 1.888.449-7787** and then notify the field supervisor.

Utility strike, motor vehicle accident or 3rd party property damage - field supervisor will immediately notify the Project or Task Manager

***Short Service Employee (SSE) working for Arcadis <1 year.**

What You Need to Know

Emergency Phone: 911 *WorkCare Phone:* 1-888-449-7787

Your nearest hospital: A.O. Fox Hospital, 1 Norton Avenue, Oneonta, New York 13820, , , 607-432-2000

H&S Specialist for this project: 0 *Cell Phone:* 0

Project Site Safety Officer: To Be Designate

Nearest assembly area(s): 0

Nearest storm shelter(s): 0

Confirm the following PPE is on site: hard hat, safety glasses, boots with protective toe and shank, traffic vest Class II, Nitrile gloves. Applicability of PPE to a particular work task is specified in the JSA or permit.

Confirm the following supplies and equipment are on site: first aid kit, eyewash (bottle), drinking water, sunscreen, traffic cones. Applicability of supplies and equipment to a specific task is specified in the JSA or permit and must be reviewed in the safety briefing.

Review applicable JSA or permit for the task being performed in the safety briefing.

Confirm traffic controls in place are consistent with the project NON-ROW TSP for the parking lot or other non-right-of-way location.

You must stop work and contact Corporate H&S, CIH or a CSP if you exceed 3.8 PID units for volatile organics during work.

Control Number: TSM- TBD.1234

ARCADIS Design & Consultancy for natural and built assets

TSM + project number plus date as follows: xxxxxxxx.xxxx.xxxxx - dd/mm/year

TAILGATE HEALTH & SAFETY MEETING FORM

Project Name:

Project Location:

Date:

Time:

Conducted by:

Signature/Title:

Issues or concerns from previous day's activities:

Task anticipated to be performed today:

☐ Additional permits/checklists attached

USE TRACK! Evaluate the hazards (h) for the tasks being performed today and rank as Low (L), Medium (M) or High (H). Use relevant JSAs, FHSHB, permit or other work standard to communicate controls (c) to be used to eliminate or mitigate identified hazards.

☐ Gravity (i.e., ladder, trips) (L M H)
h: __________
c: __________

☐ Electrical (i.e., utilities) (L M H)
h: __________
c: __________

☐ Chemical (i.e., fuel, acid, paint) (L M H)
h: __________
c: __________

☐ Sound (i.e., machinery) (L M H)
h: __________
c: __________

☐ Motion (i.e., traffic, machinery) (L M H)
h: __________
c: __________

☐ Pressure (i.e., gas cyl., wells) (L M H)
h: __________
c: __________

☐ Biological (i.e., ticks, poison ivy) (L M H)
h: __________
c: __________

☐ Personal (i.e. alone, night) (L M H)
h: __________
c: __________

☐ Mechanical (i.e., augers, motors) (L M H)
h: __________
c: __________

☐ Environment (i.e., heat, cold) (L M H)
h: __________
c: __________

☐ Radiation (i.e., alpha, sun, laser) (L M H)
h: __________
c: __________

☐ Driving (i.e. car, ATV, boat) (L M H)
h: __________
c: __________

☐ Refer to the attached Hazard Analysis Sheet(s) or JSA

Comments:

Signature and Certification: I have read and understand the project specific HASP for this project.

Non-Life Threatening Injury or Illness
Call WorkCare 1-888-449-7787

SSE Employee*	Printed Name/Signature/Company	Sign In Time	Sign Out Time

***Short Service Employee (SSE) working for Arcadis <1 year.**

I will STOP the job any time anyone is concerned or uncertain about health & safety or if anyone identifies a hazard or additional mitigation not recorded in the site, project, job or task hazard assessment.

I will be alert to any changes in personnel, conditions at the work site or hazards not covered by the original hazard assessments.

If it is necessary to **STOP THE JOB,** I will perform **TRACK**; and then amend the hazard assessments or the HASP as needed.

I will not assist a subcontractor or other party with their work unless it is absolutely necessary and then only after I have done TRACK and I have thoroughly controlled the hazard.

All site staff should arrive fit for work. If not, they should report to the supervisor any restrictions or concerns.

In the event of an injury, employees will call **WorkCare at 1.888.449-7787** and then notify the field supervisor.

Utility strike, motor vehicle accident or 3rd party property damage - field supervisor will immediately notify the Project or Task Manager

PID Calibration Log

Zero Gas Source: ____________________ Instrument Type: ____________________ PAGE ____ of ____

Lot Number/Expiration Date: ____________________ Serial Number: ____________________

Calibration Gas Source: ____________________ Instrument Type: ____________________

Lot Number/Expiration Date: ____________________ Serial Number: ____________________

Concentration: ____________________ ____________________

Instrument Number	Date	Time	Zero Cal. OK (Y/N)	Calibration Gas Reading	Comments	Calibration w/in 2% (Y/N)?	Alarms Set (Yes/No)?	User Initials

Arcadis Visitor Acknowledgement and Acceptance of HASP Signature Form

By signing below, I waive, release, and discharge the owner of the site and Arcadis and their employees from any future claims for bodily and personal injuries which may result from my presence at, entering, or leaving the site and in any way arising from or related to any and all known and unknown conditions on the site.

Printed Name	Signature	Company	Date/Time On Site	Date/Time Off Site

Attachment E

Example Task Improvement Process

Task Improvement Process

General

Observed Company: __________

Observation Type: __________

TIP Form: H&S Field Multi-Task (General)

Task Observed: __________

Observee Name: __________

Observer Name: __________

Observation Date: __________

Project Number: TBD.1234

Project Name: Oneonta Former MGP Site

Supervisor: __________

Equipment On Site: __________

Pertinent Information: __________

Observation

Task	Correct	Questionable	Comments
General			
PPE worn according to HASP/JLA specifications and inspected before use?			
STOP work authority used where appropriate?			
Body Use/Positioning			
Proper lifting/pushing/pulling techniques used (no awkward positions/posture; no twisting or excessive reaching; no straining; no excessive weight; load under control/stable; etc.)?			
Body parts away from pinch points (clear or protected from being caught between objects/equipment or from contacting sharp objects/edges, etc.)?			
Body parts not in the Line of Fire (protected from being struck by traffic, equipment, falling/flying objects, etc.)?			
Work Procedures/Environment			
Correct type and number of barricades/warning devices/cones?			

Communication with others when necessary (hand signals, flags, etc.)?			
Right tools and equipment selected for the job and inspected before use?			
Tools and equipment used properly?			
Housekeeping performed (work areas and pathways clear of hazards, uneven surfaces addressed, etc.)?			
Slip/trip/fall hazards addressed (path selected and cleared, eyes on path, speed footing, etc.)?			
Proper energy control (electrical systems grounded, lock out/tag out performed, isolated, cords/fixtures in good condition, GFCI inspected and utilized when appropriate and used properly, etc.)?			
Protected from overhead/underground utilities (proper clearance, properly marked, spotters as necessary, etc.)?			
Safe work on/near water (appropriate flotation device, appropriate boat for body of water and operation of boat, etc.)?			
Chemical/Radiation protection (decontamination zones set up properly, air monitoring, completed, and logged, etc.)?			
Fall from elevated height prevention (maintains 3-points of contact, appropriate ladder, mounting/dismounting vehicle/equipment, fall arrest system, etc.)?			
Any additional safety issues identified:			

Tip Summary **Enter details of the TIP and follow up discussion provide details on how any questionable items were resolved.**

Discussion following the TIP led by: ______________________________

Date of follow-up discussion: ______________________________

Positive Comments:

Discussion Summary Completed:

☐ Supervisor Led
☐ Peer to Peer
☐ Arcadis Employee to Subcontractor

Summary of Questionable Items

Action Items (Optional)

Assign appropriate action items based on the observations made. You can add more than one action item if needed.

Item #	Action Item	Responsible Person	Due Date	Comp. Date
1				
2				
3				

Standard Review

Reviews to be performed after entry of this TIP into 4-Sight.

Quality Review

Quality Reviews to be performed after entry of this TIP into 4-Sight.

Field Validation and Verification

Use the 4-Sight generated copy of this TIP to perform field V&V activities.

Attachment F

Example Traffic Safety Plan

Traffic Safety Plan (TSP)

1.0 General

Plan type	Non-Right of Way (Non-ROW)
Project Name:	0
Project Number:	TBD.1234
Developer Name:	
Duration of Project (in hours or days):	2 Days
Time Restrictions (Y/N, if Y describe below):	No
Not Applicable	
Not Applicable	
Not Applicable	NA
Not Applicable	
Not Applicable	NA

☐ Working on multiple roads?

Comments:

2.0 Work Description

Provide a brief description of scope of work:

Sampling of monitoring wells in a parking lot.

3.0 Type and Duration

Work locations on this project will be: Short term work (<1 hour per location)

Non-ROW work will be performed in:

Special traffic conditions may include (select most prevalent): Not applicable

4.0 Traffic Control Layout, Number of Devices Required, and Phasing

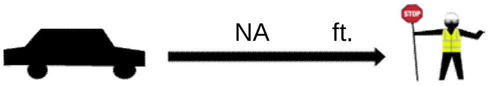
The following Non-ROW requirements in the Traffic Safety Handbook applies:

The menu below will be blank and is not applicable.

The menu below will be blank and is not applicable.

Non-ROW configuration:

An example non-ROW traffic control configuration for this project is illustrated below. The actual type and number of devices required are specified below. Don't leave vehicle doors open. Don't establish controls within 25 ft of the front or rear, of parked large vehicles/rolling equipment without coordinating with the

ROW minimum sign spacing distances for "A", "B" and "C" (as applicable) in referenced DOT Facts.	ROW oncoming traffic minimum site distance required to see Flagger and properly decelerate and stop.
A NA ft. B NA ft. C NA ft.	 NA ft.

ROW Cone Calculation (Values are default. Light grey fields may be modified based on actual road conditions)

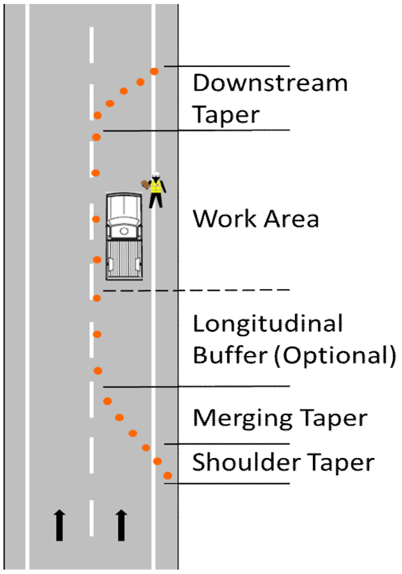
Active work area length (feet) 200

☐ Apply Optional Longitudinal Buffer (ft)? 0

Lane width of offset (feet) 12

Shoulder width of offset (feet) 8

Posted speed limit NA



☐ **Shoulder Taper**

Taper Length (feet)	NA
Cones Required	NA
Cones Spacing (max., ft)	NA

☐ **Merging Taper**

Taper Length (feet)	NA
Cones Required	NA
Cones Spacing (max., ft)	NA

☐ **Work Area**

Cone Spacing (max., ft)	NA
Cones Required	NA

☐ **Downstream Taper**

Taper Length (feet)	NA
Cones Required	NA
Cone Spacing (max., ft)	NA

Cones Required (minimum) NA

Note: Review taper configuration and cone spacing after ROW implementation to ensure traffic is moving efficiently without motorist confusion in the RWZ.

Select the traffic control devices to be used and enter number each required:

Check all that apply:		*Wording or Pictogram*	*Number:*
☐	Warning signs		
☐	Warning signs		
☐	Warning signs		
☐	Stop/Slow paddle		
☐	Red flag		
☐	Drums		
☐	Channelizer cone (42 inch height, 10 lb base)		
☐	Channelizer cone (42 inch height, 30 lb base)		
☐	Traffic cones (≥ 18 inches tall)		NA
☐	Barricade:		
☐	Flags for cones		
☐	Lights (for night work)		
☐	Plastic fencing (rolls)		
☐	Caution tape (rolls)		
☐	Other (specify):		

Non-ROW Phasing:

1) Position truck as shield, if practical

2) Deploy traffic control devices

3) Affix flags, caution tape or fencing

4) Unload project equipment

5) Commence work

6) SSO to maintain controls

7) Remove controls in reverse order

Electronic Device Use Safety
Electronic devices (tablets, laptops and cell phones) used to collect data or document activities in active parking lots must be used in a manner that does not interfere with the user's ability to see and react to vehicle movements in the work area. If this requirement cannot maintained, a spotter must be used. When possible position vehicle to act as a shield. Short-term traffic control scenarios provided by this TSP are not authorized if a spotter is not used.

Reviewed By:

HASP Reviewer: ______________________________

____

Appendix G

NYSDOH Generic Community Air Monitoring Plan

Appendix 1A
New York State Department of Health
Generic Community Air Monitoring Plan

Overview

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for VOCs and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate DEC/NYSDOH staff.

> **Continuous monitoring** will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.
>
> **Periodic monitoring** for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or

overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

2. If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

4. All 15-minute readings must be recorded and be available for State (DEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

December 2009

Appendix 1B
Fugitive Dust and Particulate Monitoring

A program for suppressing fugitive dust and particulate matter monitoring at hazardous waste sites is a responsibility on the remedial party performing the work. These procedures must be incorporated into appropriate intrusive work plans. The following fugitive dust suppression and particulate monitoring program should be employed at sites during construction and other intrusive activities which warrant its use:

1. Reasonable fugitive dust suppression techniques must be employed during all site activities which may generate fugitive dust.

2. Particulate monitoring must be employed during the handling of waste or contaminated soil or when activities on site may generate fugitive dust from exposed waste or contaminated soil. Remedial activities may also include the excavation, grading, or placement of clean fill. These control measures should not be considered necessary for these activities.

3. Particulate monitoring must be performed using real-time particulate monitors and shall monitor particulate matter less than ten microns (PM10) with the following minimum performance standards:

(a) Objects to be measured: Dust, mists or aerosols;
(b) Measurement Ranges: 0.001 to 400 mg/m3 (1 to 400,000 :ug/m3);
(c) Precision (2-sigma) at constant temperature: +/- 10 :g/m3 for one second averaging; and +/- 1.5 g/m3 for sixty second averaging;
(d) Accuracy: +/- 5% of reading +/- precision (Referred to gravimetric calibration with SAE fine test dust (mmd= 2 to 3 :m, g= 2.5, as aerosolized);
(e) Resolution: 0.1% of reading or 1g/m3, whichever is larger;
(f) Particle Size Range of Maximum Response: 0.1-10;
(g) Total Number of Data Points in Memory: 10,000;
(h) Logged Data: Each data point with average concentration, time/date and data point number
(i) Run Summary: overall average, maximum concentrations, time/date of maximum, total number of logged points, start time/date, total elapsed time (run duration), STEL concentration and time/date occurrence, averaging (logging) period, calibration factor, and tag number;
(j) Alarm Averaging Time (user selectable): real-time (1-60 seconds) or STEL (15 minutes), alarms required;
(k) Operating Time: 48 hours (fully charged NiCd battery); continuously with charger;
(l) Operating Temperature: -10 to 50^o C (14 to 122^o F);
(m) Particulate levels will be monitored upwind and immediately downwind at the working site and integrated over a period not to exceed 15 minutes.

4. In order to ensure the validity of the fugitive dust measurements performed, there must be appropriate Quality Assurance/Quality Control (QA/QC). It is the responsibility of the remedial party to adequately supplement QA/QC Plans to include the following critical features: periodic instrument calibration, operator training, daily instrument performance (span) checks, and a record keeping plan.

5. The action level will be established at 150 ug/m3 (15 minutes average). While conservative,

this short-term interval will provide a real-time assessment of on-site air quality to assure both health and safety. If particulate levels are detected in excess of 150 ug/m3, the upwind background level must be confirmed immediately. If the working site particulate measurement is greater than 100 ug/m3 above the background level, additional dust suppression techniques must be implemented to reduce the generation of fugitive dust and corrective action taken to protect site personnel and reduce the potential for contaminant migration. Corrective measures may include increasing the level of personal protection for on-site personnel and implementing additional dust suppression techniques (see paragraph 7). Should the action level of 150 ug/m3 continue to be exceeded work must stop and DER must be notified as provided in the site design or remedial work plan. The notification shall include a description of the control measures implemented to prevent further exceedances.

6. It must be recognized that the generation of dust from waste or contaminated soil that migrates off-site, has the potential for transporting contaminants off-site. There may be situations when dust is being generated and leaving the site and the monitoring equipment does not measure PM10 at or above the action level. Since this situation has the potential to allow for the migration of contaminants off-site, it is unacceptable. While it is not practical to quantify total suspended particulates on a real-time basis, it is appropriate to rely on visual observation. If dust is observed leaving the working site, additional dust suppression techniques must be employed. Activities that have a high dusting potential--such as solidification and treatment involving materials like kiln dust and lime--will require the need for special measures to be considered.

7. The following techniques have been shown to be effective for the controlling of the generation and migration of dust during construction activities:

(a) Applying water on haul roads;
(b) Wetting equipment and excavation faces;
(c) Spraying water on buckets during excavation and dumping;
(d) Hauling materials in properly tarped or watertight containers;
(e) Restricting vehicle speeds to 10 mph;
(f) Covering excavated areas and material after excavation activity ceases; and
(g) Reducing the excavation size and/or number of excavations.

Experience has shown that the chance of exceeding the 150ug/m3 action level is remote when the above-mentioned techniques are used. When techniques involving water application are used, care must be taken not to use excess water, which can result in unacceptably wet conditions. Using atomizing sprays will prevent overly wet conditions, conserve water, and provide an effective means of suppressing the fugitive dust.

8. The evaluation of weather conditions is necessary for proper fugitive dust control. When extreme wind conditions make dust control ineffective, as a last resort remedial actions may need to be suspended. There may be situations that require fugitive dust suppression and particulate monitoring requirements with action levels more stringent than those provided above. Under some circumstances, the contaminant concentration and/or toxicity may require additional monitoring to protect site personnel and the public. Additional integrated sampling and chemical analysis of the dust may also be in order. This must be evaluated when a health and safety plan is developed and when appropriate suppression and monitoring requirements are established for protection of health and the environment.

Appendix H

Generic Quality Assurance Project Plan

NYSEG

Generic Quality Assurance Project Plan

Oneonta Former MGP Site

Oneonta, New York

January 2022

Generic Quality Assurance Project Plan

Oneonta Former MGP Site
Oneonta, New York

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Version Control

Issue	Revision No.	Date Issued	Page No.	Description	Reviewed By

Contents

Tables

Attachment

Attachment A EQuIS^{TM} SOP

Acronyms and Abbreviations

ASP	Analytical Services Protocol
COC	chain of custody
DQO	data quality objective
DUSR	data usability summary reports
EDD	electronic data deliverable
EWP	Excavation Work Plan
GC/MS	gas chromatography/mass spectrometry
GFSP	Generic Field Sampling Plan
GIS	geographic information system
GPS	global positioning system
GQAPP	Generic Quality Assurance Project Plan
IDW	investigation-derived waste
LCS	laboratory control sample
MDL	method detection limit
MGP	manufactured gas plant
MS/MSD	matrix spike/matrix spike duplicate
NYSDEC	New York State Department of Environmental Conservation
NYSEG	New York State Electric & Gas Corporation
OSHA	Occupational Safety and Health Administration
PPE	personal protective equipment
QA	quality assurance
QAC	Quality Assurance Coordinator
QAM	Quality Assurance Manager
QA/QC	quality assurance/quality control
QC	quality control
RL	reporting limit
RPD	relative percent difference
SDG	sample delivery ground
SMP	Site Management Plan
SOP	Standard Operating Procedure

SVOC	semi-volatile organic compound
USDOT	United States Department of Transportation
USEPA	United States Environmental Protection Agency
VOC	volatile organic compound

1 Introduction

This Generic Quality Assurance Project Plan (GQAPP) was prepared for the New York State Electric and Gas Corporation (NYSEG) Oneonta Former Manufactured Gas Plant (MGP) Site located in Oneonta, New York (site). The QAPP presents the analytical methods and procedures that will be used for data collection and analysis.

This QAPP, along with the Generic Field Sampling Plan (GFSP) are intended to guide all sampling, measurement, and other field and laboratory measurement activities conducted as part of the Site Management Plan (SMP) and the Excavation Work Plan (EWP). This GQAPP contains laboratory analysis procedures and quality control (QC) methods to be used to characterize environmental media as needed for future site monitoring. The specific analytes for measurement will be dependent upon a specific need but are anticipated to include volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs).

This GQAPP can also be used as a generic guide for Contractors performing activities within potentially impacted areas of the Oneonta Former MGP site where the SMP requires soil or water sampling; however, the Contractor should verify the required analyses and data quality objectives with the New York State Department of Environmental Conservation (NYSDEC).

This GQAPP is applicable to the SMP approved as of the date of this document. To the extent that other work plans are written and approved relevant to this GQAPP, those activities will be incorporated by reference to the scope of the GQAPP herein.

This GQAPP was prepared in a manner consistent with the following reference and guidance documents:

- United States Environmental Protection Agency (USEPA) Requirements for Quality Assurance Project Plans, EPA-QA/R-5 (USEPA, 2001) (https://www.epa.gov/quality/agency-wide-quality-system-documents).
- USEPA Guidance for Quality Assurance Project Plans, EPA-QA/G-5 (USEPA, 2002a) (https://www.epa.gov/quality/agency-wide-quality-system-documents).
- USEPA Guidance on Systematic Planning Using the Data Quality Objectives Process, EPA-QA/G-4 (USEPA, 2006) (https://www.epa.gov/quality/agency-wide-quality-system-documents).

Information contained in this QAPP has been organized into the following sections:

Section	Content
Project Management	
1	Introduction
2	Project Organization
3	Data Quality Objectives and Criteria for Measurement Data
4	Special Training Requirements/Certification
5	Documentation and Records

Section	Content
Measurement/Data Acquisition	
6	Sampling Process Design
7	Sampling Method Requirements
8	Sample Handling and Custody Requirements
9	Analytical Method Requirements
10	Quality Control Requirements
11	Instrument/Equipment Testing, Inspection and Maintenance Requirements
12	Instrument Calibration and Frequency
13	Inspection/Acceptance Requirements for Supplies and Consumables
14	Data Management
Assessment/Oversight	
15	Assessment and Response Actions
16	Reports to Management
Data Validation and Usability	
17	Data Reduction and Review
18	Data Validation and Verification
19	Reconciliation with User Requirements
20	References

Details on each of the subjects listed above are provided in the subsequent sections.

2 Project Organization

The activities to be completed under this GQAPP will require integration of personnel from the positions identified below, collectively referred to as the project team. A detailed description of the responsibilities of each member of the project team is presented below.

2.1 Project Organization

The GQAPP will be executed by a project team assigned per the specific work plan. The project team will perform sampling activities and will evaluate data and prepare the deliverables as specified in the SMP. Project direction will be provided with lead regulatory oversight by the NYSDEC. A list of key project management personnel is provided in Table 1.1 of the SMP.

2.2 Team Member Responsibilities

The responsibilities of the various team members are summarized below.

2.2.1 NYSEG

Project Manager

Responsibilities and duties include:

- Provide overall direction of site actions.
- Understand the nature and extent of MGP-related impacts remaining at the site.
- Direct Consultant(s) and Contractors/Subcontractors.
- Review work products, including data, memoranda, letters, reports, and all other documents transmitted to the NYSDEC.

2.2.2 City of Oneonta

The City of Oneonta has the following responsibilities:

- Communicate/notify the project team regarding proposed intrusive work to be conducted within potentially MGP-impacted areas.

2.2.3 Environmental Consultant/Contractor

Project Manager/Assistant Project Manager

Responsibilities and duties include:

- Manage and coordinate the project as defined in the SMP and any other related work plans with an emphasis on adhering to the objectives of the site activities.
- Review documents prepared by subcontractors.

- Verify that corrective actions are taken for deficiencies cited during any audits of site activities.

Task Managers

The sampling components will be managed by various Task Managers. Duties of each Task Manager include, as appropriate:

- Manage relevant day-to-day activities.
- Develop, establish, and maintain files on relevant site activities.
- Review data reductions from the relevant site activities.
- Perform final data review of field data reductions and reports on relevant site activities.
- Verify that corrective actions are taken for deficiencies cited during audits of relevant site activities.
- Perform overall quality assurance/quality control (QA/QC) of the relevant portions of the site activities.
- Review relevant field records and logs.
- Instruct personnel working on relevant site activities.
- Coordinate field and laboratory schedules pertaining to relevant site activities.
- Request sample bottles from laboratory.
- Review field instrumentation, maintenance, and calibration to meet quality objectives.
- Prepare reports pertaining to relevant site activities.
- Maintain field and laboratory files of notebooks/logs, data reductions, and calculations. Transmit originals to the PM.

Field Personnel

Responsibilities and duties include:

- Perform field procedures associated with the investigations as set forth in the specific work plan.
- Perform field analyses and collect quality assurance (QA) samples.
- Calibrate, operate, and maintain field equipment.
- Reduce field data.
- Maintain sample custody.
- Prepare field records and logs.

Quality Assurance Coordinator (QAC)

Responsibilities and duties include:

- Review laboratory data packages.
- Oversee and interface with the analytical laboratory.
- Coordinate field QA/QC procedures with Task Managers, concentrating on field analytical measurements and practices to meet data quality objectives (DQOs).
- Perform and review audit reports.
- Prepare interim QA/QC compliance reports.

- Prepare a QA/QC report in accordance with USEPA guidelines, including an evaluation of laboratory data and data usability summary reports (DUSRs).

2.2.4 Analytical Laboratory

General responsibilities and duties of the analytical laboratories include:

- Perform sample analyses and associated laboratory QA/QC procedures.
- Supply sample bottles and coolers.
- Maintain laboratory custody of sample.
- Strictly adhere to all protocols in the GQAPP.

Laboratory Project Manager

Responsibilities and duties include:

- Serve as primary communication link between environmental consultant and laboratory technical staff.
- Monitor workloads and maintain availability of resources.
- Oversee preparation of analytical reports.
- Supervise in-house chain of custody (COC).

Quality Assurance Manager (QAM)

Responsibilities and duties include:

- Supervise personnel reviewing and inspecting all project-related laboratory activities.
- Conduct audits of all laboratory activities.

2.2.5 Regulatory Agencies

Project Manager

Responsibilities and duties include:

- Provide review and approval of the GQAPP, work plans, supporting documents, and future deliverables.
- Monitor progress of site activities.

3 Data Quality Objectives and Criteria for Measurement Data

The DQO process, as described in USEPA-QA/G-4 (USEPA, 2006), is used to establish performance or acceptance criteria, which serve as the basis for designing a plan for collecting data of sufficient quality and quantity to support the goals of the study. The following sections address each of the seven sequential steps in the USEPA DQO process.

Step 1: State the Problem

The Site is impacted by residuals related to historical MGP operations conducted at the property. The site-specific constituent list will be evaluated during the time of sampling. Existing sampling data from past investigations will be incorporated and utilized to determine the site-specific constituent list. Past investigations are summarized in the SMP.

Step 2: Identify the Goal of the Study

The goal of the sampling program will depend on the specific sampling needs. In general, the goal will be to protect human health and the environment, and to manage remaining site impacts in accordance with applicable rules and regulations. Analytical results of constituents will be compared to applicable NYSDEC standards/guidance values and any other applicable regulations. The analyzed environmental media will then be managed and handled, accordingly. Based on analytical results, additional characterization or remedial measure may be required.

Step 3: Identify Information Inputs

Decision inputs incorporate both the concentration and distribution of constituents in site media. A fundamental basis for decision making is that a sufficient number of data points of acceptable quality must be available to support decisions. Thus, the necessary inputs for the decision are: 1) the proportion of non-rejected (usable) data points; and 2) the quantity of data needed to evaluate whether there is unacceptable risk to human health and the environment at and surrounding the Site.

The data will be evaluated for completeness, general conformance with requirements of this GQAPP, and consistency among data sets and with historical data, as appropriate.

Step 4: Define the Boundaries of the Study

The Site is located in the City of Oneonta, Otsego County, New York. The site boundaries are more fully described in the Environmental Easement included as Appendix A of the SMP.

Step 5: Developing the Analytical Approach

Samples will be collected and analyzed as described in the GFSP and Section 3.2 of this GQAPP. Laboratory reporting limits (RLs) are presented in Tables 1a through 1c. Analytical data related to imported backfill and documentation/reuse will be validated to ensure QA/QC limits are met in accordance with this GQAPP; analytical data for liquid and solid waste characterization will not be validated. The decision on whether data can be used will be based on the validation results. Following validation, the data will be flagged, as appropriate, and any use restrictions will be noted. A reasonable decision rule would be that 90% of the data points are not rejected or deemed unusable.

Step 6: Specify Performance of Acceptance Criteria

Specifications for this step call for: (1) giving forethought to corrective actions to improve data usability; and (2) understanding the representative nature of the sampling design. This GQAPP has been designed to meet both specifications for this step. The sampling and analysis programs have been developed based on a review of previous site data and knowledge of present site conditions. Corrective actions are described in Section 15.3 of this GQAPP. The representative nature of the planned sampling program has been facilitated by discussions among professionals familiar with the Site and the appropriate government agencies.

Step 7: Develop the Plan for Obtaining Data

The overall QA objective is to develop and implement procedures for field sampling, COC, laboratory analysis, and reporting that will provide results to support the evaluation of site data against applicable project action limits/screening criteria. Specific procedures for sampling, COC, laboratory instrument calibration, laboratory analysis, data reporting, internal QC, audits, preventative maintenance of field equipment, and corrective action are described in subsequent sections of this GQAPP.

A DQO summary for anticipated sampling efforts is presented in the following subsections. The summary consists of stated DQOs relative to data uses, data types, data quantity, sampling and analytical methods, and data measurement performance criteria. Field sampling procedures are detailed in the GFSP included as Appendix J to the SMP.

3.1 Data Categories

Three data categories have been defined to address various analytical data uses and the associated QA/QC effort and methods required to achieve the desired levels of quality. These categories are:

Screening Data: Screening data affords a quick assessment of site characteristics or conditions. These data collection activities involve rapid, non-rigorous methods of analysis and QA. Screening DQOs are generally applied to physical and/or chemical properties of samples, preliminary ecological and/or human health and safety indicators, and visual or other qualitative observations used to make rapid assessment decisions for deployment or additional assessment.

Screening Data with Definitive Confirmation: Screening data provide rapid identification and quantitation however, because screening generally involves the use or less precise methods of analysis with less rigorous sample preparation, the quantitation may be relatively imprecise. Generally, at least 10% of the data are confirmed using analytical methods and QA/QC procedures and criteria associated with definitive data. This objective can also be used to verify less rigorous laboratory-based methods. This objective of data quality is available for data collection activities that require qualitative and/or quantitative verification of a select portion of sample findings.

Definitive Data: Definitive data are generated using rigorous analytical methods, such as approved USEPA reference methods. Data are analyte-specific, with confirmation of analyte identity and concentration. Methods produce tangible raw data (e.g., chromatograms, spectra, digital values). Data may be generated at the Site or at an off-site location, as long as the QA/QC requirements are satisfied. For data to be definitive, either analytical or total measurement error must be determined. Definitive data are used for formal site characterization, environmental monitoring, confirmation of field data, to support decision-making, and for risk assessments.

It is anticipated that both screening and definitive data categories will be used during the investigation. Screening techniques will include the use of a photoionization detector during intrusive sampling activities. All soil and water samples will be analyzed at an off-site laboratory using definitive techniques.

For the purposes of this investigation, two levels of data reporting have been defined. They are as follows:

NYSDEC Analytical Services Protocol (ASP) Category A: Category A reporting is used for analyses that do not generate or require extensive supporting documentation. For this investigation, Category A reporting will be required for routine sampling activities (i.e., groundwater sampling), as well as liquid and solid waste characterization samples.

Category A laboratory data reports include the following items:

- Sample delivery group (SDG) narrative.
- Sample information sheets.
- NYSDEC data package summary forms.
- COC forms.
- Test analysis results.

NYSDEC ASP Category B: Category B reporting is used for analyses that are performed following standard USEPA-approved methods and QA/QC protocols. Category B reporting is anticipated to be used for final “documentation” sampling events. Based on the intended data use, full documentation is required.

Category B laboratory data reports include the following items:

- SDG narrative.
- Sample information sheets.
- NYSDEC data package summary forms.
- COC forms.
- Test analysis results.
- Calibration standards.
- Surrogate recoveries.
- Blank results (method blank, instrument blanks).
- Spike recoveries (matrix spike/matrix spike duplicate [MS/MSD], laboratory control sample [LCS]).
- Laboratory duplicate results.
- Confirmation samples.
- Internal standard area and retention time summary.
- Chromatograms.
- Raw data files.
- Other method-specific information.

Analytical results will be reported by the laboratory in the electronic data deliverable (EDD) format in either an ASCII comma-separated value format or format outlined in EQuIS^{TM} Lab Standard Operating Procedure (SOP) FSMP Rev. 9 (Attachment A) and of the Form Is (results sheets) in a PDF or electronic spreadsheet format, within 15 working days from date of receipt.

3.2 Field Activities

To obtain information necessary to meet the objectives stated above, additional field sampling may be conducted to support the DQOs. Further details of anticipated field sampling will be presented in future sampling plans. For purposes of the SMP, anticipated sampling details are provided in the EWP, GFSP, and this appendix.

4 Special Training Requirements/Certification

In compliance with the Occupational Safety and Health Administration (OSHA) final rule, “Hazardous Waste: Operations and Emergency Response [29 Code of Federal Regulations 1910.120(e)]”, all personnel performing sampling activities at the Site will have completed the requirements for OSHA 40-Hour Hazardous Waste Operations and Emergency Response training. Persons in field supervisory positions will have also completed the additional OSHA 8 Hour Supervisory Training.

Field personnel involved with the shipping of samples to the subcontracted laboratory will have completed the United States Department of Transportation (USDOT) Hazardous Materials (HazMat) #1 – USDOT/International Air Transportation Association HazMat Shipping and Transportation.

5 Documentation and Records

Samples will be collected as described in the GFSP. Detailed descriptions of the documentation and reporting requirements are presented below.

5.1 Sample Designation System

Samples will be identified with a unique designation system that will facilitate sample tracking. The sample designation system to be employed during the sampling activities will be consistent, yet flexible enough to accommodate unforeseen sampling events and conditions. An alpha-numeric system is considered appropriate and will be used by field personnel to assign each sample with a unique sample identification number.

The sample identification number will include the sample type followed by a sequential sample number. The sample type codes are as follows:

- Groundwater Sample – “GW” or “MW”
- Soil Vapor – “SV”
- Ambient Air – “AA”
- Indoor Air – “IA”
- Trip Blank Sample – “TB”
- Field Duplicate Sample – “DUP”
- Equipment Blank Sample – “EB”
- Matrix Spike and Matrix Spike Duplicate – “MS” and MSD”
- Imported backfill – “BF”
- Waste characterization – “WC”
- Documentation/reuse – “DR”

The location code, consisting of a two to five-digit designation, will follow the sample type code. The sample code will also be a six-digit number indicating the month, day, and year the sample was obtained. For example, a groundwater sample collected from MW-10 on October 30, 2020, will be designated MW-10 (201030).

QA/QC samples will be designated by a three-letter code followed by the six-digit sample collection date. For field and equipment blanks, a two-letter sample type code will precede the blank designation to indicate which medium the blank was intended to represent. For example, a field blank collected on October 30, 2020, during groundwater sample collection would be designated GW-FB1-201030. The sampling point associations for field duplicates must be recorded in the field log. A detailed description of the sample identifications will be recorded in the field log.

5.2 Field Documentation

Field personnel will provide comprehensive documentation covering various aspects of field sampling, field analysis, and sample COC. This documentation creates a record that allows reconstruction of field events to aid in the data review and interpretation process. Documents, records, and information relating to the performance of the field work will be retained in the project file.

The various forms of documentation to be maintained throughout the investigation include:

- Sampling Information – Detailed notes will be made as to the exact sampling location, physical observations, and weather conditions (as appropriate).
- Field Notebooks/Forms – All pertinent information regarding the Site and sampling procedures will be documented. A field notebook consisting of a waterproof, bound notebook that will contain a record of all activities performed at the Site. Detailed notes will be made as to the exact sampling location, physical observations, and weather conditions (as appropriate). To ensure that data collected in the field is consistent, accurate, and complete, forms may be used during repetitive data collection (e.g., depth to groundwater in monitoring wells during groundwater sampling).
- Sample Labels – Sample labels reduce the possibility of confusing sample containers and provide information necessary to complete COC forms. To the extent practical, sample containers will be pre-labeled before sample collection (with all required information except the date and time of sample collection) and the labels protected with a clear tape covering.
- Sample Chain of Custody – COC forms provide a legal record of possession of the samples, from sample collection through submittal to the laboratory. COC forms will be filled out at each sampling site, at a group of sampling sites, or at the end of each day of sampling by field personnel designated to be responsible for sample custody. In the event that samples are relinquished by the designated sampling person to other sampling or field personnel, the COC form will be signed and dated by the appropriate personnel to document the sample transfer. The original COC form will accompany the samples to the laboratory, and copies will be forwarded to the project files. When the form is complete, it will indicate that there were no lapses in sample accountability.
- Persons will have custody of samples when the samples are in their physical possession, in their view after being in their possession, or in their physical possession and secured so they cannot be tampered with. In addition, when samples are secured in a restricted area accessible only to authorized personnel, they will be deemed to be in the custody of such authorized personnel.
- Field Equipment, Calibration, and Maintenance Logs – To document the calibration and maintenance of field instrumentation, calibration and maintenance logs will be maintained for each piece of field equipment that is not factory calibrated.

5.3 Laboratory Documentation

The following identifies laboratory documentation and record keeping procedures.

5.3.1 Laboratory Project Files

The laboratory will establish a file for pertinent data. The file will include all correspondence (including emails), faxed information, phone logs, and COC forms. The laboratory will retain project files and data packages for a period of not less than five years.

5.3.2 Laboratory Logbooks

Workbooks, bench sheets, instrument logbooks, and instrument printouts will be used to trace the history of samples through the analytical process and to document important aspects of the work, including the associated

QC checks. As such, all logbooks, bench sheets, instrument logs, and instrument printouts will be part of the permanent record of the laboratory.

Each page or entry will be dated and initialed by the analyst at the time of entry. Errors in entry will be crossed out in indelible ink with a single stroke, corrected without the use of white-out or by obliterating or writing directly over the erroneous entry, and initialed and dated by the individual making the correction. Pages of logbooks that are not used will be completed by lining out unused portions.

Information regarding the sample, analytical procedures performed, and the results of the testing will be recorded on laboratory forms or personal notebook pages by the analyst. These notes will be dated and will also identify the analyst, the instrument used, and the instrument conditions.

Laboratory notebooks will be periodically reviewed by the laboratory group leaders for accuracy, completeness, and compliance with the laboratory SOPs and QA manual. All entries and calculations will be verified by the laboratory group leader. If all entries on the pages are correct, then the laboratory group leader will initial and date the pages. Corrective action will be taken for incorrect entries before the laboratory group leader signs.

5.3.3 Electronic File Storage

All electronic files and deliverables will be retained by the laboratory for not less than five years; hard copy data packages (or electronic copies) will also be retained for not less than five years.

5.4 Data Reporting Requirements

5.4.1 Field Data Reporting

Information collected in the field through visual observation, manual measurement, and/or field instrumentation will be recorded in field notebooks or data sheets and/or on forms. Such data will be reviewed for adherence to the applicable field SOPs and for consistency. Concerns identified as a result of this review will be discussed with the field personnel, corrected if possible, and, as necessary, incorporated into the data evaluation process (as necessary).

Where applicable, field data forms and calculations will be processed and included in appendices to the appropriate project reports (when generated). The original field logs, documents, and data reductions will be kept in the main project file.

5.4.2 Laboratory Data Reporting

Analytical results will be provided by the laboratory in a digital format. Data packages will be examined to ensure that the correct analyses were performed for each sample submitted and that all of the analyses requested on the COC form were performed. If discrepancies are noted, the QAC will be notified and will promptly follow up with the laboratory to resolve any issues.

If validation is required, each data package will be validated in accordance with the procedures presented in this GQAPP. Data that do not meet the specified standards will be flagged pending resolution of the issue. The flag will not be removed from the data until the issue associated with the sample results is resolved. Although flags may remain for certain data, the use of that data may not necessarily be restricted.

Following completion of data validation, the data review will be used to populate the appropriate database tables. This format specifies one data record for each constituent and each sample analyzed. Specific fields include:

- Sample identification number.
- Date sampled.
- Date analyzed.
- Parameter name.
- Analytical result.
- Units.
- Detection limit.
- Qualifier(s).

The individual EDDs supplied by the laboratory in either an ASCII comma-separated value format or format outlined in EQuIS^{TM} Lab SOP FSMP Rev. 9, will be loaded into the appropriate database table. Analytical data that cannot be provided by the laboratory in electronic format will be entered manually. Hand-keyed data will be reviewed for accuracy. After entry into the database, the EDD data will be compared to the field information previously entered into the database to confirm that all requested analytical data were received.

The Analytical Laboratory is responsible for preparing NYSDEC Category B data packages for all samples, except, solid and liquid waste characterization samples. Data reports for all parameters will include, at a minimum, the following items:

Narrative **–** Summary of activities that took place during the course of sample analysis, including the following information:

- Laboratory name and address.
- Date of sample receipt.
- Cross reference of laboratory identification number to sample identification.
- Analytical methods used.
- Deviations from specified protocol.
- Corrective actions taken.

Included with the narrative will be any sample handling documents, including field and internal COC forms, air bills, and shipping tags.

Analytical Results – These will be reported according to analysis type and include the following information, as applicable:

- Sample ID.
- Laboratory ID.
- Date of collection.
- Date of receipt.
- Date of extraction.
- Date of analysis.

- Dilution factor.
- Detection limits.

Sample results on the report forms will be corrected for dilutions. Unless otherwise specified, all results will be reported uncorrected for blank contamination.

5.4.3 External Data Reporting

Analytical data will be provided to the NYSDEC as part final documentation reporting, such as a Periodic Review Report, Groundwater Summary Report, or Remedial System Optimization Report. Analytical will be provided in a tabular summary; original and validated laboratory reports will be provided in electronic format (i.e., PDF); and EDDs can be provided, as requested.

5.5 Project File

Project documentation will be placed in project files according to the Environmental Consultant's protocol for document management.

Final reports (including QA Reports) are filed in a designated folder within the project file. Analytical laboratory documentation (when received) and field data will also be filed in a designated folder within the project file. Filed materials may be removed and signed out by authorized personnel on a temporary basis only.

6 Sampling Process Design

Information regarding the sampling design and rationale and associated sampling locations can be found in the SMP or other task-specific work plan. Field investigation activities will be conducted according to the appropriate GFSP and applicable NYSDEC regulations.

7 Sampling Method Requirements

The Environmental Consultant/Contractor will collect all required samples as described in the GFSP. In addition, the GFSP contains the procedures that will be followed to install monitoring wells; measure water levels; perform field measurements; and handle, package, and ship collected samples.

8 Sample Handling and Custody Requirements

The sections below identify sample handling and custody requirements.

8.1 Sample Containers and Preservation

Appropriate sample containers, preservation methods, and laboratory holding times for the samples are shown in Table 2.

The analytical laboratory will supply appropriate sample containers and preservatives, as necessary. Bottles will be purchased pre-cleaned to USEPA Office of Solid Waste and Emergency Response Directive 9240.05A requirements. Field personnel will be responsible for properly labeling containers and preserving samples (as appropriate).

8.2 Field Custody Procedures

The sampling team will maintain overall responsibility for the care and custody of the samples until they are transferred or properly dispatched to the laboratory. The objective of field sample custody is to ensure that samples are not tampered or modified from the time of collection through transport and transfer to the analytical laboratory. Persons will have “custody of samples” when the samples are in their physical possession, in their view after being in their possession, or in their physical possession and secured so they cannot be tampered with. In addition, when samples are secured in a restricted area accessible only to authorized personnel, they will be deemed to be in the custody of such authorized personnel.

Field custody documentation consists of both field logbooks and field COC forms.

8.2.1 Field Logbooks

Field logbooks will provide the means of recording data collecting activities performed. As such, entries will be described in as much detail as possible so that persons going to the Site could reconstruct a particular situation without reliance on memory.

Field logbooks will be bound field survey books or notebooks and have numbered, water-resistant pages. Logbooks will be assigned to field personnel but will be stored in a secure location when not in use. Each logbook will be identified by the project specific document number. The title page of each logbook will contain the following:

- Person to whom the logbook is assigned.
- Logbook number.
- Project name.
- Project start date.
- End date.

Entries will be made in ink, with no erasures. If an incorrect entry is made, the information will be crossed out with a single strike mark and initialed by the person making the correction.

Recorded information typically includes, but may not be limited to the following:

- Name and location of Site.
- Date and time of arrival and departure.
- Name and signature of person keeping log.
- Names of all persons on-site.
- Purpose of visit.
- Level of personal protective equipment (PPE) used.
- Field instrument identification and calibration information.
- Location of sampling points.
- Results of field measurements made.
- Number of samples taken; volume of samples taken.
- Preservation.
- Method of sample collection and any factors that may affect its quality.
- Name of sample collector.
- All sample identification numbers (assigned prior to sample collection).
- Description of samples, including as applicable depth at which the sample was collected.
- Weather conditions on the day of sampling and any field observations.
- Number and description of photographs taken, if any.

8.2.2 Sample Labeling

Sample labels are an important part of proper documentation as their use reduces the possibility of confusing sample containers and provides the information necessary during handling to complete COC forms. The following information is required on each sample label:

- Site name or location.
- Date and time collected.
- Sample identification number.
- Sampler’s initials.
- Parameter sampled.
- Preservative.

When possible, preprinted sample labels (i.e., preprinted with items noted above except of date and time collected) will be affixed to sample bottles prior to delivery at the sampling site and the labels themselves protected from the sample matrix with a clear tape covering.

8.2.3 Field Chain of Custody Forms

The COC form is intended as a legal record of possession of the sample. Completed COC forms will be required for all samples to be analyzed. COC forms will be initiated by the sampling crew in the field. The COC forms will contain the sample’s unique identification number, sample date and time, sample description, sample type, preservation (if any), and analyses required. The original COC form will accompany the samples to the laboratory. Copies of the COC will be made prior to shipment (or multiple copy forms used) and placed in the project files. The COC forms will remain with the samples at all times. The samples and signed COC forms will remain in the possession of the sampling crew until the samples are delivered to the express carrier (e.g., Federal Express), hand delivered to the laboratory, picked up by a laboratory courier, or placed in secure storage.

Sample labels will be completed for each sample using waterproof ink. The labels will include the information listed in Section 8.2.2. The completed sample labels will be affixed to each sample bottle and covered with clear tape.

Whenever samples are split with a government agency or other party, a separate COC will be prepared for those samples and marked to identify the party with whom the samples are being split. The person relinquishing the samples to the facility or agency should request the representative’s signature acknowledging sample receipt. If the representative is unavailable or refuses, this is noted in the “Received By” space.

8.2.4 Sample Custody Seals

Custody seals are narrow strips of adhesive paper or glass fiber used to demonstrate that no tampering of the shipping container has occurred. The custody seals will be signed and dated by the sampling crew and placed across the opening of the lid and body of the shipping containers and at least on one side and the front of the container. The custody seals will be covered with clear, wide tape. These custody seals shall be plainly visible.

8.3 Management of Investigation-Derived Materials and Wastes

Investigation-derived waste (IDW) include soil, decontamination water, sampling supplies, and PPE generated during sampling activities. These wastes are generated during drilling, sampling, and other sampling activities. The intent of managing IDW is to ensure that impacted materials and media are not allowed to contaminate non-impacted materials and media. An example of an impacting event would be the purging of impacted groundwater and discharging that water onto non-impacted soil and shallow groundwater. Those kinds of activities will not be allowed.

Where necessary to promote the safe, efficient, and environmentally protective performance of work, management of investigation-derived materials and wastes will be performed consistent with the USEPA guidance Guide to Management of Investigation – Derived Wastes, 9345.3-03FS, dated January 1992. Disposable equipment (including PPE) will be containerized, appropriately labeled during the sampling events, and disposed of accordingly. All residual solids and water generated during purging and equipment decontamination will be containerized, temporarily staged on-site in appropriate containers (e.g., 55-gallon drums, portable tanks, etc.) and disposed of based on analytical results. Equipment will be decontaminated, as appropriate.

8.4 Packing, Handling, and Shipping Requirements

All shipping or sample transfer information will be recorded at the end of each day or collection period on COC forms. Sample packaging and shipment procedures are designed so that the samples will arrive at the laboratory with the COC, intact.

It is imperative that all samples are submitted to the laboratory with ample time for the analysis to be completed within the method-specified holding time. It should be noted that the laboratory needs to be aware that missing a holding time is unacceptable and may result in unusable data if the holding time is missed.

General sample packaging and shipping requirements are as follows:

- Securely affix the sample label to the container with clear packing tape.
- Check the cap on the sample container to confirm that it is properly sealed.
- Complete the COC form with the required sampling information and confirm that the recorded information matches the sample labels. NOTE: If the designated sampler relinquishes the samples to other sampling or field personnel for packing or other purposes, the sampler will complete the COC prior to this transfer. The appropriate personnel will sign and date the COC form to document the sample custody transfer.
- Using duct tape, secure the outside drain plug at the bottom of the cooler.
- Wrap glass sample containers in bubble wrap or other cushioning material.
- Place 1 to 2 inches of cushioning material at the bottom of the cooler.
- Place the sealed sample containers into the cooler.
- Place ice in plastic bags, seal the bags, and place the bags loosely in the cooler.
- Fill the remaining space in the cooler with cushioning material.
- Place COC forms in a plastic bag and seal. Tape the forms to the inside of the cooler lid.
- Close the lid of the cooler and secure with duct tape.
- Wrap strapping tape (or equivalent) around both ends of the cooler at least twice.
- Mark the cooler on the outside with the shipping address and return address, affix “Fragile” labels, and draw (or affix) arrows indicating “this side up.” Cover the labels with clear plastic tape. Place a signed custody seal over the cooler lid. NOTE: If the samples are being delivered directly to the laboratory or will be picked up by the lab’s courier service, this step is eliminated.

Samples will be packaged by field personnel and transported as low-concentration environmental samples. The samples will be placed in coolers pre-chilled with ice and hand-delivered or delivered by an express carrier within 48 hours of the time of collection. Coolers will be kept at required temperatures (i.e., ice will be added, as needed). In some cases, the analytical method may require analysis within a shorter holding time, and arrangements will need to be made to accommodate the laboratory requirements. Shipments will be accompanied by the COC form identifying the contents. The original form will accompany the shipment; copies will be retained by the sampler for the sampling office records. If the samples are sent by common carrier, a bill of lading will be used. Receipts or bills of lading will be retained as part of the permanent project documentation. Commercial carriers are not required to sign off on the COC form as long as the forms are sealed inside the sample cooler, and the custody seals remain intact.

Custody seals and cooler packing materials will be provided by the analytical laboratory. The filled, labeled, and sealed containers will be placed in a cooler on ice and carefully packed to eliminate the possibility of container breakage. Trip blanks of analyte-free water will be provided by the laboratory and included in each cooler containing samples to be analyzed for VOCs.

8.5 Laboratory Custody Procedures

Upon sample receipt, laboratory personnel will be responsible for sample custody. The original field COC form will accompany all samples requiring laboratory analysis. Samples will be kept secured in the laboratory until all stages of analysis are complete. All laboratory personnel having samples in their custody will be responsible for documenting and maintaining sample integrity.

8.5.1 Sample Receipt and Storage

Upon sample receipt, the laboratory sample custodian will verify the package seal, open the package, verify the sample integrity, and compare the contents against the field COC. If a sample container is broken, the sample is in an inappropriate container, has not been preserved by appropriate means, of if there is a discrepancy between the COC and the sample shipment, the Environmental Consultant/Contractor will be notified. The laboratory sample custodian will then log the samples in, assign a unique laboratory identification number to each, and label the sample bottle with the laboratory identification number. The project name, field sample code, date sampled, date received, analysis required, storage location and date, and action for final disposition will be recorded in the laboratory tracking system.

8.5.2 Sample Analysis

Analysis of an acceptable sample will be initiated by a work sheet that will contain pertinent information for analysis. The analyst will sign and date the laboratory COC form when removing the samples from storage.

Samples will be organized into SDGs by the laboratory. An SDG may contain up to 20 field samples (field duplicates, trip blanks, and rinse blanks are considered field samples for the purposes of SDG assignment). All field samples assigned to a single SDG will be received by the laboratory over a maximum of 7 calendar days and must be processed through the laboratory (preparation, analysis, and reporting) as a group.

If reanalysis of a sample is required it may be re-run separately from the original SDG; however, the resulting data will be reported with the original SDG.

Every SDG must include a minimum of one method blank and one MS/MSD (or MS/laboratory duplicate) pair; each SDG will, therefore, be self-contained for all of the required QC samples. Project samples to be used for MS/MSDs will be noted on the COC.

Information regarding the sample, analytical procedures performed, and the results of the testing will be recorded in a laboratory notebook by the analyst. These notes will be dated and identify the analyst, the instrument used, and the instrument conditions.

8.5.3 Sample Storage Following Analysis

The remaining sample volume and extracts/digestates (if any) will be maintained by the laboratory for one month after the final report is delivered to the Environmental Consultant/Contractor. After this period, the samples will be disposed of in accordance with applicable rules and regulations.

9 Analytical Method Requirements

The sections below identify analytical method requirements.

9.1 Field Analytical Procedures

Specific field measurement protocols are provided in the GFSP.

9.2 Laboratory Parameters and Methods

Laboratory analytical requirements presented in the sub-sections below include a general summary of requirements, specifics related to each sample medium to be analyzed, and details of the methods to be used for this project. Current USEPA approved methods will be used for all applicable parameters and sample media.

9.2.1 General

The following tables (attached at the end of this GQAPP) summarize general analytical requirements:

- Table 1a: Parameters, Methods, and Target Quantitation Limits (Soil).
- Table 1b: Parameters, Methods, and Target Quantitation Limits (Water).
- Table 1c: Parameters, Methods, and Target Quantitation Limits (Solid Waste Characterization).
- Table 2: Sample Containers, Preservation, and Holding Times.
- Table 3: Sample Quantities and Quality Control Frequencies.
- Table 4: Laboratory Quality Control Limits.

9.2.2 Laboratory Analyses

The primary sources of the analytical methods to be used during the investigation are provided in USEPA SW-846, and USEPA Modified Method 537. Quantitation limits for the analyses are shown in Tables 1a through 1c. The laboratory will make every effort to achieve quantitation limits as low as practicable unless dilution or interference effects make it necessary to report at higher levels. Results quantitated below the RLs will be reported as estimated concentrations and flagged, "J".

10 Quality Control Requirements

The sections below identify quality control requirements.

10.1 Data Quality Indicators

The overall DQOs for this assessment are to develop and implement procedures for sampling, COC, laboratory analysis, instrument calibration, data reduction and reporting, internal QC, audits, preventive maintenance, and corrective action such that valid data will be generated for site assessment purposes. These procedures are presented or referenced in subsequent sections of the GQAPP.

DQOs are generally defined in terms of the following parameters:

- Representativeness.
- Comparability.
- Completeness.
- Precision.
- Accuracy.
- Sensitivity.

Each parameter is defined below. Specific objectives for this assessment are set forth in other sections of this GQAPP as referenced below.

10.1.1 Representativeness

Representativeness is the extent to which measurements represent the site conditions. It is dependent on sampling and analytical variability, and the variability (or homogeneity) of the site itself. The sampling activities have been designed to assess the presence of the constituents at the time of sampling. This GQAPP presents field sampling methodologies and laboratory analytical methodologies. The use of the prescribed field and laboratory analytical methods with associated holding times and preservation requirements are intended to provide representative data.

10.1.2 Comparability

Comparability is defined as the extent to which data from one data set can be compared directly to similar or related data sets and/or decision-making standards. Comparability between this investigation and to the extent possible, with existing data will be maintained through consistent use of the sampling and analytical methodologies set forth in this GQAPP, the analytical methods, stringent applicable of established QA/QC procedures, and utilization of appropriately trained personnel.

10.1.3 Completeness

Completeness is defined as a measure of the amount of usable data collected compared to the total amount of data that was expected to be obtained. This will be determined upon final assessment of the analytical results.

10.1.4 Precision

Precision is a measure of agreement among repeated measurements. The goal is to maintain a level of analytical precision consistent with the project objectives. To maximize precision, sampling and analytical procedures will be followed and work will adhere to established protocols presented in this GQAPP. Analytical precision will be determined through the use of the same analytical methods to perform repeated analyses on the same sample, including the analysis of MSD samples, laboratory duplicates, and field duplicates. Collection of field duplicate samples allows for evaluating the precision of sample collection, sample handling, preservation, and storage.

Precision for laboratory and field measurements will be expressed as the relative percent difference (RPD) between two duplicate determinations. Acceptance criteria for laboratory precision are presented in Table 4.

10.1.5 Accuracy/Bias

Accuracy is the degree of agreement of a measured value with its true value. Accuracy can be expressed as a percent recovery or percent deviation of the measurement with respect to its known or true value. Accuracy will be determined through evaluation of spike recoveries (e.g., surrogate recoveries, LCS recoveries, MS recoveries, reference material recoveries, etc.) and instrument calibration. Acceptance for spike recoveries are presented in Table 4.

Bias is defined as the constant or systematic distortion of a measurement process as a persistent positive or negative deviation from the known or true value. This may be due to improper sample collection, sample matrix, poorly calibrated analytical or sampling equipment, or limitations or errors in analytical methods and techniques. Blank samples (laboratory or field) are also used to assess contamination of samples that may bias results high.

10.1.6 Sensitivity

Sensitivity refers to the ability of an analytical procedure to quantify an analyte at a given concentration. The sensitivity requirements should be established such that the laboratory RLs are at or below the relevant and applicable regulatory limits for each contaminant of concern for the project. Method detection limit (MDL) is defined as the minimum concentration of a substance that can be identified, measured, and reported with a 99% confidence that the analyte concentration is greater than zero and is determined from repeated analysis of a sample in a given matrix containing the analyte. MDLs have been determined as required in Title 40 of the Code of Federal Regulation Part 136B. The RL is greater than or equal to the lowest standard used to establish the calibration curve. Results greater than the MDL and less than the RL will be qualified estimated (J) by the laboratory.

10.2 Decision Rule

The decision on whether data can be used will be based on the validation results. Following validation, the data will be flagged, as appropriate, and any use restrictions noted. The sampling plan has been devised so that the loss of any single data point will not hinder description of the distribution of potential constituents of concern. Given this, a reasonable decision rule would be that 90% of the data points are not rejected and deemed unusable.

10.3 Field Quality Control Checks

The sections below identify field quality control checks.

10.3.1 Field Measurements

To verify the quality of data using field instrumentation, duplicate measurements will be obtained and reported for all field measurements. A duplicate measurement will involve obtaining measurements a second time at the same sampling location.

10.3.2 Sample Containers

New, certified, clean sample containers will be supplied by the laboratory.

10.3.3 Trip Blanks

Trip blanks will be used to assess whether site samples have been exposed to non-site-related VOCs during field handling procedures and shipping. Trip blanks will be analyzed at a frequency of once per day, per cooler containing samples to be analyzed for VOCs. A trip blank will consist of a VOC vial filled with analyte-free water (supplied by the laboratory), taken to the sampling site, and transported back to the laboratory without having been exposed to sampling procedures.

10.3.4 Field Duplicates

Field duplicates will be collected to verify the reproducibility of the sampling methods. In general, field duplicates will be analysed at a 5% frequency (every 20 samples) for the chemical constituents. Trip Blanks

10.3.5 Rinse Blanks

Rinse blanks are used to monitor the cleanliness of the sampling equipment and the effectiveness of the cleaning procedures. Rinse blanks will be prepared and submitted for analysis at a frequency of 1 per day (when sample equipment cleaning occurs) or once for every 20 samples collected, whichever is less. Rinse blanks will be prepared by filling sample containers with analyte-free water (supplied by the laboratory), which has been routed through a cleaned sampling device. When dedicated sampling devices are used or sample containers are used to collect the samples, rinse blanks will not be necessary.

10.3.6 Field Blanks

Field blanks are used to assess sample contamination from field conditions during sample collection activities. Field blanks will be prepared and submitted for analysis at a frequency of 1 per day (when constituents requiring collection of a field blank are sampled) or once for every 20 samples collected, whichever is less. Field blanks will be prepared by filling sample containers with analyte-free water (supplied by the laboratory) at the sampling location.

10.4 Analytical Laboratory Quality Control Checks

Internal laboratory QC checks will be used to monitor data integrity and to document the validity of the generated data. The checks reveal information about sampling technique, analyst technique, instrument capability, possible sources of contamination, precision of the results, and difficulties with the matrix. These checks will include method blanks, LCS, MS/MSD, laboratory duplicates, internal standards, and surrogate samples. Advisory QC limits are identified in Table 4. Laboratory control charts will be used to determine long-term instrument trends.

10.4.1 Calibration Verification

Initial calibration of instruments will be performed as required in the method and when any ongoing calibration does not meet control criteria. The number of points used in the initial calibration is defined in each analytical method.

Calibration check standards analyzed within a particular analytical series provide insight regarding instrument stability. Ongoing calibration verification will be performed as specified in the analytical methods to monitor instrument performance. In general, the calibration check standard will be analyzed at the beginning and end of an analytical series, or periodically throughout a series containing a large number of samples.

In the event that an ongoing calibration does not meet control limits, analysis of samples will be suspended until the source of the control failure if either eliminated or reduced to within control specifications. Any samples analyzed while the instrument was out of control will be reanalyzed.

10.4.2 Method Blanks

Sources of contamination in the analytical process, whether specific analyses or interferences, must be identified, isolated, and corrected. A method blank is an “analyte-free” matrix that is treated exactly as the sample including exposure to all glassware, equipment solvents, reagents, labeled compounds, internal standards, and surrogates that are used with sampled. The method blank is useful in identifying possible sources of contamination within the analytical process (i.e., laboratory environment, reagents, or apparatus). For this reason, it is necessary that the method blank is initiated at the beginning of the analytical process and encompasses all aspects of the analytical work. One method blank will be analyzed with each analytical series associated with no more than 20 samples. Blank corrections will not be applied by the laboratory to the original data.

10.4.3 Matrix Spike/Matrix Spike Duplicates

An MS is an aliquot of an environmental samples to which known quantities of target analytes are added in the laboratory. An MSD is a second aliquot of the samples which is also spiked with identical concentrations of target analytes. The MS and MSD are analyzed in an identical manner as the sample. The purpose of a MS is to determine the accuracy of the overall analytical procedure for determining the analytes of concern in the sample. The MSD analysis is used to document both the precision and accuracy of the method in a given sample matrix.

To get the true benefit from MS and MSD analyses, it is necessary that the sample come from the Site so that it is possible to ascertain if the matrix itself is contributing to analytical difficulties or outliers. When MS recoveries are outside QC limits, associated LCS and surrogate spike recoveries will be evaluated, as applicable, to attempt to verify the reason for the deviation and determine the effect on the reported sample results.

10.4.4 Laboratory Duplicates

Laboratory duplicates will be analyzed to assess laboratory precision. Laboratory duplicates are defined as a separate aliquot of an individual sample that is analyzed as a separate sample. Table 3 presents an estimated number of laboratory duplicates for each applicable parameter.

10.4.5 Laboratory Control Samples

LCS are standards of known concentration and are independent in origin from the calibration standards. An LCS is a blank matrix, free from the analytes of interest, spiked with verified known amounts of analytes created from a source other than that used to make up calibration standards. The LCS is carries through the analysis along with the samples. The intent of LCS analysis is to provide insight into the intra-laboratory or analyst specific precision and bias or to assess the performance of all or a portion of the measurement system. This includes the preparation of calibration standards, validity of calibration, sample preparation, instrument set-up, and the premises inherent in quantitation. Reference standards will be analyzed at the frequencies specified within the analytical methods.

10.4.6 Surrogate Spikes

A surrogate spike is an organic non-target analyte that is unlikely to occur under natural conditions but that have similar chemical properties to the analytes of interest. This type of control is primarily used for organic samples analyzed by gas chromatography/mass spectrometry (GC/MS) and GC methods and is added to the samples prior to purging or extraction. The surrogate spike is utilized to provide broader insight into the proficiency and efficiency of an analytical method on a sample-specific basis. This control reflects analytical conditions that may not be attributable to sample matrix.

The surrogate standard is added to the sample in a known amount, prior to purging or extraction. The surrogate concentration is measured using the same procedures used to measure other analytes in the sample. The surrogate spike is utilized to provide broader insight into the proficiency and efficiency of an analytical method on a sample-specific basis. This control reflects analytical conditions that may not be attributable to sample matrix.

If surrogate spike recoveries exceed specified QC limits, the analytical results must be evaluated thoroughly in conjunction with other control measures. In the absence of other control measures, the integrity of the data may not be verifiable, and reanalysis of the samples with additional control may be necessary.

Surrogate spike compounds will be selected utilizing the guidance provided in the analytical methods and will be added to all field samples and laboratory QC samples.

10.4.7 Reference Standards/Control Samples

Reference standards are standards of known concentration and independent in origin from the calibration standards. The intent of reference standard analysis is to provide insight into the analytical proficiency within an analytical series. This includes the preparation of calibration standards, the validity of calibration, sample preparation, instrument set up, and the premises inherent in quantitation. Reference standards will be analyzed at the frequencies specified within the analytical methods.

10.4.8 Internal Standards

Internal standard areas and retention times will be monitored for organic analyses performed by GC/MS methods. Method-specified internal standard compounds will be spiked into all field samples, calibration standards, and QC samples after preparation and prior to analysis. If internal standard areas in one or more samples exceed the specified tolerances, the cause will be investigated, the instrument will be recalibrated if necessary, and all affected samples may be re-analyzed.

The acceptability of internal standard performance will be determined using the guidance provided within the analytical methods

10.5 Data Precision Assessment Procedures

Field precision is difficult to measure because of temporal variations in field parameters. However, precision will be controlled through the use of experienced field personnel, properly calibrated meters, and duplicate field measurements. Field duplicates will be used to assess precision for the entire measurement system, including sampling, handling, shipping, storage, preparation, and analysis.

Laboratory data precision for analyses will be monitored through the use of MSD, laboratory duplicates and field duplicate.

Analytical precision will be evaluated by calculating the RPD for laboratory duplicate and MS/MSD samples, as follows:

$$RPD = \frac{abs(D1-D2)}{\frac{(D1+D2)}{2}} \times 100$$

Where: abs = absolute value

RPD = relative percent difference

D1 = sample value

D2 = duplicate sample value

Precision objectives for MSD and laboratory duplicate analyses are identified in Table 4.

10.6 Data Accuracy Assessment Procedures

The accuracy of field measurements will be controlled by employing experienced field personnel, using properly calibrated field meters, and adhering to established protocols. The accuracy of field meters will be assessed by review of calibration and maintenance logs.

Laboratory accuracy will be assessed by using MSs, surrogate spikes, internal standards, and reference standards. Where available and appropriate, QA performance standards will be analyzed periodically to assess laboratory accuracy. Accuracy will be calculated in terms of percent recovery as follows:

$$\%\ \text{Recovery} = \frac{A-X}{B} \times 100$$

Where: A = value measured in spiked sample or standard

X = value measured in original sample

B = amount added to sample or true value of the standard

This formula is derived under the assumption of constant accuracy between the original and spiked measurements. If any accuracy calculated by this formula is outside of the acceptable levels, data will be evaluated to determine whether the deviation represents unacceptable accuracy, or variable, but acceptable accuracy. Accuracy objectives for MS recoveries and surrogate recovery objectives are identified in Table 4.

10.7 Data Representativeness Assessment Procedures

Representativeness will be assessed by examining sample preservation, results of the precision and accuracy evaluation, and adherence to method holding time. Failure of field or laboratory personnel to properly handle samples may result in qualification of the data as estimated or unusable. Use of laboratory data from a sample with a failed holding time could render the data unusable, in particular, for VOC analysis there is a potential for loss of compounds and the concentration may be biased low. The representativeness review will qualitatively consider whether precision and/or accuracy are sufficient to characterize the representativeness of the samples.

10.8 Blank Sample Assessment Procedures

Blank samples will be used to determine the existence and magnitude of contamination resulting from laboratory or field activities. The method blank is used as a check on laboratory procedures as well as possible contamination from laboratory equipment (i.e., reagents, glassware, etc.). Trip blanks determine the integrity of the sample container for loss or addition of analytes due to handling and transport. Detections in any blank samples will be used to qualify similar detections in associated field samples.

10.9 Data Completeness Assessment Procedures

Completeness of a field or laboratory data set will be calculated by comparing the number of usable measurements (i.e., all measurements except rejected data) actually obtained to the total number of usable measurements that were planned.

$$Completeness = \frac{usable\ data\ points\ obtained}{total\ data\ points\ planned} \times 100$$

As a general guideline, overall project completeness is expected to be at least 90%. The assessment of completeness will require professional judgment to determine data usability for the intended purposes.

10.10 Data Comparability Assessment Procedures

Comparability will be assessed by evaluating whether samples were collected in a manner similar to previous sampling events and analytes using similar analytical methodology as previous events.

10.11 Sensitivity Assessment Procedures

Sensitivity is related to the RLs. In general, RLs should be less than the applicable standard. Analytical results for samples that are reported as not detected for a particular analyte that have RLs greater than the applicable standard cannot be used to demonstrate compliance with the applicable standard. Samples that are contaminated with sufficient quantity of material, such that dilutions are performed, are a leading cause of RLs exceeding applicable criteria. However, there may be instances where such exceedances are insignificant relative to the site specific DQOs. The sensitivity review will qualitatively consider whether the RLs are sufficiently low to compare analytical results to the applicable standards, which considering the project DQOs.

11 Instrument/Equipment Testing, Inspection and Maintenance Requirements

Preventive maintenance schedules have been developed for both field and laboratory instruments. A summary of the maintenance activities to be performed is presented below.

11.1 Field Instruments and Equipment

Prior to any field sampling, each piece of field equipment will be inspected to confirm that it is operational. If the equipment is not operational, it must be serviced prior to use. All meters that require charging or batteries will be fully charged or have fresh batteries. If instrument servicing is required, it is the responsibility of the Field Sampling Manager to follow the maintenance schedule and arrange for prompt service. Field instruments will be maintained according to the manufacturers' instructions.

Field instrumentation to be used in this study includes meters to measure pH, ORP, turbidity, temperature, conductivity, dissolved oxygen, and groundwater levels. Field equipment also includes sampling devices for groundwater. A logbook will be kept for each field instrument. Each logbook contains records of operation, maintenance, calibration, and any problems and repairs. The Task Manager will review calibration and maintenance logs.

All measuring and test equipment to be used in support of the field sampling activities that directly affect the quality of the analytical data will be subject to preventive maintenance measures that minimize equipment downtime. Equipment will be examined to certify that it is in operating condition. This includes checking the manufacturer's operating manual to confirm that all maintenance requirements are being observed. Field notes from previous sampling events will be reviewed to verify that any prior equipment problems are not overlooked and that any necessary repairs to equipment have been carried out. However, in most cases, the Environmental Consultant/Contractor will use field meters maintained and calibrated by national, reputable environmental rental equipment companies; calibration and maintenance records are provided with these pieces of rental equipment and will be maintained as part of the project file.

Field equipment returned from a site will be inspected to confirm it is in working order. This inspection will be recorded in the logbook or field notebooks, as appropriate. It will also be the obligation of the last user to record any equipment problems in the logbook.

Non-operational field equipment will either be repaired or replaced. Appropriate spare parts for field equipment/meters will be available from the rental companies or manufacturers. Owned or leased equipment will be maintained in accordance with the manufacturer's instructions.

11.2 Laboratory Instruments and Equipment

Laboratory instrument and equipment documentation procedures include details of any observed problems, corrective measure(s), routine maintenance, and instrument repair (including information regarding the repair and the individual who performed the repair).

Preventive maintenance of laboratory equipment generally will follow the guidelines recommended by the manufacturer. A malfunctioning instrument will be repaired immediately by in-house staff or through a service call from the manufacturer.

Maintenance schedules for laboratory equipment adhere to each manufacturer's recommendations. Records reflect the complete history of each instrument and specify the time frame for future maintenance. Major repairs or maintenance procedures are performed through service contracts with the manufacturer or qualified contractors. Paperwork associated with service calls and preventive maintenance calls will be kept on file by the laboratory.

Laboratory Systems Managers are responsible for the routine maintenance of instruments used in the laboratory. Any routine preventive maintenance carried out is logged into the appropriate logbooks. The frequency of routine maintenance is dictated by the nature of samples being analyzed, the requirements of the method used and/or the judgment of the Laboratory Systems Manager.

All major instruments are backed up by comparable (if not equivalent) instrument systems in the event of unscheduled downtime. An inventory of spare parts is also available to minimize equipment/instrument downtime.

On a daily basis, the operation of balances, incubators, ovens, refrigerators, and water purification systems will be checked and documented. Any discrepancies will be immediately reported to the appropriate laboratory personnel for resolution.

12 Instrument Calibration and Frequency

The sections below identify instrument calibration procedures and frequency of calibration.

12.1 Field Equipment Calibration Procedures and Frequency

Calibration checks of field equipment will be performed daily when used. Field equipment operation, calibration, and maintenance procedures are provided in the equipment operation manuals. Field calibration solutions, standards and gases will be used within specified expiration dates and will be obtained from manufacturers or authorized suppliers. Calibration solutions, standards and gases will be discarded or returned to the supplier if expiration dates have been exceeded.

Field personnel are responsible for confirming that a master calibration/maintenance log is maintained following the procedures specified for each measuring device. A calibration log for each specific field instrument (as identified by serial/instrument number) will be used to link daily calibrations to that specific field instrument. Where applicable, each log will include, at a minimum, the following information in order to link daily calibrations to specific field instruments:

- Name of device and/or instrument calibrated.
- Device/instrument serial/identification numbers.
- Calibration method.
- Tolerance.
- Calibration standard used.
- Frequency of calibration.
- Date(s) of calibration(s).

- Name of person(s) performing calibration(s).

Instruments and equipment used to gather, generate, or measure environmental data will be calibrated at the intervals specified by the manufacturer or more frequently, and in such a manner that accuracy and reproducibility of results are consistent with the manufacturer's specifications. If an internally calibrated field instrument fails to meet calibration/checkout procedures, it will be returned to the manufacturer for service. Equipment found to be out of tolerance during the period of use will be removed from the field and measuring and testing activities performed using the equipment will be addressed via the corrective action system described in Section 15.3 of this GQAPP.

12.2 Laboratory Equipment Calibration Procedures and Frequency

Instrument calibration will follow the specifications provided by the instrument manufacturer or specific analytical method used. The analytical methods for chemical constituents are identified in Tables 1a though 1c.

When analyses are conducted according to USEPA methods, the calibration procedures and frequencies specified in the applicable method will be followed. In general, equipment calibration procedures will follow guidelines presented in NYSDEC ASP, Exhibit E, Part III (NYSDEC, 2005). Records of calibrations will be filed and maintained by the laboratory. These records will be subject to QA audit. For all instruments, the laboratory will maintain trained repair staff with in-house spare parts or will maintain service contracts with vendors.

All standards used to calibrate equipment are traceable, directly or indirectly, to the National Institute of Standards and Technology. All standards received will be logged into standard receipt logs maintained by the individual analytical groups. Each group will maintain a standards log that tracks the preparation of standards used for calibration and QC purposes.

13 Inspection/Acceptance Requirements for Supplies and Consumables

All supplies to be used in the field and laboratory will be available when needed. They will be free of target chemicals and interferences. All reagents will be tested prior to use in the laboratory. All standards will be verified against a second source standard. The laboratory will follow a “first in/first out” procedure for the storage and use of all consumables to minimize the risk of contamination and degradation.

14 Data Management

The purpose of the data management is to provide for the accuracy and ready accessibility of all the necessary data to meet the analytical and reporting objectives of the project. The data management program established for the project includes field documentation and sample QA/QC procedures, methods for tracking and managing the data, and a system for filing all site-related information. More specifically, data management procedures will be employed to efficiently process the information collected such that the data are readily accessible and accurate. These procedures are described in detail in the following section.

The data management plan has five elements:

1. Sample designation system.
2. Field activities.
3. Sample tracking and management.
4. Data management system.

14.1 Sample Designation System

A concise and easily understandable sample designation system is an important part of project sampling activities. It provides a unique sample number that will facilitate both sample tracking and easy resampling of select locations to evaluate data gaps, if necessary. The sample designation system to be employed during the sampling activities will be consistent, yet flexible enough to accommodate unforeseen sampling events or conditions. A combination of letters and numbers will be used to yield a unique sample number for each field sampled collected. The sample designation system is described in more detail in Section 5.1.

14.2 Field Activities

Field activities designed to gather the information necessary to make decisions require consistent documentation and accurate record keeping. During site activities, standardized procedures will be used for documenting field activities, data security, and QA. These procedures are described in further detail in the following subsections.

14.2.1 Field Documentation

Complete and accurate record keeping is a critical component of the field activities. When interpreting analytical results and identifying data trends, investigators realize that field notes are an important part of the review and validation process. To confirm that all aspects of the field investigation are thoroughly documented, several different information records, each with its own specific reporting requirements, will be maintained, including field logs, instrument calibration records, and COC forms. A description of each of these types of field document is provided in other sections of this GQAPP.

14.2.2 Data Security

Measures will be taken during the field investigation to prevent samples and records from being lost, damaged, or altered. When not in use, all field notebooks will be in the possession of project personnel. Access to these files will be limited to the field personnel who utilize them.

14.3 Sample Tracking and Management

A record of all field documentation will be maintained to provide verification of the validity of data used in the site analysis. To effectively execute such documentation, carefully constructed sample tracking and data management procedures will be used throughout the sampling program.

Sample tracking will begin with the completion of COC forms. Copies of all completed COC forms will be maintained in the field office. The laboratory will verify receipt of the samples electronically (via email) on the following day.

When analytical data are received from the laboratory, the incoming analytical data packages will be reviewed against the information on the COCs to confirm that the correct analyses were performed for each sample and that results for all samples submitted for analysis were received. Any discrepancies noted will be promptly followed up with the laboratory.

14.4 Data Management System

In addition to the sample tracking system, a data management system will be implemented. The central focus of the data management system will be the development of a personal computer-based project database. Additionally, the data management system will allow submission of data to the NYSDEC's EQuIS^{TM} database. The project database, to be maintained by the database administrator, will combine pertinent geographical, field, and analytical data. Information that will be used to populate the database will be derived from three primary sources: surveying of sampling locations, field observations, and analytical results. Each of these sources is discussed in the following sections.

14.4.1 Computer Hardware

The database will be constructed on personal computer workstations connected through a network server. The network will provide access to various hardware peripherals, such as laser printers, backup storage devices, image scanners, and modems. Computer hardware will be upgraded to industrial and corporate standards, as necessary, in the future.

14.4.2 Computer Software

The data will be warehoused in a CORE database or EQuIS^{TM} Enterprise SQL Server database. Geographic information system (GIS) applications will be developed in ESRI ArcGIS, with additional customization performed with Visual Basic. Tables and other database reports will be generated through Microsoft Access in conjunction with Microsoft Excel and/or Microsoft Word. These software products will be upgraded to current industrial standards, as necessary.

14.4.3 Survey Information

In general, each location sampled will be surveyed or located using a global positioning system (GPS) with sub-meter accuracy to confirm that accurate documentation of sample locations for mapping and GIS purposes (if appropriate) to facilitate the re-sampling of select sample locations during future monitoring programs, if needed, and for any potential remediation activities. The surveying activities that will occur in the field will consist of the collection of information that will be used to compute a northing and easting in state plane coordinates for each sample location and the collection of information to compute elevations relative to the North American Vertical Datum of 1988 for select sample locations, as appropriate. All field books associated with the surveying activities will be stored as a record of the project activities.

14.4.4 Field Observations

An important part of the information that will ultimately reside in the data management system for use during the project will originate with observations that are recorded in the field logbook.

During each sampling event, appropriate field documentation may be prepared by the field personnel who performed the sampling activities. The purpose of the documentation is to create a summary and a record of the sampling event. The field logbook will include the locations sampled, the sampling methodologies used, QA/QC procedures, sample identification numbers, equipment decontamination procedures, personnel involved in the activity, and any other noteworthy events that occurred.

Field logbooks are valuable tools to keep project personnel informed on the details of the field activities and are also invaluable during the development of the required reports. Each field logbook will be reviewed for accuracy and completeness by the respective sampling activity manager. As appropriate, information included in the field logbook will be used to transfer field observations into the data management system.

14.4.5 Analytical Results

Analytical results will be provided by the laboratory in digital format. The data packages will be examined to confirm that the correct analyses were performed for each sample submitted and that all the analyses requested on the COC form were performed. If discrepancies are noted, the laboratory will be contacted to resolve any issues.

Each data package will be validated and a DUSR will be prepare by the Environmental Consultant (i.e., not the laboratory). Any data that do not meet the specified standards will be flagged pending resolution of the issue. The flag will not be removed from the data until the issue associated with the sample results is resolved. Although flags may remain for certain data, the use of those data may not necessarily be restricted.

Following completion of data validation, the digital files will be used to populate the appropriate database tables. An example of the format of EDD format is included in EQuIS^{TM} SOP in Attachment A. This format specifies one data record for each constituent for each sample analyzed. Specific fields include:

- Sample identification number.
- Date sampled.
- Date analyzed.
- Parameter name.
- Analytical result.
- Units.
- Detection limit.
- Qualifier(s).

The individual EDDs, supplied by the laboratory in EQuIS^{TM} file format, will be loaded into the appropriate database. Any analytical data that cannot be provided by the laboratory in electronic format will be entered manually. After entry into the database, the EDD data will be compared to the field information previously entered into the database to confirm that all requested analytical data have been received.

14.4.6 Data Analysis and Reporting

The database management system will have several functions to facilitate the review and analysis of the data. Data entry screens will be developed to assist in the keypunching of field observations. Routines have been developed to permit the user to scan analytical data from a given site for a given media. Several output functions are also available that can be modified, as necessary, for use in the data management system.

A valuable function of the data management system will be the generation of tables of analytical results from the project databases. The capability of the data management system to directly produce tables reduces redundant manual entry of analytical results during report preparation and precludes transcription errors that may occur otherwise. This data management system function creates a digital file of analytical results and qualifiers for a given media. The file can then be processed into a table of rows and columns that can be transferred to processing software (e.g., Microsoft® Excel) for final formatting and addition of titles and notes. Tables of analytical data will be produced as part of data interpretation tasks and the reporting of data to required entities.

The data management system also has the capability of producing a digital file of select parameters that exists in one or more of the databases. This type of custom function is accomplished on an interactive basis and is best used for transferring select information into a number of analysis tools, such as statistical or graphing programs.

15 Assessment and Response Actions

Performance and systems audits will be completed in the field and the laboratory during the sampling, as described below.

15.1 Field Audits

Field performance audit summaries will contain an evaluation of field activities to verify that the activities are performed according to established protocols. Field performance audits may be performed by the Environmental Consultant/Contractor, NYSDEC, or NYSEG. The auditor(s) will review field reports and communicate concerns, as appropriate. The observations made during field performance audits and any recommended changes/deviations to the field procedures will be recorded and documented.

In addition, systems audits comparing scheduled QA/QC activities from this GQAPP with actual QA/QC activities completed will be performed. The PM and QAC may periodically confirm that work is being performed consistent with this GQAPP.

15.2 Laboratory Audits

Internal audits are conducted by the laboratory consistent with their Quality Systems Manual. As part of the audit, the overall performance of the laboratory staff is evaluated and compared to the performance criteria outlined in the laboratory Quality Systems Manual and SOPs. The results of the audits are summarized and issued to each department supervisor, the laboratory manager, and the laboratory director. A systems audit of each laboratory may be performed by the Environmental Consultant's/Contractor's QAC to determine whether the procedures implemented by each laboratory are in compliance with the Quality Systems Manual and SOPs.

As a participant in state and federal certification programs, the laboratory is audited by representatives of the regulatory agency issuing certification. Audits are usually conducted on an annual basis and focus on laboratory conformance to the specific program protocols for which the laboratory is seeking certification. The auditor reviews sample handling and tracking documentation, analytical methodologies, analytical supportive documentation, and final reports. The audit findings are formally documented and submitted to the laboratory for corrective action, if necessary.

15.3 Corrective Action

Corrective actions are required when field or analytical data are not within the objectives specified in this GQAPP, the GFSP, or the SMP. Corrective actions include procedures to promptly investigate, document, evaluate, and correct data collection and/or analytical procedures. Field and laboratory corrective action procedures for the assessment are described below.

15.3.1 Field Procedures

If, during field work, a condition is noted by the field crew that would have an adverse effect on data quality, corrective action will be taken so as not to repeat this condition. Condition identification, cause, and corrective action implemented will be documented on a Corrective Action Form. The QAC or his designee will be responsible for follow-up and acceptance of corrective actions.

Examples of situations that would require corrective actions are provided below:

- Protocols as defined by the GQAPP have not been followed.
- Equipment is not in proper working order or properly calibrated.
- QC requirements have not been met.
- Issues resulting from performance or systems audits.

Project personnel will continuously monitor ongoing work performance in the normal course of daily responsibilities.

15.3.2 Laboratory Procedures

In the laboratory, when a condition is noted to have an adverse effect on data quality, corrective action will be taken so as not to repeat this condition. Condition identification, cause, and corrective action to be taken will be documented, and reported to the Environmental Consultant.

Corrective action may be initiated, at a minimum, under the following conditions:

- Protocols as defined by this GQAPP have not been followed.
- Predetermined data acceptance standards are not obtained.
- Equipment is not in proper working order or calibrated.
- Sample and test results are not completely traceable.
- QC requirements have not been met.
- Issues resulting from performance or systems audits.

Laboratory personnel will continuously monitor ongoing work performance in the normal course of daily responsibilities. Corrective action will be initiated upon identification of the problem. At whatever level this occurs (analyst, supervisor, data review, or QC), it will be brought to the attention of the Laboratory QA Manager and, ultimately, the Laboratory Director. Final approval of any action deemed necessary is subject to the approval of the Laboratory Director. If previously reported data are affected by a situation requiring correction or if the corrective action impacts a project budget or schedule, the action will directly involve the PM (and QAC).

Corrective action deemed necessary based on system or performance audits, the analytical results of split samples, or the results of data review will be implemented. The corrective action may include sample re-extraction, re-preparation, reanalysis, cleanup, dilution, matrix modification, or other activities deemed necessary to assure usable analytical data.

16 Reports to Management

The QAC will audit the implementation of the GQAPP. Each project component will result in some type of QA report or, by its absence, will indicate that no significant QA or QC deviations occurred. Items that may result in a QA report include:

- Changes or updates to the GQAPP.
- Deviations from GQAPP or work plan specification.
- Results of system and performance audits.
- Significant QA/QC problems, recommended solutions, and results of corrective actions.
- Limitations on the use of measurement data.

16.1 Internal Reporting

The analytical laboratory will submit analytical reports to the Environmental Consultant for review. Supporting data (i.e., historic data, related field and/or laboratory data) will also be reviewed to evaluate data quality, as appropriate. The QAC will incorporate results of the data validation reports and assessments of data usability into a DUSR.

16.2 Field Reports

Reporting of the quality of field sample collection and field measurements will be the responsibility of the Field Supervisor or designee. Information from the field logbooks will be compiled, and a summary report on field activity QA will be prepared for the project file.

16.3 Laboratory Reports

The laboratory will maintain QA records related to analyses, QC, and corrective action. This information will be made available to the PM upon request. Routine reporting will include documenting all internal QC checks performed for this project.

17 Data Reduction and Review

After field and laboratory data are obtained, the data will be subject to the following:

- Review.
- Data validation.
- Reduction, or manipulation mathematically or otherwise into meaningful and useful forms.
- Organization, interpretation, and reporting.

17.1 Field Data Reduction and Review

17.1.1 Field Data Reduction

Information collected in the field through visual observation, manual measurement, and/or field instrumentation will be recorded in field notebooks, log sheets, and/or on forms. Such data will be reviewed for adherence to this GQAPP and for consistency. Any concerns identified as a result of this review will be discussed with the field personnel, corrected if possible, and, as necessary, incorporated into the data evaluation process.

17.1.2 Field Data Review

Field data calculations, transfers, and interpretations will be conducted by the field personnel and reviewed for accuracy. Logs and documents will be checked for:

- General completeness.
- Readability.
- Usage of appropriate procedures.
- Appropriate instrument calibration and maintenance.
- Reasonableness in comparison to present and past data collected.
- Correct sample locations.
- Correct calculations and interpretations.

17.1.3 Field Data Reporting

Where appropriate, field data forms and calculations will be processed and included in appendices to the reports. The original field logs, documents, and data reductions will be kept in the project file.

17.2 Laboratory Data Reduction and Review

17.2.1 Laboratory Data Reduction

The calculations used for data reduction will be in accordance with the analytical methods. Whenever possible, analytical data will be transferred directly from the instrument to a computerized data system. Raw data will be entered into permanently bound laboratory notebooks. The data entered must be sufficient to document all factors used to arrive at the reported value.

Concentration calculations for chromatographic analyses will be based on response factors. Quantitation will be performed using internal standards for GC/MS methodology. Concentration calculations for metals and wet chemistry, if appropriate, will be based on linear regression.

Unless otherwise specified, all values will be reported uncorrected for blank contamination.

17.2.2 Laboratory Data Review

Data will be subject to multi-level review by the laboratory. The group leader will review all data reports prior to release for final data report generation. The QA Manager will review the final data reports, and the Laboratory Director will review a cross section of the final data reports prior to release.

If discrepancies or deficiencies are present in the analytical results, corrective action will be taken. Deficiencies discovered as a result of internal data review, as well as the corrective actions to be used to rectify the situation, will be documented on a Corrective Action Form. This form will be submitted to the PM and QAC.

18 Data Verification and Validation

For samples where a Category B report is requested, data validation will be conducted as outlined in USEPA Guidance on Environmental Data Verification and Data Validation USEPA QA/G-8 (USEPA, 2002b).

Data validation is a standardized review process for judging analytical quality and usefulness of a discrete set of chemical data and is necessary to ensure that data of known and documented quality are used in making environmental decisions that meet the DQOs of the Site. Data validation is a systematic process that compares a body of data to the requirements in a set of documented acceptance criteria to ascertain its completeness, correctness, and consistency. The data validation personnel will work independently from all other project teams. Data validators will not be involved in sampling or data analysis/reporting for the end user.

All data generated will be validated using the most recent versions of:

- The USEPA National Functional Guidelines for Organic Superfund Methods Data Review, EPA 540-R-2017-002, January 2017 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, OSWER 9240.1-05A-P, October 1999, as appropriate).
- The USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, EPA 540-R-2017-001, January 2017 (with reference to the historical USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, OSWER 9240.1-45, October 2004, as appropriate).
- USEPA SW-846 methodology.
- NYSDEC ASP (NYSDEC, 2005)
- QA/QC and reporting deliverables requirements for data validation available at the time of project initiation, where appropriate.

These procedures and criteria may be modified, as necessary, to address project-specific and method-specific criteria, control limits and procedures. Data validation will consist of data screening, checking, reviewing, editing and interpretation to document analytical data quality and to determine whether the quality is sufficient to meet the DQOs.

The data validator will verify that reduction of laboratory measurements and laboratory reporting of analytical parameters is in accordance with the procedures specified for each analytical method and/or as specified in this GQAPP. Any deviations from the analytical method or any special reporting requirement apart from those specified in this GQAPP will be detailed on COC forms.

Upon receipt of laboratory data, the following procedures will be executed by the data validator:

- Evaluate completeness of data package.
- Verify that field COC forms were completed and that samples were handled properly.
- Verify that holding times were met for each parameter. Holding time exceedances, if they occur, will be documented. Data for all samples exceeding holding time requirements will be flagged as either estimated or rejected. The decision as to which qualifier is more appropriate will be made on a case-by-case basis.
- Verify that parameters were analyzed according to the methods specified.
- Review QA/QC data (i.e., confirm that duplicates, blanks and LCS were analyzed for the required number of samples, as specified in the method, and verify that duplicate RPDs are acceptable).

- Investigate anomalies identified during review. When anomalies are identified, they will be discussed with the PM and/or Laboratory Manager, as appropriate.

Deficiencies discovered as a result of the data review, as well as the corrective actions implemented in response, will be documented and submitted in the form of a written report addressing the following topics, as applicable to each method:

- Assessment of the data package.
- Description of any protocol deviations.
- Failures to reconcile reported and/or raw data.
- Assessment of any compromised data.
- Laboratory case narrative.
- Overall appraisal of the analytical data.
- Table of site name, sample quantities, data submitted to the laboratory, year of protocol used, matrix, and fractions analyzed.

18.1 Data Verification

It should be noted that qualified results not necessarily invalidate data. The goal to produce the best possible data does not necessarily mean that data must be produced without QC qualifiers. Qualified data can provide useful information.

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 will be qualified with the following codes in accordance with the National Functional Guidelines:

Qualifier	Definition
Concentration Qualifiers (Laboratory Assigned)	
U	The analyte/compound was analyzed for but not detected. The associated value is the compound RL.
B	The analyte/compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect. (Note: laboratory assigned B qualifiers will be removed during data validation in the event that the concentration detected in the sample is greater than five-times the concentration detected in the associated blank.)
J	The analyte/compound was positively identified; however, the associated numerical value is an estimated concentration only.
Quantitation Qualifiers (Laboratory Assigned)	
E	The compound was quantitated above the calibration range.
D	Concentration is based on a diluted sample analysis.
P	The lower of the two values is reported when the percent difference between the results of two GC columns is greater than 40 percent.
Validation Qualifiers	
UJ	The analyte/compound was not detected above the reported sample quantitation limit; however, the reported limit is approximate and may or may not represent the actual RL.

Qualifier	Definition
UB	The analyte/compound is considered non-detect at the listed value due to associated blank contamination (i.e., concentration in the sample is less than five-times the concentration detected in the associated blank).
J	The analyte/compound was positively identified; however, the associated numerical value is an estimated concentration.
R	The sample results are rejected.

Two facts will be noted to all data users:

- The “R” qualifier means that the associated value is unusable. In other words, due to significant 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.
- 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.

Resolution of any issues regarding laboratory performance or deliverables will be handled between the laboratory and the data validator. Suggestions for reanalysis may be made by the QAC at this point.

Data validation reports will be kept in electronic format (e.g., PDF) at the Environmental Consultant’s office.

19 Reconciliation with User Requirements

Data results will be examined to determine the performance that was achieved for each data quality indicator. The performance will then be compared with the project objective and DQOs. Of particular note will be samples at or near action levels. All deviations from objectives will be noted. Additional action may be warranted when performance does not meet performance objectives for critical data. Options for corrective action relating to incomplete information, questionable results, or inconsistent data may include the following:

- Retrieval of missing information.
- Request for additional explanation or clarification.
- Reanalysis of sample from extract (when appropriate).
- Recalculation or reinterpretation of results by the laboratory.

These actions may improve the data quality, reduce uncertainty, and eliminate the need to qualify or reject data.

If these actions do not improve the data quality to an acceptable level, the following additional actions may be taken:

- Extrapolation of missing data from existing data points.
- Use of historical data.
- Evaluation of the critical/non-critical nature of the sample.

If the data gap cannot be resolved by these actions, an evaluation of the data bias and potential for false negatives and positives can be performed. If the resultant uncertainty level is unacceptable, additional sample collection and analysis may be required.

20 References

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USEPA 2017. National Functional Guidelines for Organic Superfund Methods Data Review. EPA-540-R-2017-002. January 2017.

Tables

Table 1a
Parameters, Methods, and Target Quantitation Limits (Soil)
NYSEG
Oneonta Former MGP Site
Oneonta, New York

Analyte	CAS Number	Units	Action Limit[1]	Laboratory MDL[2,3,4]	Laboratory RL[2,3,4]
VOCs (SW-846 8260C)					
1,1,1-Trichloroethane	71-55-6	mg/kg	500	0.000363	0.005
1,1,2,2-Tetrachloroethane	79-34-5	mg/kg	--	0.000811	0.005
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	76-13-1	mg/kg	--	0.00114	0.005
1,1,2-Trichloroethane	79-00-5	mg/kg	--	0.00065	0.005
1,1-Dichloroethane	75-34-3	mg/kg	240	0.00061	0.005
1,1-Dichloroethene	75-35-4	mg/kg	500	0.000612	0.005
1,2,4-Trichlorobenzene	120-82-1	mg/kg	--	0.000304	0.005
1,2-Dibromo-3-chloropropane	96-12-8	mg/kg	--	0.0025	0.005
1,2-Dibromoethane	106-93-4	mg/kg	--	0.000642	0.005
1,2-Dichlorobenzene	95-50-1	mg/kg	500	0.000391	0.005
1,2-Dichloroethane	107-06-2	mg/kg	30	0.000251	0.005
1,2-Dichloropropane	78-87-5	mg/kg	--	0.0025	0.005
1,3-Dichlorobenzene	541-73-1	mg/kg	280	0.000257	0.005
1,4-Dichlorobenzene	106-46-7	mg/kg	130	0.0007	0.005
2-Butanone	78-93-3	mg/kg	500	0.00183	0.025
2-Hexanone	591-78-6	mg/kg	--	0.0025	0.025
4-Methyl-2-pentanone	108-10-1	mg/kg	--	0.00164	0.025
Acetone	67-64-1	mg/kg	500	0.00421	0.025
Benzene	71-43-2	mg/kg	44	0.000245	0.005
Bromodichloromethane	75-27-4	mg/kg	--	0.00067	0.005
Bromoform	75-25-2	mg/kg	--	0.0025	0.005
Bromomethane	74-83-9	mg/kg	--	0.00045	0.005
Carbon disulfide	75-15-0	mg/kg	--	0.0025	0.005
Carbon tetrachloride	56-23-5	mg/kg	22	0.000484	0.005
Chlorobenzene	108-90-7	mg/kg	500	0.00066	0.005
Chloroethane	75-00-3	mg/kg	--	0.00113	0.005
Chloroform	67-66-3	mg/kg	350	0.000309	0.005
Chloromethane	74-87-3	mg/kg	--	0.000302	0.005
cis-1,2-Dichloroethene	156-59-2	mg/kg	500	0.00064	0.005
cis-1,3-Dichloropropene	10061-01-5	mg/kg	--	0.00072	0.005
Cyclohexane	110-82-7	mg/kg	--	0.0007	0.005
Dibromochloromethane	124-48-1	mg/kg	--	0.00064	0.005
Dichlorodifluoromethane	75-71-8	mg/kg	--	0.000413	0.005
Ethylbenzene	100-41-4	mg/kg	390	0.000345	0.005
Isopropylbenzene	98-82-8	mg/kg	--	0.000754	0.005
Methyl acetate	79-20-9	mg/kg	--	0.00302	0.025
Methyl tert-butyl ether	1634-04-4	mg/kg	500	0.000491	0.005
Methylcyclohexane	108-87-2	mg/kg	--	0.00076	0.005
Methylene chloride	75-09-2	mg/kg	500	0.0023	0.005
m,p-Xylene	179601-23-1	mg/kg	500	0.00084	0.01
o-Xylene	95-47-6	mg/kg	500	0.000653	0.005
Styrene	100-42-5	mg/kg	--	0.00025	0.005
Tetrachloroethene	127-18-4	mg/kg	150	0.000671	0.005
Toluene	108-88-3	mg/kg	500	0.000378	0.005
trans-1,2-Dichloroethene	156-60-5	mg/kg	500	0.000516	0.005
trans-1,3-Dichloropropene	10061-02-6	mg/kg	--	0.0022	0.005
Trichloroethene	79-01-6	mg/kg	200	0.0011	0.005
Trichlorofluoromethane	75-69-4	mg/kg	--	0.000473	0.005
Vinyl chloride	75-01-4	mg/kg	13	0.00061	0.005

Table 1a
Parameters, Methods, and Target Quantitation Limits (Soil)
NYSEG
Oneonta Former MGP Site
Oneonta, New York

Analyte	CAS Number	Units	Action Limit[1]	Laboratory MDL[2,3,4]	Laboratory RL[2,3,4]
SVOCs (SW-846 8270D)					
1,1'-Biphenyl	92-52-4	mg/kg	--	0.025	0.17
2,2-Oxybis(1-chloropropane)	108-60-1	mg/kg	--	0.034	0.17
2,4,5-Trichlorophenol	95-95-4	mg/kg	--	0.046	0.17
2,4,6-Trichlorophenol	88-06-2	mg/kg	--	0.034	0.17
2,4-Dichlorophenol	120-83-2	mg/kg	--	0.018	0.17
2,4-Dimethylphenol	105-67-9	mg/kg	--	0.041	0.17
2,4-Dinitrophenol	51-28-5	mg/kg	--	0.784	1.66
2,4-Dinitrotoluene	121-14-2	mg/kg	--	0.035	0.17
2,6-Dinitrotoluene	606-20-2	mg/kg	--	0.02	0.17
2-Chloronaphthalene	91-58-7	mg/kg	--	0.028	0.17
2-Chlorophenol	95-57-8	mg/kg	--	0.031	0.33
2-Methylnaphthalene	91-57-6	mg/kg	--	0.034	0.17
2-Methylphenol	95-48-7	mg/kg	500	0.02	0.17
2-Nitroaniline	88-74-4	mg/kg	--	0.025	0.33
2-Nitrophenol	88-75-5	mg/kg	--	0.048	0.17
3,3'-Dichlorobenzidine	91-94-1	mg/kg	--	0.2	0.33
3-Nitroaniline	99-09-2	mg/kg	--	0.047	0.33
4,6-Dinitro-2-methylphenol	534-52-1	mg/kg	--	0.17	0.33
4-Bromophenyl-phenylether	101-55-3	mg/kg	--	0.024	0.17
4-Chloro-3-methylphenol	59-50-7	mg/kg	--	0.042	0.17
4-Chloroaniline	106-47-8	mg/kg	--	0.042	0.17
4-Chlorophenyl-phenylether	7005-72-3	mg/kg	--	0.021	0.17
3&4-Methylphenol	108-39-4 / 106-44-5	mg/kg	500	0.02	0.33
4-Nitroaniline	100-01-6	mg/kg	--	0.089	0.33
4-Nitrophenol	100-02-7	mg/kg	--	0.119	0.33
Acenaphthene	83-32-9	mg/kg	500	0.025	0.17
Acenaphthylene	208-96-8	mg/kg	500	0.022	0.17
Acetophenone	98-86-2	mg/kg	--	0.023	0.17
Anthracene	120-12-7	mg/kg	500	0.042	0.17
Atrazine	1912-24-9	mg/kg	--	0.059	0.17
Benzaldehyde	100-52-7	mg/kg	--	0.135	0.17
Benzo(a)anthracene	56-55-3	mg/kg	5.6	0.017	0.17
Benzo(a)pyrene	50-32-8	mg/kg	1.0	0.025	0.17
Benzo(b)fluoranthene	205-99-2	mg/kg	5.6	0.027	0.17
Benzo(g,h,i)perylene	191-24-2	mg/kg	500	0.018	0.17
Benzo(k)fluoranthene	207-08-9	mg/kg	56	0.022	0.17
bis(2-Chloroethoxy)methane	111-91-1	mg/kg	--	0.036	0.17
bis(2-Chloroethyl)ether	111-44-4	mg/kg	--	0.022	0.17
bis(2-Ethylhexyl)phthalate	117-81-7	mg/kg	--	0.058	0.17
Butylbenzylphthalate	85-68-7	mg/kg	--	0.028	0.17
Caprolactam	105-60-2	mg/kg	--	0.051	0.17
Carbazole	86-74-8	mg/kg	--	0.02	0.17
Chrysene	218-01-9	mg/kg	56	0.038	0.17
Dibenzo(a,h)anthracene	53-70-3	mg/kg	0.6	0.03	0.17
Dibenzofuran	132-64-9	mg/kg	350	0.02	0.17
Diethylphthalate	84-66-2	mg/kg	--	0.022	0.17
Dimethylphthalate	131-11-3	mg/kg	--	0.02	0.17
Di-n-butylphthalate	84-74-2	mg/kg	--	0.029	0.17
Di-n-octylphthalate	117-84-0	mg/kg	--	0.02	0.17
Fluoranthene	206-44-0	mg/kg	500	0.018	0.17
Fluorene	86-73-7	mg/kg	500	0.02	0.17
Hexachlorobenzene	118-74-1	mg/kg	6.0	0.023	0.17
Hexachlorobutadiene	87-68-3	mg/kg	--	0.025	0.17
Hexachlorocyclopentadiene	77-47-4	mg/kg	--	0.023	0.17

Table 1a
Parameters, Methods, and Target Quantitation Limits (Soil)
NYSEG
Oneonta Former MGP Site
Oneonta, New York

Analyte	CAS Number	Units	Action Limit[1]	Laboratory MDL[2,3,4]	Laboratory RL[2,3,4]
Hexachloroethane	67-72-1	mg/kg	--	0.022	0.17
Indeno(1,2,3-cd)pyrene	193-39-5	mg/kg	5.6	0.021	0.17
Isophorone	78-59-1	mg/kg	--	0.036	0.17
Naphthalene	91-20-3	mg/kg	500	0.022	0.17
Nitrobenzene	98-95-3	mg/kg	--	0.019	0.17
N-Nitrosodiphenylamine	86-30-6	mg/kg	--	0.138	0.17
N-Nitroso-di-n-propylamine	621-64-7	mg/kg	--	0.029	0.17
Pentachlorophenol	87-86-5	mg/kg	6.7	0.17	0.33
Phenanthrene	85-01-8	mg/kg	500	0.025	0.17
Phenol	108-95-2	mg/kg	500	0.026	0.17
Pyrene	129-00-0	mg/kg	500	0.02	0.17
PCBs (SW-846 8082A)					
Aroclor-1016	12674-11-2	mg/kg	--	0.0489	0.25
Aroclor-1221	11104-28-2	mg/kg	--	0.0489	0.25
Aroclor-1232	11141-16-5	mg/kg	--	0.0489	0.25
Aroclor-1242	53469-21-9	mg/kg	--	0.0489	0.25
Aroclor-1248	12672-29-6	mg/kg	--	0.0489	0.25
Aroclor-1254	11097-69-1	mg/kg	--	0.117	0.25
Aroclor-1260	11096-82-5	mg/kg	--	0.117	0.25
Total PCBs	1336-36-3	mg/kg	1.0	--	--
Pesticides (SW-846 8081B)					
4,4'-DDD	72-54-8	mg/kg	92	0.000324	0.00167
4,4'-DDE	72-55-9	mg/kg	62	0.00035	0.00167
4,4'-DDT	50-29-3	mg/kg	47	0.00039	0.00167
Aldrin	309-00-2	mg/kg	0.7	0.00041	0.00167
alpha-BHC	319-84-6	mg/kg	3.4	0.0003	0.00167
alpha-Chlordane	5103-71-9	mg/kg	24	0.00083	0.00167
beta-BHC	319-85-7	mg/kg	3.0	0.0003	0.00167
delta-BHC	319-86-8	mg/kg	500	0.00031	0.00167
Dieldrin	60-57-1	mg/kg	1.4	0.0004	0.00167
Endosulfan I	959-8-8	mg/kg	200	0.00032	0.00167
Endosulfan II	33213-65-9	mg/kg	200	0.0003	0.00167
Endosulfan sulfate	1031-07-8	mg/kg	200	0.000311	0.00167
Endrin	72-20-8	mg/kg	89	0.00033	0.00167
Endrin aldehyde	7421-93-4	mg/kg	--	0.000426	0.00167
Endrin ketone	53494-70-5	mg/kg	--	0.00041	0.00167
gamma-BHC (Lindane)	58-89-9	mg/kg	9.2	0.000305	0.00167
gamma-Chlordane	5103-74-2	mg/kg	--	0.00053	0.00167
Heptachlor	76-44-8	mg/kg	150	0.000361	0.00167
Heptachlor epoxide	1024-57-3	mg/kg	--	0.00043	0.00167
Methoxychlor	72-43-5	mg/kg	--	0.00034	0.00167
Toxaphene	8001-35-2	mg/kg	--	0.0097	0.0167
Herbicides (SW-846 8151A)					
2,4-D	94-75-7	mg/kg	--	0.0105	0.0167
2,4,5-TP (Silvex)	93-72-1	mg/kg	500	0.006	0.0167
Metals (SW-846 6010C/7471B)					
Aluminum	7429-90-5	mg/kg	--	4,400	10,000
Antimony	7440-36-0	mg/kg	--	400	15,000
Arsenic	7440-38-2	mg/kg	16	400	2,000
Barium	7440-39-3	mg/kg	400	110	500
Beryllium	7440-41-7	mg/kg	590	28	200
Cadmium	7440-43-9	mg/kg	9.3	30	200
Calcium	7440-70-2	mg/kg	--	3,300	50,000
Chromium	7440-47-3	mg/kg	400	200	500
Cobalt	7440-48-4	mg/kg	--	50	500

Table 1a
Parameters, Methods, and Target Quantitation Limits (Soil)
NYSEG
Oneonta Former MGP Site
Oneonta, New York

Analyte	CAS Number	Units	Action Limit[1]	Laboratory MDL[2,3,4]	Laboratory RL[2,3,4]
Copper	7440-50-8	mg/kg	270	210	1,000
Iron	7439-89-6	mg/kg	--	3,500	10,000
Lead	7439-92-1	mg/kg	1,000	240	1,000
Magnesium	7439-95-4	mg/kg	--	927	20,000
Manganese	7439-96-5	mg/kg	10,000	32	200
Nickel	7440-02-0	mg/kg	310	230	5,000
Potassium	7440-09-7	mg/kg	--	20,000	30,000
Selenium	7782-49-2	mg/kg	1,500	400	4,000
Silver	7440-22-4	mg/kg	1,500	200	600
Sodium	7440-23-5	mg/kg	--	13,000	140,000
Thallium	7440-28-0	mg/kg	--	300	6,000
Vanadium	7440-62-2	mg/kg	--	110	500
Zinc	7440-66-6	mg/kg	10,000	0.64	2
Mercury	7439-97-6	mg/kg	3	0.0081	0.02
General Chemistry					
Cyanide (SW-846 9012B)	57-12-5	mg/kg	27	0.483	1.0

Notes:

[1] 6 NYCRR Part 375 Resticted Use Soil Cleanup Objectives for Protection of Public Health - Commerical Use, NYSDEC, December 2006. "NS" indicates that there is no criteria listed for the analyte. Criteria is applicable to Imported Backfill samples only.

[2] Concentrations detected less than the reporting limit but greater than the method detection limit must be reported with the appropriate qualifier.

[3] The laboratory limits were provided by Eurofins TestAmerica are current as of the writing of the QAPP. The samples will be reported using the current limits at the time of the analysis.

[4] The target reporting limits are based on wet weight. The actual reporting limits will vary based on sample weight and moisture content.

Abbreviations and Acronyms

-- = not applicable
MDL = method detection limit
mg/kg = micrograms per kilogram
PCB = polychlorinated biphenyls
RL = reporting limit
SVOCs = semivolatile organic compounds
VOCs = volatile organic compounds

Table 1b
Parameters, Methods, and Target Quantitation Limits (Water)
NYSEG
Oneonta Former MGP Site
Oneonta, New York

Analyte	CAS Number	Units	Action Limit[1,2]	Laboratory MDL[3,4]	Laboratory RL[3,4]
BTEX (SW-846 8260C)					
Benzene	71-43-2	ug/L	500	0.41	1.00
Ethylbenzene	100-41-4	ug/L	--	0.74	1.00
Toluene	108-88-3	ug/L	--	0.51	1.00
Xylene, Total	1330-20-7	ug/L	--	0.66	2.00
PAHs (SW-846 8270D)					
1-Methylnaphthalene	90-12-0	ug/L	--	0.73	5.00
2-Methylnaphthalene	91-57-6	ug/L	--	0.60	5.00
Acenaphthene	83-32-9	ug/L	--	0.41	5.00
Acenaphthylene	208-96-8	ug/L	--	0.38	5.00
Anthracene	120-12-7	ug/L	--	0.28	5.00
Benzo(a)anthracene	56-55-3	ug/L	--	0.36	5.00
Benzo(a)pyrene	50-32-8	ug/L	--	0.47	5.00
Benzo(b)fluoranthene	205-99-2	ug/L	--	0.34	5.00
Benzo(g,h,i)perylene	191-24-2	ug/L	--	0.35	5.00
Benzo(k)fluoranthene	207-08-9	ug/L	--	0.73	5.00
Chrysene	218-01-9	ug/L	--	0.33	5.00
Dibenzo(a,h)anthracene	53-70-3	ug/L	--	0.42	5.00
Fluoranthene	206-44-0	ug/L	--	0.40	5.00
Fluorene	86-73-7	ug/L	--	0.36	5.00
Indeno(1,2,3-cd)pyrene	193-39-5	ug/L	--	0.47	5.00
Naphthalene	91-20-3	ug/L	--	0.76	5.00
Phenanthrene	85-01-8	ug/L	--	0.44	5.00
Pyrene	129-00-0	ug/L	--	0.34	5.00
PFOA/PFOS (USEPA Method 537 Modified)					
6:2 Fluorotelomer sulfonate	27619-97-2	ng/L	100	1.10	5.00
8:2 Fluorotelomer sulfonate	39108-34-4	ng/L	100	0.39	2.00
N-ethyl perfluorooctanesulfonamidoacetic acid	2991-50-6	ng/L	100	0.74	5.00
N-methyl perfluorooctanesulfonamidoacetic acid	2355-31-9	ng/L	100	0.90	5.00
Perfluorobutanesulfonic acid	375-73-5	ng/L	100	0.25	2.00
Perfluorobutanoic acid	375-22-4	ng/L	100	0.89	5.00
Perfluorodecanesulfonic acid	335-77-3	ng/L	100	0.31	2.00
Perfluorodecanoic acid	335-76-2	ng/L	100	0.30	2.00
Perfluorododecanoic acid	307-55-1	ng/L	100	0.39	2.00
Perfluoroheptanesulfonic acid	375-92-8	ng/L	100	0.23	2.00
Perfluoroheptanoic acid	375-85-9	ng/L	100	0.24	2.00
Perfluorohexanesulfonic acid	355-46-4	ng/L	100	0.30	2.00
Perfluorohexanoic acid	307-24-4	ng/L	100	0.45	2.00
Perfluorononanoic acid	375-95-1	ng/L	100	0.28	2.00
Perfluroroctanesulfonamide	754-91-6	ng/L	100	0.58	2.00
Perfluorooctanessulfonic acid	1763-23-1	ng/L	10	0.29	2.00
Perfluorooctanoic acid	335-67-1	ng/L	10	0.42	2.00
Perfluoropentanoic acid	2706-90-3	ng/L	100	0.47	2.00
Perfluorotetradecanoic acid	376-06-7	ng/L	100	0.63	2.00
Perfluorotridecanoic acid	72629-94-8	ng/L	100	0.43	2.00
Perfluoroundecanoic acid	2058-94-8	ng/L	100	0.34	2.00
Total PFAS	NA	ng/L	500	NA	NA

Notes:

[1] BTEX and PAH analyses will be performed in association with Documentation/Reuse Samples. The project action limits are <500 ug/L for Benzene.

[2] Groundwater screening criteria for BTEX and PAHs corresponds to the NYSDEC's Division of Water, Technical and Operational (TOGS) 1.1.1, Class GA Standards. Groundwater screening criterial for PFAS corresponds to NYSDEC's January 2021 guidance.

[3] Concentrations detected less than the reporting limit but greater than the method detection limit must be reported with the appropriate qualifier.

[4] The laboratory limits were provided by Eurofins TestAmerica and are current as of the writing of the QAPP. The samples will be reported using the current limits at the time of the analysis.

Abbreviations and Acronyms

-- = not applicable
BTEX = benzene, toluene, ethylbenzene, and xylenes
MDL = method detection limit
NA = not applicable
PAHs = polynuclear aromatic hydrocarbon compounds
RL = reporting limit
ug/L = micrograms per liter

Table 1c
Parameters, Methods, and Target Quantitation Limits (Solid Waste Characterization)

NYSEG
Oneonta Former MGP Site
Oneonta, New York

Analyte	CAS Number	Units	Action Limit^1	Laboratory MDL ^{2,3}	Laboratory RL^{2,3}
TCLP VOCs (SW-846 1311/8260C)					
Benzene	71-43-2	mg/L	0.5	0.00029	0.001
2-Butanone	78-93-3	mg/L	200	0.00132	0.005
Carbon tetrachloride	56-23-5	mg/L	0.5	0.00027	0.001
Chlorobenzene	108-90-7	mg/L	100	0.00075	0.001
Chloroform	67-66-3	mg/L	6.0	0.00034	0.001
1,2-Dichloroethane	107-06-2	mg/L	0.5	0.00021	0.001
1,1-Dichloroethene	75-35-4	mg/L	0.7	0.00029	0.001
Tetrachloroethene	127-18-4	mg/L	0.7	0.00036	0.001
Trichloroethene	79-01-6	mg/L	0.5	0.00046	0.001
Vinyl chloride	75-01-4	mg/L	0.2	0.00090	0.001
TCLP SVOCs (SW-846 1311/8270D)					
1,4-Dichlorobenzene	106-46-7	mg/L	7.5	0.0018	0.040
2,4-Dinitrotoluene	121-14-2	mg/L	0.13	0.0017	0.020
Hexachlorobenzene	118-74-1	mg/L	0.13	0.0023	0.020
Hexachlorobutadiene	87-68-3	mg/L	0.5	0.0027	0.020
Hexachloroethane	67-72-1	mg/L	3	0.0023	0.020
2-Methylphenol	95-48-7	mg/L	200	0.0016	0.020
3&4-Methylphenol	108-39-4 / 106-44-5	mg/L	200	0.0016	0.040
Nitrobenzene	98-95-3	mg/L	2	0.0011	0.020
Pentachlorophenol	87-86-5	mg/L	100	0.0088	0.040
Pyridine	110-86-1	mg/L	5	0.0016	0.100
2,4,5-Trichlorophenol	95-95-4	mg/L	400	0.0019	0.020
2,4,6-Trichlorophenol	88-06-2	mg/L	2	0.0024	0.020
TCLP Metals (SW-846 1311/6010C/7470A)					
Arsenic	7440-38-2	mg/L	5.0	0.0056	0.015
Barium	7440-39-3	mg/L	100	0.1000	1.00
Cadmium	7440-43-9	mg/L	1.0	0.0005	0.002
Chromium	7440-47-3	mg/L	5.0	0.0100	0.02
Lead	7439-92-1	mg/L	5.0	0.0030	0.02
Mercury	7439-97-6	mg/L	0.2	0.00012	0.0002
Selenium	7782-49-2	mg/L	1.0	0.0087	0.025
Silver	7440-22-4	mg/L	5.0	0.0017	0.006
General Chemistry					
Cyanide (SW-846 9012B)	57-12-5	mg/L	--	0.483	1.0
Reactive Cyanide (SW-846 9014)	57-12-5	mg/L	10 mg/L	10	10
Reactive Sulfide (SW-846 9034)	NA	mg/L	10 mg/L	10	10
Flashpoint (SW-846 1030)	NA	mg/L	> 140 deg F	--	--
pH (SW-846 9045D)	NA	mg/L	< 2 or > 12.5	--	--
PCBs (SW-846 8082A)					
Aroclor-1016	12674-11-2	mg/L	--	0.049	0.25
Aroclor-1221	11104-28-2	mg/L	--	0.049	0.25
Aroclor-1232	11141-16-5	mg/L	--	0.049	0.25
Aroclor-1242	53469-21-9	mg/L	--	0.049	0.25
Aroclor-1248	12672-29-6	mg/L	--	0.049	0.25
Aroclor-1254	11097-69-1	mg/L	--	0.117	0.25
Aroclor-1260	11096-82-5	mg/L	--	0.117	0.25
Total PCBs	1336-36-3	mg/L	50	--	--

Table 1c
Parameters, Methods, and Target Quantitation Limits (Solid Waste Characterization)
NYSEG
Oneonta Former MGP Site
Oneonta, New York

Analyte	CAS Number	Units	Action Limit[1]	Laboratory MDL [2,3]	Laboratory RL[2,3]
TPH (SW-846 8015B)					
TPH-GRO (C6-C10)	NA	mg/L	--	0.330	1.25
TPH-DRO (C10-C28)	NA	mg/L	--	5.0	16.7

Notes:

[1] Waste characterization screening criteria reflect 40 CFR 261, Appendix II, 1993 ed., as amended by 58 FR 46040, August 31, 1993.

[2] Concentrations detected less than the reporting limit but greater than the method detection limit must be reported with the appropriate qualifier.

[3] The laboratory limits were provided by Eurofins TestAmerica are current as of the writing of the QAPP. Samples will be reported using the current limits at the time of the analysis.

Abbreviations and Acronymns

-- = not applicable
DRO = Diesel Range Organics
GRO = Gasoline Range Organics
MDL = method detection limit
mg/kg = milligrams per kilogram
mg/L = milligrams per liter
NA = not applicable
PCB = polychlorinated biphenyls
RL = reporting limit
SVOCs = semivolatile organic compounds
TCLP = toxicity characteristic leaching procedure
VOCs = volatile organic compounds

Table 2
Sample Containers, Preservation, and Holding Times
NYSEG
Oneonta Former MGP Site
Oneonta, New York

Parameter	Method	Bottle Type[1]	Preservation	Holding Time[2]
Soil				
VOCs	SW-846 8260C	3-EnCore™ samplers and 2 oz vial for moisture	Cool to <6°C	48 hours to preservation
			DI Water; Methanol	14 days to analysis
SVOCs	SW-846 8270D	1-8oz glass jar with Teflon®-lined lid	Cool to <6°C	14 days to extraction
				40 days to analysis
PCBs	SW-846 8082A	1-8oz glass jar with Teflon®-lined lid	Cool to <6°C	14 days to extraction
				40 days to analysis
Pesticides	SW-846 8081B	1-8oz glass jar with Teflon®-lined lid	Cool to <6°C	14 days to extraction
				40 days to analysis
Herbicides	SW-846 8151A	1-8oz glass jar with Teflon®-lined lid	Cool to <6°C	14 days to extraction
				40 days to analysis
Metals	SW-846 6010C	1-4oz wide mouth glass jar	Cool to <6°C	180 days to analysis
Mercury	SW-846 7471B			28 days to analysis
Cyanide	SW-846 9012B	1-4oz wide mouth glass jar	Cool to <6°C	14 days to analysis
Water				
BTEX	SW-846 8260C	2-40ml glass vials with Teflon®-lined lid	HCl to pH<2	14 days to analysis
			Cool to <6°C	
PAHs	SW-846 8270D	2-1 L amber glass bottle with Teflon®-lined lid	Cool to <6°C	7 days to extraction
				40 days to analysis
PFAS	USEPA 537 Modified	250 ml plastic bottle	Cool to <6°C	28 days to extraction
				28 days to analysis
Waste Characterization				
TCLP VOCs	SW-846 1311/8260C	1-4oz glass jar with Teflon®-lined lid	Cool to <6°C	14 days to TCLP extraction
				14 days to analysis
TCLP SVOCs	SW-846 1311/8270D	1-8oz glass jar with Teflon®-lined lid	Cool to <6°C	14 days to TCLP extraction
				7 days to extract prep
				40 days to analysis

Table 2
Sample Containers, Preservation, and Holding Times
NYSEG
Oneonta Former MGP Site
Oneonta, New York

Parameter	Method	Bottle Type^1	Preservation	Holding Time^2
TCLP Metals	SW-846 1311/6010C	1-4oz wide mouth glass jar	Cool to <6°C	180 days to TCLP extraction
				180 days to analysis
TCLP Mercury	SW-846 1311/7470A			28 days to TCLP extraction
				28 days to analysis
PCBs	SW-846 8082A	1-8oz glass jar with Teflon®-lined lid	Cool to <6°C	14 days to extraction
				40 days to analysis
TPH-GRO	SW-846 8015	3-EnCore™ samplers and 2 oz vial for moisture	Cool to <6°C	48 hours to preservation
			DI Water; Methanol	14 days to analysis
TPH-DRO	SW-846 8015	1-8oz glass jar with Teflon®-lined lid	Cool to <6°C	14 days to extraction
				40 days to analysis
Cyanide	SW-846 9012B	1-4oz wide mouth glass jar	Cool to <6°C	14 days to analysis
Reactivity (Cyanide)	SW-846 9014	1-4oz wide mouth glass jar	Cool to <6°C	14 days to analysis
Reactivity (Sulfide)	SW-846 9034	1-4oz wide mouth glass jar	Cool to <6°C	7 days to analysis
Flashpoint	SW-846 1030	1-4oz wide mouth glass jar	Cool to <6°C	14 days to analysis
pH	SW-846 9045D	1-4oz wide mouth glass jar	Cool to <6°C	24 hours to analysis

Notes:

[1] The laboratory should be consulted prior to sample collection, as it may be possible to combine sample volume for multiple analyses in one sample container.

[2] All holding times are measured from date of collection. It is imperative that all samples are submitted to the laboratory with ample time for the analysis to be completed within the holding time. Missing a holding time is unacceptable and may result in unusable data if the holding time is missed.

Abbreviations and Acronyms

≤ = less than or equal to
BTEX = benzene, toluene, ethylbenzene, and xylenes
DI = deionized
DRO = diesel range organics
GRO = gasoline range organics
HCl = hydrochloric acid
L = Liter
ml = milliliter
^{o}C = degrees celcius
oz = ounce
PAHs = polynuclear aromatic hydrocarbon compounds
PCB = Polychlorinated Biphenyls
PFAS = Per- and Polyfluoroalkyl Substances
psi = pounds per square inch
SVOCs = semivolatile organic compounds
TCLP = toxicity characteristic leaching procedure
TPH = total petroleum hydrocarbons
VOCs = volatile organic compounds

Table 3
Sample Quantities and Quality Control Frequencies
NYSEG
Oneonta Former MGP Site
Oneonta, New York

Parameter	Field QC Analyses								Laboratory QC Sample					
	Trip Blank		Rinse Blank		Field Blank		Field Duplicate		MS		MSD		Lab Duplicate	
	Freq.	No.	Freq.	No.	Freq.	No.	Freq.	No.	Freq.	No.	Freq.	No.	Freq.	No.
Soil														
VOCs (SW-846 8260C)	1/cooler	TBD	NA	--	NA	--	1/20	TBD	1/20	TBD	1/20	TBD	NA	--
SVOCs (SW-846 8270D)	NA	--	NA	--	NA	--	1/20	TBD	1/20	TBD	1/20	TBD	NA	--
PCBs (SW-846 8082A)	NA	--	NA	--	NA	--	1/20	TBD	1/20	TBD	1/20	TBD	NA	--
Pesticides (SW-846 8081B)	NA	--	NA	--	NA	--	1/20	TBD	1/20	TBD	1/20	TBD	NA	--
Herbicides (SW-846 8151A)	NA	--	NA	--	NA	--	1/20	TBD	1/20	TBD	1/20	TBD	NA	--
Metals (SW-846 6010C)	NA	--	NA	--	NA	--	1/20	TBD	1/20	TBD	NA	--	1/20	TBD
Mercury (SW-846 7471B)	NA	--	NA	--	NA	--	1/20	TBD	1/20	TBD	NA	--	1/20	TBD
Cyanide (SW-846 9012)	NA	--	NA	--	NA	--	1/20	TBD	1/20	TBD	NA	--	1/20	TBD
Water														
BTEX (SW-846 8260C)	1/cooler	TBD	NA	--	NA	--	1/20	TBD	1/20	TBD	1/20	TBD	NA	--
PAHs (SW-846 8270D)	NA	--	NA	--	NA	--	1/20	TBD	1/20	TBD	1/20	TBD	NA	--
PFAS (USEPA 537 Modified)	NA	--	1/20	TBD	1/20	TBD	1/20	TBD	1/20	TBD	1/20	TBD	NA	--
Solid Waste Characterization														
TCLP VOCs (SW-846 1311/8260C)	NA	--	NA	--	NA	--	NA	--	NA	--	NA	--	NA	--
TCLP SVOCs (SW-846 1311/8270D)	NA	--	NA	--	NA	--	NA	--	NA	--	NA	--	NA	--
TCLP Metals (SW-846 1311/6010C)	NA	--	NA	--	NA	--	NA	--	NA	--	NA	--	NA	--
TCLP Mercury (SW-846 1311/7470A)	NA	--	NA	--	NA	--	NA	--	NA	--	NA	--	NA	--
PCBs (SW-846 8082A)	NA	--	NA	--	NA	--	NA	--	NA	--	NA	--	NA	--
TPH-GRO and TPH-DRO (SW-846 8015)	NA	--	NA	--	NA	--	1/20	--	NA	--	NA	--	NA	--
Reactivity (Cyanide) (SW-846 9014)	NA	--	NA	--	NA	--	NA	--	NA	--	NA	--	NA	--
Reactivity (Sulfide) (SW-846 9034)	NA	--	NA	--	NA	--	NA	--	NA	--	NA	--	NA	--
Flashpoint (SW-846 1030)	NA	--	NA	--	NA	--	NA	--	NA	--	NA	--	NA	--
pH (SW-846 9045D)	NA	--	NA	--	NA	--	NA	--	NA	--	NA	--	NA	--

Abbreviations and Acronyms
BTEX = benzene, toluene, ethylbenzene, and xylenes
DRO = diesel range organics
USEPA = United States Environmental Protection Agency
Freq = frequency
GRO = gasoline range organics
MS = matrix Spike
MSD = matrix spike duplicate
NA = not applicable
No. = number
QC = quality control
PAH = polynuclear aromatic hydrocarbons
PCB = polychlorinated biphenyls
PFAS = Per- and Polyfluoroalkyl Substances
SVOCs = semivolatile organic compounds
TBD = to be determined
TCLP = toxicity characteristic leaching procedure
TPH = total petroleum hydrocarbons
VOCs = volatile organic compounds

Table 4
Laboratory Quality Control Limits
NYSEG
Oneonta Former MGP Site
Oneonta, New York

Parameter	Accuracy - Percent Recovery			Precision - Relative Percent Difference		
	Surrogate	MS/MSD	LCS	MS/MSD	Laboratory Duplicate	Field Duplicate
Soil						
VOCs (SW-846 8260C)	60-144	37-146	37-146	30	--	50
SVOCs (SW-846 8270D)	52-130	10-150	10-150	30	--	50
PCBs (SW-846 8082A)	60-174	33-200	51-184	30	--	50
Pesticides (SW-846 8081B)	30-124	27-150	37-133	30	--	50
Herbicides (SW-846 8151A)	28-129	22-140	39-125	30	--	50
Metals (SW-846 6010C)	--	75-125	27-174	--	20	50
Mercury (SW-846 7471B)	--	75-125	51-149	--	20	50
Cyanide (SW-846 9012B)	--	85-115	29-122	--	20	50
TPH-GRO (SW-846 8015)	46-156	41-142	46-129	30	--	--
TPH-DRO (SW-846 8015)	48-125	43-150	63-127	30	--	--
TCLP VOCs (SW-846 1311/8260C)	73-123	57-140	57-140	30	--	--
TCLP SOVCs (SW-846 1311/8270D)	22-148	16-150	10-136	30		--
TCLP Metals (SW-846 6010C)	--	75-125	80-120	30	--	--
TCLP Mercury (SW-846 7470A)	--	80-120	80-120	30	--	--
Reactivity (Cyanide) (SW-846 9014)	--	10-100	10-100	30	--	--
Reactivity (Sulfide) (SW-846 9034)	--	10-100	10-100	30	--	--
Flashpoint (SW-846 1030)	--	--	97-103 °F	--	--	--
pH (SW-846 9045D)	--	--	--	--	±0.10	--
Water						
BTEX (SW-846 8260C)	73-123	55-150	55-150	30	--	35
PAHs (SW-846 8270D)	22-148	16-147	57-150	30	--	35
PFAS (USEPA 537 Modified)	--	--	--	--	--	--
6:2 Fluorotelomer sulfonate	--	40-160	50-150	30	30	--
8:2 Fluorotelomer sulfonate	--	40-160	50-150	30	30	--
N-ethyl perfluorooctanesulfonamidoacetic acid	--	40-160	70-130	20	20	--
N-methyl perfluorooctanesulfonamidoacetic	--	40-160	70-130	20	20	--
Perfluorobutanesulfonic acid	--	40-160	70-130	20	20	--
Perfluorobutanoic acid	--	40-160	50-150	30	30	--
Perfluorodecanesulfonic acid	--	40-160	50-150	30	30	--
Perfluorodecanoic acid	--	40-160	70-130	20	20	--
Perfluorododecanoic acid	--	40-160	70-130	20	20	--
Perfluoroheptanesulfonic acid	--	40-160	50-150	30	30	--
Perfluoroheptanoic acid	--	40-160	70-130	20	20	--
Perfluorohexanesulfonic acid	--	40-160	70-130	20	20	--
Perfluorohexanoic acid	--	40-160	70-130	20	20	--
Perfluorononanoic acid	--	40-160	70-130	20	20	--
Perflurooctanesulfonamide	--	40-160	50-150	30	30	--
Perfluorooctanessulfonic acid	--	40-160	70-130	20	20	--
Perfluorooctanoic acid	--	40-160	70-130	20	20	--
Perfluoropentanoic acid	--	40-160	50-150	30	30	--
Perfluorotetradecanoic acid	--	40-160	70-130	20	20	--
Perfluorotridecanoic acid	--	40-160	70-130	20	20	--
Perfluoroundecanoic acid	--	40-160	70-130	20	20	--

Note:

1. The listed QC limits are based on the laboratory-provided limits at the time of this document. The limits are updated periodically by the laboratory, and the current limits at the time of analysis will be reported.

Abbreviations and Acronyms

BTEX = benzene, toluene, ethylbenzene, and xylenes
DRO = diesel range organics
GRO = gasoline range organics
LCS = laboratory control sample
MS = matrix spike
MSD = matrix spike duplicate
PCB = polychlorinated biphenyls
PFAS = Per- and Polyfluoroalkyl Substances
SVOCs = semivolatile organic compounds
TCLP = toxicity characteristic leaching procedure
TPH = total petroleum hydrocarbons
VOCs = volatile organic compounds

Appendix A

EQuIS Standard Operating Procedure

INTRODUCTION

ARCADIS manages and verifies/validates analytical data generated by commercial analytical laboratories in the EQuIS database (product of Earthsoft, Inc.). All laboratories contracted by ARCADIS or their clients, on a site-by-site basis, may be required to submit electronic data deliverables (EDDs) in addition to the hard copy report. This Standard Operating Procedure (SOP) describes the structure, format, and submission requirements for electronic data deliverables (EDDs) in the EQuIS EFWEDD (Sample, Test, Result, Batch) format.

This document is a general guidance for preparation of the required electronic data and associated quality control information. The structure of the EDD as defined in this document will remain constant unless Earthsoft modifies the database structure. Reference values and requirements for population of additional fields with specific information will not change from project to project.

Modification to reference value lists may NOT be made by the laboratory without authorization from ARCADIS.

Section I provides ARCADIS contact information and the procedure to submit electronic deliverables directly via e-mail. However, all EDDs will be required to be submitted in a final CD compilation for each specific sampling event or as directed by the ARCADIS Project Manager (PM).

Section II outlines the table structures and general requirements of the EDDs. The EDD structure is based on EarthSoft's EFWEDD EDD format. EarthSoft's EDD format has not been changed; however, some 'optional' fields identified in the EarthSoft EDD have been modified to be 'required' in this EDD format. Additional information regarding the EarthSoft products can be found at http://www.earthsoft.com/.

Section III presents some additional explanation and requirements for populating the table structure and population set forth in Section II.

Section IV summarizes the use of the EDP. Each laboratory **MUST** use EDP to check each EDD file set prior to submission to ARCADIS. The EDP Error Report must be submitted with the EDD. ***All errors identified by the EDP routine must be corrected prior to forwarding the files for entry into the EQuIS database. Or approval for submittal with errors must be authorized by ARCADIS.***

I. CONTACT INFORMATION

Laboratories should contact the ARCADIS National Program Lab Managers with questions regarding this document. The contact info is as follows:

Richard J. Murphy, Ph.D.
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630 Plaza Drive, Suite 100
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Dennis.capria@arcadis-us.com

ELECTRONIC LABORATORY DATA CHECKER EDP

Prior to submitting an EDD to ARCADIS, the EarthSoft EDP must be run to check and verify the EDD structure, format and reference value compliance. The EDP report must be submitted for each file with each EDD set. The Data Checker error report, which demonstrates that the EDD files were successfully checked, must be electronically submitted with the four EDD files to ARCADIS.

REFERENCE VALUES

A specific set of values is required to be utilized in populating certain key fields of the EDD. The Reference Value Lists for the EDP will be provided for each ARCADIS subcontracted laboratory. The Reference Value Lists must be utilized as provided. Alterations or additions to the Reference Values are **NOT** allowed **without prior** written authorization by the ARCADIS Data Manager. Electronic mail may be considered written authorization.

ELECTRONIC DATA DELIVERABLE (EDD) SUBMISSION

Prior to submission to ARCADIS, each data file must also be reviewed by the laboratory to ensure that the sample IDs, dates, times and other inter-related information is consistent between all four (4) files and the EDD is complete. All parameters that are subcontracted to other laboratories must be included in the EDD for a specific SDG or Laboratory Project Number. It is not acceptable to submit separate EDDs for subcontract parameters. Manual review of the files may be necessary to complete this review.

It is **IMPERATIVE** that the EDD results match the hard copy results. If the results do not match the lab will correct the error ASAP at no additional charge. This includes issues involving various rounding routines for different electronic data management programs within the laboratory (i.e. LIMS vs. EPA CLP). Significant figures must also match hard copy and be consistent from one sampling event to the next. Reporting limits must be consistent between events as well and must be in compliance with the Laboratory Task Order or Project Statement of Work. There may be instances where diluted surrogates and unrecovered spike compounds will require population of the EDD with numeric values in lieu of data flags in the hard copy report. The ARCADIS Data Manager will provide project specific guidance for these conditions. Adherence to the SOP requirements for population of spike/surrogate recovery and RPD fields is required to allow electronic validation of the data.

The EDP Reports for each file must be submitted with the 4 files of the actual EDD.

Laboratories must submit EDDs via e-mail for verification of compatibility and completeness to the assigned ARCADIS Data Manager for the project.

The subject line of this e-mail must include the following text:

[Facility-Code] [Laboratory Project/Log/SDG Number] - EDD Submission

The e-mail should also include the laboratory contact name and phone number.

EDDs must be submitted via e-mail prior to or at the same time the final hard copy document is delivered. ARCADIS may review the EDDs prior to requesting final submittal on CD. EDDs will be returned to the laboratory for modifications until the files can be successfully imported into the EQuIS Project Database and Electronic Data Validation can be performed without field population errors. Any revisions to the EDD will be required within 24 hours of notification to the laboratory regarding observed problems with the EDD. When the EDD is acceptable to the ARCADIS Data Manager and Project Manager, a CD containing all final versions of the EDD should be submitted to ARCADIS for archiving.

Invoices for analytical work will not be approved for payment until the final EDD revisions are acceptable.

II. ELECTRONIC DELIVERABLE DATA FORMAT

This section identifies the structure and format requirements for EQuIS EFWEDD EDDs submitted by all laboratories to ARCADIS. Specific field definitions are presented for each of the four files. Laboratories should review the unique requirements for these fields. The format population and adherence to the criteria are mandatory. Data are electronically validated and errors are quickly identifiable if the EDD is incorrect.

GENERAL FORMAT REQUIREMENTS

All laboratory data must be saved as an ASCII file format using the following standard format. Each subcontracting laboratory's data must be incorporated into the primary laboratory's EDD.

Each data field must be either separated by tabs or enclosed in double quotes (") and separated by commas. Data fields that do not contain information may be represented by two commas. Maximum length of text fields is indicated in the parentheses. If the input information is less than the maximum field length, **DO NOT ADD** spaces to account for the difference.

Each record must be terminated with a carriage return/line feed (i.e., standard DOS text file). The file can be produced using any software with the capability to create ASCII files.

THE LABORATORY SHALL LEAVE THE HEADERS IN EACH ASCII FILE TO ASSIST IN REVIEW AND RESOLUTION OF ERRORS.

Four files are required for each SDG or Laboratory Project Number: one each for samples, tests, results, and batches. Each file must be saved as a Tab Delimited or Comma Separated file.

Enterprise EDD File Naming Conventions

EDD packages must be named using a specific naming convention. An EDD Package consists of a .zip file containing the text (.txt) EDDs and a User Certificate. The zip file and text file names must contain the specific elements listed below under file naming conventions, separated by a period. A User Certificate file will be supplied to the lab by Arcadis for inclusion in the zip file. Please include in the subject line of emailed EDD submissions the facility code and Sample Delivery Group (SDG) number.

File Naming Conventions:

ZIP File Name = Unique ID.Facility Code.Format Name.zip
Text File EDDs Name = Unique ID.EDD Section Name.txt

Unique ID = SDG number.
Facility Code = The facility code (i.e., Site Name from ENFOS)
Format Name = The EQuIS EDD format name (e.g., ESBasic, EFWEDD, etc.).
EDD Section Name = The name of the section within the EDD (e.g. EFW2FSample, EFW2LabTST, etc.).

For example, ZIP File Name = "2009001.BP-99999.EFWEDD.zip" will contain the following files: "2009001.EFW2FSample.txt", "2009001.EFW2LabTST.txt", “2009001.EFW2LabRES.txt", '2009001.EFW2LabBCH.txt' and "pfoos.usr".

Package re-submittal

In order to re-submit corrected EDDs, the .zip file and text (.txt) EDDs must each be renamed. If the example EDD package above were to be re-submitted it would have ZIP File Name = "2009001B.BP-99999.EFWEDD.zip" containing "2009001B.EFW2FSample.txt", "2009001B.EFW2LabTST.txt", “2009001B.EFW2LabRES.txt", '2009001B.EFW2LabBCH.txt' and "pfoos.usr". Note that a “B” has been appended to the SDG name in both the zip file name and each of the text file names. A subsequent re-submittal of the same SDG would require that a C be appended and so on.

Referential integrity is enforced between tables (e.g. sys_sample_code present in the result, batch, and test tables must also be present in the sample table). For example, a data record with a specific sys_sample_code found in the result table, but not in the sample table, will cause and error in the Data Import Module and the file will not be allowed to be entered into the database. Dates and times associated with each test must match in the “Test” and “Result” files or the database will not allow entry of the entire file.

Reference values must be adhered to for a variety of fields as identified in the Reference Value list and described in the following table format requirements.

FORMAT DETAILS

The following four sections provide a detailed summary and the specific layout for each field required in each of the four (4) tables of the EDD. The ARCADIS EDD has been derived from the EarthSoft EFWEDD EDD.

Date is reported as MM/DD/YY (month/day/year) and time as HH:MM (hour:minute). Time must be reported in 24-hour (military) format (3:30 p.m. = 15:30 and 8:30 AM = 08:30 not 8:30). **NOTE:** Make certain that the LIMS systems format the date and time the same way for all files.

The columns in the following 4 tables relate to:

“Number” Column in Tables = Column of EDD table

“Attribute Name” = Column Name
PK after attribute indicates this is a primary key within Access for the table.

“Column Data” Type = Text or Numeric values required. Parenthetical number indicates total allowable number of characters in the field.

“Required” Column:

> The column titled 'Required' will contain the text 'Yes' if the field is required to be populated by the laboratory. In addition, a “condition” is added to indicate additional information applying to population of the associated field. The first number of the condition relates to the table in which the condition applies, i.e. 1 is the Sample File, 2 is the Test File, 3 is the Result File, and 4 is the Batch File. Conditions apply as follows:

Condition	Table	Description
0	ALL	Field always required
1-1	SAMPLE	Field required for field samples only not required for laboratory samples
1-2	SAMPLE	Field required (parent_sample_code) for **laboratory** QC samples that have 'parents'
1-3	SAMPLE	Field not required for field samples
2-1	TEST	Field required if applicable for specific test
3-1	RESULT	Field required (result_value) for detected analytes only (TRG or TICs). Must be NULL if non-detect or surrogates, internal standards or spiked compounds
3-2	RESULT	Field required if available or appropriate for result
3-3	RESULT	Field required for matrix spikes or matrix spike duplicates (NOT required for surrogate compounds or LCS samples where the original concentration is assumed to be zero).
3-4	RESULT	Field required for surrogate compounds, LCS, Blank Spikes, Matrix Spikes, and Internal Standards.
3-5	RESULT	Field required for LCS duplicates, Blank Spike Duplicates, Matrix Spike Duplicates, Lab Replicates
3-6	RESULT	Field required for LCSD, BSD, MSD, and Lab duplicate samples
3-7	RESULT	Field required for surrogates and spike compounds
4-1	BATCH	Field required if available or appropriate for result

“REQUIRED”:

“YES” = Required data if applicable

“NO” = Optional information unless otherwise directed by ARCADIS Data Manager or preferred for insertion by lab except where lab is specifically directed to leave the field Null.

Parent Sample Definition

Parent Samples are base samples for duplicates or spikes. i.e. original field samples used for matrix spikes or field sample used for Lab Duplicate/Replicate. A Matrix Spike is not the Parent Sample of the Matrix Spike Duplicate.

POPULATING SPIKE FIELDS

SURROGATES: surrogate recoveries are to be populated in qc_spike_added, qc_spike_measure, and qc_spike_recovery fields. Surrogates are analyte type = SUR. Control limits for surrogate recoveries must also be populated.

INTERNAL STANDARDS: internal standard values are to be populated in qc_spike_added, qc_spike_measure, and qc_spike_recovery fields. Internal Standards are analyte type = IS.

LCS, BS, and MS COMPOUNDS: recoveries are to be populated in qc_spike_added, qc_spike_measured, and qc_spike_recovery fields. Compounds spiked to evaluate method accuracy are analyte type = SC. Control limits for spike recoveries must also be populated.

LCSD, BD, AND MSD COMPOUNDS: recoveries are to be populated in qc_dup_spike_added, qc_dup_spike_measured, and qc_dup_spike_recovery fields. The Compounds spiked to evaluate method accuracy are analyte type = SC. Control limits for spike recoveries must also be populated. Additionally, the qc_rpd and qc_rpd_cl fields must be populated for these samples.

LAB REPLICATE SAMPLE DATA: values for lab duplicates/replicates are to be populated in qc_dup_spike_measured field. The qc_rpd and qc_rpd_cl fields must be populated for these samples.

III. ADDITIONAL REQUIREMENTS

SAMPLE TABLE				
Num	**Attribute Name**	**Column Data Type**	**Required**	**Attribute Definition**
1	sys_sample_code	Text(40)	Yes (0)	Unique sample identifier (COC Sample ID). Each sample must have a unique value, including spikes and duplicates. Unique sample identifiers **throughout** the database are an **ABSOLUTE** restriction enforced by EQuIS Chemistry. This unique identifier also carries through to each subsequent sampling event where the samples IDs must be unique for EVERY event of the project (continuing years). Laboratory QC samples must also have unique identifiers between sampling event and from 1 year to the next and between laboratories in the event subcontractors are used. For Matrix Spike, Matrix Spike Duplicate, and Laboratory Duplicates of Field Samples, add the suffix **MS, MSD, and LR**, respectively to create unique identifiers for these types of Lab QC samples.
2	sample_name	Text(30)	No	Additional sample identification information as necessary. Is not required to be unique (i.e., duplicates are OK).

SAMPLE TABLE				
Num	**Attribute Name**	**Column Data Type**	**Required**	**Attribute Definition**
3	sample_matrix_code	Text(10)	Yes (0)	Code, which distinguishes between different types of sample matrix. **Examples**: Soil samples =“SO” , groundwater samples = “WG”. Field Blanks, Trip Blanks, and Rinsate Blanks = “WQ”. Water Method Blanks and liquid matrix spikes = “WQ” Soil Method Blanks and soil/sludge/sediment matrix spikes = “SQ’ This field refers to the sample matrix not the matrix after preparation or extraction. See rt_matrix for the list of valid values.
4	sample_type_code	Text(10)	Yes (0)	Code that distinguishes between different types of samples. **For example**, normal field samples = “N” and laboratory method blank =“LB”. Field QC sample types are Field Duplicates = “FD”, Field Blanks = “FB”, Trip Blanks = “TB”. Lab QC sample types are LCS or Blank Spikes = “BS”, LCSD or BS Duplicates = “BD” and Matrix Spikes = “MS” and Matrix Spike Duplicates = “SD”. See rt_sample_type in Reference Values list of valid values.
5	sample_source	Text(10)	Yes (0)	Must be either "Field" for field samples **or** "Lab" for laboratory QC samples. No other values are allowed. Matrix spikes and lab duplicate/replicate are "Lab" samples, even though the parent is a "Field" and the base sample came from the field. The spiking or splitting for duplication is done in the lab. Field duplicates as submitted to the lab by field sampling teams are “Field”
6	parent_sample_code	Text(40)	Yes (1-2)	The value in the "sys_sample_code" that identifies the sample that was the source of this sample. *For example*, the Matrix Spike and the Matrix Spike Duplicate or Lab Replicates parent_sample_code is the sys_sample_code for the originating field sample that is spiked to generate the MS/MSD or split by the lab for use as the laboratory duplicate. This field is only required in the EDD for laboratory "clone" samples (e.g., matrix spikes and duplicates). Field duplicates are submitted blind to the laboratory, so this field cannot be completed by the laboratory. This field must be blank for samples that have no parent (e.g., normal field samples, method blanks, etc.).
7	sample_delivery_group	Text(10)	Yes (0)	Sample delivery group or laboratory Project/Log Number. All deliverables must reference the SDG or Lab Log-in Number. **This field MUST BE POPULATED**
8	sample_date	Date	Yes (1-1)	Date of sample collection in **MM/DD/YY** format including trip blanks. Must be blank for laboratory samples.
9	sample_time	Time	Yes (1-1)	Time of sample collection in 24-hour (military) **HH:MM** format. 8:45 AM = 08:45 and 3:30 PM = 15:30. Must be blank for laboratory samples.

SAMPLE TABLE				
Num	**Attribute Name**	**Column Data Type**	**Required**	**Attribute Definition**
10	sys_loc_code	Text(20)	No	Sample collection location. To be populated by ARCADIS unless otherwise directed at project initiation.
11	start_depth	Double	No	Beginning depth (top) of soil sample. To be populated by ARCADIS unless otherwise directed at project initiation.
12	end_depth	Double	No	Ending depth (bottom) of soil sample. To be populated by ARCADIS unless otherwise directed at project initiation.
13	depth_unit	Text(15)	No	Unit of measurement for the sample begin and end depths. IRPIMS-style unit of measurement codes (see table X03) are recognized by Chem; other codes may be allowed by the Chem project manager. To be populated by ARCADIS unless otherwise directed at project initiation.
14	chain_of_custody	Text(15)	Yes (1-1)	Chain of custody identifier or number. A single sample may be assigned to only one chain of custody. The COC identifier will be provided by the field sampling team based on conventions established for a specific project.
15	sent_to_lab_date	Date	No	Date sample was sent to lab (in MM/DD/YY format for EDD).
16	sample_receipt_date	Date	Yes (1-1)	Date that sample was received at laboratory in **MM/DD/YY** format. Must be blank for laboratory samples.
17	sampler	Text(30)	No	Name or initials of sampler.
18	sampling_company_code	Text(10)	Yes (1-1)	Name or initials of sampling company (no controlled vocabulary). “ARCADIS” should be entered into this field unless otherwise directed at project initiation.
19	sampling_reason	Text(30)	No	Optional reason for sampling. No controlled vocabulary is enforced.
20	sampling_technique	Text(40)	No (1-1)	To be populated by ARCADIS unless otherwise directed at project initiation. Sampling technique. **For example**, low flow, bailing, MIP, etc… Must be blank for laboratory samples.
21	task_code	Text(10)	No	Code used to identify the task under which the field sample was retrieved.
22	collection_quarter	Text(5)	No	Quarter of the year sample was collected (e.g., "1Q96")
23	composite_yn	Text(1)	No	Boolean field used to indicate whether a sample is a composite sample.
24	composite_desc	Text(255)	No	Description of composite sample (if composite_yn is YES).

SAMPLE TABLE				
Num	**Attribute Name**	**Column Data Type**	**Required**	**Attribute Definition**
25	sample_class	Text(10)	No	Navy sample class code.
26	custom_field_1	Text(255)	No	Custom sample field
27	custom_field_2	Text(255)	No	Custom sample field
28	custom_field_3	Text(255)	No	Custom sample field
29	comment	Text(255)	Yes (0)	Field required to contain the full sample ID code.
30	sample_receipt_time	Text(5)	Yes (1-1)	Time of sample receipt by laboratory in 24-hour (military) **HH:MM** format. 8:45 AM = 08:45 and 3:30 PM = 15:30

TEST TABLE				
Num	**Attribute Name**	**Column Data Type**	**Required**	**Attribute Definition**
1	sys_sample_code (PK)	Text (40)	Yes (0)	SAME AS #1 IN SAMPLE TABLE. This value is used in enforcing referential integrity between tables. Must match sys_sample_code in Sample Table.
2	lab_anl_method_name (PK)	Text (35)	Yes (0)	Laboratory analytic method name or description. See rt_analytic_method in reference value tables for list of valid values.
3	analysis_date (PK)	Date/ Time	Yes (0)	Date of sample analysis in MM/DD/YY format. Refers to initiation of the analysis not prep method date.
4	analysis_time (PK)	Text (5)	Yes (0)	Time of sample analysis in 24-hour (military) HH:MM format. Note that this field, combined with the "analysis_date" field is used to distinguish between reextractions, reanalyses, and dilutions. Please ensure that retests have "analysis_date" and/or analysis_time" different from the original test event (and complete test_type field as appropriate).
5	total_or_dissolved (PK)	Text (1)	Yes (0)	"T" for total metal organic carbon concentration, "D" for dissolved or filtered metal or organic carbon concentration ONLY. USE "N" for organic (or other) constituents for which neither "total" nor "dissolved" is applicable including TDS.
6	column_number (PK)	Text (2)	Yes (2-1)	Applicable for GC or HPLC methods. "1C" for first column analyses, "2C" for second column analyses, or "NA" for analyses where not applicable. If any "2C" tests are listed, then there must be corresponding "1C" tests present also. Laboratories must indicate which of the two columns is to be considered "primary" by entering “Y” in the "reportable_result" field of the result table for the result presented in hard copy reports. It is NOT acceptable to identify both “1C” and “2C” reportable_result as “Y:; one must be “N” if” “1C” and “2C” are provided in the EDD.

TEST TABLE				
Num	**Attribute Name**	**Column Data Type**	**Required**	**Attribute Definition**
7	test_type (PK)	Text (10)	Yes (0)	Type of test. Valid values include "initial", "reextract", and "reanalysis", "dilution" are acceptable. See rt_test_type for al valid values.
8	lab_matrix_code	Text (10)	Yes (0)	Code that distinguishes between different types of matrix analyzed. Soil = "SO"; groundwater = "GW" and TCLP = TCLP as a lab matrix. See rt_matrix for valid values
9	analysis_location	Text (2)	Yes (0)	"LB" for fixed-based laboratory analysis, "FI" for field instrument, "FL" for mobile field laboratory analysis, or.
10	basis	Text (10)	Yes (0)	"Wet" for wet-weight basis; or "Dry" for dry-weight basis. For tests for which this distinction is not applicable use Wet
11	container_id	Text (30)	No	Sample container identifier.
12	dilution_factor	Single	Yes (0)	Test or analytical run dilution factor. **Must** be "1'" if no dilution.
13	Prep_method	Text (35)	Yes (2-1)	Laboratory sample preparation method name. See rt_std_prep_method for valid values.
14	prep_date	Date/ Time	Yes (2-1)	Date of sample preparation in MM/DD/YY format.
15	prep_time	Text (5)	Yes (2-1)	Time of sample preparation in 24-hour (military) HH:MM format
16	leachate_method	Text (15)	Yes (2-1)	Method name, e.g., SW1311 or SW1312. See rt_analytic_method for valid values.
17	leachate_date	Date/ Time	Yes (2-1)	Date of leachate preparation in MM/DD/YY format.
18	leachate_time	Text (5)	Yes (2-1)	Time of leachate preparation in 24-hour (military) HH:MM format.
19	lab_name_code	Text (10)	Yes (0)	Unique identifier of the laboratory reporting results. See rt_subcontractor for valid values.
20	qc_level	Text (10)	NO	Not populated by Lab.
21	lab_sample_ id	Text (20)	Yes (0)	Laboratory sample identifier. A field sample may have more than one laboratory lab_sample_id; however it is limited to only ONE lab_sample_id per method).
22	percent_moisture	Text (5)	Yes (2-1)	Percent moisture of the sample portion used in the specific lab_anl_methd_name test; this value may vary from test to test for any sample. The value must be NUMERIC as "NN.MM", e.g., 70.1% could be reported as "70.1" but not as 70.1%". The database assumes that the number is a "%" and units of measure are not necessary**. NOTE: This field MUST be populated for all soil, sludge, and sediment samples whether or not the value is reported in the hard copy. Use "0" for lab soil QC samples.**
23	subsample_amount	Text (14)	Yes 0)	Amount of sample used for the test. THIS FIELD MUST BE POPULATED
24	subsample_amount_unit	Text (15)	Yes (0)	Unit of measurement for subsample amount. See rt_unit for valid values.

TEST TABLE				
Num	**Attribute Name**	**Column Data Type**	**Required**	**Attribute Definition**
25	analyst_name	Text (30)	Yes (0)	Name or initials of laboratory analyst.
26	instrument_lab	Text (50)	Yes (0)	Instrument identifier.
27	comment	Text (255)	NO	Comments about the test as necessary (Optional).
28	preservative	Text (50)	Yes (2-1)	Indicate preservative or leave blank, if none. **THIS FIELD MUST BE POPULATED IF A PRESERVATIVE WAS IN THE SAMPLE AS RECEIVED FROM THE FIELD OR IF THE SAMPLE WAS PRESERVED BY THE LABORATORY BEFORE PREPARATION AND ANALYSIS.**
29	final_volume	Text (15)	Yes (2-1)	Final amount of extract or digestate.
30	final_volume_unit	Text (15)	Yes (2-1)	Unit of measure for final_volume. See rt_unit for valid values.

RESULT TABLE				
Num	**Attribute Name**	**Column Data Type**	**Required**	**Attribute Definition**
1	sys_sample_code (PK)	Text (40)	Yes (0)	SAME AS #1 IN SAMPLE & TEST TABLES. This value is used in enforcing referential integrity between tables.
2	lab_anl_method_name (PK)	Text (35)	Yes (0)	Laboratory analytic method name. Must be same as lab_anl_method_name in Test File. See rt _analytic_method for valid values.
3	analysis_date (PK)	Date/Time	Yes (0)	Must be the SAME AS #3 IN THE TEST TABLE. This value is used in enforcing referential integrity between tables. Date of sample analysis in MM/DD/YY format.
4	analysis_time (PK)	Text (5)	Yes (0)	Must be the SAME AS #4 IN THE TEST TABLE. This value is used in enforcing referential integrity between tables.
5	total_or_dissolved_ (PK)	Text (1)	Yes (0)	Must be the SAME AS #5 IN THE TEST FILE.
6	column_number (PK)	Text (2)	Yes (3-2)	Must be the SAME AS #6 IN THE TEST FILE
7	test_type (PK)	Text (10)	Yes (0)	Must be the SAME AS #7 IN THE TEST FILE
8	cas_rn (PK)	Text (15)	Yes (0)	Chemical Abstracts Number for the parameter if available. This must be the true CAS # and “not made up”. Where CAS #s are not available, i.e. wet chem. Parameters, identifiers will be provided by ARCADIS project requirements. See notes at end of section for TIC management. See rt_analyte for valid values. The lab is not authorized to add internally developed “CAS #s” for general chemistry parameters, surrogates, internal standards, TICs. CAS#s used for TICs must be available through an outside source such as “Chemfinder”.
9	chemical_name	Text (60)	Yes (0)	Chemical name associated with CAS # in #8. The cas_rn field is the only chemical identifier information actually imported in EQuIS Chemistry.

RESULT TABLE				
Num	**Attribute Name**	**Column Data Type**	**Required**	**Attribute Definition**
10	result_value	Text (20)	Yes (3-1)	Analytical result reported for **“TRG” or “TIC”** result_type **ONLY**. Appropriate and consistent number of significant digits must be entered. **MUST BE BLANK FOR NON-DETECTS.** “SUR”, “IS”, and “SC” results do **NOT** populate this field (populate the QC fields).
11	result_error_delta	Text (20)	Yes (3-2) [Radiochem)	Error range applicable to the result value for radiochemistry results.
12	result_type_code	Text (10)	Yes (0)	Must be either "TRG" for a target or regular results, "TIC" for tentatively identified compounds, "SUR" for surrogates, "IS" for internal standards, or "SC" for spiked compounds.**[LCS, LCSD, MS, MSD, BS, BSD]**
13	reportable_result	Text (10)	Yes (0)	Must be either "**Yes**" for results, which are considered to be reportable, **or** "**No**" for other results. Used to distinguish between multiple results where a sample is retested after dilution or to indicate which of the first or second column result should be considered primary. For re-analyses and dilutions all results must be entered into the database if hard copy data is provided **BUT ONLY ONE RESULT FOR EACH COMPOUND/ANALYTE MAY BE FLAGGED AS REPORTABLE**.
14	detect_flag	Text (2)	Yes (0)	Either "Y" for detected analytes or "N" for non-detects**. MUST be “N” for NON-DETECTS**.
15	lab_qualifiers	Text (7)	Yes (3-2)	Qualifier flags assigned by the laboratory. See rt_qualifier for valid qualifiers that may be used.
16	Organic_ yn	Yes/No	Yes (0)	Must be either "Y" for organic constituents or "N" for inorganic constituents.
17	method_detection_ limit	Text (20)	Yes (0)	Laboratory determined MDL per 40 CFR Part 136, adjusted for dilutions and percent moisture (if it applies).
18	reporting_detection_ limit	Text (20)	Yes (0)	Detection limit that reflects sample analysis conditions including analysis volumes and dilution factors. This should be the laboratory PQL or standard reporting limits
19	quantitation_limit	Text (20)	No	NOT Currently used unless specifically defined for the project.
20	Result_unit	Text (15)	Yes (0)	Units of measure relates to **ALL** results including result_value, qc_original_concentration, qc_spike added, qc_spike_measured, qc_dup_orginal_conc, qc_dup_spike_added, qc_dup_spike_measured. See rt_unit for valid values.
21	detection_limit_unit	Text (15)	Yes (0)	Units of measure for detection limit(s). See rt_unit for valid values.
22	tic_retention_time	Text (8)	Yes (3-2)	Retention time in minutes for tentatively identified compounds (TICs). Populated only for TIC result_type
23	result_comment	Text (255)	NO	MUST BE LEFT BLANK BY THE LAB

RESULT TABLE				
Num	**Attribute Name**	**Column Data Type**	**Required**	**Attribute Definition**
24	qc_original_conc	Text (14)	Yes (3-3)	The concentration of the analyte in the original (unspiked) sample. Populated for matrix spike samples. Not populated where original concentration is assumed to be zero, i.e. LCS or BS samples.
25	qc_spike_added	Text (14)	Yes (3-4)	The concentration of the analyte added to the original sample. Populated for **ALL** Surrogates, and LCS, BS, and MS samples
26	qc_spike_measured	Text (14)	Yes (3-4)	The measured concentration of the analyte. Use zero for spiked compounds that were not detected in the sample. **MUST BE NUMBERIC** even if diluted out or not recovered (use “0” if diluted, matrix interference, elevated concentrations of target compounds, etc.) Populated for **ALL** Surrogates, and LCS, BS, and MS samples
27	qc_spike_recovery	Text (14)	Yes (3-4)	The percent recovery for “SUR” and “SC” results. **MUST BE NUMERIC** even if diluted out or not recovered (use “0” if diluted, matrix interference, elevated concentrations of target compounds, etc.) Report as percentage (e.g., report "120%" as "120"); DO NOT include “%” sign in field. Populated for **ALL** Surrogates, and LCS, BS, and MS samples
28	qc_dup_original conc	Text (14)	Yes (3-5)	The concentration of the analyte in the original (unspiked) sample. Populated for matrix spike duplicate samples. Not populated where original concentration is assumed to be zero, i.e. LCSD or BSD samples.
29	qc_dup_spike_added	Text (14)	Yes (3-5)	The concentration of the analyte added to the original sample. Populated for **ALL** LCSD, BSD, and MSD samples.
30	qc_dup_spike_measured	Text (14)	Yes (3-5)	The measured concentration of the analyte in the duplicate. Populated for **ALL** LCSD, BSD, and MSD samples. MUST be NUMERIC. Use zero for spiked compounds that were not recovered due to dilution, matrix interference, elevated concentrations of target compounds, etc..
31	qc_dup_spike_recovery	Text (14)	Yes (3-5)	The duplicate percent recovery. Populated for **ALL** LCSD, BSD, and MSD samples. **MUST be NUMERIC.** Use zero for spiked compounds that were not recovered due to dilution, matrix interference, elevated concentrations of target compounds, etc Report as percentage (e.g., report "120%" as "120").
32	qc_rpd	Text (8)	Yes (3-6)	The relative percent difference between MS and MSD, LCS and LCSD, BS and BSD, & primary field sample result and Lab Replicate. Populated for **ALL** LCSD, BSD, MSD, and LR samples. **MUST be NUMERIC**. Use zero for RPDs that were not calculated due to elevated concentrations of target compounds, dilution, matrix interference, etc Report as percentage (e.g., report "120%" as 120").
33	qc_spike_lcl	Text (8)	Yes (3-7)	Lower control limit for spike recovery. Required for spikes, spike duplicates, surrogate compounds, LCS and any spiked sample. Report as

RESULT TABLE				
Num	**Attribute Name**	**Column Data Type**	**Required**	**Attribute Definition**
				percentage (e.g., report "120%" as "120").
34	qc_spike_ucl	Text (8)	Yes (3-7)	Upper control limit for spike recovery. Required for spikes, spike duplicates, surrogate compounds, LCS and any spiked sample. Report as percentage (e.g., report "120%" as "120").
35	qc_rpd_cl	Text (8)	Yes (3-6)	Relative percent difference control limit. Required for any duplicated sample. Report as percentage (e.g., report "120%" as "120").
36	qc_spike_status	Text (10)	Yes (3-4)	Used to indicate whether the spike recovery was within control limits. Use the "+" character to indicate failure, otherwise leave blank.
37	qc_dup_spike_status	Text (10)	Yes (3-5)	Used to indicate whether the duplicate spike recovery was within control limits. Use the "+" character to indicate failure, otherwise leave blank.
38	qc_rpd_status	Text (10)	Yes (3-6)	Used to indicate whether the relative percent difference was within control limits. Use the "+" character to indicate failure, otherwise leave blank. Required for any duplicated sample.

BATCH TABLE				
Num	**Attribute Name**	**Column Datatype**	**Required**	**Attribute Definition**
1	sys_sample_code (PK)	Text (40)	Yes (0)	SAME AS #1 IN SAMPLE , TEST TABLE. This value is used in enforcing referential integrity between tables.
2	lab_anl_method_name (PK)	Text (35)	Yes (0)	SAME AS #2 IN TEST TABLE. See rt _analytic_method for valid values.
3	analysis_date (PK)	Date	Yes (0)	SAME AS #3 IN TEST TABLE. This value is used in enforcing referential integrity between tables. Date of sample analysis in MM/DD/YY format. May refer to either beginning or end of the analysis as required by EQuIS Chemistry project manager.
4	analysis_time (PK)	Text (5)	Yes (0)	SAME AS #4 IN TEST, AND RESULT TABLES. This value is used in enforcing referential integrity between tables.
5	total_or_dissolved (PK)	Text (1)	Yes (0)	SAME AS #5 IN TEST TABLE. This value is used in enforcing referential integrity between tables.
6	column_number (PK)	Text (2)	Yes (4-1)	SAME AS #6 IN TEST TABLE. This value is used in enforcing referential integrity between tables.
7	test_type (PK)	Text (10)	Yes (0)	SAME AS #7 IN TEST TABLE. This value is used in enforcing referential integrity between tables.
8	test_batch_type (PK)	Text (10)	Yes (0)	Lab batch type. Valid values include "Prep", "Analysis", and "Leach". Additional valid values may optionally be provided by the EQuIS Chemistry project manager. This is a required field for all batches.
9	test_batch_id	Text (20)	Yes (0)	Unique identifier for all and each lab batches. Must be unique within EQuIS Chemistry database. For example, the same identifier cannot be used for a prep batch and an analysis batch and the values must be different from one sampling event to another. THIS IDENTIFIER CANNOT BE USED FROM ONE YEAR TO THE NEXT.

ADDITIONAL INFORMATION FOR PREPARING THE 4-FILE EDD

SAMPLE FILE AND SYS_SAMPLE_CODE

1. The sys_sample_code is the unique sample ID as supplied on the Chain of Custody form with the same spacing as identified on the COC or on a supplemental Sample ID list submitted to the laboratory with the Laboratory Task Order or prior to submission of samples.

2. In order to uniquely identify MS/MSD, laboratory duplicates, TCLP, and SPLP samples, the laboratory shall add a suffix to the original sample ID listed on the chain of custody:

   Matrix Spike Sample = xxxxx MS
   Matrix Spike Duplicate Sample = xxxxx MSD
   Lab Duplicate/Replicate = xxxxx LR
   TCLP Extract Sample = xxxxx TCLP
   SPLP Extract Sample = xxxxx SPLP

   These are the only characters that are allowed to be amended to ANY sample ID as listed on the COC or the sample ID list referred to above.
   The parent_sample_code shall be entered into the parent_sample_code field of the Sample File.

3. If the sample_name field is provided it must contain the full sample ID from the chain of custody.

4. Sample_Type_Code must be appropriately applied as follows:
   “N” = normal field samples
   “FD” = field duplicates samples submitted blind to the laboratory
   “TB” = trip blanks
   “FB” = field blanks
   “EB” = rinsate or equipment blanks
   “BS” = laboratory control samples or blank spikes
   “BD” = laboratory control sample duplicates or blank spike duplicates
   “MS” = matrix spikes
   “SD” = matrix spike duplicates
   “LR” = laboratory duplicates or laboratory replicates

5. The following “**matrix_type**” codes must be used (“**SQ**” = soil QC sample and “**WQ”** = water QC sample):
   Method Blank = “SQ” or “WQ”
   MS/MSDs = “SQ” or “WQ”
   LCS/LCSDs = “SQ” or “WQ”
   BS/BSDs = “SQ” or “WQ”

6. SDG Numbers or laboratory Log Numbers (per ARCADIS PM direction) **MUST** be populated in “**sample_delivery_group**” field of the **Sample File.**

QUALITY CONTROL SAMPLES AND DATA

7. The source of Lab Duplicates, Lab Replicates, Matrix Spikes, and Matrix Spike Duplicates is the Lab not the Field even if the MS/MSD are identified on the COC by the field sampling team. The samples are spiked in the laboratory not in the field.

8. Laboratory QC data, which span more than one SDG may be submitted with each appropriate SDG.

9. Laboratory LCS and LCSD should be reported as two separate samples.

10. **Matrix Spike and Matrix Spike Duplicate recoveries must be reported as “0” if the value is not calculated due to concentrations of the spiked analyte in the sample at concentrations above the 4X factor.**

11. **All laboratory method performance site-specific and batch Quality Control sample results (i.e. Method Blanks, LCS/LCSDs, Blank Spikes, Leachate Blanks as method appropriate) must be included in the EDD.** For most projects, this does **NOT** include **non-site-specific** matrix spikes and laboratory duplicates/replicates.

12. Laboratory batch sample duplicate/replicate and MS/MSD results from **non-project specific** samples (i.e. batch QC samples) shall **NOT** be included in the EDD.

13. Surrogates populate the qc_spike fields not qc_dup_spike fields or the result_value field even if the surrogates are reported for MSD, BSD, or LCSD samples.

14. QC_Spike_Added values for Spike, IS and Surrogate compounds are REQUIRED.

15. QC_Spike_Measured values for Spike, IS and Surrogate compounds are REQUIRED.

16. RPDs for LCSDs, BSDs, MSDs, and Laboratory Duplicates must be populated in the “**qc_rpd”** field. A value of “0” or “100” must be reported, as appropriate, if the RPD is not calculated due to excessive concentrations or interference present in the sample. The “**qc_rpd**” must be a numeric entry.

17. The RPD control limit must be listed in the “**rpd_cl”** field for all parameters where an RPD is reported. This includes lab duplicate/replicate samples.

SAMPLE FILE

18. The following “**matrix_type**” codes must be used for QC samples (“**SQ**” = soil QC sample and “**WQ”** = water QC sample):

    Method Blank = “SQ” of “WQ”
    MS/MSDs = “SQ” or “WQ”
    LCS/LCSDs = “SQ” or “WQ”
    BS/BSDs = “SQ” or “WQ”

19. SDG or Laboratory Project numbers must be populated in “sample_delivery_group” field.

TEST FILE

20. Percent moisture must be reported in the “**percent_moisture**” field in the **Test File** for all solid samples (i.e., soil, sediment, and sludge).

21. Subsample weights and final volumes must be listed for all parameters as appropriate.

RESULTS FILE

22. Result_value is only populated with data for “TRG” and “TIC” detections. All other data is entered in the “qc_” fields. The field must be “NULL” for non-detects and other analyte_types. The Reporting Limit must not be entered in this field.

23. Non-detected data shall have a lab_qualifier of "U" in addition to other qualifiers deemed applicable. The Detect_Flag shall be “N” and the Result_value field shall be blank.

24. The Reporting Limit must be provided for all parameters. The RL MUST be adjusted for dilutions made during analysis.

25. Surrogate recoveries MUST BE REPORTED in the qc_spike_measured and qc_spike_recovery fields, even if the surrogate had been diluted out. List “0” as the measured and recovered amount. Control Limits must also be entered for surrogates. Surrogates are “SUR” analyte_type not “TRG”.

26. Surrogate, LCS, LCSD, BS, BSD, MS, and MSD detected concentrations, and percent recoveries must be populated with a numeric value. A value of “0” **must** be entered if the Spiked Compound is diluted out or not recovered. An “+” is unacceptable as this is a numeric field.

27. “**QC_original_concentration**” must be populated for matrix spikes and matrix spike duplicates

28. Valid entries for the reportable_result field are "Yes" or "No” only.

29. ONLY report compounds of interest for any method blank, sample, and sample duplicate, trip blank.

30. Laboratory Qualifier designation must be consistent. For an estimated concentration with blank contamination “BJ” must be used. Note that “JB”, “B J” or “J B” cannot be used.

31. Explanation of Duplicate Qualifiers:

B	Analyte found in associated blank	Organic Analysis
B	<CRDL but >= Instrument Detection Limit	Inorganic Analysis
N	Presumptive evidence of a compound	Organic Analysis
N	Sample recovery not within control limits	Inorganic Analysis

It is preferred by ARCADIS that the laboratory not qualifiers with multiple explanations. **Any qualifiers utilized in the hard copy report or the electronic report must be defined in the hard copy report. There is no exception to this requirement for explanation of qualifiers applied to electronic data.**

32. Nomenclature for tentatively identified compounds (TIC):

Use the CAS # if it is available and **REAL (outside verifiable source)** for TICs and enter the chemical name in the chemical_name field.

For UNKNOWN TICs follow the following protocol:

cas_rn for unkown VOA TIC = VTIC 1 through VTIC 10
cas_rn for unkown SVOA TIC = SVTIC 1 through SVTIC 20

Enter “UNKNOWN”, “UNKNOWN Hydrocarbon”, “UNKNOWN Aliphatic”, or other identifier as appropriate or applicable in “chemical_name” field.

TICs will produce errors in the ELDC/EDDP that cannot be corrected by the laboratory. These are the only acceptable errors in the data checker report unless otherwise authorized by ARCADIS.

33. TCLP or SPLP results must be submitted in units of mg/L or appropriate liquid units. **(Make sure that moisture correction is not automatically enforced).**

BATCH FILE

34. **The laboratory must use unique Batch File Names for each analytical department/method and for continuing years. Electronic validation utilizes Batch IDs to link field samples with quality control data. Overlapping Batch IDs are not acceptable.**

GENERAL ISSUES

35. Incomplete chain-of-custody (C-O-C) forms must be immediately communicated to the project manager. Some of the C-O-C information is used for completion of the Sample_Matrix_Code and Sample_Delivery_Group. These discrepancies must be rectified upon receipt of samples at the laboratory prior to log in.

36. **Duplicate sample IDs are not acceptable within the EQuIS database. It is imperative that samples including field blanks, trip blanks, equipment blanks, field duplicates have unique sample IDs for projects including ongoing sampling events such as quarterly groundwater monitoring.**

SUBCONTRACTED PARAMETERS

37. The EDD must be populated with **ALL** appropriate and applicable fields, including **ALL** QC data for any subcontracted parameters.

PLEASE CONTACT THE ARCADIS PROJECT CHEMIST, DATA MANAGER or PROJECT MANAGER IF THERE ARE ANY QUESTIONS REGARDING PREPARATION OR GENERATION OF THE EDD.

EXAMPLE EDD REPORTS

The following subsections provide examples of how the EQuIS EDD should be populated for QC data.

RESULT FILE FIELDS FOR A NORMAL FIELD SAMPLE, TRG AND TIC RESULTS

The table below shows some of the fields in the Result File for a normal field sample (i.e., Sample_type_code = N, TB, FD, etc.) and "TRG" or "TIC" analyte_type_code. NOTE: all QC fields are blank.

cas_rn	result value	qc original conc	qc spike added	qc spike measured	qc spike recovery	qc dup. original conc	qc dupl. spike added	qc dup. spike measured	qc dup. spike recovery
93-76-5 94-75-7 94-82-6	3.17 1.56 2.31								

RESULT FILE FIELDS FOR A NORMAL FIELD SAMPLE WITH SURROGATES

The following table shows some of the fields in the result file for a normal field sample (i.e., Sample_type_code = N, TB, etc.). Note that QC fields are blank except on surrogate Rows.

cas_rn	result value	result unit	result type code	qc original conc	qc spike added	qc spike measured	qc spike recovery
93-76-5	1.56	mg/L	TRG				
94-75-7	3.17	mg/L	TRG				
PHEN2F		mg/L	SUR		12.5	12.9	103

RESULT FILE FIELDS FOR A MATRIX SPIKE

The following table shows some of the fields in the result file for a matrix spike sample (i.e., Sample_type_code = MS). Note that all "dup" QC fields are blank, and that the result_value field is NULL. Also, the qc_rpd field would be blank for these rows. The parent_sample_code must contain the contents of the sys_sample_code of the original (parent) sample.

cas_rn	result value	qc original conc	qc spike added	qc spike measured	qc spike recovery	qc dup. original conc	qc dupl. Spike added	qc dup. spike measured	qc dup. spike recovery
93-76-5		1.56	4.18	5.36	90.9				
94-75-7		3.17	4.18	7.15	95.2				
94-82-6		2.31	4.22	5.66	79.3				

RESULT FILE FIELDS FOR A MATRIX SPIKE DUPLICATE

The following table shows some of the fields in the result file for a matrix spike/matrix spike duplicate considered as a single sample (i.e., Sample_type_code = MSD). Note that all QC fields are completed, and that the result_value field is not needed. Also, the qc_rpd field would be completed for these rows. The parent_sample_code must contain the contents of the sys_sample_code of the original (parent) sample.

cas_rn	result value	qc original conc	qc spike added	qc spike measured	qc spike recovery	qc dup original conc	qc dup. spike added	qc dup spike measured	qc dup spike recovery
93-76-5						1.56	4.23	5.70	97.8
94-75-7						3.17	4.23	7.62	105
94-82-6						2.31	4.13	5.33	73.1

RESULT FILE FIELDS FOR A LCS or BS \

The following table shows some of the fields in the result file for an LCS sample (i.e., laboratory control sample, blank spike, Sample_type_code = BS). The qc_rpd field is left blank for these rows.

cas_rn	result value	qc original conc	qc spike added	qc spike measured	qc spike recovery	qc dup original conc	qc dup spike added	qc dup spike measured	qc dup spike recovery
93-76-5		1.5	5.00	5.26	105				
94-75-7		10.2	1.00	1.02	102				
94-82-6		3.4	12.5	12.9	103				

RESULT FILE FIELDS FOR A LCS DUPLICATE OR BS DUPLICATE

The following table shows some of the fields in the result file for a laboratory control sample duplicate (i.e., Sample_type_code = BD). Note that the result_value field is not required. Also, the qc_rpd field must be completed for these rows.

cas_rn	result value	qc original conc	qc spike added	qc spike measured	qc spike recovery	qc dup original conc	qc dup spike added	qc dup spike measured	qc dup spike recovery	qc_rpd
93-76-5							5.00	4.92	98	2.0
94-75-7							1.00	0.95	95	6.6
94-82-6							12.5	11.8	94	12.3

REANALYSES, REEXTRACTIONS, DILUTIONS

The following table shows how to report retests for three different circumstances. The first example, the sample was retested (for 75-25-2) because the initial result required reanalysis due to QC failure. For the second example, the initial sample result (for 95-95-4) required dilution. The third example (for 67-66-3) required both reanalysis and dilution (reanalysis supercedes dilution). The fourth example (87-86-5) shows an initial result that require re-extraction due to QC failure or elevated concentrations that could not be diluted based on the original extraction. The other results are "turned off" by setting the reportable_result field to "No".

test_type	cas_rn	result_value	reportable_result
initial	75-25-2	1.2	No
reanalysis	75-25-2	1.1	Yes
initial	95-95-4	250E	No
dilution	95-95-4	328	Yes
initial	67-66-3	3.4	No
reanalysis	67-66-3	3.3	Yes
initial	87-86-5	980E	No
reextraction	87-86-5	1500	Yes

ANALYSES REQUIRING SECOND COLUMN CONFIRMATION

Analyte identification requiring confirmation by a second analytical technique is required by certain gas chromatography (GC) methods. A common technique used to confirm the identity of an analyte is to analyze the sample using a second GC column that is dissimilar from the GC column used for the first analysis. This confirmation technique is used routinely when analyzing samples for pesticides, herbicides, and certain volatile organic compounds (e.g., BTEX), and the two analyses often are performed simultaneously using an instrument equipped with dual GC columns connected to common injection port.

The method for reporting data from dual column GC analyses is not standard throughout the environmental laboratory industry. ARCADIS recommends that laboratories use the method described in SW-846 Method 8000B, unless project-specific requirements or the method used for analysis dictate otherwise. The following table illustrates the proper format to be used to report first and second column results. The results for the first and third constituents (75-25-2 and 95-95-4) are being reported from column 1, and the result for the second constituent (67-66-3) is being reported from column 2. The other results are "turned off" by setting the reportable_result field to "No".

column_number	cas_rn	result_value	reportable_result
1C	75-25-2	6.2	Yes
1C	67-66-3	3.4	No
1C	95-95-4	5.6	Yes
2C	75-25-2	1.3	No
2C	67-66-3	33.7	Yes
2C	95-95-4	5.4	No

REFERENCE TABLES

A number of fields in each of the EDD files must be entered to correspond exactly with reference values standardized by ARCADIS. These reference values will be updated from time to time. Each laboratory will be supplied a copy of the updated document. It is the laboratory’s responsibility to submit EDDs using the most current reference tables as defined by a specific project.

The following table summarizes the EDD fields where standard reference values must be used:

EDD File	EDD Field	Reference Table
Sample	sample_type_code	rt_sample_type
	sample_matrix_code	rt_matrix
Test	lab_anl_method_name	rt_anl_mthd
	lab_matrix_code	rt_matrix
	prep_method	rt_std_prep_mthd
	subsample_amount_unit	rt_unit
	final_volume_unit	rt_unit
Result	lab_anl_method_name	rt_anl_mthd
	cas_rn	rt_analyte
	chemical_name	rt_analyte
	result_type_code	rt_result_type
	lab_qualifier	rt_qualifier
	result_unit	rt_unit
	detection_limit_unit	rt_unit
Batch	lab_anl_method_name	rt_anl_mthd

IV. EDP

The EDP data checker assists the **LABORATORY** in checking EDD files to ensure that they are error-free prior to submission to ARCADIS. All laboratories providing data to ARCADIS **must use** the EDP program to verify that EDDs are without error. The EDP error reports for each file **must be** submitted with each EDD.

The use of the EDDP helps to solve common data population problems including duplicate data, incorrectly populated fields, and incorrect methods, CAS #s, and other acceptable reference values. If an EDD is received by ARCADIS containing errors it will be rejected until the EDD report is acceptable for import into the EQuIS database. Invoice payment will not be made until the EDD is acceptable.

ARCADIS will provide laboratories with the most recent version of the EDP.

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Appendix I

Site Inspection Form

Site Inspection Form

Oneonta Former MGP Site - Oneonta, New York

Date/Time: ______________________ Weather: ______________

Personnel: ______________________ Temperature: ______________

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	☐ Good	☐ Poor*
Cover Areas (Pavement)	☐ Good	☐ Poor*
Cover Areas (Sidewalk)	☐ Good	☐ Poor*
Cover Areas (Grass/Landscaping)	☐ Good	☐ Poor*
Signs of intrusive activities	☐ No	☐ Yes*
Evidence of Settlement	☐ 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	☐ No	☐ Yes*
Standing Water	☐ No	☐ Yes*
Missing Asphalt/Sidewalk	☐ No	☐ Yes*
Vegetative Growth (Other than grass/landscaped areas)	☐ No	☐ Yes*
Evidence of Settlement	☐ No	☐ Yes*
Sedimentation	☐ No	☐ Yes*
Damage/Failure	☐ No	☐ Yes*

3. Notes:

Site Inspection Form

Oneonta Former MGP Site - Oneonta, New York

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

Appendix J

Generic Field Sampling Plan

NYSEG

Generic Field Sampling Plan

Oneonta Former MGP Site

Oneonta, New York

January 2022

Generic Field Sampling Plan

Oneonta Former MGP Site

Oneonta, New York

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Version Control

Issue	Revision No.	Date Issued	Page No.	Description	Reviewed By

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Attachments

1 Introduction

This Generic Field Sampling Plan (GFSP) supports the Site Management Plan (SMP) prepared by Arcadis of New York, Inc. (Arcadis) for the Oneonta Former Manufactured Gas Plant (MGP) Site located in Oneonta, New York (site).

This GFSP addresses field procedures and sample collection methods to be used during implementation of the SMP field activities. In addition, field sampling procedures for other media (e.g., test pit installation) are included in the event that future intrusive work is conducted within potentially MGP-impacted areas of the site. The GFSP should be used in conjunction with the SMP or other task-specific work plan, the Generic Quality Assurance Project Plan (GQAPP), and an approved Health and Safety Plan (HASP). The SMP presents the site background and defines the required sampling program. The GQAPP presents the quality assurance/quality control procedures to be used during field activities, as well as a description of the general field and laboratory procedures.

1.1 Objectives

The purpose of the GFSP is to describe field procedures and sample collection methods to be used during implementation of the SMP field activities, in addition to field sampling procedures for other media (e.g., test pit installation) in the event that future intrusive work is conducted within potentially MGP-impacted areas of the site.

1.2 Overview of Investigation Field Activities

The following activities may be conducted at the site:

- Soil boring advancement.
- Test pit excavation.
- Monitoring well installation.
- Fluid level measurement.
- Soil sample collection.
- Groundwater sample collection.
- Non-aqueous phase liquid (NAPL) removal from NAPL recovery wells.
- Replacement of Adventus EHC-O® oxygen releasing compound socks in wells.

Sampling locations and rationale for each field sampling activity are described in the SMP, or other task-specific work plan.

A site location map and a figure with sampling locations have been prepared for the site; these figures are presented in the SMP.

This GFSP represents a generic reference document to be used by Contractors. It is the Contractor’s responsibility to review the GFSP and to verify that the required field activities are included in the GFSP, and to verify that the GFSP contains the best practices approach to conducting field activities, and to verify that the guidance provided is consistent with the New York State Department of Environmental Conservation’s (NYSDEC’s) requirements. This GFSP does not provide safety guidance or reference to either State or Federal safety requirements; it is the

Contractor's responsibility to prepare a site- and task-specific HASP and to modify this GFSP to meet safety requirements, guidelines, or regulations, as required. Neither NYSEG nor Arcadis assumes responsibility or liability for work conducted by Contractors at the site.

2 Field Activities

Sections below present field activities that may occur at the site.

2.1 General Field Guidelines

Underground utilities will be identified prior to any drilling, intrusive work, or subsurface sampling. Public and privately-owned utilities will be located by contacting responsible agencies by phone so that their underground utilities can be marked at the site. Other potential onsite hazards, such as traffic, overhead power lines, and building hazards, will be identified during a site reconnaissance visit.

The following is a general list of equipment necessary for sample collection:

- Stainless steel spoons and bowls for compositing soil samples.
- Appropriate sample containers provided by the laboratory (kept closed and in laboratory-supplied coolers until the samples are collected).
- Reagent grade preservatives and pre-preserved sample containers for aqueous samples.
- Chain of custody record forms.
- Logbook, field sampling records, and indelible ink pens and markers.
- Laboratory-grade soap (such as Alconox®), reagent grade solvents, and distilled water to be used for decontaminating equipment between sampling stations.
- Buckets, plastic wash bins, and scrub brushes for decontaminating equipment.
- Digital camera.
- Stakes to identify sampling locations.
- Shipping labels and forms.
- Scissors.
- Packing/shipping material for samples bottles.
- Clear plastic tape.
- Duct tape.
- Aluminum foil.
- Re-closable plastic bags.
- Portable field instruments, including a photoionization detector (PID), water quality parameter meter, conductivity meter, turbidity meter, and water-level indicator.

Field logbooks will be maintained by the field team leader and other team members to provide a daily record of significant events, observations, and measurements during the field investigation.

Information pertinent to the intrusive field activities and/or sampling activities will also be recorded in the logbooks. The books will be bound with consecutively numbered pages. Entries in the logbook will include, at a minimum, the following information:

- Name of author, date of entry, and physical/environmental conditions during field activity.

- Purpose of sampling activity.
- Location of sampling activity.
- Name of field crew members.
- Name of any site visitors.
- Identification of sample media (e.g., soil, groundwater).
- Sample collection method.
- Number and volume of sample(s) taken.
- Description of sampling point(s).
- Volume of groundwater removed before sampling (where appropriate).
- Preservatives used.
- Date and time of collection.
- Sample identification number(s).
- Field observations.
- Any field measurements made, such as, but not limited to, pH, temperature, conductivity, water level.

All original data recorded in field logbooks and chain of custody records will be written with indelible ink. If an error is made on an original document assigned to one individual, that individual will make all corrections simply by crossing a single line through the error and entering the correct information. The erroneous information will not be erased. Any subsequent error discovered on an original document will be corrected by the person who made the entry. All subsequent corrections will be initialed and dated.

2.2 Sample Labeling, Packing, and Shipping

Each sample will be given a unique identification. With this type of identification, no two samples will have the same label.

Samples will be promptly labeled upon collection with the following information:

- Project number and site.
- Unique sample identification.
- Analysis required.
- Date and time sampled.
- Sample type (composite or grab).
- Preservative, if applicable.

Clear tape will be secured over the sample label and the chain of custody will be initiated. A sample chain of custody form is included as Figure 1.

Appropriate sample containers, preservation methods, and laboratory holding times for each sample type is identified in the GQAPP.

If samples are to be shipped by commercial carrier (e.g., FedEx), sample bottles/jars will be packed in coolers containing the following:

- A drain plug (if present) that has been sealed with duct tape.
- 1 to 2 inches of bubble wrap on the bottom of the cooler.
- Water ice packaged in resealable plastic bags.
- Sufficient bubble wrap to fill in the remaining area.
- The completed chain of custody in a resealable plastic bag, taped in place on the inside cover of the cooler.

The cooler will then be sealed with tape. Appropriate shipping labels, such as "this-end-up" and "fragile" stickers will be affixed to the cooler. Samples will be hand delivered or delivered by an express carrier within 48 hours of sample collection. The express carrier will not be required to sign the chain of custody form; however, the shipping receipt should be retained by the sampler and forwarded to the project files.

2.3 Equipment Decontamination

The sections below present decontamination procedures for drill rigs ad sampling equipment.

2.3.1 Drill Rig Decontamination

A decontamination pad will be lined with plastic sheeting on a surface sloped to a sump. The sump must also be lined and of sufficient volume to contain approximately 20 gallons of decontamination water. All drilling equipment, including rear-end of drilling rig, augers, bits, rods, tools, split spoon samplers, tremie pipe, etc., will be cleaned on the decontamination pad with a high-pressure hot water "steam cleaner" unit and scrubbed with a wire brush, as needed, to remove dirt, grease, and oil before beginning work in the project area. If heavy accumulations of tars or oils are present on the downhole tools, a citrus-based cleaner (e.g., Citra-Solv®) may be used to aid in equipment cleaning. Tools, drill rods, and augers will be placed on sawhorses, decontaminated pallets, or polyethylene plastic sheets following steam cleaning. Direct contact with the ground will be avoided. The back of the drill rig and augers, rods, and tools will be decontaminated between each drilling location according to the above procedures. Decontamination water will be contained in a dedicated plastic tank or 55-gallon open-top drums located on site. All open-top drums will remain closed when not in use.

Following decontamination of all heavy site equipment, the decontamination pad will be decommissioned. The decommissioning will be completed by:

- Transferring the bulk of the remaining liquids and solids into the drums, tanks, and roll-offs to be provided by NYSEG or the drilling subcontractor for these materials.
- Rolling the sheeting used in the decontamination pad onto itself to prevent discharge of the remaining materials to the ground surface. Once rolled up, the polyethylene sheeting will be placed in the roll-off or drums used for disposal of personal protective equipment (PPE) and disposable equipment.

Unless sealed in manufacturer’s packaging, polyvinyl chloride (PVC) monitoring well casing screens will be decontaminated by the above procedures before installation.

2.3.2 Sampling Equipment Decontamination

Prior to collecting samples to be submitted for chemical analysis, if any, all non-dedicated bowls, spoons, hand augers, bailers, and filtering equipment will be washed with potable water and a detergent (such as Alconox®). Decontamination may take place at the sampling location as long as all liquids are contained in pails and buckets.

The sampling equipment will then be rinsed with potable water, followed by a 10% “pesticide-grade” methanol rinse, and finally a distilled water rinse. When sampling for inorganic constituents in an aqueous phase, an additional rinse step will be added prior to the rinse with methanol. The rinse step will entail a rinse with a 10 percent “ultra-pure grade” nitric acid followed by a distilled water rinse. Between rinses, equipment will be placed on polyethylene sheets or aluminum foil, if necessary. At no time will washed equipment be placed directly on the ground. Equipment will be either be used immediately or wrapped in plastic or aluminum foil for storage or transportation from the designated decontamination area to the sampling location.

2.4 Subsurface and Staged Soil Sampling Method

Continuous soil sampling will be conducted during drilling in the overburden. Continuous core samples of overburden material will be collected. At select locations designated for geotechnical data collection, the Standard Penetration Test (American Society for Testing and Materials [ASTM] D 1586 84) and hollow-stem augers or flush-joint casing will be used during drilling to collect split-spoon samples from the unconsolidated fill and soils beneath the site. If required, samples selected for laboratory analysis will be based on:

- Their position in relation to potential source areas.
- The visual presence of source materials.
- The relative levels of volatile organics based on PID field screening measurements.
- The discretion of the onsite geologist.

Samples selected for laboratory analysis will be placed in appropriate containers provided by the laboratory. Sample containers for volatile organic analyses will be filled first. Soil samples collected for volatile organic compond (VOC) analysis will be collected in a manner consistent with the previous soil VOC analyses completed at the site to provide data comparability (soil VOC samples will not be collected using methanol preservation or analyzed using United States Environmental Protection Agency Method 5035). Next, a sufficient amount of the remaining soil will be homogenized by mixing the sample in a decontaminated stainless-steel tray or bowl with a decontaminated stainless-steel trowel or disposable scoop or by homogenizing the soil in a disposable zip-top plastic bag. Laboratory-supplied sample containers for other analytes will then be filled. Duplicate samples will be collected at the frequency detailed in the GQAPP by alternately filling two sets of sample containers.

Representative portions of each soil sample will be placed in a 1-pint jar or disposable zip-top plastic bag, labeled, and stored on site. This container will be labeled with:

- Site.
- Boring number.
- Interval sampled.
- Date.
- Initials of sampling personnel.

These soil samples will be screened for organic vapors using a PID. In addition, a geologist will be on site during the drilling operations to describe each sample. Soil samples will be described using the methods described in the soil description technical guidance instruction (TGI), included as Attachment 1.

For samples that may be submitted for chemical analysis, split-spoons, or any portion of the drilling rig that may contact the sample, will be decontaminated, as specified in Section 2.3, after each sample is collected. Sample descriptions, PID readings, and location will be recorded in the field book or on the field drilling log presented on Figure 2. Calibration, operation, and maintenance procedures are included as Attachment 2 for one type of PID commonly used in the field. The procedures to be followed will be dependent on the PID acquired for this project, as described in the equipment manual.

2.5 Soil Boring/Monitoring Well Installation and Development

Where required, soil borings and/or monitoring wells will be installed to the depths and at the locations defined in a task-specific work plan. After completion of drilling and well installation, all new wells will be developed to establish hydraulic connection between the well and the formation. The following procedures will be used to drill borings and install and develop monitoring wells.

2.5.1 Drilling and Geological Logging Methods

The drilling and geological logging methods to be completed in connection with soil boring/monitoring well installation are as follows:

- Boreholes in the overburden will be drilled using rotosonic technology or hollow-stem augers, or other NYSDEC-approved method.
- Continuous soil sampling will be conducted during advancement of soil borings and/or monitoring wells. Rotosonic drilling methods provide continuous core samples of overburden by advancing casings and corebarrels using harmonic wave energy. Boreholes will be drilled by first advancing a corebarrel to obtain a soil sample, followed by advancing an outer casing using the corebarrel to stabilize the borehole. The inner corebarrel is then retrieved and the soil sample is extruded into polyethylene bags. Six-inch or 4-inch cased boreholes will be drilled to required depths retrieving continuous soil samples in 5-foot or 10-foot core runs. Soil samples are extruded into polyethylene bags and laid out for characterization.
- Split-spoon sampling will be conducted during the advancement of soil borings for geotechnical data collection. Sampling will be performed in accordance with ASTM Specification D 1586 08 for standard penetration test and split-spoon sampling, unless otherwise authorized by the field geologist.
- The designated field geologist will log borehole geology and monitoring well specifications in the field book and/or field forms.
- A plywood sheet or tub may be placed around the auger or casing when drilling to contain cuttings.
- Soil cuttings will be placed in a drum or roll-off supplied by NYSEG or the drilling subcontractor. Decontamination water will be placed in plastic tanks/drums supplied by NYSEG or the drilling subcontractor. Soil cuttings and decontamination water will be picked up and containerized at the end of each workday. The roll-offs or open-top drums used to contain the solids will be covered when not in use.

Results from the drilling efforts will be recorded in the field book.

2.5.2 Monitoring Well Specifications

Figure 2 shows details of a typical monitoring well construction for shallow wells installed in unconsolidated sediments that do not penetrate a presumed confining layer, above which dense non-aqueous phase liquid (DNAPL) is known or suspected to exist. The overburden monitoring wells will be installed according to the following specifications:

- PVC 2-inch-diameter, threaded, flush joint casing and 10-foot-long, 0.020 inch slot screens will be installed.
- A sump, 2 feet in length and grouted in with cement, may be attached to the bottom of the screen for potential collection of DNAPL, if present.
- The top of the casing will extend approximately 2 feet above ground surface given site-specific considerations; otherwise, flush-mount casings will be used.
- The annulus around the screens will be backfilled with an appropriate size of silica sand, such as Morie #1 sand, to a minimum height of 1 foot above the top of the screen, assuming there is sufficient room to install an appropriate surface seal above the sand.
- An approximately 1-foot-thick chipped bentonite seal or slurry (30 gallons water to 25 to 30 pounds bentonite, or relative proportions) will be placed above the sand pack. The pellet seal must be allowed to partially hydrate before placing grout above the seal.
- The remainder of the annular space will be filled with a cement/bentonite grout to approximately 2 feet below grade. The grout will be placed with a tremie pipe from the bottom up. The grout will consist of a cement mixture of one 94-pound bag of Portland cement, approximately 5 pounds of granular bentonite, and approximately 7 gallons of water. The grout will be allowed to set for a minimum of 24 hours before wells are developed.
- Each monitoring well will have a vented cap and a 4-inch-diameter steel casing with a locking cap placed over the monitoring well. The protective casing will extend approximately 1 to 2 feet below ground surface and be set in concrete. In some areas, it may be necessary to provide flush-mounted casings.
- A concrete seal or pad, approximately 2 feet in diameter and 1.5 feet below grade, will be installed.
- A weep hole will be drilled through the protective standpipe casing just above the top of the concrete seal to allow water between the inner and outer casing to drain.
- The top of the PVC well casing and outer protective casing will be marked, and the elevation determined by survey to the nearest 0.01 foot, relative to a fixed benchmark or datum.
- The measuring point on all wells will be on the innermost PVC casing at the highpoint of the casing, if any.

The following characteristics of each newly installed well will be recorded in the field logbook:

- Date/time of construction.
- Drilling method and drilling fluid used (if applicable).
- Approximate well location.
- Borehole diameter and well casing diameter.
- Well depth.
- Drilling and lithologic logs.
- Casing materials.

- Screen materials and design.
- Casing and screen joint type.
- Screen slot size/length.
- Filter pack material/size.
- Filter pack placement method.
- Sealant materials.
- Sealant placement method.
- Surface seal design/construction.
- Well development procedure.
- Type of protective well cap.
- Detailed drawing of well (including dimensions).

2.5.3 Monitoring Well Development and Well Redevelopment

A minimum of 24 hours after installation, monitoring wells will be developed by surging/bailing using a centrifugal pump and dedicated polyethylene tubing, or by Waterra positive displacement pumps and dedicated polyethylene tubing or other methods at the discretion of the field geologist. The development water will be contained in a tank on site or in drums to be provided by NYSEG or the drilling subcontractor. Wells will be developed until the water removed from the well is reasonably free of visible sediment (50 nephelometric turbidity units [NTUs]), if possible, or until the turbidity levels stabilize, assuming a minimum of 10 well volumes of water have been removed from the monitoring well during development. Following development, wells will be allowed to recover for at least 1 week before groundwater is purged and sampled. All monitoring of well development will be overseen by a field geologist and the duration, method of development, and approximate volume of water removed will be recorded in the field book.

In the event of excessive sedimentation in existing site wells, redevelopment may be required. Procedures for redevelopment of wells will be the same as for newly installed wells.

2.6 Fluid-Level Measurements

The following procedure will be used to measure fluid-level depths at monitoring wells and surface-water gauges:

- Decontaminate the water-level probe or oil/water interface probe (for wells expected to contain NAPL).
- Measure the static fluid-level, fluid interfaces (i.e., NAPL/water interface), and sound the bottom of the well (if applicable) with reference to the surveyed elevation mark on the top of the PVC casing or surface-water gauge. Record all measurements to nearest 0.01 foot and record in the field book.

The measurements will be made in as short a timeframe as practical to minimize temporal fluctuations in hydraulic conditions.

2.7 Low-Flow Groundwater Sampling Procedures for Monitoring Wells

This protocol describes procedures to collect groundwater samples. Additional protocols and procedures for low-flow sampling are described in the Low-Flow Groundwater Purging and Sampling Procedures for Monitoring Wells TGI included as Attachment 3, Additional protocols and procedures for sampling polyfluoroalkyl substances (PFAS) are described in the Poly- and Perfluorinated Alkly Substances (PFAS) Field Sampling Guidance TGI included as Attachment 4. For newly installed wells, no wells will be sampled until well development has been performed. During precipitation events, groundwater sampling will be discontinued until precipitation ceases. When one round of water levels is taken to generate water-elevation data, the water levels will be taken consecutively at one time prior to sampling or other activities.

The following materials, as required, shall be available during groundwater sampling:

- Sample pump.
- Sample tubing.
- Power source (i.e., generator, battery).
- PID.
- Appropriate health and safety equipment, as specified in the HASP.
- Plastic sheeting (for each sampling location).
- Dedicated or disposable bailers.
- New disposable polypropylene rope.
- Buckets to measure purge water.
- Water-level probe.
- 6-foot rule with gradation in hundredths of a foot.
- Conductivity/temperature meter.
- pH meter.
- Turbidity meter.
- Dissolved oxygen (DO) meter.
- CHEMets® dissolved oxygen ampoules at both the 1-12ppm and 0-1ppm (Item numbers R-7512 and R-7501, respectively) or similar.
- Oxidation-reduction potential (ORP) meter.
- Appropriate water sample containers.
- Appropriate blanks (trip blank supplied by the laboratory).
- Appropriate transport containers (coolers) with ice and appropriate labeling, packing, and shipping materials.
- Groundwater sampling logs.
- Chain of custody forms.
- Indelible ink pens.
- Site map with well locations and groundwater contour maps.

- Keys to wells.

The following 20 steps detail the monitoring well sampling procedures:

1. Review materials checklist to confirm that the appropriate equipment has been acquired.
2. Identify site and well to be sampled on sampling log sheets, including date, arrival time, and weather conditions. Identify the personnel and equipment used and other pertinent data. Example log sheets are provided in Attachment 5.
3. Label all sample containers using an appropriate label.
4. Use safety equipment, as required by the HASP.
5. Place plastic sheeting adjacent to the well to use as a clean work area.
6. Establish the background reading with the PID and record the reading on the field log.
7. Remove lock from the well, and if rusted or broken, replace with a new keyed-alike lock.
8. Unlock and open the well cover while standing upwind of the well. Remove well cap and place on the plastic sheeting. Insert PID probe in the breathing zone above the well casing following instructions in the HASP.
9. Set out on plastic sheeting the dedicated or disposable sampling device and meters.
10. Prior to sampling, groundwater elevations will be measured at each monitoring well and the presence of light non-aqueous phase liquid (LNAPL) or DNAPL (if any) within the well will be evaluated. Obtain a water-level depth and bottom of well depth using an electric well probe and record on the sampling log sheet. Clean the well probe after each use with a soapy (Alconox®) water wash and a tap water rinse. (Note: water levels will be measured at all wells prior to initiating a sampling event).
11. After groundwater elevations are measured and NAPLs are determined not to be present, groundwater will be purged from the wells. If NAPLs are determined to be present, then a groundwater sample will not be collected; rather, a representative NAPL sample may be collected (if required) using a peristaltic pump or other method determined by the Field Manager/Site Supervisor.
12. Pump, safety cable, electrical lines, and/or tubing (for peristaltic pumps) will be lowered slowly into the well to a depth corresponding to the center of the saturated screen section of the well. If sampling for PFAS, low-density polyethylene and/or Teflon® materials cannot be used. Materials must be high-density polyethylene and/or silicone materials.
13. Measure the water level again with the pump in the well before starting the pump. Start pumping the well at 100 to 500 milliliters per minute. Ideally, the pump rate should cause little water-level drawdown in the well (less than 0.3 feet and the water level should stabilize). The water level should be monitored every 3 to 5 minutes (or as appropriate) during pumping. Care should be taken not to cause the pump suction to be broken or entrainment of air in the sample. Record pumping rate adjustments and depths to water. Pumping rates should, if needed, be reduced to the minimum capabilities of the pump to avoid pumping the well dry and/or to confirm stabilization of indicator parameters. If the recharge rate of the well is very low, purging should be interrupted so as not to cause the drawdown within the well to advance below the pump. However, a steady flow rate should be maintained to the extent practicable. Sampling should commence as soon as the volume in the well has recovered sufficiently to permit sample collection.
14. During well purging, monitor the field indicator parameters (e.g., turbidity, temperature, specific conductance, pH, dissolved oxygen [DO], and oxidation-reduction potential [ORP]) every 3 to 5 minutes (or as appropriate). The well is considered stabilized and ready for sample collection when the indicator parameters have stabilized for three consecutive readings as follows (Puls and Barcelona, 1996):

+0.1 for pH
+3% for specific conductance (conductivity)
+10 mv for ORP
+10% for turbidity and DO

Note that turbidity and DO usually require the longest time to achieve stabilization. As such, sampling may be allowed prior to stabilization of turbidity and/or DO if all other parameters have stabilized. The decision to sample under this scenario must be agreed to by the Project Manager.

The pump must not be removed from the well between purging and sampling. If the parameters have stabilized, but the turbidity is not in the range of the 50 NTU goal, the pump flow rate should be decreased to no more than 100 millimeters per minute. Measurement of the indicator parameters should continue every 3 to 5 minutes. Measurements for parameters may be taken using a flow-thru cell or in a clean container such as a glass beaker. Measurements of DO should be taken from a sample collected using an in-line tee fitting installed before the tubing outlet, prior to connection to the flow-through cell (if one is being used). DO measurements should be measured using a CHEMet® dissolved oxygen ampoule field test kit, or similar.

15. Fill in the sample label and cover the label with clear packing tape to secure the label onto the container.
16. After the groundwater quality parameters have stabilized, as discussed above, obtain the groundwater sample needed for analysis directly from the sampling device in the appropriate container and tightly screw on the caps. Note that groundwater samples collected for analysis of VOCs cannot be collected using a peristaltic pump. If purging the well using a peristaltic pump, collect all other types of samples (e.g., semivolatile organic compounds [SVOCs], inorganics, etc.) prior to collecting the sample for VOC analysis. Once other samples are collected, remove the peristaltic pump tubing and collect the VOC samples using a new disposable polyethylene bailer. The bailer should be gently lowered to the approximate depth at which the pump intake was set, and then retrieved.

    If only DO readings are to be collected, omit step 15, as above wait for groundwater quality parameters to stabilize, collect a small amount of groundwater in the cup provided in the DO ampoule test kit, and record the DO readings using the appropriate colorimetric ampoules.
17. Secure with packing material and store at 4 degrees Celsius (^{o}C) on wet ice in an insulated transport container provided by the laboratory.
18. Record the time sampling procedures were completed on the field logs.
19. Place all disposable sampling materials (plastic sheeting, disposable bailers, and health and safety equipment) in appropriately labeled containers. Go to the next well and repeat Step 1 through Step 19 until all wells are sampled.
20. Complete the procedures for packaging, shipping, and handling with associated chain of custody forms (Section 2.2).

2.8 Surface Soil Sampling

If required, surface soil samples will be collected from below the vegetative sod layer or sub-base material (if these materials are present at the selected locations) at a depth of approximately 0 to 2 inches below the vegetative sod layer or sub-base material. Sub-samples will be collected from within a 1-square-meter area centered on the sampling location and evenly distributed throughout the square meter area. Each sample will be visually characterized for color, texture, and moisture content.

A grab sample will also be placed into a container or zip-top re-sealable plastic bag (or equivalent) for headspace screening using a PID to measure the relative concentration of total VOC vapors, if any. Equipment, materials, and procedures for collecting surface soil grab samples are presented below.

The following equipment and materials will be available, as required, during the surface soil sampling:

- Appropriate health and safety equipment.
- Digital camera.
- Cleaning equipment.
- Aluminum or stainless-steel tray.
- Measuring device.
- Appropriate sample containers and forms.
- Coolers with ice.
- Field book.

The procedures for collecting surface soil samples are presented below:

1. Don PPE (as required by the HASP).
2. Identify sample locations from the sample location plan and note locations in the field notebook. Locations should not be selected in areas covered with crushed stone or hard-packed gravel.
3. Eight sub-soil samples will be collected from a 1-square-meter area centered on the sampling location by carefully cutting into and removing the surface material (e.g., sod, sub-base) with a precleaned stainless steel scoop. The sub-samples will be collected from 0 to 2 inches below the surficial material and placed into a stainless steel or aluminum tray.
4. Gently mix the soil in the tray and obtain one surface soil sample and place it into an 8-ounce jar or zip-top re-sealable plastic bag (or equivalent) and screen the headspace with a PID. Record PID reading in field book. Visually characterize the soil for presence of stains and classify according to ASTM soil classification procedures.
5. Obtain one composite sample and place into appropriate sample containers provided by the analytical laboratory for SVOC, inorganic, and total cyanide analysis.
6. Based on the presence of staining, collect a grab sample from 0 to 2 inches from one of the eight sub-sample locations and place into an appropriate sample container provided by the analytical laboratory for VOC analysis.
7. Fill out sample labels, in accordance with procedures in Section 2.2, and affix the labels on the containers. Also, label the sample bottle caps with the sample ID.
8. Place the sample containers on ice in an insulated transportation cooler.
9. Discard gloves and stainless-steel scoop in designated location.
10. Handle, pack, and ship the samples with appropriate chain of custody procedures in accordance with Section 2.2.

Record all other appropriate information in the field logbook.

2.9 Test Pit Excavation

If required, test pits/trenches will be excavated using a backhoe equipped with a bucket. If residues are visually observed in the test pit/trenches, the contents may also be sampled.

The following materials will be available, as required, during test pit excavation:

- Backhoe with bucket.
- Shovel.
- Plastic sheeting.
- Stainless steel hand trowel.
- Stainless steel pan.
- Appropriate sample containers and packing materials, if required.
- Potable water.
- Steam cleaning equipment.
- Appropriate health and safety equipment, as required by the HASP.
- PID.
- Camera/video camera.
- Test pit/trench log.

The following procedures will be used to excavate test pits.

1. Identify the test pit/trench number on an appropriate log or in the designated field notebook, as well as with the temperature, weather, date, time, and personnel at the site.
2. Set up a decontamination station and decontaminate the backhoe, bucket, shovel, and other sampling apparatus with a high-pressure steam rinse using a tap water source.
3. Put on appropriate health and safety equipment as specified by the HASP.
4. Place the plastic sheeting on the ground next to the test pit/trench location.
5. Position the backhoe and personnel at upwind (to the extent feasible) locations of the test pit/trench area.
6. Turn on the PID. Measure and record on the test pit/trench log background PID readings on the log or in the field book.
7. Excavate the soil with the backhoe in approximately 1-foot increments. At each interval, examine and classify the soils according to applicable standards. Record these observations in the test pit/trench log or field book. Also, screen the soil samples with a PID. These measurements will also be recorded in the test pit/trench log (or field book).
8. If the contents of the test pit/trench visually appear to consist of site residues, the test pit/trench contents may be sampled. If sampling is required, the test pit/trench will be sampled with a shovel if the test pit/trench is less than 3 feet deep. If the test pit/trench is greater than 3 feet deep, then the test pit/trench will be sampled with the backhoe bucket. The contents of the bucket will then be sampled with a cleaned stainless steel hand trowel.

9. If sampling is required, the samples will be collected in the appropriate containers and placed immediately in a cooler of wet ice to maintain a 4ºC temperature for preservation. Volatile organic samples will be collected immediately after sample retrieval. Next, a sufficient amount of the remaining soil will be removed from the sampling device and homogenized by mixing thoroughly in a clean stainless-steel pan with a clean stainless-steel trowel. Samples will be selected for analytical characterization only if visible residues are present and/or relatively high PID screening readings are measured.
10. The test pit/trench will be terminated when significant residues are encountered, the top of the water table is reached, or to the maximum reach of the backhoe, whichever occurs first.
11. Soils generated during drilling will be staged on plastic during excavation, monitored for PID readings and visual observations, then placed back into the test pit/trench. Clean fill will be placed at the surface.
12. A labeled stake will be placed at the test pit/trench location.
13. A photograph of each location before, during, and after each test pit/trench is excavated will be taken.
14. The backhoe, backhoe bucket, and all tools used at the test pit/trench area will be decontaminated using a high-pressure steam rinse using a tap water source. Decontamination water and residual materials associated with decontamination will be contained.

2.10 Measurement of Fluid Levels

Fluid levels will be measured using an electronic fluid-level indicator (sounder), steel tape, pressure transducer, or stream gauge at established reference points (e.g., top of casing, stream gauge).

The following materials will be available, as required:

- Appropriate health and safety equipment, as specified in the HASP.
- Laboratory-type soap (Alconox or equivalent).
- Electronic water-level indicator (sounder) or pressure transducer.
- PID.
- Analyte-free water.
- Indelible ink pen.

The following procedures will be used to obtain fluid levels.

2.10.1 Well Fluid Level Gauging

1. Identify site and well number in field book, as well as with the date, time, personnel, and weather conditions using indelible ink. Use safety equipment, as specified in the HASP. Clean the water-level indicator in accordance with section 2.3.2. Contain rinse water in a portable container that will be transferred to an onsite container.
2. Unlock and open the well cover while standing upwind from the well. Record PID reading in well headspace.
3. Locate a measuring reference point on the well casing. If one is not found, create a reference point by notching the inner casing (or outer if an inner casing is not present) with a hacksaw or marking with paint or marker. All downhole measurements will be taken from one reference point. Document the creation of any new reference point or alteration of the existing reference point.

4. Measure to the nearest 0.01-foot and record the height of the inner and outer casing from reference point to ground level.
5. Lower the water-level indicator probe down the well. Take depth measurements of light product (if any), water, dense product (if any), and bottom. Double check all measurements and record depths to the nearest 0.01-foot.
6. Clean the instrument(s), as specified in section 2.3.2.
7. Compare the depth of the well to previous records.
8. Lock the well when all activities are completed.

2.10.2 Surface-Water Elevation Measurement

1. Identify site and surface-water gauge number in field book, as well as with the date, time, personnel, and weather conditions using indelible ink.
2. Use safety equipment, as specified in the HASP.
3. Clean the water-level indicator, as specified in Section 2.3.2. Contain rinse water in a portable container that will be transferred to an onsite container.
4. Locate a measuring reference point on the surface-water gauge. If one is not found, create a reference point by notching the surface-water gauge with a hacksaw or marking with paint or marker. The surface-water elevation measurement will be taken from one reference point. Document the creation of any new reference point or alteration of the existing reference point.
5. Lower the water-level indicator until it touches the bottom of the staff gauge. Record the depth of the water body. Take water-level measurements as the probe is drawn back up through the water column. Double check all measurements and record depths to the nearest 0.01-foot. Double check that the water level measured inside the stream gauge appears to coincide with the observable level of the waste body outside the stream gauge.
6. Clean the instrument(s), as specified in Section 2.3.2.
7. Compare the measurements to previous records.

2.11 NAPL Bailing

In the event that NAPL product, either LNAPL or DNAPL, is observed during well gauging, it will be removed via appropriately sized disposable bailers. Bailing will continue until there is no longer recoverable product retrieved in the bailer. All material brought up in the bailer (groundwater and product) will be dumped into a bucket immediately adjacent to the well. Upon completion of bailing of NAPL from a well, the bailed material will be transferred to an onsite storage container (e.g. 55-gallon drum) for temporary storage in an area identified by the City of Oneonta, pending disposal.

2.12 EHC-O® Oxygen Releasing Compound Replacement

The EHC-O® oxygen releasing compound will be replaced in accordance with the schedule provided in the SMP. The following are the procedural guidelines to replace the material and perform general maintenance on the system.

1. Remove the cap suspending the stainless-steel canister and retrieve the canister. Place the canister on a disposable cloth with plastic backing.
2. Gently roll the stainless-steel canister on the disposable cloth to try and separate the sock from the canister wall.
3. Remove the sock and store in onsite container (e.g. 55-gallon drum) pending disposal.
4. With the sock removed, scrape the outside of the canister with a putty knife to remove encrusted material. Scrub the canister with a stiff brush in a bucket of water to further remove encrusted material and any bioaccumulations.
5. Insert new sock into canister and re-install in well.

The aforementioned maintenance should be performed at each sock change-out event. Through monitoring of groundwater dissolved oxygen concentration and groundwater site parameters, it may become apparent that the well screens have become encrusted with material or clogged by bioaccumulations. In such a case, an appropriate remedy will be selected to unclog the well screens. Examples of possible actions could be;

- Manual scrubbing of the well screens via a down well brush.
- Addition of chemicals such as a biocide, peroxide, or acid to remove bioaccumulations and encrusting material.

The methods listed above may require redevelopment of the well to remove free floating materials.

2.13 Air Monitoring

Air monitoring will be conducted with a PID and dust monitor during all intrusive activities and only a PID during sampling activities. Air monitoring requirements that need to be conducted during intrusive activities are provided in the SMP. The PID will be used to monitor organic vapors in the breathing zone and borehole and to screen samples for analysis, and the dust monitor will be used to monitor particulate concentration in the breathing zone for particulates less than 10 microns in diameter.

The PID and dust monitor readings will be recorded in the field book during trenching and drilling activities. The instruments will be calibrated at least once each day and more frequently, if needed. A detailed procedure for the PID calibration is included as Attachment 2.

2.14 Investigation Derived Waste and Storage

Investigation-derived wastes (IDW) will be generated during site activities, which include, but are not limited to groundwater sampling, NAPL removal, and decontamination. IDW may include decontamination liquids, PPE, sorbent materials, purge water, recovered NAPLs, and disposable sampling materials that may have come in contact with potentially impacted materials. IDW will be collected and staged at the point of generation. Waste materials will be analyzed for constituents of concern to evaluate proper disposal methods. Anticipated IDW will be labeled and stored in 55-gallon drums with bolt-sealed lids. Disposable equipment (PPE and disposable sampling equipment) typically does not require laboratory analysis.

Minimization of IDW will be considered by the Project Manager and may include techniques such as replacing solvent based cleaners with aqueous-based cleaners for decontamination of equipment, reuse of equipment (where it can be decontaminated), and sampling techniques that generate little waste.

The procedures for handling IDW are based on the USEPA's Guide to Management of Investigation Derived Wastes (USEPA, 1992). IDW is assumed to be contaminated with the site residuals until analytical evidence indicates otherwise. IDW will be managed to ensure the protection of human health and the environment and will comply with all applicable or relevant and appropriate requirements (ARARs). The following Laws and Regulations on Hazardous Waste Management are possible ARARs for this Site.

- 6 New York Codes, Rules, and Regulations (6 NYCRR) Part 364 "Waste Transporter Permits", Part 371 "Identification and Listing of Hazardous Wastes", and Part 372 "Hazardous Waste Manifest System and Related Standards for Generators, Transporters and Facilities".
- Resource Conservation and Recovery Act 42 USC Part 6901-6987.
- Comprehensive Environmental Response, Compensation and Liability Act 42 USC Part 9601-9675.
- Superfund Amendments and Reauthorization Act.
- Department of Transportation (DOT) Hazardous Materials Transportation.

Waste characterization will be conducted in accordance with waste hauler, waste handling facility, and state/federal requirements following the laboratory requirements and methodologies outlined in the GQAPP. For purposes of this Site, IDW will be analyzed by methods appropriate for the known constituents that have been historically detected at the Site.

In the event that IDW is characterized as a hazardous waste (as defined in 6 NYCRR Part 371), RCRA and DOT requirements must be followed for packaging, labeling, transporting, storing, and record keeping as described in Title 40 of the Code of Federal Regulations Part (40 CFR) Part 262 and 49 CFR Part 171-178.

These procedures may be varied or changed as required, dependent upon site conditions, equipment limitations, or limitations imposed by the procedure. The ultimate procedure employed will be documented in the project work plans or reports. If changes to the sampling procedures are required due to unanticipated field conditions, the changes will be discussed with the Project Manager and NYSEG as soon as practicable and documented in the Periodic Review Report.

The following materials, as required, shall be available for IDW handling and storage:

- Appropriate PPE as specified by the HASP.
- 55-gallon steel drums, DOT 1A2 or equivalent.
- 15/16-inch socket wrench.
- Hammer.
- Leather gloves.
- Drum dolly.
- Appropriate drum labels (outdoor waterproof self-adhesive).
- Polyethylene storage tank.
- Appropriate labeling, packing, COC forms, and shipping materials.
- Indelible ink and/or permanent marking pens.
- Plastic sheeting.
- Digital camera.

- Field Logbook.

2.14.1 Drum Storage

All 55-gallon drums will be stored at a secure, centralized onsite location that is readily accessible for vehicular pick-up. Drums confirmed as, or believed to contain hazardous waste, will be stored over an impervious surface provided with secondary containment. The storage location will, for drums containing liquid, have a containment system that can contain at least the larger of 10% of the aggregate volume of staged materials or 100% of the volume of the largest container. No drum shall be placed directly on the ground. At minimum, all drums shall be placed on wooden pallets or secondary containment pallets (if not already staged in a secondary containment area on a wooden pallet). Drums will be closed during storage and be in good condition in accordance with the USEPA’s 1992 Guide to Management of Investigation-Derived Wastes.

2.14.2 Drum Container Labeling

Drums will be labeled on both the side and lid of the drum using a permanent marking pen. Old drum labels must be removed to the extent possible, descriptions crossed out should any information remain, and new labels affixed on top of the old labels. Other containers used to store various types of waste (polyethylene tanks, roll-off boxes, end-dump trailers, etc.) will be labeled with an appropriate "Waste Container" or “Testing in Progress” label pending characterization. Drums and containers will be labeled as follows:

- Appropriate waste characterization label (Testing in Progress, Hazardous, or Non-Hazardous).
- Waste generator's name (e.g., client name).
- Project name.
- Name and telephone number of project manager.
- Composition of contents (e.g., used oil, acetone 40%, toluene 60%).
- Media (e.g., solid, liquid).
- Accumulation date (i.e., date the waste is first placed in the container).
- Drum number of total drums as reconciled with the Drum Inventory maintained in the field log book.

Immediately upon placing waste into the drum/container, an appropriate waste label will be filled out to include the information specified above and affixed to the container. Containers with waste determined to be non-hazardous will be labeled with a green and white "Non-Hazardous Waste" label over the "Waste Container" label. Containers with waste determined to be hazardous will be stored in an onsite storage area and will be labeled with the "Hazardous Waste" label and affixed over the "Waste Container" label. DOT hazardous class labels must be applied to all hazardous waste containers for shipment offsite to an approved disposal or recycling facility. In addition, a DOT proper shipping name shall be included on the hazardous waste label. The transporter should be equipped with the appropriate DOT placards. However, placarding or offering placards to the initial transporter is the responsibility of the generator per 40 CFR Part 262.33.

2.14.3 Inspection and Documentation

All IDW will be documented as generated on a Drum Inventory Log maintained in the field log book. The Drum Inventory will record the generation date, type, quantity, matrix and origin (e.g. RW-1 through RW-10, MW-97-7) of materials in every drum, as well as a unique identification number for each drum. The drum inventory will be used during drum pickup to assist with labeling of drums. Digital photographs will be taken upon the initial generation and drumming/staging of waste, and final labeling after characterization to document compliance with labeling and storage protocols, and condition of the container. Evidence of damage, tampering or other discrepancy should be documented photographically.

2.14.4 Prepare Waste Shipment Documentation (Hazardous and Non-Hazardous)

Waste profiles will be provided to the waste disposal contractor for preparation of a manifest. The manifest will be reviewed and approved by NYSEG or its designated agent. Upon approval of the manifest, NYSEG's agent may sign manifests. Signed copies of the manifests will be returned to NYSEG from the waste disposal contractor.

Different profile numbers will be generated for different matrices or materials. For example, the profile number for disposable equipment will be different than the profile number for purge water. When there are multiple profiles it is critical that the proper label, with the profile number appropriate to a specific material be affixed to the proper containers. A copy of the container inventory will be provided to the waste transporter during pickup and to the facility receiving the waste.

2.14.5 Satellite Accumulation of Hazardous Waste

Satellite accumulation (SAA) shall mean the accumulation of as much as fifty-five (55) gallons of hazardous waste, or the accumulation of as much as one quart of acutely hazardous waste, in containers at or near any point of generation where the waste initially accumulates, which is under the control of the operator of the process generating the waste, without a permit or interim status and without complying with the requirements of 40 CFR Part 262.34(a) and without any storage time limit, provided that the generator complies with 40 CFR Part 262.34(c)(1)(i).

If more than 55 gallons of hazardous waste accumulates in the SAA, the generator has three days to move this waste into storage.

Storage recommendations for hazardous waste include:

- Hazardous waste must be stored on a concrete slab (asphalt is acceptable if there are no free liquids in the waste) per 40 CFR Part 265.176.
- Drainage must be directed away from the accumulation area.
- Area must be properly vented.
- Area must be secure.

2.14.6 Emergency Response and Notifications

Specific procedures for responding to site emergencies will be detailed in the HASP. In the event of a fire, explosion, or other release which could threaten human health outside of the Site or when NYSEG or its agent has knowledge of a spill that has reached surface water, NYSEG or its designated agent must immediately notify the National Response Center (800-424-8802) in accordance with 40 CFR Part 262.34. Other notifications to state agencies may also be necessary. The NYSEG PM will serve as the emergency contact on waste manifests for hazardous waste streams.

3 Field Instruments

All field-screening equipment will be calibrated immediately prior to each day's use and more frequently, if required. The calibration procedures will conform to the manufacturer's standard instructions. Records of all instrument calibration will be maintained by the field personnel. Copies of all of the instrument manuals will be maintained on site by the field personnel.

3.1 Portable Photoionization Detector

The PID will be a MiniRAE 3000 (or equivalent), equipped with a 10.6 electron volt (eV) lamp. The MiniRAE 3000 is capable of ionizing and detecting compounds with an ionization potential of less than 10.6 eV. This accounts for up to 73 percent of the VOCs on the Target Compound List. Calibration will be performed according to the procedures outlined in Attachment 2.

3.2 Dust Monitor

The dust monitor will be an TSI DustTrak II 8530 (or equivalent) and will be calibrated at the start of each day of use. Calibration and maintenance of the dust monitor will be conducted in accordance with the manufacturer’s specifications. The calibration data will be recorded in field notebooks.

3.3 pH Meter

The pH meter will be calibrated at the start of each day of use and after very high or low readings, as required by this GFSP. National Institute of Standards and Technology traceable standard buffer solutions that bracket the expected pH range will be used. The standards will most likely be a pH of4.0, 7.0, and 10.0 standard units. The auto pH calibration program in the meter will be used to calibrate the sensor. The calibration data will be recorded in field notebooks.

3.4 Specific Conductivity Meter

Calibration checks using the appropriate conductivity standard for the meter will be performed at the start of each day of use and after very high or low readings, as required by this GFSP. Readings must be within 3% to be acceptable. The thermometer of the meter will be calibrated against the field laboratory thermometer on a weekly basis.

3.5 Dissolved Oxygen Meter

The DO meter will be calibrated, and the condition of the DO sensor will be checked at the start of each day of use. Calibration and maintenance of the DO meter will be conducted in accordance with the manufacturer’s specifications. The calibration data will be recorded in field notebooks.

3.6 Water-Level Meter

The water-level cable will be checked once to a standard to assess if the meter has been correctly calibrated by the manufacturer or vendor. If the markers are incorrect, the meter will be sent back to the manufacturer or vendor.

3.7 Turbidity Meter

The turbidity meter will be calibrated daily prior to use. Calibration and maintenance will be conducted in accordance with the manufacturer’s specifications. Calibration and maintenance information will be recorded in the field notebook.

3.8 Oxidation-Reduction Potential Meter

The ORP meter will be calibrated at the start of each day of use. Calibration and maintenance of the ORP meter will be conducted in accordance with the manufacturer’s specifications. The calibration data will be recorded in the field notebook.

4 References

Arcadis. 2019a. Site Management Plan for the Oneonta Former MGP Site, Oneonta, New York. July 2019.

Arcadis. 2019b. Quality Assurance/Sampling and Analysis Project Plan for the Oneonta Former MGP Site, Oneonta, New York. July 2019.

Puls and Barcelona, 1996.

Figures

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ID#:

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

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Lab Work Order #

Send Results to:

Contact & Company Name:	Telephone:
Address:	Fax:
City State Zip	E-mail Address:
Project Name/Location (City, State):	Project #:
Sampler's Printed Name:	Sampler's Signature:

Preservative							
Filtered (✓)							
# of Containers							
Container Information							

PARAMETER ANALYSIS & METHOD

Keys

Preservation Key:
- A. H_2SO_4
- B. HCL
- C. HNO_3
- D. NaOH
- E. None
- F. Other: ________
- G. Other: ________
- H. Other: ________

Container Information Key:
- 1. 40 ml Vial
- 2. 1 L Amber
- 3. 250 ml Plastic
- 4. 500 ml Plastic
- 5. Encore
- 6. 2 oz. Glass
- 7. 4 oz. Glass
- 8. 8 oz. Glass
- 9. Other: ________
- 10. Other: ________

Matrix Key:

SO - Soil	SE - Sediment	NL - NAPL/Oil
W - Water	SL - Sludge	SW - Sample Wipe
T - Tissue	A - Air	Other: _______

Sample ID	**Collection**		**Type (✓)**		**Matrix**								**REMARKS**
	Date	Time	Comp	Grab									

Special Instructions/Comments:

☐ **Special QA/QC Instructions(✓):**

Laboratory Information and Receipt		**Relinquished By**	**Received By**	**Relinquished By**	**Laboratory Received By**
Lab Name:	Cooler Custody Seal (✓)	Printed Name:	Printed Name:	Printed Name:	Printed Name:
☐ Cooler packed with ice (✓)	☐ Intact ☐ Not Intact	Signature:	Signature:	Signature:	Signature:
Specify Turnaround Requirements:	Sample Receipt:	Firm:	Firm/Courier:	Firm/Courier:	Firm:
Shipping Tracking #:	Condition/Cooler Temp: _________	Date/Time:	Date/Time:	Date/Time:	Date/Time:

20730826 CofC AR Form 08.27.2015

Distribution: **WHITE – Laboratory returns with results** **YELLOW – Lab copy** **PINK – Retained by Arcadis**

Date Start/Finish: 8/9/2008 - 8/10/2008
Drilling Company: Drillers, Inc.
Driller's Name: Joe Smith
Drilling Method: Hollow Stem Auger
Auger Size: 4.25" ID
Rig Type: CME-55
Sampling Method: 2" Split Spoon

Northing: 617984.1848
Easting: 559115.8392
Casing Elevation: NA

Borehole Depth: 26' bgs
Surface Elevation: 682.35' AMSL

Descriptions By: Katherine Murray

Well/Boring ID: **EXAMPLE BORING**

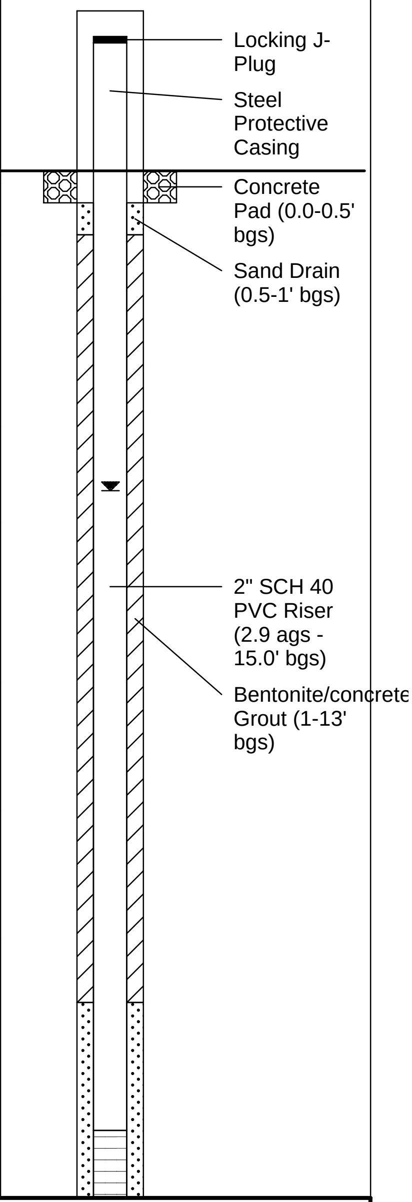
Client: XYZ Chemical Plant,
An ABC Company

Location: Smith Street Site
Syracuse, NY

DRAFT

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
	685								
0		1	0-2	2.0	1 1 2 5	3	1.1		Asphalt surface. Black-gray coarse GRAVEL, some fine Sand, moist. Dark brown to brown fine SAND and Coal SLAG, some medium to coarse Sand, moist.
	680	2	2-4	1.2	1 2 3 5	5	0.0		Light gray to white ASH, little rust colored mottles, moist to wet. Dark gray fine SAND and SILT, trace Clay, slightly plastic, some rust colored layers, wet.
5		3	4-6	1.1	1 2 1 5	3	0.0		Dark gray SILT and CLAY, little fine Gravel, little coarse Sand, medium plasticity, soft, wet. Gravel content increasing to some below 4.7' bgs. Red to yellow-brown fine to medium GRAVEL and coarse SAND, little Silt, trace Clay, wet.
	675	4	6-8	1.3	7 8 1 8	9	0.0		
		5	8-10	0.3	1 2 5 4	7	0.0		Brown fine to coarse SAND, some fine Gravel, little Silt, moist.
10		6	10-12	0.0	6 18 50/0.3	NA	NA		No Recovery.
	670	7	12-14	1.4	6 5 4 6	9	3.5		Red to yellow-brown fine to medium GRAVEL and coarse SAND, little Silt, saturated.
15		8	14-16	1.5	2 9 1 2	10	4.5		Color change to brown below 14' bgs.

Well/Boring Construction



ARCADIS
Infrastructure, environment, facilities

Remarks: bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level.

Client: XYZ Chemical Plant,
An ABC Company

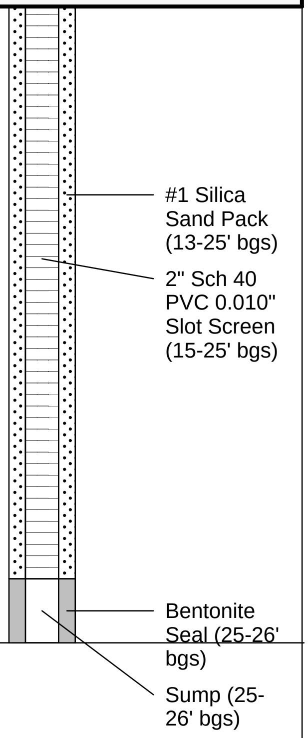
Site Location:
Smith Street Site
Syracuse, NY

Well/Boring ID: EXAMPLE BORING

Borehole Depth: 26' bgs

DRAFT

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
	665	9	16-18	2.0	3 2 1 1	3	0.0		Brown fine to medium GRAVEL and coarse SAND, little Silt, saturated.	
		10	18-20	2.0	1 1 2 2	3	0.0			
20		11	20-22	2.0	5 4 1 2	5	0.0			
	660	12	22-24	1.6	4 13 12 9	15	87			
25		13	24-26	1.7	3 12 9 15	21	112			
	655									
30										
	650									
35										



ARCADIS
Infrastructure, environment, facilities

Remarks: bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level.

Attachment 1

Soil Description Technical Guidance Instruction

TGI - SOIL DESCRIPTION

Rev: #2

Rev Date: February 16, 2018

VERSION CONTROL

Revision No	Revision Date	Page No(s)	Description	Reviewed by
0	May 20, 2008	17	Original SOP	Joe Quinnan Joel Hunt
1	September 2016	15	Updated to TGI	Nick Welty Patrick Curry
2	February 16, 2018	15	Updated descriptions, attachments and references in text	Nick Welty Patrick Curry

APPROVAL SIGNATURES

Prepared by: June 30, 2017

Patrick Curry, PG Date:

Technical Expert Reviewed by: Niklaus R.H. Welt June 30, 2017

Nicklaus Welty, PG Date:

1 INTRODUCTION

This document describes general and/or specific procedures, methods, actions, steps, and considerations to be used and observed by Arcadis staff when performing work, tasks, or actions under the scope and relevancy of this document. This document may describe expectations, requirements, guidance, recommendations, and/or instructions pertinent to the service, work task, or activity it covers.

It is the responsibility of the Arcadis Certified Project Manager (CPM) to provide this document to the persons conducting services that fall under the scope and purpose of this procedure, instruction, and/or guidance. The Arcadis CPM will also ensure that the persons conducting the work falling under this document are appropriately trained and familiar with its content. The persons conducting the work under this document are required to meet the minimum competency requirements outlined herein, and inquire to the CPM regarding any questions, misunderstanding, or discrepancy related to the work under this document.

This document is not considered to be all inclusive nor does it apply to all projects. It is the CPM's responsibility to determine the proper scope and personnel required for each project. There may be project- and/or client- and/or state-specific requirements that may be more or less stringent than what is described herein. The CPM is responsible for informing Arcadis and/or Subcontractor personnel of omissions and/or deviations from this document that may be required for the project. In turn, project staff are required to inform the CPM if or when there is a deviation or omission from work performed as compared to what is described herein.

In following this document to execute the scope of work for a project, it may be necessary for staff to make professional judgment decisions to meet the project's scope of work based upon site conditions, staffing expertise, regulation-specific requirements, health and safety concerns, etc. Staff are required to consult with the CPM when or if a deviation or omission from this document is required that has not already been previously approved by the CPM. Upon approval by the CPM, the staff can perform the deviation or omission as confirmed by the CPM.

2 SCOPE AND APPLICATION

This Arcadis Technical Guidance Instruction (TGI) describes proper soil description procedures. This TGI should be followed for unconsolidated material unless there is an established client-required specific procedure or regulatory-required specific procedure. In cases where there is a required specific procedure, it should be followed and should be referenced and/or provided as an appendix to reports that include soil classifications and/or boring logs. When following a required non-Arcadis procedure, additional information required by this TGI should be included in field notes with client approval.

This TGI has been developed to emphasize field observation and documentation of details required to:

- make hydrostratigraphic interpretations guided by depositional environment/geologic settings;
- provide information needed to understand the distribution of constituents of concern; properly design wells, piezometers, and/or additional field investigations; and develop appropriate remedial strategies.

This TGI incorporates elements from various standard systems such as ASTM D2488-06, Unified Soil Classification System, Burmister and Wentworth. However, none of these standard systems focus specifically on contaminant hydrogeology and remedial design. Therefore, although each of these systems contain valuable guidance and information related to correct descriptions, strict application of these systems can omit information critical to our clients and the projects that we perform.

This TGI does not address details of health and safety; drilling method selection; boring log preparation; sample collection; or laboratory analysis. Refer to other Arcadis procedure, guidance, and instructional documents, the project work plans including the quality assurance project plan, sampling plan, and health and safety plan (HASP), as appropriate.

3 PERSONNEL QUALIFICATIONS

Soil descriptions should only be performed by Arcadis personnel or authorized sub-contractors with a degree in geology or a geology-related discipline. Field personnel will complete training on the Arcadis soil description TGI in the office and/or in the field under the guidance of an experienced field geologist with at least 2 years of prior experience applying the Arcadis soil description method.

4 EQUIPMENT LIST

The following equipment should be taken to the field to facilitate soil descriptions:

- field book, field forms or PDA to record soil descriptions;
- field book for supplemental notes;
- this TGI for Soil Descriptions and any project-specific procedure, guidance, and/or instructional documents (if required);
- field card showing Wentworth scale;
- Munsell® soil color chart;
- tape measure divided into tenths of a foot;
- stainless steel knife or spatula;
- hand lens;
- water squirt bottle;
- jar with lid;
- personal protective equipment (PPE), as required by the HASP; and
- digital camera

5 CAUTIONS

Drilling and drilling-related hazards including subsurface utilities are discussed in other procedure documents and site-specific HASPs and are not discussed herein.

Soil samples may contain hazardous substances that can result in exposure to persons describing soils. Routes for exposure may include dermal contact, inhalation and ingestion. Refer to the project specific HASP for guidance in these situations.

6 HEALTH AND SAFETY CONSIDERATIONS

Field activities associated with soil sampling and description will be performed in accordance with a site-specific HASP, a copy of which will be present on site during such activities. Know what hazardous substances may be present in the soil and understand their hazards. Always avoid the temptation to touch soils with bare hands, detect odors by placing soils close to your nose, or tasting soils.

7 PROCEDURE

1. Select the appropriate sampling method to obtain representative samples in accordance with the selected sub-surface exploration method, e.g. split-spoon or Shelby sample for hollow-stem drilling, acetate sleeves for direct push, bagged core for sonic drilling, etc.
2. Proceed with field activities in required sequence. Although completion of soil descriptions is often not the first activity after opening sampler, identification of stratigraphic changes is often necessary to select appropriate intervals for field screening and/or selection of laboratory samples.
3. Set up boring log field sheet.
    - Drillers in both the US and Canada generally work in feet due to equipment specifications. Use the Arcadis standard boring log form (**Attachment A**).
    - The preferred boring log includes a graphic log of the principal soil component to support quick visual evaluation of grain size. The purpose of the graphic log is to quickly assess relative soil permeability. Note, for poorly sorted soils (e.g. glacial till), the principal component may not correlate to permeability of the sample. In this case, the geologist should use best judgement to graph overall soil type consistent with relative soil permeability. For example, for a dense sand/silt/clay till, the graphic log would reflect the silt/clay, rather than sand.
    - Record depths along the left-hand side at a standard scale to aid in the use of this tool. See an example completed boring log (**Attachment B**).
4. Examine each soil core (this is different than examining each sample selected for laboratory analysis), and record the following for each stratum:
    - depth interval;
    - principal component with descriptors, as appropriate;
    - amount and identification of minor component(s) with descriptors as appropriate;
    - moisture;
    - consistency/density;
    - color; and
    - additional description or comments (recorded as notes).
5. At the end of the boring, record the amount of drilling fluid used (if applicable) and the total depth logged.

The above is described more fully below.

DEPTH

To measure and record the depth below ground surface (bgs) of top and bottom of each stratum, the following information should be recorded.

1. Measured depth to the top and bottom of sampled interval. Use starting depth of sample based upon measured tool length information and the length of sample interval.
2. Length of sample recovered, not including slough (material that has fallen into hole from previous interval), expressed as fraction with length of recovered sample as numerator over length of sampled interval as denominator (e.g. 14/24 for 14 inches recovered from 24-inch sampling interval that had 2 inches of slough discarded).
3. Thickness of each stratum measured sequentially from the top of recovery to the bottom of recovery.
4. Any observations of sample condition or drilling activity that would help identify whether there was loss from the top of the sampling interval, loss from the bottom of the sampling interval, or compression of the sampling interval. Examples: 14/24, gravel in nose of spoon; or 10/18 bottom 6 inches of spoon empty.

DETERMINATION OF COMPONENTS

Obtain a representative sample of soil from a single stratum. If multiple strata are present in a single sample interval, each stratum should be described separately. More specifically, if the sample is from a 2-foot long split-spoon where strata of coarse sand, fine sand and clay are present, then the resultant description should be of the three individual strata unless a combined description can clearly describe the interbedded nature of the three strata. Example: Fine Sand with interbedded lenses of Silt and Clay, ranging between 1 and 3 inches thick.

Identify principal component and express volume estimates for minor components on logs using the following standard modifiers.

Modifier	Percent of Total Sample (by volume)
and	36 - 50
some	21 - 35
little	10 - 20
trace	<10

Determination of components is based on using the Udden-Wentworth particle size classification (see below) and measurement of the average grain size diameter. Each size grade or class differs from the next larger grade or class by a constant ratio of ½. Due to visual limitations, the finer classifications of Wentworth's scale cannot be distinguished in the field and the subgroups are not included. Visual determinations in the field should be made carefully by comparing the sample to the Soil Description Field Guide (**Attachment C**) that shows Udden-Wentworth scale or by measuring with a ruler. Use of field sieves is encouraged to assist in estimating percentage of coarse grain sizes. Settling test or wash method (Appendix X4 of ASTM D2488) is encouraged for determining presence and estimating percentage of clay and silt. Note that "gravel" is not an Udden-Wentworth size class.

Udden-Wenworth Scale
Modified Arcadis, 2008

Size Class	Millimeters	Inches	Standard Sieve #
Boulder	256 – 4096	10.08+	
Large cobble	128 - 256	5.04 -10.08	
Small cobble	64 - 128	2.52 – 5.04	
Very large pebble	32 – 64	0.16 - 2.52	
Large pebble	16 – 32	0.63 – 1.26	
Medium pebble	8 – 16	0.31 – 0.63	
Small pebble	4 – 8	0.16 – 0.31	No. 5 +
Granule	2 – 4	0.08 – 0.16	No.5 – No.10
Very coarse sand	1 -2	0.04 – 0.08	No.10 – No.18
Coarse sand	½ - 1	0.02 – 0.04	No.18 - No.35
Medium sand	¼ - ½	0.01 – 0.02	No.35 - No.60
Fine sand	1/8 -¼	0.005 – 0.1	No.60 - No.120
Very fine sand	1/16 – 1/8	0.002 – 0.005	No. 120 – No. 230
Silt (subgroups not included)	1/256 – 1/16	0.0002 – 0.002	Not applicable (analyze by pipette or hydrometer)
Clay (subgroups not included	1/2048 – 1/256	.00002 – 0.0002	

Identify components as follows. Remove particles greater than very large pebbles (64-mm diameter) from the soil sample. Record the volume estimate of the greater than very large pebbles. Examine the sample fraction of very large pebbles and smaller particles and estimate the volume percentage of the pebbles, granules, sand, silt and clay. Use the jar method, visual method, and/or wash method (Appendix X4 of ASTM D2488) to estimate the volume percentages of each category.

Determination of actual dry weight of each Udden-Wentworth fraction requires laboratory grain-size analysis using sieve sizes corresponding to Udden-Wentworth fractions and is highly recommended to determine grain-size distributions for each hydrostratigraphic unit.

Lab or field sieve analysis is advisable to characterize the variability and facies trends within each hydrostratigraphic unit. Field sieve-analysis can be performed on selected samples to estimate dry weight fraction of each category using ASTM D2488 Standard Practice for Classification of Soils for Engineering Purposes as guidance, but replace required sieve sizes with the following Udden-Wentworth set: U.S. Standard sieve mesh sizes 6; 12; 20; 40; 70; 140; and 270 to retain pebbles; granules; very coarse sand; coarse sand; medium sand; fine sand; and very fine sand, respectively.

PRINCIPAL COMPONENT

The principal component is the size fraction or range of size fractions containing the majority of the volume. Examples: the principal component in a sample that contained 55% pebbles would be “Pebbles”; or the principal component in a sample that was 20% fine sand, 30% medium sand and 25% coarse sand would be “Sand, fine to coarse” or for a sample that was 40% silt and 45% clay the principal component would be “Clay and Silt”. Shade the boxes on the graphic log (**Attachment A**) up to and including the box with the principal component. The purpose of the graphical log is to provide a relative estimate of permeability. As noted above, for poorly sorted soils such as glacial till, the principal component may not correlate to permeability of the sample. In this case, the geologist should use best judgement to graph overall soil type consistent with relative soil permeability.

Include appropriate descriptors with the principal component. These descriptors vary for different particle sizes as follows.

Angularity – Describe the angularity for very coarse sand and larger particles in accordance with the table below (ASTM D-2488-06). Figures showing examples of angularity are available in ASTM D-2488-06 and the Arcadis Soil Description Field Guide.

Description	Criteria
Angular	Particles have sharp edges and relatively plane sides with unpolished surfaces.
Sub-angular	Particles are similar to angular description but have rounded edges.
Sub-rounded	Particles have nearly plane sides but have well-rounded corners and edges.
Rounded	Particles have smoothly curved sides and no edges.

Plasticity – Describe the plasticity for silt and clay based on observations made during the following test method (ASTM D-2488-06).

- As in the dilatancy test below, select enough material to mold into a ball about ½ inch (12 mm) in diameter. Mold the material, adding water if necessary, until it has a soft, but not sticky, consistency.
- Shape the test specimen into an elongated pat and roll by hand on a smooth surface or between the palms into a thread about 1/8 inch (3 mm) in diameter. If the sample is too wet to roll easily, it should be spread into a thin layer and allowed to lose some water by evaporation. Fold the sample threads and reroll repeatedly until the thread crumbles at a diameter of about 1/8 inch. The thread will crumble when the soil is near the plastic limit.

Description	Criteria
Non-plastic	A 1/8-inch (3 mm) thread cannot be rolled at any water content.
Low	The thread can barely be rolled, and the lump cannot be formed when drier than the plastic limit.
Medium	The thread is easy to roll and not much time is required to reach the plastic limit. The thread cannot be rerolled after reaching the plastic limit. The lump crumbles when drier than the plastic limit.
High	It takes considerable time rolling and kneading to reach the plastic limit. The thread can be rolled several times after reaching the plastic limit. The lump can be formed without crumbling when drier than the plastic limit.

Dilatancy – Describe the dilatancy for silt and silt-sand mixtures using the following field test method (ASTM D-2488-06).

- From the specimen select enough material to mold into a ball about ½ inch (12 mm) in diameter. Mold the material adding water if necessary, until it has a soft, but not sticky, consistency.
- Smooth the ball in the palm of one hand with a small spatula.
- Shake horizontally, striking the side of the hand vigorously with the other hand several times.
- Note the reaction of water appearing on the surface of the soil.
- Squeeze the sample by closing the hand or pinching the soil between the fingers, and not the reaction as none, slow, or rapid in accordance with the table below. The reaction is the speed with which water appears while shaking and disappears while squeezing.

Description	Criteria
None	No visible change in the specimen.
Slow	Water appears slowly on the surface of the specimen during shaking and does not disappear or disappears slowly upon squeezing.
Rapid	Water appears quickly on the surface of the specimen during shaking and disappears quickly upon squeezing.

Note that silt and silt-sand mixtures will be non-plastic and display dilatancy. Clay mixtures will have some degree of plasticity but do not typically react to dilatancy testing. Therefore, the tests outlined above can be used to differentiate between silt dominated and clay dominated soils.

MINOR COMPONENT(S)

The minor component(s) are the size fraction(s) containing less than 50% volume. Example: the identified components are estimated to be 60% medium sand to granules, 25% silt and clay; 15 % pebbles – there are two identified minor components: silt and clay; and pebbles.

Include a standard modifier to indicate percentage of minor components (see Table on Page 6) and the same descriptors that would be used for a principal component. Plasticity should be provided as a descriptor for clay and clay mixtures. Dilatancy should be provided for silt and silt mixtures. Angularity should be provided as a descriptor for pebbles and coarse sand. For the example above, the minor constituents with modifiers could be: some silt and clay, low plasticity; little medium to large pebbles, sub-round.

SORTING

Sorting is the opposite of grading, which is a commonly used term in the USCS or ASTM methods to describe the uniformity of the particle size distribution in a sample. Well-sorted samples are poorly graded and poorly sorted samples are well graded. Arcadis prefers the use of sorting for particle size distributions and grading to describe particle size distribution trends in the vertical profile of a sample or hydrostratigraphic unit because of the relationship between sorting and the energy of the depositional process. For soils with sand-sized or larger particles, sorting should be determined as follows:

Well sorted – the range of particle sizes is limited (e.g. the sample is comprised of predominantly one or two grain sizes).

Poorly sorted – a wide range of particle sizes are present.

You can also use sieve analysis to estimate sorting from a sedimentological perspective; sorting is the statistical equivalent of standard deviation. Smaller standard deviations correspond to higher degree of sorting (see Remediation Hydraulics, 2008).

MOISTURE

Moisture content should be described for every sample since increases or decreases in water content is critical information. Moisture should be described in accordance with the table below (percentages should not be used unless determined in the laboratory).

Description	Criteria
Dry	Absence of moisture, dry to touch, dusty.
Moist	Damp but no visible water.
Wet (Saturated)	Visible free water, soil is usually below the water table.

CONSISTENCY or DENSITY

This can be determined by standard penetration test (SPT) blow counts (ASTM D-1586) or field tests in accordance with the tables below. When drilling with hollow-stem augers and split-spoon sampling, the SPT blow counts and N-value is used to estimate density. The N-value is the blows per foot for the 6” to 18” interval. Example: for 24-inch spoon, recorded blows per 6-inch interval are: 4/6/9/22. Since the second interval is 6” to12”, the third interval is 12” to 18”, the N value is 6+9, or 15. Fifty blow counts for less than 6 inches is considered refusal. In recent years, more common drilling methods include rotary-sonic or direct push. When blow counts are not available, density is determined using a thumb test. Note however, the thumb test only applies to fine-grained soils.

Fine-grained soil – Consistency

Description	Criteria
Very soft	N-value < 2 or easily penetrated several inches by thumb.
Soft	N-value 2-4 or easily penetrated one inch by thumb.
Medium stiff	N-value 9-15 or indented about ¼ inch by thumb with great effort.
Very stiff	N-value 16-30 or readily indented by thumb nail.
Hard	N-value > than 30 or indented by thumbnail with difficulty

Coarse-grained soil – Density

Description	Criteria
Very loose	N-value 1- 4
Loose	N-value 5-10
Medium dense	N-value 11-30
Dense	N-value 31- 50
Very dense	N-value >50

COLOR

Color should be described using simple basic terminology and modifiers based on the Munsell system. Munsell alpha-numeric codes are required for all samples. If the sample contains layers or patches of varying colors this should be noted and all representative colors should be described. The colors should be described for moist samples. If the sample is dry it should be wetted prior to comparing the sample to the Munsell chart.

ADDITIONAL COMMENTS (NOTES)

Additional comments should be made where observed and should be presented as notes with reference to a specific depth interval(s) to which they apply. Some of the significant information that may be observed includes the following.

- Odor - You should not make an effort to smell samples by placing near your nose since this can result in unnecessary exposure to hazardous materials. However, odors should be noted if they are detected during the normal sampling procedures. Odors should be based upon descriptors such as those used in NIOSH "Pocket Guide to Chemical Hazards", e.g. "pungent" or "sweet" and should not indicate specific chemicals such as "phenol-like" odor or "BTEX" odor.
- Structure
- Bedding planes (laminated, banded, geologic contacts).
- Presence of roots, root holes, organic material, man-made materials, minerals, etc.
- Mineralogy
- Cementation
- NAPL presence/characteristics, including sheen (based on client-specific guidance).
- Reaction with HCl - typically only used for special soil conditions, such as caliche environments.
- Origin, if known (Lacustrine; Fill; etc.).

EXAMPLE DESCRIPTIONS

51.4 to 54.0' CLAY, some silt, medium to high plasticity; trace small to large pebbles, sub-round to sub-angular up to 2" diameter; moist, stiff, dark grayish brown (10 YR 4/2) NOTE: Lacustrine; laminated 0.1 to 0.2" thick, laminations brownish yellow (10 YR 4/3).

32.5 to 38.0’ SAND, medium to very coarse, sub-round to sub-angular; little granule and pebble, trace silt; poorly sorted, wet, grayish brown (10 YR 5/2).

Unlike the first example where a density of cohesive soils could be estimated, this rotary-sonic sand and pebble sample was disturbed during drilling (due to vibrations in a loose sand and pebble matrix) so no density description could be provided. Neither sample had noticeable odor so odor comments were not included.

The standard generic description order is presented below.

- Depth
- Principal Components
    - Angularity for very coarse sand and larger particles
    - Plasticity for silt and clay
    - Dilatancy for silt and silt-sand mixtures
- Minor Components
- Sorting
- Moisture
- Consistency or Density
- Color
- Additional Comments

8 WASTE MANAGEMENT

Project-specific requirements should be identified and followed. The following procedures, or similar waste management procedures are generally required.

Water generated during cleaning procedures will be collected and contained onsite in appropriate containers for future analysis and appropriate disposal. PPE (such as gloves, disposable clothing, and other disposable equipment) resulting from personnel cleaning procedures and soil sampling/handling activities will be placed in plastic bags. These bags will be transferred into appropriately labeled 55-gallon drums or a covered roll-off box for appropriate disposal.

Soil materials will be placed in sealed 55-gallon steel drums or covered roll-off boxes and stored in a secured area. Once full, the material will be analyzed to determine the appropriate disposal method.

9 DATA RECORDING AND MANAGEMENT

Upon collection of soil samples, the soil sample should be logged on a standard boring log and/or in the field log book depending on Data Quality Objectives (DQOs) for the task/project. The preferred standard boring log is presented below and is included as **Attachment A**.

The general scheme for soil logging entries is presented above; however, depending on task/project DQOs, specific logging entries that are not applicable to task/project goals may be omitted at the project manager's discretion. In any case, use of a consistent logging procedure is required.

Completed logs and/or logbook will be maintained in the task/project field records file. Digital photographs of typical soil types observed at the site and any unusual features should be obtained whenever possible. All photographs should include a ruler or common object for scale. Photo location, depth and orientation must be recorded in the daily log or log book and a label showing this information in the photo is useful.

10 QUALITY ASSURANCE

Soil descriptions should be completed only by appropriately trained personnel. Descriptions should be reviewed by an experienced field geologist for content, format and consistency. Edited boring logs should be reviewed by the original author to assure that content has not changed.

11 REFERENCES

Arcadis Soil Description Field Guide, 2008.

Munsell® Color Chart – available from Forestry Suppliers, Inc.- Item 77341 "Munsell® Color Soil Color Charts.

Field Gauge Card that Shows Udden-Wentworth scale – available from Forestry Suppliers, Inc. – Item 77332 "Sand Grain Sizing Folder."

ASTM D-1586, Test Method for Penetration Test and Split-Barrel Sampling of Soils.

ASTM D-2488-00, Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)

United States Bureau of Reclamation. Engineering Geology Field Manual. United States Department of Interior, Bureau of Reclamation. http://www.usbr.gov/pmts/geology/fieldmap.htm.

Petrology of Sedimentary Rocks, Robert L. Folk, 1980, p. 1-48.

NIOSH Pocket Guide to Chemical Hazards.

Remediation Hydraulics, Fred C. Payne, Joseph A. Quinnan, and Scott T. Potter, 2008, p 59-63.

ATTACHMENT A

Arcadis Standard Soil Boring Log Form

ARCADIS Design & Consultancy for natural and built assets

SOIL BORING LOG

Boring/Well ____________ Project ______________________________ Page ____ of ____

Site Location ______________________________ Drilling Started ____________

Total Depth Drilled ________ Feet Hole Diameter ________ inches Drilling Completed ____________

Type of Sample or Coring Device ________ Length and Diameter of Coring Device ________________ Sampling Interval ________ feet

Drilling Method ________ Drilling Fluid Used ____________

Drilling Contractor ______________________ Driller ____________

Prepared By ______________________ Helper ____________

Core Recovery (feet)	PID Reading (ppm)	Sample Depth (ft bgs)	MUD		SAND					GRAVEL				**Udden-Wentworth Description:** principal components, (angularity, plasticity, dilatency); minor components, (angularity, plasticity, dilatency); sorting, moisture content, consistency/density, color, additional comments
			clay	silt	very fine	fine	medium	coarse	very coarse	granular	pebble	cobble	boulder	

ARCADIS Design & Consultancy for natural and built assets

SOIL BORING LOG (CONT'D)

Boring/Well ____________ Prepared By ____________ Page ____ of ____

Core Recovery (feet)	PID Reading (ppm)	Sample Depth (ft bgs)	MUD		SAND					GRAVEL				Udden-Wentworth Description: principal components, (angularity, plasticity, dilatency); minor components, (angularity, plasticity, dilatency); sorting, moisture content, consistency/density, color, addtl. Comments
			clay	silt	very fine	fine	medium	coarse	very coarse	granular	pebble	cobble	boulder	

ATTACHMENT B

Example of Completed Arcadis Soil Boring Log

ARCADIS Design & Consultancy for natural and built assets

SOIL BORING LOG

Boring/Well SB-01 Project Example Page 1 of 1

Site Location Anytown, North America

Drilling Started 6/26/17

Total Depth Drilled 20 Feet

Hole Diameter 4.5 inches

Drilling Completed 6/26/17

Type of Sample or Coring Device Continuous

Length and Diameter of Coring Device 5', 2.25" macrocore

Sampling Interval 5 feet

Drilling Method Geoprobe

Drilling Fluid Used NA

Drilling Contractor Fibertec

Driller Ryan Brown

Prepared By A. DeGrandis

Helper Grant Berger

Core Recovery (feet)	PID Reading (ppm)	Sample Depth (ft bgs)	MUD		SAND					GRAVEL				Udden-Wentworth Description: principal components, (angularity, plasticity, dilatency); minor components, (angularity, plasticity, dilatency); sorting, moisture content, consistency/density, color, additional comments
			clay	silt	very fine	fine	medium	coarse	very coarse	granular	pebble	cobble	boulder	
	0.3	1	X	X	X	X	X							(0.0-4.0) SAND, fine to medium, sub-rounded;
	0.1	2	X	X	X	X	X							little granules to small pebbles, sub-rounded
60" (HA)	0.0	3	X	X	X	X	X							to sub-angular; trace silt; poorly sorted, dry
	0.0	4	X	X	X	X	X							to moist, dark grayish brown (10YR 4/2).
	1.4	5	X	X										NOTE: Ablation till.
	1.7	6	X	X										
	0.9	7	X	X										(4.0-10.0) SILT, non-plastic, rapid dilatancy;
52"	1.2	8	X	X										dry to moist, soft to medium stiff,
	0.6	9	X	X										gray (10YR 5/1).
	0.2	10	X	X										
	0.0	11	X	X	X	X								(10.0-15.5) SAND, fine, sub-rounded; trace
	0.0	12	X	X	X	X								silt; well sorted, moist to wet, pale
60"	0.1	13	X	X	X	X								brown (10YR 6/3).
	0.0	14	X	X	X	X								
	0.0	15	X	X	X	X								NOTE: Wet at 12.0'
	0.2	16	X	X	X	X								
	0.0	17	X											(15.5-20.0) CLAY, high plasticity, no dilatancy;
58"	0.0	18	X											little silt; moist, soft to medium stiff,
	0.0	19	X											light gray (10YR 7/1) to dark gray (10YR 4/1).
	0.0	20	X											NOTE: Lacustrine, minor 0.1-0.25" lamination.
														End of boring - 20.0'

ATTACHMENT C

Arcadis Soil Description Field Guide

ON THE ORIGINAL DRAWING.
USE TO VERIFY FIGURE
REPRODUCTION SCALE

SOIL DESCRIPTION FIELD GUIDE (JUNE 30, 2017; REV. 2.0)

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FINE-GRAINED SOILS

Description	Criteria
	Descriptor - Plasticity
Nonplastic	A 1/8-inch (3mm) thread cannot be rolled at any moisture content.
Low	Thread can barely be rolled, and lump cannot be formed when drier than plastic limit.
Medium	Takes considerable time and rolling to reach plastic limit. Thread cannot be rolled after reaching plastic limit. Lump crumbles when drier than plastic limit.
High	Thread is easy to roll and quickly reaches plastic limit. Thread can be rerolled several times after reaching plastic limit. Lump can be formed without crumbling when drier than plastic limit.
	Descriptor - Dilatancy
No Dilatancy	No visible change when shaken or squeezed.
Slow	Water appears slowly on the surface of soil during shaking and does not disappear or disappears slowly when squeezed.
Rapid	Water appears quickly on surface of soil during shaking and disappears quickly when squeezed.
Minor Components with Descriptors	
	Moisture
Dry	Absence of moisture, dry to touch, dusty.
Moist	Damp but no visible water.
Wet	Visible free water; soil is usually below the water table. (Saturated)
	Consistency
Very soft	N-value < 2 or easily penetrated several inches by thumb.
Soft	N-value 2-4 or easily penetrated 1 inch by thumb.
Medium stiff	N-value 5-8 or indented about 1/2 inch by thumb with great effort.
Stiff	N-value 9-15 or indented about 1/4 inch by thumb with great effort.
Very stiff	N-value 16-30 or readily indented by thumb nail.
Hard	N-value > than 30 or indented by thumbnail with difficulty.
Color using Munsell	
Geologic Origin (if known)	
Other	

EXAMPLE OF SOIL DESCRIPTION AND PHOTO

10-15 feet CLAY, medium to high plasticity; trace silt; trace small to very large pebbles, subround to subangular up to 2" diameter; moist, stiff, dark grayish brown (10YR 4/2). NOTE: Lacustrine; laminated 0.1 to 0.2" thick, laminations brownish yellow (10YR 4/3).

DESCRIPTION ORDER

Depth Interval
Principal Components with Descriptors
Minor Components with Descriptors
Sorting
Field Moisture Condition
Density/Consistency
Color using Munsell
Geologic Origin (if known)
Other descriptions as NOTES:
- Odor
- Stratigraphy
- Structure
- Sphericity
- Cementation
- Reaction to acid

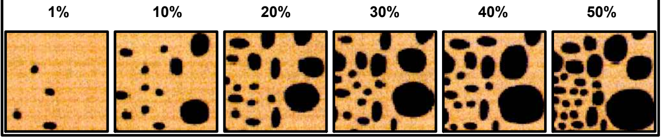
MINOR COMPONENTS % MODIFIERS

Modifier	Percent of Total Sample (by volume)
and	36 - 50
some	21 - 35
little	10 - 20
trace	<10

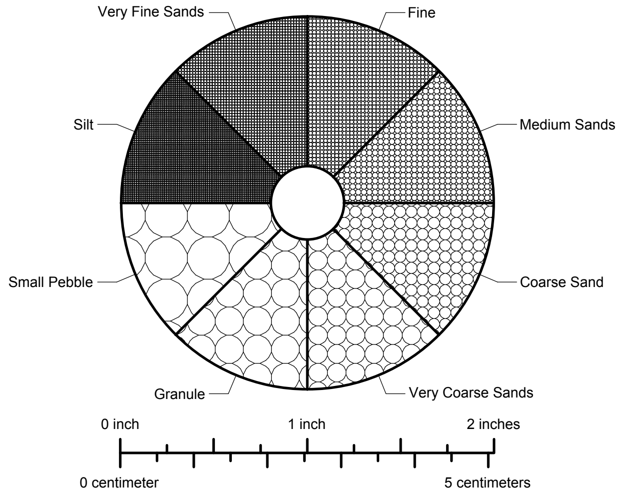
UDDEN-WENTWORTH SCALE

Fraction	Sieve Size	Grain Size	Approximate Scale
Boulder		256 - 4096 mm	Larger than volleyball
Large Cobble		128 - 256 mm	Softball to volleyball
Small Cobble		64 - 128 mm	Pool ball to softball
Very Large Pebble		32 - 64 mm	Pinball to pool ball
Large Pebble		16 - 32 mm	Dime size to pinball
Medium Pebble		8 - 16 mm	Pencil eraser to dime size
Small Pebble	No. 5+	4 - 8 mm	Pea size to pencil eraser
Granule	No. 10 - 5	2 - 4 mm	Rock salt to pea size
Very Coarse Sand	No. 18 - 10	1 - 2 mm	See field gauge card
Coarse Sand	No. 35 -18	0.5 - 1 mm	See field gauge card
Medium Sand	No. 60 - 35	0.25 - 0.5 mm	See field gauge card
Fine Sand	No. 120 - 60	0.125 - 0.25 mm	See field gauge card
Very Fine Sand	No. 230 - 120	0.0625 - 0.125 mm	See field gauge card
Silt and Clay. See SOP for description of fines	Not Applicable	<0.0625 mm	Analyze by pipette or hydrometer

PARTICLE PERCENT COMPOSITION ESTIMATION



GRAPH FOR DETERMINING SIZE OF PARTICLES



FOR COARSE-GRAINED SOILS

Description	Criteria
	Descriptor - Angularity
Angular	Particles have sharp edges and relatively planar sides withunpolished surfaces.
Subangular	Particles are similar to angular but have rounded edges.
Subround	Particles have nearly planar sides but have well-roundedcorners and edges.
Round	Particles have smoothly curved sides and no edges.
Minor Components with Descriptors	
	Sorting **Cu= d60/d10**
Well Sorted	Near uniform grain-size distribution Cu= 1 to 3.
Poorly Sorted	Wide range of grain size Cu= 4 to 6.
	Moisture
Dry	Absence of moisture, dry to touch, dusty.
Moist	Damp but no visible water.
Wet	Visible free water; soil is usually below the water table. (Saturated)
	Density
Very loose	N-value 1 - 4
Loose	N-value 5 - 10
Medium Dense	N-value 11 - 30
Dense	N-value 31 - 50
Very dense	N-value >50
Color using Munsell	
Geologic Origin (if known)	
Other	
	Cementation
Weak Cementation	Crumbles or breaks with handling or little finger pressure.
Moderate Cementation	Crumbles or breaks with considerable finger pressure.
Strong Cementation	Will not crumble with finger pressure.
	Reaction with Dilute HCl Solution (10%)
No Reaction	No visible reaction.
Weak Reaction	Some reaction, with bubbles forming slowly.
Strong Reaction	Violent reaction, with bubbles forming immediately.

EXAMPLE OF SOIL DESCRIPTION AND PHOTO

10 -15 feet SAND, medium to very coarse; little granules to medium pebbles, subround to subangular; trace silt; poorly sorted, wet, grayish brown (10YR5/2).

ON THE ORIGINAL DRAWING.
USE TO VERIFY FIGURE
REPRODUCTION SCALE

SOIL DESCRIPTION FIELD GUIDE (JUNE 30, 2017; REV. 2.0)

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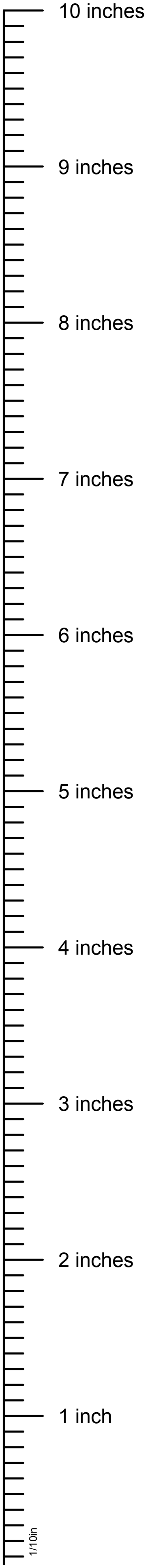
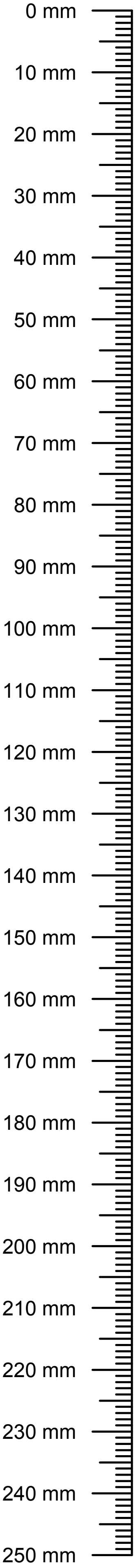




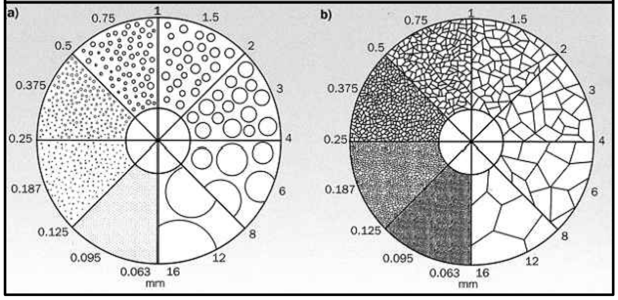
VARIATIONS IN SOIL STRATIGRAPHY

Term	Thickness of Configuration
Parting	0 - to 1/16-inch thickness.
Seam	1/16 - to 1/2-inch thickness.
Layer	1/2 - to 12-inch thickness.
Stratum	> 12-inch thickness.
Pocket	Small erratic deposit, usually less than 1 foot in size.
Varved Clay	Alternating seams or layers of sand, silt, and clay (laminated).
Occasional	≤ 1 foot thick.
Frequent	> 1 foot thick.

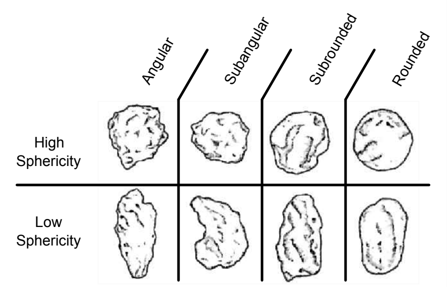
SOIL STRUCTURE DESCRIPTIONS

Term	Description
Homogeneous	Same color and appearance throughout.
Laminated	Alternating layers < 1/4 inch thick.
Stratified	Alternating layers ≥ 1/4 inch thick.
Lensed	Inclusions of small pockets of different materials, such as lenses of sand scattered through a mass of clay; note thickness.
Blocky	Cohesive soil can be broken down into small angular lumps, which resist further breakdown.
Fissured	Breaks along definite planes of fracture with little resistance to fracturing.
Slickensided	Fracture planes appear to be polished or glossy, sometimes striated.

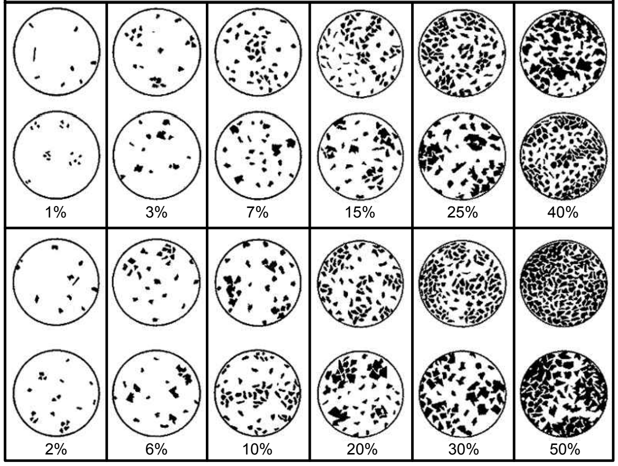
GRAPH FOR DETERMINING SIZE OF PARTICLES



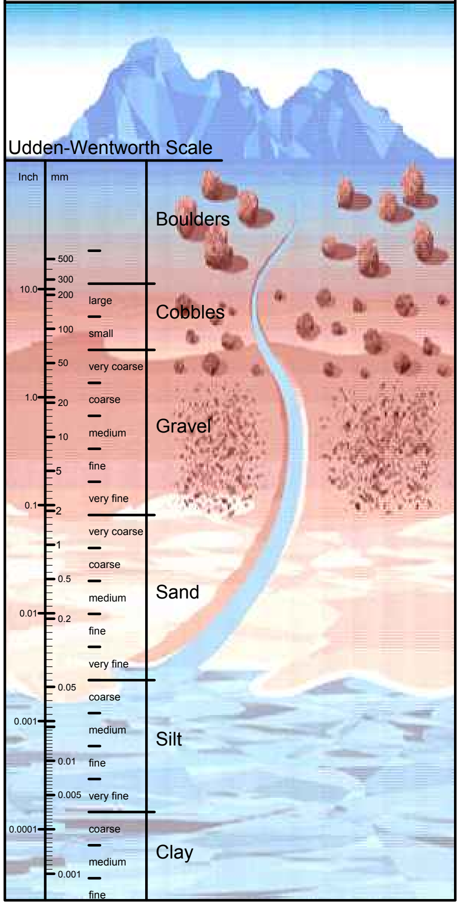
ANGULARITY CHART



PARTICLE PERCENT COMPOSITION ESTIMATION



SORTING



SETTLING TABLE (SILT/CLAY)

Diameter of Particle (mm)	<0.625	<0.031	<0.016	<0.008	<0.004	<0.002	<0.0005
Depth of Withdrawal (cm)	10	10	10	10	5	5	3
Time of Withdrawal	hr:min:sec	hr:min:sec	hr:min:sec	hr:min:sec	hr:min:sec	hr:min:sec	hr:min:sec
Temperature (Celsius)							
20	00:00:29	00:01:55	00:07:40	00:30:40	00:61:19	04:05:00	37:21:00
21	00:00:28	00:01:52	00:07:29	00:29:58	00:59:50	04:00:00	
22	00:00:27	00:01:50	00:07:18	00:29:13	00:58:22	03:54:00	
23	00:00:27	00:01:47	00:07:08	00:28:34	00:57:05	03:48:00	
24	00:00:26	00:01:45	00:06:58	00:27:52	00:55:41	03:43:00	33:56:00
25	00:00:25	00:01:42	00:06:48	00:27:14	00:54:25	03:38:00	
26	00:00:25	00:01:40	00:06:39	00:26:38	00:53:12	03:33:00	
27	00:00:24	00:01:38	00:06:31	00:26:02	00:52:02	03:28:00	
28	00:00:24	00:01:35	00:06:22	00:25:28	00:50:52	03:24:00	31:00:00
29	00:00:23	00:01:33	00:06:13	00:24:53	00:49:42	03:10:00	
30	00:00:23	00:01:31	00:06:06	00:24:22	00:48:42	03:05:00	

Attachment 2

Calibration, Operation, and Maintenance Procedures

NYSEG

Calibration, Operation, and Maintenance Procedures

Oneonta Former MGP Site

Oneonta, New York

Calibration, operation, and Maintenance Procedures

Oneonta Former MGP Site

Oneona, New York

Prepared By:
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Prepared For:
NYSEG

Version Control (optional)

Issue	Revision No.	Date Issued	Page No.	Description	Reviewed By

Contents

Attachments

1 Introduction

The MiniRAE 3000 measures relative total concentrations of organic and inorganic vapors in the field and will be calibrated daily prior to use. The MiniRAE 3000 does not carry an Intrinsic Safety Rating and will be used in a controlled environment only. The MiniRAE 3000 will be used to screen soil samples, the head space of soil/water samples, and to monitor the breathing and work zones.

2 Materials

- MiniRAE 3000 (PID).
- Isobutylene calibration gas tank with pressure regulator and up to four other selected span gases.
- Zero span gas (clean outdoor air or zero grade gas).
- Gas sampling bag with plastic tubing to connect PID probe to calibration gas.
- Flow regulator.
- PID calibration and maintenance log.

3 Calibration Procedures

1. Turn on the MiniRAE 3000 and monitor the ambient air. If there is any doubt of the air quality, then zero grade gas will be obtained.
2. Connect the regulator to the span gas cylinder. Hand-tighten the fittings.
3. Open the valve on the gas bag by turning the valve stem fully counterclockwise.
4. Attach the gas bag to the regulator. Hand-tighten the fittings.
5. Turn the regulator knob counterclockwise half a turn to start the gas flow.
6. Fill the gas bag half full and then close the regulator fully clockwise to turn off the flow of gas.
7. Fill the gas bag and then turn the valve clockwise.
8. Press “MODE” and “N” at the same time to enter the set-up screens. To cycle through the screens press “MODE.” Press “Y” for span cal and “Y” again for zero point. Press “Y” to set the zero point.
9. When screen displays “CAL GAS” press “Y” and calibrate the unit with isobutylene calibration gas.
10. Press and hold “MODE” for a few seconds and the display will return to normal screening mode.
11. After 7 hours of use, recharge the battery pack. Record the time the battery pack was charged on the MiniRAE 3000 Calibration and Maintenance Log (Attachment 1).
12. Record the date, time, your initials, calibration gas, and concentration on the MiniRAE 3000 Calibration and Maintenance Log (Attachment 1).

4 Operation Procedures

1. Use the health and safety equipment, as required by the HASP.
2. Calibrate the instrument, as described in Section 3.
3. Measure and record the background PID reading.
4. If the PID will be used for more than 7 hours during optimal weather conditions (50 degrees or greater) or during extreme cold or precipitation, have a fully charged battery available for use.
5. In the event of precipitation, fully cover the instrument, leaving the probe accessible for measurements.
6. Measure and record PID reading.

5 Maintenance Procedures

1. At the end of each day or when the battery is fully discharged, recharge batteries overnight.
2. Store the instrument in the protective case when not in use.
3. Keep records of operation, maintenance, calibration problems and repairs.
4. A replacement instrument will be available on site or ready for overnight shipment, if necessary.
5. The MiniRAE 3000 will be sent back to the manufacturer for service if needed.

Attachment 1

Equipment Calibration Form

ARCADIS

INSTRUMENT CALIBRATION FORM

Project ____________________

Project No. ____________________

Site Location ____________________

Date ____________________

Time ____________________

Prepared by ____________________

☐ Ph Cond Tempmeter Model Oakton 300 Services Serial 121686	☐ Turbidity Meter Model 2020 Lamotte Serial 3597-3502	☐ D.O. Meter Model #55/25 FT Serial 00H0611	☐ ORP Meter Model 00702-70 Serial 55386
☐ Multiprobe Model YSI 600 XL Serial 02J0183A1	☐ Turbidity Meter Model 2020 Lamotte Serial	☐ D.O. Meter Model Serial	☐ ORP Meter Model Serial
☐ PID Model Photovac 2020 Serial ED HF 358	☐ PID Model Photovac 2020 Serial	☐ pH Cond Temp Model Oakton 300 Series Serial 197765	☐ Rental Model Serial

Check appropriate box for equipment calibrated. If two similar items are calibrated, please note two checks under calibration successful

Parameter PID (ppmv)	**Value**	**Calibration Successful**
Zero		
Span		

Parameter D.O.	**Calibration Successful**
100% Saturated Air	
Barometer Adjustment	
Elevation Adjustment	

ph (si Units)	**Value**	**Calibration Successful**
4.00		
7.00		
10.00		

*** ORP (Mv)**	**Calibration Successful**
Hydroquinone (240) (Black)	
Zobel Solution (237) (yellow)	
Temperature Based Chart Calibration	
* Adjusted	

Conductivity (umhos)	**Value**	**Calibration Successful**
84 umhos		
1413 uhmos		
Other		

*** No adjustment on some meters just a probe check, others are adjustable**

Turbidity (NTU)	**Value**	**Calibration Successful**
1.0 NTU		
10 NTU		
40 NTU		
Other		

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Attachment 3

Low-Flow Groundwater Purging and Sampling Procedures for Monitoring Well Technical Guidance Instruction

TGI - LOW-FLOW GROUNDWATER PURGING AND SAMPLING PROCEDURES FOR MONITORING WELLS

Rev: #1

Rev Date: May 8, 2020

VERSION CONTROL

Revision No	Revision Date	Page No(s)	Description	Reviewed by
0	October 12, 2018	All	Updated and re-written as TGI with new branding and content	Marc Killingstad
1	May 8, 2020	Pages 5, 10-11	Added clarification/details for equipment requirements and procedure steps based on USEPA guidance	Marc Killingstad

APPROVAL SIGNATURES

Prepared by:		10/12/2018
	Ryan McKinney	Date:
Technical Expert Reviewed by:		May 8, 2020
	Marc Killingstad (Technical Expert)	Date:

1 INTRODUCTION

This document describes general and/or specific procedures, methods, actions, steps, and considerations to be used and observed by Arcadis staff when performing work, tasks, or actions under the scope and relevancy of this document. This document may describe expectations, requirements, guidance, recommendations, and/or instructions pertinent to the service, work task, or activity it covers.

It is the responsibility of the Arcadis Certified Project Manager (CPM) to provide this document to the persons conducting services that fall under the scope and purpose of this procedure, instruction, and/or guidance. The Arcadis CPM will also ensure that the persons conducting the work falling under this document are appropriately trained and familiar with its content. The persons conducting the work under this document are required to meet the minimum competency requirements outlined herein, and inquire to the CPM regarding any questions, misunderstanding, or discrepancy related to the work under this document.

This document is not considered to be all inclusive nor does it apply to all projects. It is the CPM’s responsibility to determine the proper scope and personnel required for each project. There may be project- and/or client- and/or state-specific requirements that may be more or less stringent than what is described herein. The CPM is responsible for informing Arcadis and/or Subcontractor personnel of omissions and/or deviations from this document that may be required for the project. In turn, project staff are required to inform the CPM if or when there is a deviation or omission from work performed as compared to what is described herein.

In following this document to execute the scope of work for a project, it may be necessary for staff to make professional judgment decisions to meet the project’s scope of work based upon site conditions, staffing expertise, regulation-specific requirements, health and safety concerns, etc. Staff are required to consult with the CPM when or if a deviation or omission from this document is required that has not already been previously approved by the CPM. Upon approval by the CPM, the staff can perform the deviation or omission as confirmed by the CPM.

2 SCOPE AND APPLICATION

Groundwater samples are collected from monitoring wells to evaluate groundwater quality. The protocol presented in this Technical Guidance Instruction (TGI) describes the procedures to purge monitoring wells and collect groundwater samples using the low flow purging/sampling methodology. This protocol has been developed in accordance with the United States Environmental Protection Agency (USEPA) Region I *Low Stress (Low Flow) Purging and Sampling Procedures for the Collection of Groundwater Samples from Monitoring Wells* (EQASOP-GW4; September 19, 2017).

Both filtered and unfiltered groundwater samples may be collected using this low-flow sampling method. Filtered samples will be obtained using a 0.45-micron disposable filter. Project teams will evaluate the last time the monitoring wells were developed and determine if additional development might be necessary. Water samples will not be taken immediately following well development. Sufficient time will be allowed for the groundwater flow regime in the vicinity of the monitoring well to stabilize and to approach chemical equilibrium with the well construction materials. This lag time will depend on site conditions and methods of installation but often exceeds one week.

3 PERSONNEL QUALIFICATIONS

Arcadis field sampling personnel will have completed or are in the process of completing site-specific training as well as having current health and safety training as required by Arcadis, client, or regulations, such as 40-hour HAZWOPER training and/or OSHA HAZWOPER site supervisor training. Arcadis personnel will also have current training as identified in the site-specific Health and Safety Plan (HASP) which may include first aid, cardiopulmonary resuscitation (CPR), Blood Borne Pathogens (BBP) as needed. The HASP will also identify any access control requirements.

Prior to mobilizing to the field, the groundwater sampling team will review and be thoroughly familiar with relevant site-specific documents including but not limited to the task-specific work plan or field implementation plan (FIP)/field sampling plan, Quality Assurance Project Plan (QAPP), HASP, historical information, and other relevant site documents.

Arcadis field sampling personnel will be knowledgeable in the relevant processes, procedures, and TGIs and possess the demonstrated required skills and experience necessary to successfully complete the desired field work. Additionally, the groundwater sampling team will review and be thoroughly familiar with documentation provided by equipment manufacturers and become familiar with the operation of (i.e., hands-on experience) all equipment that will be used in the field prior to mobilization.

4 EQUIPMENT LIST

Specific to this activity, the following materials (or equivalent) will be used:

- Site-specific HASP and health and safety documents identified in the HASP
- Field Implementation Plan (FIP) that includes site map, well construction records, sampling plan (sample analyses, sample volume required, and sample holding time), and prior groundwater sampling records (if available)
- Field notebook and/or smart device (phone or tablet)
- Low-flow sampling field forms (**Attachment A**)
- Appropriate personal protective equipment (PPE) (e.g., latex or nitrile gloves, safety glasses, etc.) as specified in the HASP
- Well keys and other tools to remove manhole covers (manual torque wrench with 9/16” socket and flat head screwdriver typical)
- Photoionization detector (PID) or Flame ionization detector (FID) (as appropriate, depending on site-specific constituents of concern)
- Electronic water-level indicator (e.g., Solinist Model 101) or oil/water interface probe with 0.01-foot accuracy (oil/water as appropriate, note that sampling will not be performed when sheen or light non-aqueous phase liquid [LNAPL] is present)
- Down-hole multi-parameter water-quality sonde (temperature/pH/specific conductivity/oxidation reduction [ORP]/turbidity/dissolved oxygen) meter coupled with flow-through-cell for measurements, for example:

  - YSI 6-Series Multi-Parameter Instrument
  - Horiba U-22 Multi-Parameter Instrument.
  - Hydrolab Series 3 or Series 4a Multiprobe and Display.

  NOTE: *Transparent, small volume flow-through-cells (e.g., 250 milliliters or less) are preferred as they allow for easy detection of air bubbles and sediment buildup in the cell, which can interfere with the monitoring instrument probes. A small volume cell also allows for quick turnover of water in the cell between measurements of the indicator field parameters. It is recommended to use a flow-through-cell and monitoring probes from the same manufacturer and model to avoid incompatibility between the probes and flow-through-cell.*

- Plastic sheeting (e.g., Weatherall Visqueen) to protect all down-hole sampling equipment from contact with potential sources of contamination.
- Decontamination equipment
  - Non-phosphate laboratory soap (Alconox or equivalent), brushes, clean buckets or clean wash tubs—new buckets or tubs will be purchased if it cannot be determined if the present items are clean
  - Distilled or de-ionized water for equipment decontamination
- Indelible ink pen
- 150-foot measuring tape (or sufficient length for the maximum site depth requirement)
- Sampling pump, which may consist of one or more of the following:
  - Submersible pump (e.g., Grundfos Redi-Flo 2)
  - Peristaltic pump (e.g., ISCO Model 150)
  - Bladder pump (e.g., Marschalk System 1, QED Micropurge, Geotech)
- Appropriate controller and power source for pump:
  - Submersible and peristaltic pumps require electric power from either a generator or a deep cell battery
  - Submersible pumps such as Grundfos require a pump controller to run the pump
  - Bladder pumps require a pump controller and a gas source (e.g., air compressor or compressed N2 or CO2 gas cylinders)
- Teflon® tubing or Teflon®-lined polyethylene tubing of an appropriate size for the pump being used
  - For peristaltic pumps, dedicated Tygon® tubing (or other type as specified by the manufacturer) will be used through the pump apparatus
  - Teflon® will not be used when sampling for per- and polyfluoroalkyl substances (PFAS)
- Graduated cylinder and stop watch or other device to measure time to determine pumping rate

- Appropriate water sample containers (supplied by the laboratory)
- Appropriate blanks (trip blank supplied by the laboratory)
- Sample labels and Chain-of-Custody forms (COC)
- 0.45-micron disposable filters (if field filtering is required)
- A supplemental turbidity meter (e.g., Horiba U-10, Hach 2100P, LaMotte 2020) may be required for specific projects and will be specified in the project FIP/ work plan and the kick-off notes.
    - If used, in-line ‘T’ and valve allows for collection of water for turbidity measurements before the pump discharge enters the flow-through cell

NOTE: *The maintenance requirements for the above equipment generally involve decontamination or periodic cleaning, battery charging, and proper storage, as specified by the manufacturer. For operational difficulties, the equipment will be serviced by a qualified technician.*

5 CAUTIONS

Different USEPA regions and/or state regulatory agencies may stipulate deviations from this document. It is the responsibility of the Project Team (Project Manager and Technical Lead) to be fully aware of the requirements from the applicable regulatory framework.

Weather

- If heavy precipitation occurs, and no cover over the sampling area and monitoring well can be erected, sampling may be discontinued until adequate cover is provided. Rain water could compromise groundwater samples.
- Avoid extreme weather situations. Be aware that thermal currents and vertical mixing of cold and warm water inside the well casing could create a convection cell within the well and compromise data collection (e.g., biological mechanisms).
    - Direct sunlight and hot ambient temperatures may cause the groundwater in the tubing or flow-through-cell to heat up and de-gas. This may result in the loss of volatile organic compounds (VOCs) and dissolved gases. Shade the equipment from direct sunlight, keep the tubing as short as possible, and avoid the hottest times of the day.
    - Sampling during freezing conditions may adversely impact the data quality objectives. USEPA recommends low-flow sampling be conducted at air temperatures above 32°F (0°C) or taking special precautions to prevent groundwater from freezing in the equipment.

Cross-Contamination

- To mitigate potential cross-contamination, groundwater samples are to be collected in a pre-determined order from least impacted to impacted based on previous analytical data. If no analytical data are available, collect samples in order of up-gradient, then furthest down-gradient to source area locations.

- Note that permanent markers could introduce volatile constituents into the samples; *therefore, indelible ink is recommended* to be used for labels on sample containers or sample coolers.
- When using a gasoline generator, this power source will be set-up at least 30 feet downwind from the well to avoid exhaust fumes to contaminate samples.

Pumps

- Preferred methods of extracting groundwater are adjustable rate, submersible pumps - such as centrifugal pumps or bladder pumps – constructed of stainless steel or polytetrafluoroethylene (PTFE, i.e. Teflon®). However, *PTFE will not be used when sampling for per- and polyfluoroalkyl substances (PFAS). PTFE could contain PFAS*.
- When using a bladder pump for collecting VOCs and dissolved gases, "best practice" is to set-up the pump to deliver sufficient water to fill a 40 mL VOC vial.
- The use of peristaltic pumps will be based on the type of data to be collected. *Because the use a peristaltic pump can result in de-gassing of VOC and / or dissolved gases from groundwater, a different type of pump will be considered if these compounds are of concern.*
- *Manual or motor driven inertial pumping devices are not recommended because they cause greater disturbance during purging and pumping than regular pumps and are less easily controlled. This could cause a higher degree of data variability.*

Tubing

- When sampling for VOCs, SVOCs, pesticides, PCBs and inorganics, use of PTFE (Teflon®) or PTFE-lined tubing is preferred. However, PTFE tubing will not be used when sampling for PFAS.
- PVC, polypropylene or polyethelene tubing may be used when sampling for metals or other inorganics.
- Tubing with inside diameters of 1/4 or 3/8 inch is recommended because this will help ensure tubing remains water filled when operating at very low pumping rates.

General Precautions

- Store and/or stage empty and full sample containers and coolers out of direct sunlight.
- It may be necessary to field filter the groundwater for some parameters (e.g., metals) during collection, depending on preservation, analytical method, and project quality objectives. The task-kick-off notes and the FIP/work plan will list the samples that require field filtering.
- Be careful not to overtighten lids with Teflon® liners or septa (e.g., 40 mL vials). Over-tightening can cause the glass to shatter or impair the integrity of the Teflon® seal.

6 HEALTH AND SAFETY CONSIDERATIONS

The HASP will be followed, as appropriate, to ensure the safety of field personnel.

Appropriate personal protective equipment (PPE) will be worn at all times in line with the task and the site-specific HASP.

Review all site-specific and procedural hazards as they are provided in the HASP, and review Job Safety Analysis (JSA) documents in the field each day prior to beginning work.

Access to wells may expose field personnel to hazardous materials such as contaminated groundwater or non-aqueous phase liquid (NAPL) (e.g., oil). Other potential hazards include pressurized wells, stinging insects that may inhabit well heads, other biologic hazards (e.g. ticks in long grass/weeds around well head), and potentially the use of sharp cutting tools (scissors, knife)—open well caps slowly and keep face and body away to allow to vent any built-up pressure; only use non-toxic peppermint oil spray for stinging insect nests; review client-specific health and safety requirements, which may preclude the use of fixed/folding-blade knives, and use appropriate hand protection.

Generators and cord and plug equipment will employ an overcurrent protection device such as an integrated ground fault circuit interrupter (GFCI) cord. Grundfos pump controllers will not run properly with a GFCI, so the power source will be equipped with other overcurrent protection means.

Overtightening of lids with Teflon® liners can cause the glass to shatter and create a risk for hand injuries.

7 PROCEDURE

Field personnel will set up and perform low-flow sampling in accordance with the following procedures.

1. Review FIP and groundwater sampling records from previous sampling events (if available) prior to mobilization to estimate the optimum pumping rate and anticipated drawdown for each well to perform sampling as efficiently as possible (i.e., reach a stabilized pumping condition).
2. Calibrate field instruments according to manufacturer procedures for calibration and record calibration procedure and results in field log.
3. All equipment will either be new or decontaminated in accordance with appropriate guidance document (*TGI – Groundwater and Soil Sampling Equipment Decontamination)* prior to use.
4. Visually inspect the well to ensure that it is undamaged, properly labeled and secured
    a) Damage or other conditions that may affect the integrity of the well will be recorded in the Field Activity Daily Log and brought to the attention of the designated Field Manager and/or Project Manager
    b) Record well construction and conditions on the Low-Flow Sampling Field Form (**Attachment A**)
5. Place clean plastic sheeting on the ground near the well to keep monitoring and sampling equipment off the surface unless the equipment is elevated above the ground (e.g. on a table).
6. Open the well cover while standing upwind of the well. Remove the well cap and place it on the plastic sheeting. If appropriate or required for site-specific conditions, insert the photoionization detector (PID) probe approximately 4 to 6 inches into the casing or the well headspace and cover it with a gloved hand. Record the PID reading in the field log. Perform air monitoring in the breathing zone according to the HASP and/or JSA.
7. Measure and record the initial depth to groundwater prior to placing the pumps.

8. Prepare and install the pump in the well.

   NOTE: *Groundwater will be purged from the wells using an appropriate pump. If the depth to water is below the sampling range of a peristaltic pump (approximately 25 feet below ground surface), a submersible or bladder pump will be used, provided that the well is constructed with a casing diameter of at least two (2) inches (the minimum well diameter capable of accommodating such pumps). For smaller diameter wells, where the depth to water is below the sampling range of a peristaltic pump, alternative sampling methods (i.e., bailing or small diameter bladder pumps) will be used to purge and sample the groundwater. Bladder pumps are preferred over peristaltic and submersible pumps to prevent volatilization if sampling of VOCs and/or dissolved gasses is required. Purge water will be collected and containerized according to the direction of the project team.*

   a) For submersible and non-dedicated bladder pumps, decontaminate the pump according to site decontamination procedures. Non-dedicated bladder pumps will require a new bladder and attachment of an air-line, sample discharge line, and safety cable prior to placement in the well. Attach the air-line tubing to the air-port on the top of the bladder pump. Attach the sample discharge tubing to the water port on the top of the bladder pump. Take care not to reverse the air and discharge tubing lines during bladder pump setup, as this could result in bladder failure or rupture. Attach and secure a safety cable to the eyebolt on the top of pump (if present, depending on pump model used). Slowly lower the pump, safety cable, tubing, and electrical lines into the well to a depth corresponding to the approximate center of the saturated screen section of the well. Avoid twisting and tangling of safety cable, tubing, and electrical lines while lowering the pump into the well; twisted and tangled lines could result in the pump becoming stuck in the well casing. Also, make sure to keep tubing and lines from touching the ground or other surfaces while introducing them into the well, as this could lead to unintended contamination.

   b) If using a bladder pump, connect the air-line to the pump controller output port. The pump controller will be connected to a supply line from an air compressor or compressed gas cylinder using an appropriate regulator and air hose. Tighten the regulator connector onto the gas cylinder (if used) to prevent leaks. Teflon® tape may be used on the threads of the cylinder to provide a tighter seal. Once the air compressor or gas cylinder is connected to the pump controller, turn on the compressor or open the valve on the cylinder to begin the gas flow. Turn on the pump controller power (if an on/off switch is present) and verify that all batteries are charged and fully functioning before starting the pump.

   c) If a peristaltic pump is being used, slowly lower the sampling tubing into the well to a depth corresponding to the approximate center of the saturated screen section of the well. The pump intake or sampling tube must be kept at least two (2) feet above the bottom of the well to prevent mobilization of any sediment present in the bottom of the well.

   d) If using an in-line ‘T’ and valve, install between pump discharge water line and the bottom inlet port of the flow-through cell. Attach a short piece of tubing to the outlet. This set-up will be used to collect samples for turbidity readings.

9. Connect the pump discharge water line to the bottom inlet port on the flow-through cell connected to the multi-parameter water-quality sonde and make sure to record equipment/instrument identification (manufacturer and model number).
10. Before starting the pump, ensure that the water level inside the well has stabilized (i.e., measure the water level multiple times after deploying the pump in the well).
11. Start pumping the well at 200 to 500 milliliters (mL) per minute (or at lower site-specific rate if specified) and adjust the pumping rate to cause little or no water level drawdown in the well (less than 0.3 feet below the initial static depth to water measurement): the water level should stabilize, however, this is not always possible.
12. If the well diameter is of sufficient size, measure the water level every 3 to 5 minutes (or as appropriate, lower flow rates may require longer time between readings) during pumping.
13. Maintain a steady flow rate to the extent practicable and do not break pump suction or cause entrainment of air in the sample.
14. Record pumping rate adjustments and depths to water.

    If necessary, reduce pumping rates to the minimum capabilities of the pump to avoid pumping the well dry and/or to stabilize indicator parameters; if the recharge rate of the well is very low, use alternative purging techniques, which will vary based on the well construction and screen position.

    For wells screened across the water table, the well may be pumped dry and sampling can commence as soon as the volume in the well has recovered sufficiently to permit collection of samples.

    For wells screened entirely below the water table, the well can be pumped until a stabilized level (which may be greater than the maximum displacement goal of 0.3 feet) is maintained and monitoring for stabilization of field indicator parameters can commence; if a lower stabilization level cannot be maintained, the well may be pumped until the drawdown is at a level slightly higher than top of the well screen.
15. After water levels have stabilized and a sufficient volume has been purged (*see note below*), continue pumping and begin monitoring field indicator parameters using a multi-parameter water-quality sonde coupled with a flow-through-cell.

    NOTE: *The final purge volume must be greater than the stabilized drawdown volume plus the pump's tubing volume. If the drawdown has exceeded 0.3 feet and stabilizes, calculate the volume of water between the initial water level and the stabilized water level. Add the volume of the water which occupies the pump's tubing to this calculation. This combined volume of water needs to be purged from the well after the water level has stabilized before samples are collected.*
16. Use the flow to measure all indicator field parameters, except for turbidity, every 3 to 5 minutes (or after each volume of the flow-through cell has been purged or other appropriate interval); turbidity samples will be collected before the flow-through-cell using the T-valve and a clean container such as a glass beaker.
17. Record field indicator parameters on the groundwater sampling log.

18. The well is considered stabilized and ready for sample collection when three consecutive readings are within the following limits:

    - **Turbidity** within ± 10% for values greater than 5 nephelometric turbidity units [NTUs] or if three turbidity values are less than 5 NTUs, consider the values stabilized
    - **Dissolved Oxygen (DO)** within ± 10% for values greater than 0.5 mg/L or if three DO values are less than 0.5 mg/L, consider the values stabilized
    - **Specific Conductance** within ± 3%
    - **Temperature** within ± 3%
    - **pH** within ± 0.1 unit
    - **Oxidation/Reduction Potential (ORP)** within ±10 millivolts (mV)

    NOTE: *Alternate stabilization goals may exist in different geographic regions, consult the site-specific FIP/work plan for stabilization criteria).*

    NOTE: *While achieving turbidity levels less than 5 NTU and a stable drawdown of less than 0.3 feet is desirable, sample collection may still take place provided the indicator field parameter criteria in this procedure are met.*

19. If the parameters have stabilized but turbidity remains relatively high (e.g., greater than 50 NTUs), the pump flow rate may be decreased to a minimum rate of 100 mL/min to reduce turbidity levels as low as possible. If groundwater turbidity has been minimized (i.e., consecutive readings within ± 10%) and the values for all other parameters have stabilized, the well may be sampled; however, consult specifications in the FIP/work plan and/or the project technical lead prior to sampling.

20. If after one (1) hour of purging indicator field parameters have not stabilized, consult specifications in the FIP/work plan and/or the project technical lead prior to sampling.

    In general, three potential options are available if stabilization criteria are not met:

    a) Continue purging until stabilization is achieved.

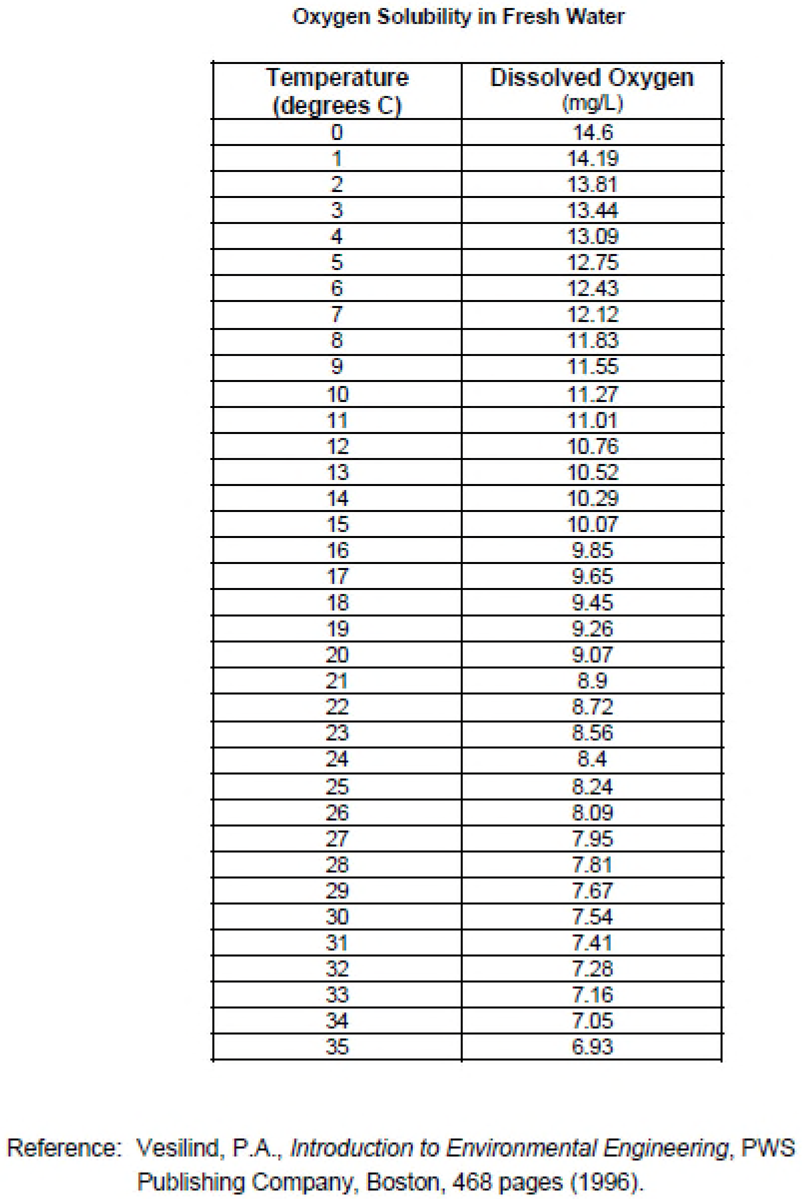
    b) Discontinue purging, do not collect any samples, and record in field logbook/on the sampling form that stabilization could not be achieved (documentation must describe attempts to achieve stabilization).

    c) Discontinue purging, collect samples and provide full explanation of attempts to achieve stabilization. *There is a risk that the analytical data obtained under these conditions, particularly metals and hydrophobic organic analytes, may reflect a sampling bias and, as a result, the data may not meet the data quality objectives of the sampling event.*

    NOTE: *DO is extremely susceptible to various external influences (including temperature or the presence of bubbles on the DO meter); therefore, great care will be taken to minimize the agitation or other disturbance of water within the flow-through cell while collecting these measurements. If air bubbles are present on the DO probe or in the discharge tubing, remove them before taking a measurement. If DO values are not within acceptable range for the temperature of groundwater, again check for and remove air bubbles on the probe before re-measuring. The table below may be* *used as a general guide for DO values under various temperatures; however, understand that the table corresponds to freshwater solubility and groundwater contaminants may affect oxygen solubility. If DO value is 0.00 or less, then the meter will be serviced and re-calibrated. If DO values are above possible results, then the meter will be serviced and re-calibrated.*

NOTE: *During extreme weather conditions, stabilization of field indicator parameters may be difficult to attain. Modifications to the sampling procedures to alleviate these conditions (e.g., measuring the water temperature in the well adjacent to the pump intake) will be documented in the field logbook/on the sampling form.*

NOTE: *If other field conditions are suspected of preventing stabilization of certain parameters, detailed observations will be documented in the field logbook/on the sampling form.*



Oxygen Solubility in Fresh Water

Temperature (degrees C)	Dissolved Oxygen (mg/L)
0	14.6
1	14.19
2	13.81
3	13.44
4	13.09
5	12.75
6	12.43
7	12.12
8	11.83
9	11.55
10	11.27
11	11.01
12	10.76
13	10.52
14	10.29
15	10.07
16	9.85
17	9.65
18	9.45
19	9.26
20	9.07
21	8.9
22	8.72
23	8.56
24	8.4
25	8.24
26	8.09
27	7.95
28	7.81
29	7.67
30	7.54
31	7.41
32	7.28
33	7.16
34	7.05
35	6.93

Reference: Vesilind, P.A., *Introduction to Environmental Engineering*, PWS Publishing Company, Boston, 468 pages (1996).

21. Complete the sample label(s) and cover the label(s) with clear packing tape to secure the label onto the container.
22. After the indicator parameters have stabilized, collect groundwater samples by diverting flow out of the unfiltered discharge tubing into the appropriate labeled sample container.
    a) If a flow-through analytical cell is being used to measure field parameters, the flow-through cell will be disconnected after stabilization of the field indicator parameters and prior to groundwater sample collection.
    b) Under no circumstances will analytical samples be collected from the discharge of the flow-through cell.
    c) If an in-line 'T' and valve are used, the valve needs to be removed as well.
    d) Samples will be collected in the following order: VOCs, total organic carbon (TOC), semi-volatile organic compounds (SVOCs), metals and cyanide, and others (or other order as defined in the site-specific FIP/work plan).
    e) When the container is full, tightly screw on the cap.
23. If sampling for total and filtered metals and/or polychlorinated biphenyls (PCBs), a filtered and unfiltered sample will be collected.
    a) Install an in-line, disposable 0.45-micron particle filter on the discharge tubing after the appropriate unfiltered groundwater sample has been collected.
    b) Continue to run the pump until an initial volume of "flush" water has been run through the filter in accordance with the manufacturer's directions (generally 100 to 300 mL).
    c) Collect the filtered groundwater sample by diverting flow out of the filter into the appropriately labeled sample container.
    d) When the container is full, tightly screw on the cap.
24. Secure with packing material and store the samples on ice in an insulated transport container provided by the laboratory and include a temperature blank in each container to be shipped.
25. Record on the Low-Flow Sampling Field Form (and bound field logbook) the time at which sampling procedures were completed, any pertinent observations of the sample (e.g., physical appearance and the presence or lack of odors or sheens), and the values of the stabilized field indicator parameters as measured during the final reading during purging (see **Attachment A**).
26. Turn off the pump and air compressor or close the gas cylinder valve if using a bladder pump setup.
27. Slowly remove the pump, tubing, lines, and safety cable from the well.
    a) If using dedicated tubing, do not allow the tubing or lines to touch the ground or any other surfaces which could contaminate them.
    b) If using dedicated tubing, it will be folded - without pinching it - to a length that will allow the well to be capped and also facilitate retrieval of the tubing during later sampling events.
    c) Use a length of rope or string to tie the tubing to the well cap.

   d) Alternatively, if tubing and safety line are to be saved and reused for sampling the well at a later date, coil the tubing neatly and placed in a clean plastic bag that is clearly labeled with the well ID ensuring the bag is tightly sealed before placing it in storage.

28. Secure the well and properly dispose of personal protective equipment (PPE) and disposable equipment.

29. Complete the procedures for packaging, shipping, and handling with the associated Chain-of-Custody.

30. Complete decontamination for flow-through analytical cell and submersible or bladder pump, as appropriate (*TGI – Groundwater and Soil Sampling Equipment Decontamination*).

31. At the end of each day of the sampling event, perform calibration check of field instruments and record procedure and results in field log.

8 WASTE MANAGEMENT

Materials generated during groundwater sampling activities, including disposable equipment and excess purge water, will be stored on site in appropriately labeled containers and disposed of properly. Waste will be managed in accordance with the *TGI – Investigation-Derived Waste Handling and Storage,* the procedures identified in the FIP or QAPP as well as state-, federal- or client-specific requirements. Be certain that waste containers are properly labeled and documented in the field logbook.

9 DATA RECORDING AND MANAGEMENT

Management of the original documents from the field will be completed in accordance with the site-specific QAPP.

In general, forms (e.g., Low-Flow Sampling Field Forms), logs/notes (including daily field and calibration logs), digital records, and Chain-of-Custody records will be maintained by the field team lead.

Field logs and Chain-of-Custody records will be transmitted to the Arcadis Project Manager and/or Task Manager, as appropriate, at the end of each day unless otherwise directed. Electronic data files will be sent to the project team and uploaded to the electronic project folder daily.

Records generated as a result of this TGI will be controlled and maintained in the project record files in accordance with project requirements.

10 QUALITY ASSURANCE

Quality assurance procedures shall be conducted in accordance with the Arcadis Quality Management System or the site-specific QAPP.

Unless described otherwise in the project-specific FIP/work plan, QAPP, or Sampling and Analysis Plan, quality assurance/quality control samples will be collected as follows:

- One duplicate for every 10 samples

- One laboratory matrix/matrix spike sample for every 20 samples

In addition to the quality control samples to be collected in accordance with this TGI, the following quality control procedures will be observed in the field:

- Collect samples from monitoring wells, in order of increasing concentration, to the extent known based on review of historical site information if available
- Equipment blanks will include the pump and tubing (if using disposable tubing) or the pump only (if using tubing dedicated to each well)
- Collect equipment blanks after wells with higher concentrations (if known) have been sampled
- Operate all monitoring instrumentation in accordance with manufacturer's instructions and calibration procedures—calibrate instruments at the beginning of each day, verify the calibration at the end of each day, and record all calibration activities in the field notebook
- Clean all groundwater sampling equipment prior to use in the first well and after each subsequent well following the procedure for equipment decontamination

11 REFERENCES

USEPA. 1986. *RCRA Groundwater Monitoring Technical Enforcement Guidance Document* (September 1986).

USEPA. 1991. *Handbook Groundwater, Volume II Methodology*, Office of Research and Development, Washington, DC. USEPN62S, /6-90/016b (July 1991).

USEPA Region I. 2017. *Low Stress (Low Flow) Purging and Sampling Procedures for the Collection of Groundwater Samples from Monitoring Wells* (EQASOP-GW4; September 19, 2017).

U.S. Geological Survey (USGS). 1977. *National Handbook of Recommended Methods for Water-Data Acquisition: USGS Office of Water Data Coordination*. Reston, Virginia.

12 ATTACHMENTS

A. Low-Flow Sampling Field Form

ARCADIS

GROUNDWATER SAMPLING FORM

Page _____ of _____

Project No. ____________________ Well ID ____________ Date ____________

Project Name/Location ______________________________ Weather ____________

Measuring Pt. Description ____________ Screen Setting (ft-bmp) ____________ Casing Diameter (in.) ________ Well Material ____ PVC ____ SS

Static Water Level (ft-bmp) ____________ Total Depth (ft-bmp) ____________ Water Column (ft) ________ Gallons in Well ________

MP Elevation ____________ Pump Intake (ft-bmp) ____________ Purge Method: ____________ Sample Method ____________

Centrifugal ____________

Submersible ____________

Other ____________

Pump On/Off ____________

Sample Time: ____________ Volumes Purged ____________

Purge Start ____________ Gallons Purged ____________ Sample ID ________ Sampled by ____________

Purge End ____________ Replicate/Code No. ________

Time	Minutes Elapsed	Rate (gpm)/(mL/min) 200mL/min +	Depth to Water (ft) -0.3	Gallons Purged	pH ± 0.1	Cond. (µMhos)/(mS/cm) ± 3%	Turbidity (NTU) ± 10%	DO (mg/L) ± 10%	Temp. (°C)/(°F) ± 3%	Redox (mV) ± 10mV	Appearance	
											Color	Odor
Stabilization Calculations (±)												
Stabilization Criteria					**± 0.1 s.u.**	**±3%**	**± 10% or within 1 NTU (1)**	**± 10%**	**±3%**	**±10 mV**		

(1) **Turbidity** < 50 NTU and ±10% or within 1 NTU of a previous reading when <10 NTU

Constituents Sampled	**Container**	**Number**	**Preservative**

Comments ____

____

Well Casing Volumes

Gallons/Foot	*1" = 0.04*	*1.5" = 0.09*	*2.5" = 0.26*	*3.5" = 0.50*	*6" = 1.47*
	1.25" = 0.06	*2" = 0.16*	*3" = 0.37*	*4" = 0.65*	

Well Information

Well Location: ______________________________ Well Locked at Arrival: Yes / No

Condition of Well: ______________________________ Well Locked at Departure: Yes / No

Well Completion: Flush Mount / Stick Up Key Number To Well:

ARCADIS

Design & Consultancy
for natural and
built assets

Attachment 4

Poly- and Perfluorinated Alkly Substances (PFAS) Field Sampling Guidance Technical Guidance Instruction

POLY- AND PERFLUORINATED ALKYL SUBSTANCES (PFAS) FIELD SAMPLING GUIDANCE

Rev: 4

Rev Date: March 26, 2019

VERSION CONTROL

Revision No	Revision Date	Page No(s)	Description	Reviewed by
0	April 27, 2017	All	Initial Release	Erica Kalve Erika Houtz Sue Tauro
1	June 19, 2018	1 through 4 and 17	Updated Information on Sampling Materials	Erica Kalve Erika Houtz
2	October 15, 2018	6 to 16	Minor updates on laboratory elements, updates to decontamination procedures, and clarification on equipment and reagent blank collection	Erika Houtz Erica Kalve
3	December 17, 2018	4, 6, 17	Removed Sharpies from acceptable field writing implements; Changed language in Section 3.2 and Section 10.5 to provide stricter guidance for DoD projects.	Erika Houtz, Erica Kalve
4	March 26, 2019	4,5	Removed Citranox from acceptable Decon solutions in Table 1a, added all fluoropolymer containing materials to prohibited items in Table 1b. Made a correction that Liquinox contains trace levels of 1,4 Dioxane, not Alconox.	Erika Houtz

APPROVAL SIGNATURES

Prepared by:

Erika F. Houtz

3/26/2019

Erika F. Houtz, PhD, PE
Environmental Engineer and PFAS Analytical Lead

Date:

Reviewed by:

Erica Kalve

12/17/2018

Erica Kalve, PG-CA
Emerging Contaminants Focus Group Leader

Date:

1 INTRODUCTION

This document describes general and/or specific procedures, methods, actions, steps, and considerations to be used and observed by Arcadis staff when performing work, tasks, or actions under the scope and relevancy of this document. This document may describe expectations, requirements, guidance, recommendations, and/or instructions pertinent to the service, work task, or activity it covers.

It is the responsibility of the Arcadis Certified Project Manager (CPM) to provide this document to the persons conducting services that fall under the scope and purpose of this procedure, instruction, and/or guidance. The Arcadis CPM will also ensure that the persons conducting the work falling under this document are appropriately trained and familiar with its content. The persons conducting the work under this document are required to meet the minimum competency requirements outlined herein, and inquire to the CPM regarding any questions, misunderstanding, or discrepancy related to the work under this document.

This document is not considered to be all inclusive nor does it apply to any and all projects. It is the CPM's responsibility to determine the proper scope and personnel required for each project. There may be project- and/or client- and/or state-specific requirements that may be more or less stringent than what is described herein. The CPM is responsible for informing Arcadis and/or Subcontractor personnel of omissions and/or deviations from this document that may be required for the project. In turn, project staff are required to inform the CPM if or when there is a deviation or omission from work performed as compared to what is described herein.

In following this document to execute the scope of work for a project, it may be necessary for staff to make professional judgment decisions to meet the project's scope of work based upon site conditions, staffing expertise, state-specific requirements, health and safety concerns, etc. Staff are required to consult with the CPM when or if a deviation or omission from this document is required that has not already been previously approved by the CPM. Upon approval by the CPM, the staff can perform the deviation or omission as confirmed by the CPM.

2 SCOPE AND APPLICATION

The purpose of this Technical Guidance Instructions (TGI) is to provide guidance on field sampling to be used for poly-and perfluorinated alkyl substances (PFASs). This protocol was adapted from various sources including Arcadis Australia, Transport Canada, and the U.S Army Corp of Engineers (USACE) Omaha. In general, sampling techniques used for PFAS site characterization are consistent with conventional sampling techniques used in the environmental industry, but special consideration is made regarding PFAS-containing materials and cross-contamination potential. **Table 1a** provides a summary of materials that have been approved for site investigation; this list is expected to grow longer as industry experience increases. **Table 1b** provides a summary of field equipment and materials that have available testing information and/or industry knowledge regarding PFAS cross-contamination potential and it is recommended that these materials be prohibited for sample collection; for materials that are suspected of containing PFASs and/or to retain PFASs, these recommendations are considered preliminary and subject to change.

Table 1a: Summary of Acceptable Sampling Equipment and Materials for PFAS Site Investigations

Sampling Materials	Additional Considerations	References
Water Sampling Materials		
High density polyethylene (HDPE) or silicone tubing materials	--	DER 2016; USACE 2016; NHDES 2016; MassDEP 2017
HDPE HydraSleeves™	Low density polyethylene (LDPE) HydraSleeves™ are not recommended	USACE 2016; MassDEP 2017
Drilling and Soil Sampling Materials		
PFAS-free drilling fluids	--	DER 2016
PFAS-free makeup water	Confirm PFAS-free water source via laboratory analysis prior to investigation	--
Acetate liners	For use in soil sampling	USACE 2016
Sample Containers and Storage		
HDPE sample containers with HDPE lined lids for soil and water samples	Laboratory should provide; whole bottle analysis of aqueous samples combined with a solvent rinse of bottle is recommended	DER 2016, MassDEP 2017
Ice contained in plastic (polyethylene) bags (double bagged)	--	DER 2016; USACE 2016; NHDES 2016; MassDEP 2017
Field Documentation		
Ball point pens	--	MassDEP 2017
Standard paper and paper labels	--	DER 2016; USACE 2016; NHDES 2016; MassDEP 2017
Decontamination		
Water-only decontamination	Confirm PFAS-free water source via laboratory analysis prior to investigation	DER 2016
Alconox® or Liquinox® followed by deionized water or PFAS-free water rinse	Liquinox® known to contain trace levels of 1,4-dioxane	NHDES 2016; USACE 2016; MassDEP 2017
Methanol, isopropanol, or acetone	Special health and safety precautions are necessary	UNEP 2015; USACE 2016

Note: This list is considered preliminary and additional materials may be added as additional information becomes available. Project teams are expected to follow a methodical evaluation process of materials to be used and confirm acceptance prior to implementation of field activities.

Table 1b: Summary of Sampling Equipment and Materials Not Recommended for PFAS Site Investigations.

Sampling Materials	Known PFAS-Containing Materials	Suspected PFAS-Containing Materials	Materials with Potential to Retain PFASs	References
Water Sampling Materials				
Teflon®, PTFE-containing or other fluoropolymer coated or containing field equipment (e.g., tubing, bailers, liners, tape, plumbing paste, pump parts)	x			DER 2016; USACE 2016; NHDES 2016; MassDEP 2017
Passive diffusion bags			x	MassDEP 2017
LDPE HydraSleeves ™			x	USACE 2016; MassDEP 2017
Water particle filters			x	MassDEP 2017
Drilling and Soil Sampling Materials				
Aluminum foil			x	DER 2016; USACE 2016; NHDES 2016; MassDEP 2017
Drilling fluid containing PFASs	x	x		DER 2016
Sample Containers and Storage				
Glass sample containers with lined lids			x	DER 2016; USACE 2016; NHDES 2016; MassDEP 2017
LDPE containers and lined lids			x	USACE 2016
Teflon® or PTFE- lined lids on containers (e.g., sample containers, rinsate water storage containers)	x			DER 2016; USACE 2016; NHDES 2016; MassDEP 2017
Reusable chemical or gel ice packs (e.g., BlueIce®)		x		DER 2016; USACE 2016; NHDES 2016; MassDEP 2017
Field Documentation				
Self-sticking notes and similar office products (e.g., 3M Post-it-notes)		x		DER 2016; USACE 2016; NHDES 2016; MassDEP 2017
Waterproof paper, notebooks, and labels	x			DER 2016, MassDEP 2017
Non-Sharpie® markers		x		NHDES 2016
Decontamination				
[Some] detergents and decontamination solutions (e.g., Decon 90® Decontamination Solution)	x	x		DER 2016; NHDES 2016; MassDEP 2017

Note: For materials that are suspected of containing PFASs, or have the potential to retain PFASs, project specific considerations may provide adequate justification for use during the field event. For example, further evaluation may be conducted in the form of pre-field equipment blank sample analysis.

Given the extremely low detection limits associated with PFAS analysis and the many potential sources of trace levels of PFASs, field personnel are advised to err on the side of caution by strictly following these protocols, frequently replacing nitrile gloves, and rinsing field equipment to help mitigate the potential for false detections of PFASs. A summary of other specific items related to field sampling for PFASs are discussed in the sections below.

This TGI applies to all Arcadis and subcontractor personnel involved in field sampling for PFAS.

3 PERSONNEL QUALIFICATIONS

3.1 Sampling Personnel

Field personnel must have current health and safety training, including 40-hour HAZWOPER training, site supervisor training, and site-specific training, as needed. In addition, field personnel will be versed in the other relevant SOPs (e.g., low flow sampling) and will possess the skills and experience necessary to successfully complete the desired field work. The site Health and Safety Plan (HASP) and other documents will identify any other training requirements such as site-specific safety training or access control requirements.

3.2 Laboratories

These laboratories are example laboratories that could be used to analyze environmental media for PFASs, pending project approval:

- United States: TestAmerica, SGS, Vista, ALS, and Eurofins
- Canada: Axys-SGS and Maxxam Laboratories

Other laboratories may be used if they are appropriately accredited for PFAS analysis according to any project requirements. It is recommended that a laboratory is Environmental Laboratory Accreditation Program (ELAP)-accredited for PFAS analysis in accordance with the Department of Defense (DoD) Quality Systems Manual (QSM) 5.1 Table B-15 or any subsequent updates. **For all data collection efforts at DoD sites, PFAS data must be obtained using a method that is DoD ELAP-accredited under QSM 5.1 or later.**

4 EQUIPMENT LIST

The following equipment and materials must be available for sampling:

- Site plan of sampling locations, relevant work plan (or equivalent), and this TGI;
- Appropriate health and safety equipment, as specified in the site HASP;
- Dedicated plastic sheeting (preferably high-density polyethylene [HDPE]) or other clean surface to prevent sample contact with the ground;
- Conductivity/temperature/pH meter;
- Dissolved oxygen meter, oxidation reduction potential meter, and turbidity meter;
- Depth to water meter;

- If using low-flow groundwater sampling techniques, peristaltic pump (groundwater sampling)/bladder pump (with PFAS free bladder/ HDPE bladder), flow through cell, and accompanying HDPE and silicone tubing;
- Hydrasleeves, if using Hydrasleeves for groundwater sampling;
- Metal trowel for soil samples; specialized soil/sediment sampling equipment as required;
- Brushes for scrubbing sampling equipment;
- Pens, pencils, and/or Sharpies for writing;
- Clipboards, field binders, and field note pages that are not waterproof;
- Labeled sample bottles:
    - Water: HDPE bottles fitted with polypropylene screw cap only; some types of PFAS samples (primarily drinking water) may require preservative, which will be indicated by the laboratory conducting the analysis. The laboratory will specify the sample bottle volume.
    - Soil and sediment: HDPE bottles fitted with polypropylene screw cap only; no preservatives. The laboratory will specify the sample bottle volume.
- If high concentrations of PFASs related to class B firefighting foams are expected, bring additional small vials to conduct field-based shaker tests for foaming;
- Ziploc® bags to hold ice and samples;
- Bottles containing “PFAS-free” water used for reagent blanks;
- Labeled coolers for samples with ice; Blue ice is not permitted;
- Deionized or distilled water for initial decontamination rinsing;
- “PFAS-free” water provided by the laboratory for final decontamination rinsing;
- Methanol, isopropanol, or acetone if able to be brought safely to field site; especially important for decontamination during soil sampling;
- Alconox or Liquinox®;
- Packing and shipping materials;
- Groundwater Sampling Log; and
- Chain-of-Custody (COC) Forms.

5 CAUTIONS

5.1 Food Packaging

Some food packaging may be treated with PFAS-containing chemicals to prevent permeation of oil and water in the food outside of the packaging. To avoid potential food packaging-related PFAS contact:

- Do not bring any food outside of the field vehicles onsite and eat snacks and meals offsite.
- Wash hands after eating.
- Remove any field garments or outer layers prior to eating. Do not put them back on until done eating and hands are washed.

5.2 Field Gear

5.2.1 Clothing

Many types of clothing are treated with PFASs for stain and water resistance, in particular outdoor performance wear under brand names such as Gore-Tex®. To avoid potential clothing-related PFAS contact:

- Do not wear any outdoor performance wear that is water or stain resistant, or appears to be. Err on the side of caution.
- Wear pre-laundered (multiple washings, i.e. 6+) clothing that is not stain resistant or water proof.
- Natural fabrics such as cotton are preferred. Synthetic fabrics may also be acceptable if there is no indication on the label that the fabric is water and stain resistant.
- Most importantly, avoid contacting your clothing with sampling equipment, bottles, and samples.

5.2.2 Personal Protective Equipment

Safety Footwear

Some safety footwear has been treated to provide a degree of waterproofing and increased durability and may represent a source of trace PFASs. For the health and safety of field personnel, footwear must be protected at all times to avoid potential PFAS contamination. To do this:

- Do not contact your footwear with equipment, bottles, or samples in any way.
- Do not allow gloves used for sampling to come in contact with safety footwear.

Nitrile Gloves

Wear disposable nitrile gloves at all times. Don a new pair of nitrile gloves **before** the following activities at each sample location:

- Decontamination of re-usable sampling equipment;
- Contact with sample bottles or “PFAS-free” water bottles;
- Insertion of anything into the sample ports (e.g., HDPE tubing); and
- Handling of any quality assurance/quality control (QA/QC) samples including field blanks and equipment blanks.

Don a new pair of nitrile gloves **after** the following activities:

- Handling of any non-dedicated sampling equipment;
- Contact with contaminated surfaces; or
- When judged necessary by field personnel.

5.3 Personal Hygiene

- Shower at night.
- Do not use personal care products after showering such as lotions, makeup, and perfumes, UNLESS medically necessary.
- Use sunscreen and insect repellent ONLY if necessary for health and safety. If they are necessary, apply sunscreen and repellant prior to initiating field sampling. If sunscreen and/or repellant need to

be reapplied, ensure a safe distance away from the sampling locations and equipment (i.e., more than 10 meters (m) away). Wash hands after application.

5.4 Visitors

Visitors to the site are asked to remain at least 10 m from sampling areas.

5.5 Rain Events

Special care should be taken when rain is falling at the project site:

- Do not perform field sampling when rain fall is persistent at a consistent rate that saturates the ground (i.e., formation of puddles) because rain gear is not permitted while sampling. Intermittent showers or fog are acceptable conditions to proceed. If rain showers occur; field gear must be removed from the monitoring well location until the rain subsides.
- If project timelines are tight, consider the use of a gazebo tent that can be erected over the top of the monitoring well to provide shelter from the rain. The canopy material is possibly a PFAS-treated surface and should be managed as such; therefore, wear gloves when moving the tent, change them immediately after moving the tent, and avoid further contact with the tent until all sampling activities have been finished and the team is ready to move on to the next site.

6 HEALTH AND SAFETY CONSIDERATIONS

- The ability to safely access the surface water sampling locations must be verified before sampling.
- Field activities must be performed in accordance with the site HASP, a copy of which will be present onsite during such activities.
- Safety hazards associated with sampling surface water include fast-moving water, deep water, and steep slopes close to sampling sites. Use extreme caution when approaching sampling sites.
- If thunder or lighting is present, discontinue sampling and take cover until 30 minutes have passed after the last occurrence of thunder or lighting.
- Use caution when removing well caps as well may be under pressure, cap can dislodge forcefully and cause injury.

7 PROCEDURE

7.1 Field Equipment Cleaning

Reusable field sampling equipment will require cleaning between uses. For groundwater sampling, between uses, decontaminate the flow-through cell and any non-dedicated equipment (i.e., interface probe of depth to water meter) that comes into contact with well water. Trowels and other materials used to sample soil samples will also require decontamination, although dedicated, single use equipment such as liners should be used where possible.

After donning a new pair of nitrile gloves:

- Rinse sampling equipment with Alconox or Liquinox® cleaning solution; Scrub equipment with a plastic brush if needed;
- Rinse two times with distilled water or deionized water;

- Rinse one time with “PFAS-free” water or once with methanol/isopropanol/acetone, if it is available, and once with “PFAS-free” water; organic solvents are especially useful for decontaminating soil sampling equipment. If organic cleaning solvents cannot be brought to site, scrub equipment a second time after a single distilled or deionized water rinse, then rinse two times with distilled or deionized water and once with “PFAS-free” water (i.e., two scrubbings and four water rinsings total).
- Collect all rinsate in a sealed pail for disposal. Do not reuse decontamination solutions between sampling locations.

7.2 Borehole/Monitoring Well Development

If a drill rig is being used to drill for soil cores or to install monitoring wells, wear clean nitrile gloves before collecting each continuous soil sample. Additional requirements include the following:

- Verify in writing with the manufacturer that single-use liners used to collect each sample are made of a material that does not contain PFASs;
- Collect soil samples in laboratory-supplied HDPE bottles.
- Store the sample bottles in coolers and keep at a temperature of 0 to 6ºC until transported to the laboratory.

7.2.1 Well Condition Survey/ Water Level Monitoring

Using equipment that has been thoroughly decontaminated according to the procedures in Section 7.1, conduct the well condition surveys and water level monitoring:

- Conduct monitoring well inspections and record water levels.
- Use an interface probe to evaluate presence/absence of non-aqueous phase liquid (NAPL).
- Measure the depth to water from the top of the polyvinyl chloride (PVC) riser and the total depth of the well.
- Record information in the field notes.

7.2.2 Monitoring Well Development and Purging

Follow these requirements for monitoring well development and purging:

- Do not use Teflon™ tubing for purging or sample collection. HDPE tubing is acceptable.
- Do not re-use materials between wells. Upon completion of use, remove all disposable materials (such as HDPE and/or silicone tubing) and place in heavy duty garbage bags for disposal.
- During development of the well, create sufficient energy to agitate the water column and create flow reversals in the well screen, filter pack and formation to loosen fine-grained materials and draw them into the well. The pumping or bailing action should then draw all drilling fluids and fine-grained material out of the borehole and adjacent formation and then out of the well. Review the Arcadis Monitoring Well Development guidance (Arcadis 2010) for more detailed information.
- Follow the low-flow purge and sampling techniques per the U.S. Protection Agency’s (EPA’s) guidance document titled *Low Stress (Low Flow) purging and Sampling Procedure for the Collection of Ground Water Samples from Monitoring Wells* (2010) and ASTM’s standard titled *Standard Practice for Low-Flow Purging and Sampling for Wells and Devices Used for Ground-Water Quality Investigations* (2002). Also available for review is the Arcadis Low-Flow Groundwater Purging and Sampling Procedures for Monitoring Wells (Arcadis 2011).

- To purge the well, if using HDPE tubing and a peristaltic pump, insert the end of the tubing to the approximate depth of the midpoint of the screened section of the monitoring wells. Measure the length of HDPE tubing to be inserted into each monitoring well and pre-cut it to approximate lengths (such as the previously measured arm span of a field technician) to avoid contact with any materials other than the monitoring well and peristaltic pump. Flow rates should be as low as can be reasonably achieved. Collect and appropriately dispose of purge water.
- Silicone tubing should direct the purge water through a flow-through cell for field parameter measurements of pH, conductivity, temperature, dissolved oxygen, and turbidity. Calibrate the instrument in the field prior to use. Decontaminate the instrument and flow-through cell at each monitoring well location before purging.
- Record field parameters in intervals (generally of 3-minute duration) to ensure purge water has cycled through the flow-through cell. Sample the wells after field parameter measurements indicate stabilization, which allows collection of representative formation water (generally acceptable standards are three consecutive pH readings to within ±0.1 units, and three consecutive conductivity, temperature and dissolved oxygen measurements to within 3%). Turbidity must be monitored, but does not need to be used as a stabilization indicator of purge completion. Record field parameter measurements at each well. Drawdown should be monitored throughout the purge.
- If wells are suspected to be dewatering throughout the purge (i.e., reduced flow rate/difficulty pumping water or bubbles begin to come through the flow through cell), turn off the pump and allow the water level to recover for ½ hour, followed by sample collection. Document these activities in the field notes.

7.3 Sample Collection

Different laboratories may supply sample collection bottles of varying sizes depending on the type of media to be sampled.

7.3.1 Sample Containers

- Collect samples in HDPE bottles fitted with an unlined (no Teflon™), polypropylene screw cap.
- Complete bottle labels after the caps have been placed back on each bottle.
- Do not use glass bottles due to potential loss of analyte through adsorption. This is particularly important for aqueous samples.
- Review with analytical lab the sample size, sample container, etc. depending upon the type of PFAS analysis that is being requested.

7.3.2 Soil Sampling

Before Sample Collection

- Place plastic sheeting adjacent to the sample port for use as a clean work area, if conditions allow. Otherwise, prevent sampling equipment from contacting the ground or other surface that could compromise sample integrity.
- Trowels or drilling equipment that will come into contact with a sample should be decontaminated prior to sample collection, preferably with methanol/isopropanol/acetone;
- Don a new set of nitrile gloves. Do not use gloved hands to subsequently handle papers, pens, clothes, etc., before collecting samples.
- Use the HDPE bottles that are supplied by the laboratory. Make sure that the caps remain on the bottle until immediately prior to sample collection.

During Sample Collection

- Collect soil samples using a clean stainless steel trowel or with single-use PFAS-free liners;
- Place soil samples in labeled HDPE bottles supplied by the laboratory.
- Note the time on the sample label.
- Collect any necessary duplicates/co-located samples and matrix spikes – verify with laboratory whether they need to be collected in separate sample bottles.
- Collect any necessary equipment blanks. The best timing to collect equipment blanks is immediately after the collection of a sample likely to contain high concentrations of PFASs, after the sampling equipment has been appropriately decontaminated.
- Collect any necessary field reagent blanks. This sample should be collected after field staff return from an offsite break (e.g., lunch) to capture any potential cross-contamination from field personnel.

After Sample Collection

- Place soil sample bottles in a sealed Ziploc© bag (optional).
- Record the label information and time of sampling in the field notes.
- Place soil sample bottles in coolers that are durable in transportation and keep the temperature between 0 and 6ºC until transported to the laboratory. Do not use blue ice.

7.3.3 Groundwater Sampling

Before Sample Collection

- Place plastic sheeting adjacent to the sample port for use as a clean work area, if conditions allow. Otherwise, prevent sampling equipment from contacting the ground or other surface that could compromise sample integrity.
- Don a new set of nitrile gloves. Do not use gloved hands to subsequently handle papers, pens, clothes, etc., before collecting samples.
- Use the labeled HDPE bottles that are supplied by the laboratory. Make sure that the caps remain on the bottle until immediately prior to sample collection.
- Measure depth to water and field parameters. Turbidity and the physical appearance of the purged water should be noted on the Groundwater Sampling Log.

During Sample Collection

- Start groundwater sample collection upon stabilization of field parameters.
- If low-flow groundwater sampling techniques are being used, disconnect the silicone tubing from the flow-through cell, enabling collection of groundwater samples prior to passing through the cell.
- Hydrasleeves are also considered acceptable for sampling of PFAS in groundwater – consult the project manager to determine which technique should be used. In general, low flow sampling is preferable.
- Collect groundwater samples (to the neck of the bottle, some headspace is acceptable) from the dedicated sampling ports at the center of the well screen. While collecting the sample, make sure the bottle cap remains in the other hand of the sampler, until replaced on the bottle.
- To mitigate cross contamination, collect groundwater samples in a pre-determined order from least impacted to greater impacted based on previous analytical data or knowledge about past activities at the site. If no analytical data are available, samples are to be collected in the following order:
    1. First sample the upgradient well(s).

2. Next, sample the well located furthest downgradient of the interpreted or known source.
3. The remaining wells should be progressively sampled in order from downgradient to upgradient, such that the wells closest to the interpreted or known source are sampled last.

- NOTE: If high concentrations of PFASs related to class B firefighting foams are expected in a groundwater sample, conduct a Shaker test by collecting and shaking a small portion of the sample (~10 to 25 mL) on site in a small disposable vial. If foaming is noted within the sample, document the foaming when samples are submitted for analysis; the 'shaker test' vial can then be disposed. This shaker test provides information about how each of the samples should be handled analytically.
- After collecting the sample, tightly screw on the polypropylene cap (snug, but not too tight). This will minimize leaking or cross contamination of the sample. Most PFASs, including all analytes measured by USEPA Method 537, are not volatile at environmental pH.
- Note the time on the sample label.
- Collect any necessary duplicates and matrix spikes. As the laboratory should be analyzing the entire aqueous sample rather than sub-sampling, separate bottles will be required for these samples.
- Collect any necessary equipment blanks. The best timing to collect equipment blanks is immediately after the collection of a sample likely to contain high concentrations of PFASs, after the sampling equipment has been appropriately decontaminated.
- Collect any necessary field reagent blanks. This sample should be collected after field staff return from an offsite break (e.g., lunch) to capture any potential cross-contamination from field personnel.
- Do not rinse PFAS sample bottles during sampling. Do not filter samples.

After Sample Collection

- Place groundwater sample bottles in a sealed Ziploc© bag (optional).
- Record the label information and time of sampling in the field notes and COC. Note ‘shake test’ results if appropriate.
- Place groundwater samples in coolers that are durable in transportation and keep the temperature between 0 and 6ºC until transported to the laboratory. **Do not use blue ice. Store PFAS samples in a separate cooler from other types of samples.**
- Treat all disposable sampling materials as single use and dispose of them appropriately after sampling at each monitoring well.

7.3.4 Sediment Sampling

Before Sample Collection

- Place plastic sheeting (preferably HDPE) adjacent to the sample port for use as a clean work area, if conditions allow. Otherwise, prevent sampling equipment from contacting the ground or other surface that could compromise sample integrity.
- Don a new set of nitrile gloves. Do not use gloved hands to subsequently handle papers, pens, clothes, etc., before collecting samples.
- Use the HDPE bottles that are supplied by the laboratory. Make sure that the caps remain on the bottle until immediately prior to sample collection.

During Sample Collection

- Where surface water samples and sediment samples are collected at the same location, collect surface water samples first to minimize siltation.

- Collect sediment samples either manually using a stainless steel trowel or using a petite ponar grab sampler, depending on field conditions at each sampling location during sampling program.
- Collect sediment samples from the upper 10 cm of sediment.
- For a sample to be acceptable overlying, low turbidity water must be present.
- Decant the overlying water and use a stainless steel trowel to collect only the upper 5 centimeters (cm) of sediment.
- Collect sediment samples directly into laboratory-supplied bottles that are suitable in both material and size.
- Do not overfill the sample bottle.
- Make sure that the sample does not contain vegetation, that the sediment is undisturbed, and that the sampler shows no signs of winnowing or leaking.
- Make sure bottle caps remain in the gloved hand of the sampler until sampling is complete and caps are replaced on the bottle.
- Note the time on the sample label.
- Collect any necessary duplicates and matrix spikes.
- Collect any necessary equipment blanks. The best timing to collect equipment blanks is immediately after the collection of a sample likely to contain high concentrations of PFASs, after the sampling equipment has been appropriately decontaminated.
- Collect any necessary field reagent blanks. This sample should be collected after field staff return from an offsite break (e.g., lunch) to capture any potential cross-contamination from field personnel.

After Sample Collection

- Place sample bottles in a sealed Ziploc© bag (optional).
- Record the label information and time of sampling in the field notes.
- Place samples in coolers that are durable in transportation and keep the temperature between 0 and 6ºC until transported to the laboratory. **Do not use blue ice. Store PFAS samples in a separate cooler from other types of samples.**
- Measure surface water pH, conductivity, temperature, and total dissolved solids (TDS) at each location **after** both surface water and sediment sampling is completed.

7.3.5 Surface Water Sampling

Before Sample Collection

- Place plastic sheeting (preferably HDPE) adjacent to the sample port for use as a clean work area, if conditions allow. Otherwise, prevent sampling equipment from contacting the ground or other surface that could compromise sample integrity.
- Don a new set of nitrile gloves. Do not use gloved hands to subsequently handle papers, pens, clothes, etc., before collecting samples.
- Use the HDPE bottles that are supplied by the laboratory. Make sure that the caps remain on the bottle until immediately prior to sample collection.

During Sample Collection

- Avoid sampling the surface.
- Where surface water samples and sediment samples are collected at the same location, collect surface water samples first to minimize siltation.

- Collect surface water samples directly into laboratory-supplied bottles; wide-mouth bottles may be preferable to narrow mouth bottles for ease of surface water collection.
- Make sure bottle caps remain in the gloved hand of the sampler until sampling is complete and caps are replaced on the bottle.
- Note the time on the sample bottle.
- Collect any necessary duplicates and matrix spikes. As the laboratory should be analyzing the entire aqueous sample rather than sub-sampling, separate bottles will be required for these samples.
- Collect any necessary equipment blanks. The best timing to collect equipment blanks is immediately after the collection of a sample likely to contain high concentrations of PFASs, after the sampling equipment has been appropriately decontaminated.
- Collect any necessary field reagent blanks. This sample should be collected after field staff return from an offsite break (e.g., lunch) to capture any potential cross-contamination from field personnel.

After Sample Collection

- Place sample bottles in a sealed Ziploc© bag (optional).
- Record the label information and time of sampling in the field notes.
- Place samples in coolers that are durable in transportation and keep the temperature between 0 and 6ºC until transported to the laboratory. **Do not use blue ice. Store PFAS samples in a separate cooler from other types of samples.**
- Measure surface water pH, conductivity, temperature, and TDS at each location **after** both surface water and sediment sampling.

7.4 Shipping

- If samples cannot be shipped the same day as collected, arrange an appropriate means of keeping the samples cool overnight and maintain the temperature between 0 and 10°C for the first 48 hours after collection, and then between 0 and 6°C thereafter.
- Store samples in appropriate transport bottles (coolers) with ice (Ziploc© bags for use as ice containers) with appropriate labeling. **Do not use blue ice. Store PFAS samples in a separate cooler from other types of samples.**
- Complete the appropriate procedures for COC, handling, packing, and shipping.
- Fill out and check COC Forms against the labels on the sample bottles progressively after each sample is collected.
- Place all disposable sampling materials (such as plastic sheeting, and health and safety equipment) in appropriate containers.
- Ship samples via courier service with priority overnight delivery. Tracking numbers for all shipments should be provided and recorded after they have been sent out to ensure their timely delivery.
- Do not ship samples via Fed Ex for Saturday delivery.

8 WASTE MANAGEMENT

All rinsate should be collected in a sealed pail for disposal. Drill cuttings and purge water will be managed as specified in the Field Sampling Plan (FSP) or Work Plan, and according to state and/or federal requirements. PPE and decontaminated fluids will be contained separately and staged at the sampling location. Containers must be labeled at the time of collection. Labels will include date, location(s), site name, city, state, and description of matrix contained (e.g., soil, groundwater, PPE). General guidelines for investigation derived waste (IDW) handling and storage are set forth in a separate IDW guidance document (Arcadis 2009).

Typical waste characterization procedures include collection of a composite sample of the drill cutting material and a composite sample of the purge water for laboratory analysis. Samples are typically analyzed for disposal toxicity characteristic leaching procedure (TCLP) analysis for metals and VOCs. For PFASs, a simple leach test with neutral pH water may be more indicative of actual risk. Additionally, generators of waste are required to include analysis of other constituents that are reasonably believed to be present including (in this case) PFASs.

Emerging contaminants pose a unique challenge for disposal because acceptance of such waste will be based on the local facility and their permit restrictions. Project teams will be required to identify appropriate facilities based on the facility’s legal ability to accept the waste and the team should confirm that the facility is meeting the regulatory requirements for accepting waste containing PFASs. In general, facilities that provide solidification and/or incineration will be likely to meet the necessary requirements to accept PFAS-containing waste. The facility will then provide the definitive laboratory analysis requirements needed to meet their permit requirements for waste classification.

9 DATA RECORDING AND MANAGEMENT

9.1 Field Notes

Waterproof field books must not be used for field notes. Instead, field notes should be on loose paper on Masonite, plastic, or aluminum clip boards. Other requirements for field notes include:

- Pens, pencils, and Sharpies may be used.
- Keep field notes and writing implements away from samples and sampling materials.
- One person should conduct sampling while another records field notes.
- Do not write on sampling bottles unless they are closed.

9.2 Other Project Documentation

- Complete Groundwater Sampling Logs.
- Make sure COC Forms are properly completed. Verify which PFAS analytes (e.g., just PFOS and PFOA, some or all of the 537 list, etc.) are required for analysis and note on the COC.

10 QUALITY CONTROL

Refer to quality control requirements for the project to ensure that appropriate quality assurance and quality control (QA/QC) samples are collected. When collecting QA/QC samples, the same guidelines apply as when collecting regular samples – specifically that:

- Samples should be collected in laboratory-supplied HDPE bottles;
- Bottle caps must remain in the hand of the sampler until replaced on the bottle;
- Labels must be completed after the caps have been placed back on each bottle; and

- Samples must be stored in appropriate transport bottles (coolers) with ice (Ziploc© bags for use as ice containers) with appropriate labeling. **Do not use blue ice. Store PFAS samples in a separate cooler from other types of samples.**

10.1 Equipment Blanks (if relevant)

QA/QC sampling typically includes daily collection of equipment blanks using the laboratory-supplied "PFAS-free" water. For peristaltic pump tubing, laboratory supplied "PFAS-free" water should be poured into a clean HDPE sample bottle and then pumped through new HDPE tubing using the peristaltic pump (with new silicone tubing). The best timing to collect equipment blanks is immediately after the collection of a sample likely to contain high concentrations of PFASs, after the sampling equipment has been appropriately decontaminated.

10.2 Field Duplicates

QA/QC sampling typically includes the collection of one field duplicate for every 10 or 20 samples collected. Each duplicate sample will be collected immediately after the initial sample of which it is a duplicate into a separate laboratory-provided sample bottle. Do not indicate to the laboratory which sample the duplicate replicates, i.e. it should be given a blind reference on the COC and sample name such as "duplicate".

10.3 Field Reagent Blanks

QA/QC sampling for PFASs typically includes the submission of one laboratory supplied field reagent blank per day. The field reagent blank sample is brought to the site in a laboratory-supplied sample bottle. Field staff transfer the laboratory-supplied reagent blank to an empty sample bottle. This sample should be collected after field staff return from an offsite break (e.g., lunch) to capture any potential cross-contamination from field personnel and should be placed in the same cooler as the other PFAS samples.

10.4 Matrix Spikes (optional in some cases)

QA/QC sampling includes submitting a sample to be used as a matrix spike if the project requires it. If a separate sample bottle is required, an additional sample will be collected immediately after the initial sample of which it is a duplicate into a separate laboratory-supplied sample bottle.

10.5 Laboratory Analytical QA/QC

- Arcadis recommends that any request for PFAS analysis in groundwater or soil should be conducted by an ELAP-accredited method compliant with QSM 5.1 Table B-15. Requirements laid out in Table B-15 strictly govern acceptable laboratory data quality for PFAS analysis in environmental samples. **For all data collection efforts at DoD sites, PFAS data must be obtained using a method that is DoD ELAP-accredited under QSM 5.1 or later.**
- Laboratory QA/QC should consist of one laboratory blank and one laboratory control sample (or blank spike) per batch of samples, and additional QA/QCs as indicated by the laboratory QA/QC procedures.
- Isotope dilution should be used for quantification with isotope-labeled surrogate standards, as available, according to the guidelines of QSM 5.1 Table B-15. USEPA Method 537 does not allow for isotope dilution in their PFAS drinking water method.

- For drinking water, groundwater, and surface water samples, laboratories must extract the entire sample and include a solvent rinse of the bottle for analysis. Aqueous samples should generally not be sub-sampled prior to analysis, unless they are high concentration and require serial dilution (US DoD 2017).
- Soil samples should be analyzed in their entirety or thoroughly homogenized before extraction and analysis.
- As part of the internal QA/QC of laboratory results, relative percent difference (RPD) should be calculated between samples and corresponding field or laboratory duplicates. The laboratory quality assurance portion of the laboratory certificates should be reviewed to verify that all calculations/recoveries were within acceptable limits as established by the laboratory method and guidelines in Table B-15 of QSM 5.1 or later (USDoD 2017).

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Attachment 5

Field Sampling Logs

ARCADIS
Infrastructure, environment, facilities

Page _____ of _____

Water Sampling Log

Project ______________________ Project No. ______________________

Site Location ______________________ Date ______________________

Well No. ____________ Replicate No.________ Weather ____________

Sampling Personnel____________ Sampling Time: Begin __________ End __________

Purge Data

Measuring Point (describe) ____________

Sounded Well Depth (ft bmp) ____________

Depth to Water (ft bmp) ____________

Depth to Packer (ft bmp) ____________

Water Column in Well (ft) ____________

Casing Diameter ____________

Gallons in Well ____________

Gallons Purged
Prior to Sampling ____________

Pump Intake
Setting (ft bmp) ____________

Packer Pressure (psi) ____________

Pumping Rate (gpm) ____________

Evacuation Method ____________

Sampling Method ____________

Purge Time Begin ________ End ________

Field Parameters

Color ______________________

Odor ______________________

Appearance ______________________

	I	**1V**	**2V**	**3V**
pH (s.u.)				
Conductivity (mS/cm) or				
(µmhos/cm) 1)				
Temperature (°C)				
DO (mg/L)				
ORP (mV)				
Turbidity (NTU)				
Time				
DTW (ft bmp)				

Remarks: ____

____

____

Parameter	**Container**	**No.**	**Preservative**

PID Reading ____________

Well Casing Volumes

Gal./Ft. $1^{1/4}$" = 0.06 2" = 0.16 3" = 0.37 4" = 0.65

$1^{1/2}$" = 0.09 2-½" = 0.26 3-½" = 0.50 6" = 1.47

---

1) Circle one unit type

GROUNDWATER SAMPLING LOG

Site ***Event:***

Sampling Personnel: **Well ID:**
Client / Job Number: **Date:**
Weather: **Time In:** **Time Out:**

Well Information

Depth to Water: (feet TIC)
Total Depth: (feet TIC)
Length of Water Column: (feet)
Volume of Water in Well: (gal)
Screen Interval: (feet)
Depth to pump Intake: (feet TIC)

Well Type:	Flushmount	Stick-Up	
Well Material:	Stainless Steel	PVC	
Well Locked:	Yes	No	
Measuring Point Marked:	Yes	No	
Well Diameter:	1”	2”	Other:

Purging Information

Purging Method:	Bailer	Peristaltic	Grundfos	Other:
Tubing/Bailer Material:	St. Steel	Polyethylene	Teflon	Other:
Sampling Method:	Bailer	Peristaltic	Grundfos	Other:

Duration of Pumping: (min)
Average Pumping Rate: (ml/min) Water-Quality Meter Type:
Total Volume Removed: (gal) Did well go dry: Yes No

Conversion Factors				
gal / ft. of water	1” ID	2” ID	4” ID	6” ID
	0.041	0.163	0.653	1.469
1 gal = 3.785 L =3785 ml = 0.1337 cubic feet				

Unit Stability			
pH	DO	Cond.	ORP
±0.1	± 10%	± 3.0%	± 10 mV

Parameter:	1	2	3	4	5	6	7	8	9	10	11	12	13
Volume Purged (gal)													
Rate (mL/min)													
Depth to Water (ft.)													
pH													
Temp. (C)													
Conductivity (mS/cm)													
Dissolved Oxygen (mg/l)													
ORP (mV)													
Turbidity (NTU)													
Notes:													

Sampling Information

Analyses	#	Laboratory
Sample ID:		Sample Time:
MS/MSD:	Yes	No
Duplicate:	Yes	No
Duplicate ID		Dup. Time:
Chain of Custody Signed By:		

Problems / Observations

Initial Purge:

Final Purge:

CHEMet Readings:

(0 – 1.0) =

(1-12) =

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