Mr. Scott Deyette
New York State Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway, 11th Floor
Albany, New York 12233-7014

Arcadis of New York, Inc.
One Lincoln Center
110 West Fayette Street
Suite 300
Syracuse
New York 13202
Phone: 315 446 9120
Fax: 315 449 0017
www.arcadis.com

Date: March 1, 2021
Our Ref: B0013080.0013
Subject: Site Management Plan
NYSEG Goshen Former Manufactured Gas Plant Site
NYSDEC Site No. 3-36-046

Dear Mr. Deyette,

On behalf of the New York State Electric & Gas Corporation (NYSEG), please find attached, the Site Management Plan (SMP) for the Goshen Former Manufactured Gas Plant (MGP) Site located in Goshen, New York.

The Draft SMP was submitted to the New York State Department of Environmental Conservation (NYSDEC) in February 2017. In NYSDEC's January 29, 2018 letter to NYSEG, the NYSDEC requested minor modifications to the SMP. In accordance with NYDEC's request, modifications consist of the following:

- Table 1.1 lists Mr. Scott Deyette as NYSDEC Project Manager.
- Table 4.1 reflects the current Post-Remediation Sampling schedule.
- Section 4.3.3 includes the requirement of a soil vapor intrusion evaluation prior to any changes to the use of the existing building.
- Excavation Work Plan lists Mr. Scott Deyette as NYSDEC Project Manager.

Additionally, this SMP has been stamped/signed and updated to include the following:

- Environmental Easement (Appendix A)
- Revised site figures to reflect current site conditions/monitoring well locations based on an October 2020 site survey.

Please contact Tracy Blazicek of NYSEG at 585.484.6839 or tlblazicek@nyseg.com with any questions or comments.

Sincerely,
Arcadis of New York, Inc.

Jason Golubski, P.E.
Principal Environmental Engineer

Mr. Scott Deyette
NYSDEC
March 1, 2021

Email: jason.golubski@arcadis.com
Direct Line: 315.671.9437
Mobile: 716.597.7620

CC. Tracy Blazicek, CHMM, NYSEG
Jason Brien, PE, Arcadis

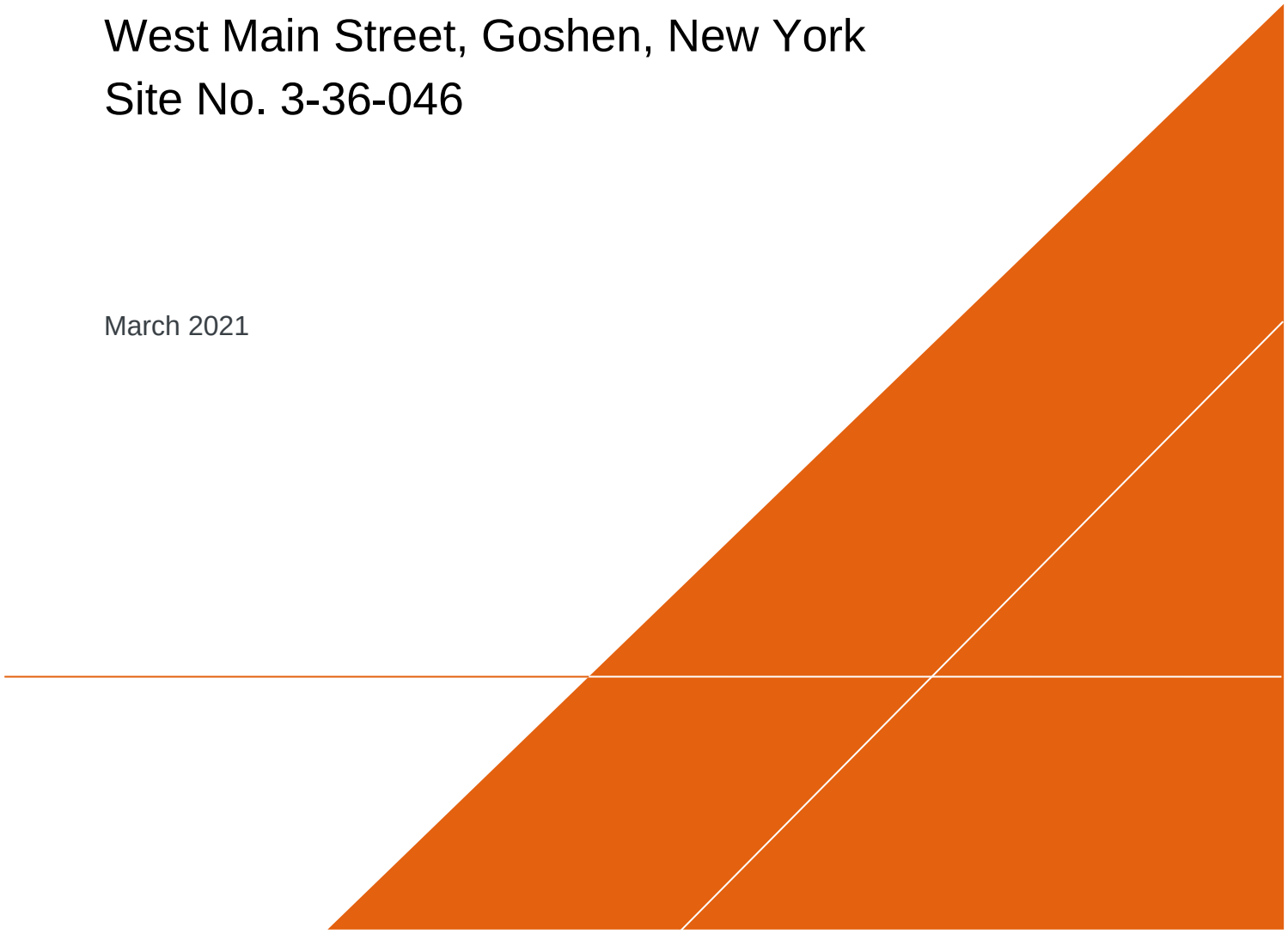
ARCADIS Design & Consultancy for natural and built assets

NYSEG

SITE MANAGEMENT PLAN

Goshen Former Manufactured Gas Plant Site
West Main Street, Goshen, New York
Site No. 3-36-046

March 2021



Certification Statement

I, Jason Brien, P.E. certify that I am currently a NYS registered professional engineer and that this Site Management Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER *Technical Guidance for Site Investigation and Remediation* (DER-10).

Date 1/27/2021

Jason Brien, P.E.
NYS PE License No. 084067

Arcadis of New York, Inc.
One Lincoln Center
110 West Fayette Street, Suite 300
Syracuse, New York 13202
315.446.9120

SITE MANAGEMENT PLAN

Goshen Former Manufactured Gas Plant Site

Prepared for:
NYSEG

Prepared by:
Arcadis of New York, Inc.
One Lincoln Center
110 West Fayette Street
Suite 300
Syracuse
New York 13202
Tel 315 446 9120
Fax 315 449 0017

Our Ref.:
B0013080

Date:
March 2021

CONTENTS

TABLES

FIGURES

APPENDICES

ACRONYMS AND ABBREVIATIONS

ASP	Analytical Services Protocol
BBL	Blasland, Bouck & Lee, Inc.
BTEX	benzene, toluene, ethylbenzene, and xylene
CAMP	Community Air Monitoring Plan
COC	Certificate of Completion
DER	Division of Environmental Remediation
EC	Engineering Control
ECL	Environmental Conservation Law
ES	Engineering-Science
EWP	Excavation Work Plan
FEMA	Federal Emergency Management Agency
FER	Final Engineering Report
FSP	Field Sampling Plan
FWRIA	Fish and Wildlife Resource Impact Analysis
HASP	Health and Safety Plan
HHEA	Human Heath Exposure Assessment
IC	Institutional Control
ISS	in-situ soil solidification
MGP	manufactured gas plant
NAPL	non-aqueous phase liquid
NYS	New York Estate
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYSDOT	New York State Department of Transportation
NYCRR	New York Codes, Rules, and Regulations
PAH	polycyclic aromatic hydrocarbon
PRR	Periodic Review Report
QAPP	Quality Assurance Project Plan
RAO	Remedial Action Objective

RI	Remedial Investigation
ROD	Record of Decision
RP	Remedial Party
RSO	Remedial System Optimization
SCG	Standards, Criteria and Guidelines
SCO	Soil Cleanup Objective
SCSDT	Site Characterization Summary and Data Transmittal
SMP	Site Management Plan
SPI	site prioritization investigation
SVI	Soil Vapor Intrusion
SVOC	semi-volatile organic compound
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VOC	volatile organic compound

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:	Goshen Former Manufactured Gas Plant Site West Main Street, Goshen, New York New York State Department of Environmental Conservation (NYSDEC) Site No. 3-36-046

Institutional Controls:	1. The NYSEG-owned Site may be used for commercial and industrial use.
	2. All Environmental Controls (ECs) must be operated and maintained as specified in this SMP.
	3. All ECs must be inspected at a frequency and in a manner defined in the SMP.
	4. The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the New York State Department of Health (NYSDOH) or the Orange 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.
	5. Groundwater and other environmental or public health monitoring must be performed as defined in this SMP.
	6. Data and information pertinent to site management must be reported at the frequency and in a manner defined in this SMP.
	7. All future activities that will disturb remaining impacted/solidified material must be conducted in accordance with this SMP.
	8. Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in this SMP.

Institutional Controls:	9. Maintenance, monitoring, inspection, and reporting of any mechanical or physical component of the remedy shall be performed as defined in this SMP.	
	10. 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.	
	11. The potential for vapor intrusion must be evaluated (or vapor intrusion mitigation measures installed) for any new buildings developed in the area within the Institutional Controls (IC) boundaries, and any potential impacts that are identified must be monitored or mitigated.	
Engineering Controls:	1. Cover system	
	2. NAPL monitoring wells	
Inspections:		Frequency
1. Cover inspection		Annually
Monitoring:		
1. NAPL Monitoring and Passive Recovery		Quarterly for years 1 through 3 (2018, 2019, and 2020), semi-annually for years 4 and 5 (2021 and 2022), and annually thereafter
2. Groundwater Sampling		Annually
Reporting:		
1. NAPL Monitoring Letter Report		Annually
2. Groundwater Sampling Letter Report		Annually
3. Periodic Review Report		Annually

Further descriptions of the above requirements are provided in detail in the latter sections of this SMP.

1 INTRODUCTION

1.1 General

This Site Management Plan (SMP) is a required element of the remedial program for the NYSEG Goshen Former Manufactured Gas Plant (MGP) Site located in Goshen, New York (hereinafter referred to as the "Site"). A site location map is included as Figure 1. The Site is currently in the New York State (NYS) Inactive Hazardous Waste Disposal Site Remedial Program, Site No. 3-36-046 which is administered by New York State Department of Environmental Conservation (NYSDEC).

NYSEG entered into an Order on Consent (Index # D0-0002-9309) on March 30, 1994 with the NYSDEC to remediate the Site. Figures showing the Site location and Site boundaries are provided in Figures 1 and 2, respectively. The Site serves as an active natural gas service center and is occupied by a service center building, a parking lot, and an open outdoor equipment storage area. No remnants of the former MGP structures exist above grade on-site. Historical MGP features and subsurface structures are shown on 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 remedial work, some impacted media (including solidified soil) were left at this Site, which are hereafter referred to as "remaining impacts". Institutional and Engineering Controls (ICs and ECs) have been incorporated into the site remedy to control exposure to remaining contamination to ensure protection of public health and the environment. An Environmental Easement granted to the NYSDEC, and recorded with the Orange County Clerk, requires compliance with this SMP and all ECs and ICs placed on the Site.

This SMP was prepared to manage remaining impacts at the Site until the Environmental Easement is extinguished in accordance with the Environmental Conservation Law (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).

- Failure to comply with this SMP is also a violation of ECL, 6 New York Codes, Rules, and Regulations (NYCRR) Part 375 and the Order on Consent (Index # D0-0002-9309; Site No. 3-36-046) 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 contacts for persons involved with the Site is provided in Table 1.1 (in Section 1.3) of this SMP.

This SMP was prepared by Arcadis of New York, Inc. (Arcadis), on behalf of NYSEG, in accordance with the requirements of the NYSDEC's Division of Environmental Remediation (DER) "Technical Guidance for Site Investigation and Remediation" (DER-10), dated May 2010 (NYSDEC, 2010), 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. Revisions will be necessary upon, but not limited to, the following occurring: a change in media monitoring requirements, upgrades to or shut-down of a remedial system, post-remedial removal of impacted sediment or soil, or other significant change to the site conditions. In accordance with the Environmental Easement for the Site, the NYSDEC 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 Order on Consent, 6NYCRR Part 375 and/or ECL.
- 7-day advance notice of any field activity associated with the remedial program.
- 15-day advance notice of any proposed ground-intrusive activity pursuant to the Excavation Work Plan (EWP).
- Notice within 48-hours of any damage or defect to the foundation, structures or EC 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.
- Verbal notice by noon of the following day 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 (RP) 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 includes contact information for the above notification, as well as a complete site contacts list. The information on this table will be updated as necessary to provide accurate contact information.

Table 1.1 – Site Contact List

Name/Affiliation	Address	Contact Information
NYSEG		
Mr. Tracy Blazicek Remediation Project Manager	18 Link Drive P.O. Box 5224 Binghamton, NY 13094	T: 607.762.8839 tlblazicek@nyseg.com
NYSDEC		
Mr. Scott Deyette Division of Environmental Remediation	625 Broadway 11th Floor Albany, NY 12233	T: 518.402.9794 scott.deyette@dec.ny.gov
NYSDOH		
Ms. Kristin Kulow Oneonta District Office	28 Hill Street, Suite 201 Oneonta, NY 13820	T: 518.402.7860 kxk07@health.state.ny.us
Arcadis		
Mr. Jason Golubski, P.E. Project Manager	110 West Fayette Street Suite 300 Syracuse, NY 13202	T: 315.671.9437 jason.golubski@arcadis-us.com

Note:
Notifications are subject to change and will be updated as necessary.

2 SUMMARY OF PREVIOUS INVESTIGATIONS AND REMEDIAL ACTIONS

This section summarizes site background information relevant to the development of this SMP, including site location and description, physical setting, investigation and remedial history, remedial action objectives (RAOs), and a summary of remaining site-related impacts.

2.1 Site Location and Description

The Site is located in Goshen, Orange County, New York and is identified as Section 111 Block 10 and Lot 16.2 (i.e., 250 West Main Street) on the Village of Goshen Tax Map. The Site is an approximately 3/4-acre area and is bounded by Rio Grande Creek at the northwest corner, Village of Goshen property to the north and northeast, West Main Street to the south, and private commercial properties to the east and west (see Figure 2). The boundaries of the Site are more fully described in the Environmental Easement included as Appendix A. The owner of the Site at the time of issuance of this SMP is NYSEG.

2.2 Physical Setting

An overview of the Site's physical setting is presented below, including a description of the land use, and site geology and hydrogeology.

2.2.1 Land Use

The Site consists of the following: a service center building (which was formerly the gas house associated with the MGP), equipment lay-down/storage areas, and driveway/parking area. The Site is zoned for commercial use and currently serves as a NYSEG natural gas service center. The properties adjoining the Site and, in the neighborhood surrounding the Site primarily include properties zoned for commercial, industrial, central shopping, and residential use.

2.2.2 Geology

Site investigations identified three relevant unconsolidated geologic units beneath the Site (in descending order):

- Fill – The fill unit is generally 10 to 12 feet thick and consists of reworked alluvial deposits (sands, gravels, silts) and anthropogenic materials (e.g., slag, coal, wood, metal, ash, concrete, brick and foundations from former MGP structures).

- Alluvium – An alluvial sand and silt unit is located directly beneath the fill unit and consists of deposits of fine sands, silts, and varying amounts of clay and gravel. The alluvial unit is found throughout the Site with a relatively uniform thickness between approximately 15 to 19 feet.

- Till – The till unit is located directly beneath the alluvial unit and consists of dense matrix of sand, silt, and varied amounts of gravel and clay. The bottom of the till unit was not encountered during investigation activities but is estimated to have a thickness greater than 15 feet.

Geologic cross sections were previously presented in the Remedial Investigation Report (RI Report) (Arcadis, 2010) as Figures 5 and 6 (cross section locations are shown on Figure 2 of the RI) (see Appendix B). Site specific boring logs were provided in the RI Report.

2.2.3 Hydrogeology

Groundwater flow occurs within the three above-mentioned geologic units. The water table lies within the fill unit at approximately 3 to 10 feet below grade. Shallow groundwater moves northwestward, towards Rio Grande Creek. Potentiometric data from wells located near the area of former Gas Holders #1 and #2 suggest that the foundations for these holders influence shallow groundwater flow locally.

Groundwater in the deeper alluvium and till units moves westward, parallel to the creek. The rate of groundwater movement within the alluvium is slow (i.e., less than 0.1 foot per day). Water-level data suggest a downward hydraulic gradient across most of the Site. However, upward gradients exist at well clusters located near Rio Grande Creek. Even though downward and upward gradients exist at the Site, groundwater movement is primarily horizontal.

Water table and deep overburden potentiometric surface contours were provided as RI Report Figures 7 and 8, respectively (see Appendix B). Groundwater elevation data collected in 2009 was provided in the RI Report.

2.3 Investigation and Remedial History

The following narrative provides an operation, investigation, and remedial history of the Site. Available project records to document key investigative and remedial milestones for the Site are referenced in the following subsections.

2.3.1 Operational History

MGP operations began at the Site between 1885 and 1889 as a carbureted water gas plant. The plant was apparently converted to a coal gas plant in 1923 and continued to operate as a coal gas plant until sometime between 1945 and 1947, when the facility was converted to a natural gas operations center (Engineering-Science [ES], 1991). During this time, the Site was owned by the A. VanDerwerken Water Gas Works (circa 1889 to circa 1905), Goshen Gas Light Company Water Gas Works (circa 1905 to circa 1923), Goshen Illuminating Company Coal Gas Plant (circa 1923 to 1945), Associated Gas & Electric Company (1945 to 1947) and NYSEG (1947 to present). While operational, the MGP consisted of a gas house (composed of a meter house, purifying/purifier houses, oil tanks, a boiler, a generator, a washer, and a superheater), three gas holders, a shed, furnace area, coal storage area, retorts, and a lime kiln.

2.3.2 Investigation History

The Site has been subject to several environmental investigations, including:

- 1990 – Site Prioritization Investigation (SPI). In October and November 1990, ES conducted a SPI to assess whether the Site posed an imminent threat to human health and/or the environment. Investigation activities consisted of collecting five surface-soil samples from the upper 0.5 foot of soil, three surface-water samples from Rio Grande Creek, and three sediment samples (collected at the same locations as the surface-water samples). Analytical results indicated that the most significant risk associated with the Site was direct contact with surface soil, fill, and residues exposed along the banks of Rio Grande Creek. Analytical results for sediment and surface water collected from Rio Grande Creek showed no indications of MGP impacts. SPI results were presented in a report titled Prioritization of Former Manufactured Gas Plant Site, Goshen Site (ES, 1991).

- 1992 to 1994 – Task II Remediation Investigation (RI). In 1992, Blasland, Bouck & Lee, Inc. (BBL) (now Arcadis) developed a conceptual model for the Site that noted data gaps, including the nature of potential source areas and the extent of MGP impacts on environmental media (particularly subsurface soil and groundwater). To address the identified data gaps, a Task II RI was conducted consisting of the following general field activities:

    - Excavating six test pits and collecting soil samples for laboratory analysis.
    - Completing seven test borings and collecting soil samples for laboratory analysis.
    - Collecting and submitting water samples from an underground storage tank (UST) and cistern structure (located near former Gas Holder #2) for laboratory analysis.
    - Collecting and submitting five surface soil samples for laboratory analysis.
    - Installing six overburden groundwater monitoring wells in pairs.
    - Collecting and submitting four rounds (October, 1993; January, April and July, 1994) of groundwater samples from the new wells for laboratory analysis.
    - Conducting sediment probing upstream, adjacent to, and downstream from the Site and collecting eight sediment samples for laboratory analysis.

    The results of the Task II RI indicated that that the extent of MGP-impacted soil, sediment and groundwater at the Site was relatively limited. Subsurface soils from test borings in former Gas Holders #1 and #2, and north of the former tar drip were observed to contain a coal tar-type non-aqueous phase liquid (NAPL). The results of the Task II RI were documented in the Site Characterization Summary and Data Transmittal (SCSDT), which was submitted to the NYSDEC in February 2001 (BBL, 2001).

- 2008 – Soil Vapor Intrusion Evaluation (SVI Evaluation). On March 14 and 15, 2008 Arcadis conducted an SVI evaluation consisting of:

    - Walking through the building and completing the New York State Department of Health (NYSDOH) Indoor Air Quality Questionnaire and Building Inventory form.

    - Collecting three co-located sub-slab and indoor air samples inside/beneath the floor slab of the service center building.

    - Collecting two stand-alone indoor air samples inside the service center building.

    - Collecting one upwind ambient air sample outside of the service center building.

    Each soil vapor/air sample was collected using a 6-liter SUMMA® canister over a 24-hour sampling period and samples were submitted for laboratory analysis in accordance with the United States Environmental Protection Agency (USEPA) Compendium Method TO-15, titled Determination of Volatile Organic Compounds (VOCs) in Air Collected in Specially-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry. The results of the SVI Evaluation indicated that only low levels of VOCs were present in soil vapor and indoor air. Additional soil vapor investigations were not deemed necessary because the service center building is mainly used to store materials and supplies used by NYSEG gasfitters. Results of SVI evaluation were presented on May 20, 2008 in a letter report to NYSDEC (Arcadis, 2008).

- 2008 to 2009 – Remedial Investigation. From October 2008 to October 2009, Arcadis conducted RI activities consisting of:

    - Drilling 50 soil borings and collecting soil samples for laboratory analysis.

    - Excavating two test pits and collecting soil samples for laboratory analysis.

    - Collecting 11 surface soil samples for laboratory analysis.

    - Installing 12 overburden groundwater monitoring wells, three piezometers, and two NAPL monitoring wells.

    - Collecting and submitting three rounds (October 2008, December 2008 and March/April 2009) of groundwater samples from the Site wells for laboratory analysis.

    - Conducting specific-capacity testing at each monitoring well to estimate hydraulic conductivity.

    - Completing creek reconnaissance and sediment probing in the Rio Grande Creek at 165 locations along 33 transects.

- Completing 18 sediment cores and collecting 61 sediment samples and six sediment grab samples for laboratory analysis.
- Collecting six surface water samples for laboratory analysis.
- Conducting a Fish and Wildlife Resource Impact Analysis (FWRIA) and a Human Heath Exposure Assessment (HHEA).

The results of the RI indicated the following:

- Coal tar at the Site had migrated only a short distance (i.e., 20 to 30 feet) north and northwest of the assumed release points (i.e., former MGP structures).
- Most of the tar was encountered below the water table in relatively thin, sporadic seams.
- Soils that contain tar would likely exceed NYSDEC Standards and Guidance Values that are used to establish cleanup goals.
- The extent of impacted groundwater was generally limited to the Site boundary within the sand and silt unit, extending about 50 to 60 feet downgradient (generally northwest) of the former MGP structures.
- Coal carbonization polycyclic aromatic hydrocarbons (PAHs) detected in creek sediments cannot be conclusively linked to the Site. The most elevated concentrations of PAHs were detected at a 24-inch storm sewer outfall located near the Site.
- No imminent threat to human health or the environment was identified, based on the findings of the FWRIA and HHEA.

A detailed discussion of the RI activities and results is presented in the RI Report (Arcadis, 2010).

2.3.3 Remedial History

An overview of the remedial measures conducted to address environmental impacts identified at the Site is presented below.

2.3.3.1 Tar Drip Remedial Measure (2007)

NYSEG completed a remedial measure in May 2007 to remove tarry material in the apparent former tar drip (i.e., sump-like) structure located in the storage area of the former gas house (current service center building). The top of the 1-foot diameter circular sump was flush with the concrete floor of the storage room and the bottom of the sump was approximately 1.5 feet below the floor slab. Prior to the remedial measures, the surface of the sump was covered with a circular metal plate and the sump contained

approximately 4 inches of standing water overlaying a tarry material. In May 2007, Arcadis removed approximately 1 gallon of water and 4 gallons of tar-like material from the sump and placed the liquids into New York State Department of Transportation- (NYSDOT-) approved 55-gallon drums for characterization and disposal. The sump was then filled with a non-shrink grout.

2.3.3.2 Site Remedy (2016)

NYSEG implemented the NYSDEC-selected remedy from September through November 2016 to address environmental impacts identified at the Site. The selected Site remedy was presented in the March 2011 Record of Decision (ROD) (NYSDEC, 2011) and consisted of the following:

- Conducting in-situ soil solidification (ISS) to address MGP impacted material, including source material outside the footprint of the existing structures.
- Removal and disposal of the UST.
- Removing sediment in the Rio Grande Creek near the mouth of the 24-inch outfall pipe to a depth up to 2 feet to address elevated levels of PAHs.
- Installing NAPL monitoring wells in the area between the existing service center building and the ISS treatment area.
- Installing a site cover to allow for commercial use of the Site.
- Implementing an institutional control in the form of an environmental easement for the controlled property that:
    - Requires the RP or site owner to complete and submit to the NYSDEC, a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3).
    - Limits the use and development of the controlled property for commercial and industrial use, recognizing that land use is subject to local zoning laws.
    - Restricts the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDEC, NYSDOH, or County DOH.
    - Prohibits agriculture or vegetable gardens on the controlled property.
    - Requires compliance with this SMP.

- Preparing this SMP, which includes the following:
    - An Institutional and Engineering Control (IC/EC) Plan that identifies all use restrictions and engineering controls for the Site and details the steps and media-specific requirements necessary to assure the following institutional and/or engineering controls remain in place and effective:
        - ICs (as described above).
        - ECs (the recovery wells and site cover described above).

      This plan includes, but may not be limited to:
        - An EWP which details the provisions for management of future excavations in areas of remaining contamination (under and next to the service center building).
        - Descriptions of the provisions of the environmental easement including any land use or groundwater restrictions.
        - Provisions for the management and inspection of the identified engineering controls.
    - A Monitoring Plan to assess the performance and effectiveness of the remedy. The plan will include, but is not limited to:
        - Monitoring the soil cover and groundwater quality to assess the performance of the remedy.
        - A schedule of monitoring and frequency of submittals to NYSDEC.
        - Provision to evaluate the potential for vapor intrusion for any buildings developed on the Site, implementing actions recommended to address exposure related to soil vapor intrusion.

Site remedy-related activities are documented in the February 2017 Draft Final Engineering Report (FER) (Arcadis, 2017).

2.4 Remedial Action Objectives

The RAOs for the Site as listed in the ROD dated March 31, 2011 are as follows:

Groundwater

RAOs for Public Health Protection

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards.
- Prevent contact with, or inhalation of, volatiles from contaminated groundwater.

RAOs for Environmental Protection

- Restore ground water aquifer to pre-disposal/pre-release conditions, to the extent practicable.
- Prevent the discharge of contaminants to surface water.

Soil

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.
- Prevent inhalation of contaminants volatilizing from contaminants in soil.

RAOs for Environmental Protection

- Prevent migration of contaminants that would result in groundwater or surface water contamination.

Sediment

RAOs for Public Health Protection

- Prevent direct contact with contaminated sediments.
- Prevent surface water contamination which may result in fish advisories.

RAOs for Environmental Protection

- Restore sediments to pre-release/background conditions to the extent feasible.

Soil Vapor

RAOs for Public Health Protection

- Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at the Site.

2.5 Remaining Impacts

Manufactured gas-production byproducts, typically coal tar NAPL and purifier waste, often account for the majority of the impacts at former MGP sites. Principal components of coal tar that are routinely analyzed for at MGP sites are benzene, toluene, ethylbenzene, and xylene (BTEX) compounds, which are VOCs, and PAHs, which are semi-volatile organic compounds (SVOCs). The principal toxic chemical associated with purifier waste is cyanide.

A majority of the soil containing BTEX and PAH compounds at concentrations greater than commercial use soil cleanup objectives (SCOs) (and NAPL and impacted groundwater) was addressed during the implementation of the site remedy, which included the pre-ISS excavation and ISS to the top of the till unit (i.e., 26 to 28 feet below grade). The extent of impacts remaining at the Site (following the completion of the remedial actions discussed in Section 2.3.3) is presented in the following subsections.

2.5.1 NAPL Distribution

NAPL has historically accumulated in NAPL monitoring well NMW08-02 in the area between the service center building and the ISS treatment area. NAPL was also observed in November 2016 during the installation of the NAPL monitoring wells NMW-16-03 through NMW16-05 in this area. As presented in Section 2.3.3, the site remedy includes NAPL monitoring and removal to permanently reduce the volume of potentially mobile NAPL (remaining beneath the service center building) and limit the potential for further downgradient migration of mobile NAPL. Additionally, at soil boring SB08-30, blebs of oil-like material were only observed at a depth of 33 feet below, within till. Locations where NAPL has been observed are shown on Figure 3.

2.5.2 Soil

Soil treated via ISS is generally located a depth of five feet below grade. As described in Section 3.3.1, ISS treated material is covered with imported fill and a new asphalt cover. Outside the limits of ISS treatment, a majority of the area north of the service center building was also covered with new asphalt.

Table 1 summarizes the results of all soil samples collected that exceed commercial use SCOs at the Site after completion of remedial action. As shown on Figure 3, soil containing BTEX and PAH compounds at concentrations greater than commercial use SCOs is generally limited to the area near and below the service center building.

2.5.3 Sediment

Analytical results for sediment samples collected during site investigations were compared to acute and chronic aquatic life criteria presented in Technical Guidance for Screening Contaminated Sediments (NYSDEC, 1999). Although several sediment samples appeared to have a PAH signature consistent with coal carbonization tar, the signature can also be attributable to creosote and particles/flakes of coal-tar-based sealcoat contributed by the numerous sewer outfalls and run-off from parking lots along the creek. Given this information and the lack of visually MGP-impacted sediments in the creek, PAHs detected in sediment samples could not be conclusively attributed to the former MGP.

The site remedy included the removal of sediment containing the greatest concentrations of the PAHs, near the mouth of the 24-inch outfall pipe. Table 2 summarizes the results of sediment samples collected that exceed the acute and chronic aquatic life criteria after completion of the remedial action. The location of the completed sediment removal and the previous sediment sampling locations are shown on Figure 4.

2.5.4 Groundwater

Analytical results for groundwater samples collected during site investigations were compared to the Class GA groundwater quality standards/guidance values presented in the NYSDEC's Division of Water, Technical and Operational Guidance Series 1.1.1: Ambient Water Quality Standards and Groundwater Effluent Limitations (TOGS 1.1.1) (NYSDEC, 2008). As shown on Figure 5, Analytical results for the most recent groundwater samples (collected in 2008 and 2009) indicated that groundwater along the downgradient portion of the Site contains BTEX and/or PAHs at concentrations greater than NYSDEC Class GA Standards and Guidance Values. Table 3 summarizes the results of samples of groundwater that exceed the SCGs after completion of the remedial action.

Impacted groundwater within the ISS treatment area was solidified in-place with impacted soil. Given the extent of soil containing MGP-related impacts, a majority of the monitoring wells are located near/at the site boundaries (i.e., beyond the limits of the completed ISS treatment). Although ISS treatment was completed to address the most heavily impacted soil (i.e., material is solidified in-place), given the slow groundwater velocities at the Site, concentrations of BTEX and/or PAHs may not decrease for some time. This SMP provides the requirements for post-remediation groundwater monitoring.

2.5.5 Soil Vapor

As presented in the May 2008 SVI Evaluation letter report (Arcadis, 2008), the results of the SVI Evaluation indicated that only low levels of VOCs were present in soil vapor. The SVI Evaluation also concluded that additional indoor air soil vapor investigations were not warranted because the service center building is mainly used to store materials and supplies used by NYSEG gasfitters. This SMP provides the requirements for a SVI evaluation if new structures are built on-site.

3 INSTITUTIONAL AND ENGINEERING CONTROL PLAN

3.1 General

Based on the presence of remaining impacts at the Site, ICs and ECs are required to protect human health and the environment. This IC/EC Plan describes the procedures for the implementation and management of all ICs/ECs at the Site. The IC/EC Plan is one component of the SMP and is subject to revision by the NYSDEC.

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 EWP (as provided in Appendix C) for the proper handling of remaining impacts that may be disturbed during maintenance or redevelopment work on the Site.
- Any other provisions necessary to identify or establish methods for implementing the IC/ECs required by the Site remedy, as determined by the NYSDEC.

3.2 Institutional Controls

A series of ICs is required by the ROD to: (1) implement, maintain and monitor Engineering Control systems; (2) prevent future exposure to remaining impacts; and, (3) limit the use and development of the Site. Adherence to these ICs on the Site is required by the Environmental Easement and will be implemented under this SMP. ICs below may not be discontinued without an amendment to or extinguishment of the Environmental Easement. These ICs are:

- The property may be used for: commercial use, subject to local zoning laws.
- 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 is prohibited without necessary water quality treatment as determined by the NYSDOH or the Orange 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 NYSDEC.
- 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 impacted/solidified material must be conducted in accordance with this SMP.
- Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in this SMP.
- Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical 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 new buildings developed on the Site, and any potential impacts that are identified must be monitored or mitigated.
- Vegetable gardens and farming on the Site are prohibited.

3.3 Engineering Controls

An overview of the ICs established for the Site is presented below, including a site cover and NAPL monitoring wells.

3.3.1 Cover

Exposure to remaining impacts at the Site is prevented by an existing cover system placed over the Site. This cover system is comprised of a minimum of 4 feet of imported fill, geotextile, 8 inches of subgrade, and 4 inches of pavement within the limits of ISS treatment, and 4 inches of pavement outside the ISS treatment limits. The EWP provided in Appendix C outlines the procedures required to be implemented for intrusive activities within the Site and if any underlying remaining impacts (including to solidified material) are disturbed. Procedures for the inspection of the existing cover are provided in the Monitoring and Sampling Plan included in Section 4 of this SMP. Any work conducted pursuant to the EWP must

also be conducted in accordance with the procedures defined in a Health and Safety Plan (HASP) and NYSDOH's *Generic Community Air Monitoring Plan* (G-CAMP) provided in Appendices D and E, respectively.

3.3.2 NAPL Monitoring Wells

As discussed in Section 2.3.3.2, a total of five NAPL monitoring wells were installed in November 2016 to facilitate the recovery of potentially mobile NAPL downgradient of the existing service center building, to the extent practicable. NAPL monitoring wells were installed near the northwest corner of the service center building to an approximate depth of 25 to 32 feet below grade and consist of 6-inch diameter PVC wells equipped with a 5-foot sump (installed in the till unit) and completed with flush-mount well covers. Additionally, NMW08-02 is located immediately north of the western portion of the service center building and will be gauged along with the newly installed NAPL monitoring wells. The locations of the NAPL monitoring wells are shown on Figure 2. Monitoring/gauging activities completed as required by this SMP will be summarized in an annual NAPL Monitoring Report letter submitted to NYSDEC.

3.3.3 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.

3.3.3.1 Cover

The existing 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.

3.3.3.2 NAPL Monitoring Wells

The NAPL monitoring wells are a permanent control. NAPL monitoring will be conducted at defined, regular intervals in accordance with this SMP. In the event that NAPL is not observed in any wells for four consecutive events, NYSEG will provide the NYSDEC with a proposal to discontinue the monitoring. In the event that monitoring continues beyond five years, the need for continued monitoring will be regularly reevaluated. If the results of an evaluation deem NAPL monitoring unnecessary, then NYSEG will propose to the NYSDEC that monitoring be discontinued. Monitoring will continue until written permission to discontinue is granted by the NYSDEC.

4 MONITORING AND SAMPLING PLAN

4.1 General

This Monitoring and Sampling Plan describes the measures for evaluating the overall performance and effectiveness of the remedy. This Monitoring and Sampling Plan may only be revised with the approval of the NYSDEC. 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 Field Sampling Plan (FSP) and Quality Assurance Project Plan (QAPP) provided in Appendices F and G, respectively.

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

- Sampling and analysis of all appropriate media (e.g., groundwater, indoor air, soil vapor, soils).
- Assessing compliance with applicable NYSDEC standards, criteria and guidance (SCGs), particularly groundwater standards and Part 375 SCOs for soil.
- 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:

- 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 of this SMP.

4.2 Site-Wide Inspection

Site-wide inspections will be performed at the Site at a minimum of once per year. Modification to the frequency or duration of the inspections will require approval from the NYSDEC. Site-wide inspections will also be performed after all severe weather conditions that may affect ECs or monitoring devices. During these inspections, an inspection form will be completed as provided in Appendix H – Site Inspection Form. The form 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 (PRR). 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
- Achievement of remedial performance criteria
- If site records are complete and up to date

Reporting requirements are outlined in Section 7.0 of this SMP.

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 must be given by noon of the following day. In addition, an inspection of the Site will be conducted within 5 days of the event to verify the effectiveness of the IC/ECs implemented at the Site by a qualified environmental professional, as determined by the NYSDEC. Written confirmation must be provided to the NYSDEC within 7 days of the event that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public.

4.3 Post-Remediation Media Monitoring and Sampling

Samples shall be collected from the groundwater monitoring wells on a routine basis. Sampling locations, required analytical parameters and schedule are provided in Table 4.1 – Remedial System Sampling Requirements and Schedule below. Modification to the frequency or sampling requirements will require approval from the NYSDEC.

Table 4.1 – Post Remediation Sampling Requirements and Schedule

Sampling Location	Analytical Parameters			Water-Level Monitoring	NAPL Monitoring	Schedule
	BTEX (USEPA Method 8260)	PAHs (USEPA Method 8270)	Total Cyanide (USEPA Method 9012)			
MW93-1D, MW93-1S, MW93-2D, MW93-2S, MW18-04D, MW18-04S, MW08-05D, MW08-05S, MW08-06D, MW08-06S, MW08-07D, MW08-07S, MW18-08D, and MW08-08S	X	X	X	X		Annually
NMW08-02 and NMW16-01 through NMW16-05				X	X	Starting January 2018, quarterly for years 1 through 3 (2018, 2019, and 2020), semi-annually for years 4 and 5 (2021 and 2022), and annually thereafter

Detailed sample collection and analytical procedures and protocols are provided FSP (Appendix F) and the QAPP (Appendix G).

4.3.1 Groundwater Monitoring and Sampling

As required by the ROD, groundwater monitoring will be conducted to assess the performance and effectiveness of the remedy. As noted previously, the remedy principally consisted of conducting ISS treatment to address accessible MGP source material and installing NAPL monitoring wells to facilitate the recovery of potentially mobile NAPL. NAPL inadvertently released during former MGP operations have been in place for decades. While the solidification/removal of impacted material has reduced the time potentially required to achieve the groundwater RAOs presented in the ROD, some residual NAPL remains in site soils (i.e., near/below the western portion of the service center building). This residual NAPL will continue to slowly dissolve for many years; therefore, groundwater RAOs may not be achieved in the foreseeable future. A network of monitoring wells has been installed to monitor upgradient and

downgradient site groundwater conditions. The network of wells has been designed to achieve the following objectives:

1. Confirm that groundwater-flow patterns have not changed appreciably. Note that implementation of ISS treatment is anticipated to alter local groundwater flow patterns, compared to the flow patterns observed during the remedial investigation. The first groundwater level gauging event (described in Section 4.3.1.1) will serve as the "baseline" and establish post-remediation local groundwater flow patterns.

2. Document the quality of groundwater entering the Site.

3. Document that the extent of groundwater impacted by the former MGP remains stable or is shrinking.

Periodic groundwater level gauging and groundwater sampling, as described in the following subsections, will be completed to meet these objectives. Well construction details are provided in Table 4.

4.3.1.1 Groundwater Level Gauging

To meet Objective #1, synoptic rounds of groundwater levels will be periodically collected at site monitoring wells. Water-level monitoring will be performed in conjunction with groundwater sampling (discussed in Section 4.3.1.2). As such, groundwater levels will be measured whenever groundwater samples are collected from site monitoring wells or NAPL gauging is conducted.

Following the completion of the groundwater level gauging, potentiometric surface maps (i.e., for shallow and deep units) will be prepared depicting the water table. As indicated above, ISS treatment is anticipated to alter local groundwater flow patterns, the first gauging event will serve as the "baseline" for post-remediation groundwater flow patterns.

4.3.1.2 Groundwater Sampling

To meet Objectives #2 and #3, groundwater samples will be periodically collected from the monitoring wells listed in Table 4.1. Based on historical groundwater data, the extent of impacted groundwater is stable. Therefore, groundwater sampling will be performed annually to assess the performance of the remedy. Based on the results of the groundwater sampling activities, the quantity of wells sampled or the frequency of sampling may be reduced. Any modification to the frequency or sampling requirements presented in this SMP will require approval from the NYSDEC. Monitoring will continue until written permission to discontinue is granted by the NYSDEC. This SMP will be modified to reflect changes in the groundwater sampling plan once approved by the NYSDEC.

The well construction details, including well identification number, as well as the purpose, location, depths, diameter and screened intervals of the wells to be sampled are presented in Table 4. As part of the groundwater monitoring, four (4) upgradient wells, six (6) downgradient wells, and four (4) side gradient wells are sampled to evaluate the effectiveness of the remedial system. Monitoring well construction logs are included in Appendix I of this document. Note that during the initial 2018 NAPL

gauging event, monitoring wells MW08-04D, MW08-04S, and MW08-08D were observed to be destroyed and/or missing. With NYSDEC approval, replacement wells MW18-04D, MW18-04S, and MW18-08D (respectively) were installed in December 2018.

Groundwater samples will be collected from the wells listed in Table 4.1 using low-flow purging and sampling techniques in accordance with the FSP (Appendix F). The groundwater samples will be submitted to an NYSDOH-certified laboratory for analysis for the parameters listed in Table 4.1. Analytical parameters to be analyzed along with the detection limits and minimum reporting limits to be achieved by the Environmental Laboratory Approval Program-certified laboratory are included in the QAPP (Appendix G). Analytical results will be reported using NYSDEC Analytical Services Protocol (ASP) Category B data deliverables. The analytical results will be validated in accordance with USEPA National Functional Guidelines.

4.3.1.3 Monitoring Well Repairs, Replacement, and Decommissioning

If biofouling or silt accumulation occurs in the 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 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 PRR. Well decommissioning without replacement will be done only with the prior approval of the NYSDEC. Well abandonment will be performed in accordance with NYSDEC's November 2009 CP-43: Groundwater Monitoring Well Decommissioning Policy (NYSDEC, 2009). 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.

Deliverables for the groundwater monitoring program are specified in Section 7.

4.3.2 NAPL Gauging and Removal

NAPL gauging will be conducted to identify wells where NAPL accumulates, allow estimation of the accumulation rate, and develop a removal schedule. Starting January 2018, NAPL gauging will be conducted on a quarterly basis for 2018, 2019, and 2020; semi-annually for 2021 and 2022; and subsequently, annually thereafter. NAPL monitoring wells are listed in Table 4.1 and shown on Figure 2.

If a recoverable quantity of NAPL is identified in any well, the NAPL will be removed by manual bailing or pumping with a portable pump at a frequency that is sufficient to maintain the level of NAPL to within the well sump (i.e., the NAPL gauging schedule may be modified based on the observed NAPL accumulation

rate). If no recoverable quantities of NAPL are observed during a five-year period, NYSEG would request to conduct NAPL monitoring less frequently or cease NAPL monitoring altogether.

4.3.3 Soil Vapor Intrusion Sampling

As indicated in Section 2.3.2, additional SVI investigations are not currently warranted because the service center building is mainly used to store materials and supplies used by NYSEG gasfitters and only low levels of VOCs were detected in soil vapor and indoor air. However, prior to the construction of any new enclosed structures located over areas that contain remaining impacts (or prior to any changes to the use of the existing building), a SVI evaluation will be conducted to determine whether any mitigation measures are necessary to eliminate potential exposure to vapors in the proposed structure. Alternatively, an SVI mitigation system may be installed as an element of the building foundation without first conducting an investigation. This mitigation system may include a vapor barrier and passive sub-slab depressurization system that is capable of being converted to an active system.

Prior to conducting an SVI investigation or installing a mitigation system, a work plan will be developed and submitted to the NYSDEC and NYSDOH for approval. This work plan will be developed in accordance with the NYSDOH's October 2006 (or most recent) Guidance for Evaluating Soil Vapor Intrusion in the State of New York (NYSDOH, 2006) and the FSP (Appendix F). Measures to be employed to mitigate potential vapor intrusion will be evaluated, selected, designed, installed, and maintained based on the SVI evaluation, NYSDOH guidance, and construction details of the proposed structure.

Preliminary (non-validated) SVI sampling data will be forwarded to the NYSDEC and NYSDOH for initial review and interpretation. Upon validation, the final data will be transmitted to the agencies, along with a recommendation for follow-up action, such as mitigation.

SVI sampling results, evaluations, and follow-up actions will also be summarized in the next PRR.

4.3.4 Monitoring and Sampling Protocol

All sampling activities will be recorded in a field book and associated sampling log as provided in the FSP (Appendix F). Other observations (e.g., groundwater monitoring well integrity, etc.) 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 FSP.

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, the operation and maintenance of such components is not included in this SMP.

Automated NAPL recovery systems could be installed in the future (if warranted based on the rate of NAPL recovery). In the event that a new building(s) is constructed at the Site, based on the results of SVI sampling as described in Section 4.3.3, vapor mitigation measures (e.g., vapor barrier and sub-slab depressurization system piping) may be installed. This SMP will be updated to include an Operation and Maintenance Plan if any active remedial systems (e.g., NAPL recovery system, vapor mitigation system) are installed.

6 PERIODIC ASSESSMENT/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.

The Site serves as an active natural gas service center and does not contain vulnerable assets. The engineering controls are passive and are not vulnerable to changing or extreme weather conditions. Storm water management is not anticipated to be a concern because the Site is graded for positive drainage to the Rio Grande Creek. Based on the Federal Emergency Management Agency (FEMA) National Flood Insurance Program Map Number 3615710289E, dated August 3, 2009, only the northwest corner of the Site is located within the limits of a 100-year floodplain. Remaining impacted/solidified materials are below the soil cover system, which is anticipated to withstand foreseeable rain, snow, and flooding and protect against long-term direct contact exposures. Based on the thickness and integrity of the soil cover system, impacted materials are not anticipated to be released from the Site during extreme weather events, including flooding.

If site conditions change, NYSEG with NYSDEC consultation, will evaluate the need to develop a vulnerability assessment. Potential future vulnerability assessments will be provided as part of the PRR.

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 to be completed for the Site during site management, and as reported in the PRR.

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.

6.2.1 Timing if Green Remediation Evaluations

For potential future major remedial system components (e.g. the construction of sub-slab depressurization system for a future building), green remediation evaluations and corresponding modifications will be undertaken as part of a formal Remedial System Optimization (RSO), or at any time that the Project Manager feels appropriate (e.g. during significant maintenance events or in conjunction with storm recovery activities).

Modifications resulting from green remediation evaluations will be routinely implemented and scheduled to occur during planned/routine operation and maintenance activities. Reporting of these modifications will be presented in the PRR.

6.3 Remedial System Optimization

A RSO study will be conducted any time that the NYSDEC or the RP requests in writing that an in-depth evaluation of the remedy is needed. An RSO may be appropriate if any of the following occur:

- The remedial actions have not met or are not expected to meet RAOs in the time frame estimated in the Decision Document.
- The management and operation of the remedial system is exceeding the estimated costs.
- The remedial system is not performing as expected or as designed.
- Previously unidentified source material may be suspected.
- Plume shift has potentially occurred.
- Site conditions change due to development, change of use, change in groundwater use, etc.
- There is an anticipated transfer of the site management to another RP or agency.
- A new and applicable remedial technology becomes available.

An RSO will provide a critique of a Site's conceptual model, give a summary of past performance, document current cleanup practices, summarize progress made toward the Site's cleanup goals, gather additional performance or media specific data and information and provide recommendations for improvements to enhance the ability of the present system to reach RAOs or to provide a basis for changing the remedial strategy.

An RSO study will focus on overall site cleanup strategy, process optimization and management with the intent of identifying impediments to cleanup and improvements to site operations to increase efficiency, cost effectiveness and remedial time frames. Green remediation technology and principals are to be considered when performing the RSO.

7 REPORTING REQUIREMENTS

7.1 Site Management Reports

All site management inspection, maintenance and monitoring events will be recorded on the appropriate site inspection form provided in Appendix H. This form is subject to NYSDEC revision.

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 – Schedule of Interim Monitoring/Inspection Reports

Task/Report	Reporting Frequency*
Groundwater Sampling Letter Report	Annually
NAPL Monitoring Letter Report	Annually (combined with the Groundwater Sampling Letter Report when conducted concurrently)
PRR (Including Groundwater Monitoring Analytical Results)	Annually

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

All interim monitoring/inspections reports will include, at a minimum:

- Date of event or reporting period.
- Name, company, and position of person(s) conducting monitoring/inspection activities.
- Description of the activities performed.
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted (included either on the checklist/form or on an attached sheet).
- Type of samples collected (e.g., groundwater, NAPL, sub-slab vapor, indoor air, outdoor air, etc.).
- Copies of all field forms completed (e.g., well sampling logs, chain-of-custody documentation, etc.).
- Sampling results in comparison to appropriate standards/criteria.

- A figure illustrating sample type and sampling locations.
- Copies of all laboratory data sheets and the required laboratory data deliverables required for all points sampled (to be submitted electronically in the NYSDEC-identified format).
- Any observations, conclusions, or recommendations.
- A determination as to whether remaining impacts have changed since the last reporting event.
- Other documentation such as copies of invoices for maintenance work, receipts for replacement equipment, etc., (attached to the checklist/form).

Non-routine maintenance event reporting forms will include, at a minimum:

- Date of event.
- Name, company, and position of person(s) conducting non-routine maintenance/repair activities.
- Description of non-routine activities performed.
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents (included either on the form or on an attached sheet).
- Other documentation such as copies of invoices for repair work, receipts for replacement equipment, etc. (attached to the checklist/form).

Data will be reported in digital format as determined by the NYSDEC. Currently, data is to be supplied electronically and submitted to the NYSDEC EQuIS™ database in accordance with the requirements found at this link http://www.dec.ny.gov/chemical/62440.html.

7.2 Periodic Review Report

A PRR will be submitted to the NYSDEC beginning sixteen (16) months after the COC (i.e., anticipated to be submitted in early to mid-2017) is issued. After submittal of the initial PRR, the next PRR shall be submitted to the NYSDEC annually. In the event that the Site is subdivided into separate parcels with different ownership, a single PRR will be prepared that addresses the Site described in the Environmental Easement (Appendix A). 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 constituents of concern by media (groundwater, soil vapor, etc.), which include a listing of all compounds analyzed, along with the applicable standards, with all exceedances highlighted. These will include a presentation of past data as part of an evaluation of constituents' concentration trends.

- 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™ 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:

    - The compliance of the remedy with the requirements of the site-specific Remedial Design, ROD or Decision Document.

    - The operation and the effectiveness of all treatment units, etc., including identification of any needed repairs or modifications.

    - Any new conclusions or observations regarding remaining 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.

    - Trends in constituent levels in the affected media will be evaluated to determine if the remedy continues to be effective in achieving remedial goals as specified by the Decision Document.

    - The overall performance and effectiveness of the remedy.

7.2.1 Certification of Institutional and Engineering Controls

Following the last inspection of the reporting period, a Professional Engineer licensed to practice in NYS 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.*
- *The information presented in this report is accurate and complete.*

Based on my inquiry of NYSEG and persons under my direction who performed that 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 Central Office, Regional Office in which the Site is located and the NYSDOH Bureau of Environmental Exposure Investigation. The PRR may need to be submitted in hard-copy format, as 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, a Corrective Measures Work Plan will be submitted to the NYSDEC 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.

7.4 Remedial Site Optimization Report

In the event that an RSO is to be performed (see Section 6.3, upon completion of an RSO, an RSO report must be submitted to the NYSDEC for approval. The RSO report will document the research/ investigation and data gathering that was conducted, evaluate the results and facts obtained, present a revised conceptual site model and present recommendations. RSO recommendations are to be implemented upon approval from the NYSDEC. Additional work plans, design documents, HASPs etc., may still be required to implement the recommendations, based upon the actions that need to be taken. A final engineering report and update to the SMP may also be required.

The RSO report will be submitted, in electronic format, to the NYSDEC Central Office, Regional Office in which the Site is located, Site Control and the NYSDOH Bureau of Environmental Exposure Investigation.

8 REFERENCES

Arcadis, 2008. Letter report to NYSDEC regarding soil vapor intrusion evaluation results. Submitted on May 20, 2008 on behalf of NYSEG.

Arcadis, 2010. Remedial Investigation Report. Goshen Former MGP Site, Goshen, New, York. Prepared on behalf of NYSEG. July 2010.

Arcadis, 2017. Draft Final Engineering Report, Goshen Former MGP Site, Goshen, New York. Prepared on behalf of NYSEG, February 2017.

Blasland, Bouck & Lee, Inc., 2001. Site Characterization Summary and Data Transmittal for the Goshen Site, Goshen Former MGP Site, prepared on behalf of New York State Electric and Gas Corporation, February 2001.

Engineering-Science, 1991. Prioritization of Former Manufactured Gas Plant Site, Goshen Site (NYSEG Code CGGS), prepared for New York State Electric and Gas. September 1991.

NYSDEC. 1999. Division of Fish, Wildlife and Marine Resources. Technical Guidance for Screening Contaminated Sediments, January 1999.

NYSDEC, 2008. Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations (TOGS 1.1.1), Reissued June 1998 and addended April 2000 and June 2004.

NYSDEC, 2009. CP-43, Groundwater Monitoring Well Decommissioning Policy, November 2009.

NYSDEC, 2010. DER-10 Technical Guidance for Site Investigation and Remediation. May 3, 2010.

NYSDEC, 2011. Record of Decision, NYSEG Goshen MGP. Site Number 3-36-046. March 2011.

NYSDOH, 2006. Guidance for Evaluating Soil Vapor Intrusion in the State of New York. October, 2006

TABLES

Table 1. Soil Analytical Summary
NYSEG
Goshen Former MGP Site
Goshen, New York

ARCADIS Design & Consultancy for natural and built assets

Location ID:	NYSDEC Commercial SCOs	Units	PZ08-2	PZ08-3	SB08-1	SB08-2	SB08-2	SB08-3	SB08-3	SB08-4	SB08-5	SB08-5	SB08-6	SB08-6	SB08-7	SB08-7	SB08-8	SB08-8	SB08-9	SB08-9
Sample Depth(Feet):			11 - 11.5	8.5 - 9	23.5 - 24	22.5 - 23	32.5 - 33	11 - 15	28 - 30	30 - 34	22.5 - 23	31 - 31.5	6 - 8	37 - 39	18 - 18.5	29.5 - 30	22 - 24	28 - 30	22 - 24	36 - 40
Date Collected:			10/16/08	11/14/08	10/28/08	10/20/08	10/20/08	10/24/08	10/24/08	10/23/08	10/21/08	10/21/08	10/30/08	10/30/08	10/21/08	10/21/08	10/22/08	10/22/08	10/30/08	10/30/08
Volatile Organics																				
1,1,1,2-Tetrachloroethane	- -	mg/kg	8.3 U	0.61 U	0.0060 U	4.5 U	0.0050 U	0.13 U	0.13 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0050 U	0.022 U	0.0050 U	0.0050 U	0.0050 U
1,1,1-Trichloroethane	500	mg/kg	8.3 U	0.61 U	0.0060 U	4.5 U	0.0050 U	0.13 U	0.13 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0050 U	0.022 U	0.0050 U	0.0050 U	0.0050 U
1,1,2,2-Tetrachloroethane	- -	mg/kg	8.3 U	0.61 U	0.0060 U	4.5 U	0.0050 U	0.13 U	0.13 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0050 U	0.022 U	0.0050 U	0.0050 U	0.0050 U
1,1,2-Trichloroethane	- -	mg/kg	8.3 U	0.61 U	0.0060 U	4.5 U	0.0050 U	0.13 U	0.13 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0050 U	0.022 U	0.0050 U	0.0050 U	0.0050 U
1,1-Dichloroethane	240	mg/kg	8.3 U	0.61 U	0.0060 U	4.5 U	0.0050 U	0.13 U	0.13 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0050 U	0.022 U	0.0050 U	0.0050 U	0.0050 U
1,1-Dichloroethene	500	mg/kg	8.3 U	0.61 U	0.0060 U	4.5 U	0.0050 U	0.13 U	0.13 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0050 U	0.022 U	0.0050 U	0.0050 U	0.0050 U
1,2,3-Trichloropropane	- -	mg/kg	8.3 U	0.61 U	0.0060 U	4.5 U	0.0050 U	0.13 U	0.13 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0050 U	0.022 U	0.0050 U	0.0050 U	0.0050 U
1,2-Dibromo-3-chloropropane	- -	mg/kg	8.3 U	0.61 U	0.0060 U	4.5 U	0.0050 U	0.13 U	0.13 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0050 U	0.022 U	0.0050 U	0.0050 U	0.0050 U
1,2-Dibromoethane	- -	mg/kg	8.3 U	0.61 U	0.0060 U	4.5 U	0.0050 U	0.13 U	0.13 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0050 U	0.022 U	0.0050 U	0.0050 U	0.0050 U
1,2-Dichlorobenzene	500	mg/kg	8.3 U	0.61 U	0.0060 U	4.5 U	0.0050 U	0.13 U	0.13 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0050 U	0.022 U	0.0050 U	0.0050 U	0.0050 U
1,2-Dichloroethane	30	mg/kg	8.3 U	0.61 U	0.0060 U	4.5 U	0.0050 U	0.13 U	0.13 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0050 U	0.022 U	0.0050 U	0.0050 U	0.0050 U
1,2-Dichloroethene (total)	- -	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	- -	mg/kg	8.3 U	0.61 U	0.0060 U	4.5 U	0.0050 U	0.13 U	0.13 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0050 U	0.022 U	0.0050 U	0.0050 U	0.0050 U
1,3-Dichlorobenzene	280	mg/kg	8.3 U	0.61 U	0.0060 U	4.5 U	0.0050 U	0.13 U	0.13 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0050 U	0.022 U	0.0050 U	0.0050 U	0.0050 U
1,4-Dichlorobenzene	130	mg/kg	8.3 U	0.61 U	0.0060 U	4.5 U	0.0050 U	0.13 U	0.13 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0050 U	0.022 U	0.0050 U	0.0050 U	0.0050 U
2-Butanone	500	mg/kg	42 U	3.1 U	0.028 U	22 U	0.027 U	0.66 U	0.65 U	0.027 U	0.027 U	0.026 U	0.030 U	0.027 U	0.029 U	0.026 U	0.11 U	0.027 U	0.027 U	0.026 U
2-Chloroethylvinylether	- -	mg/kg	42 U	3.1 U	0.028 U	22 U	0.027 U	0.66 U	0.65 U	0.027 U	0.027 U	0.026 U	0.030 U	0.027 U	0.029 U	0.026 U	0.11 U	0.027 U	0.027 U	0.026 U
2-Hexanone	- -	mg/kg	42 U	3.1 U	0.028 U	22 U	0.027 U	0.66 U	0.65 U	0.027 U	0.027 U	0.026 U	0.030 U	0.027 U	0.029 U	0.026 U	0.11 U	0.027 U	0.027 U	0.026 U
4-Methyl-2-pentanone	- -	mg/kg	42 U	3.1 U	0.028 U	22 U	0.027 U	0.66 U	0.65 U	0.027 U	0.027 U	0.026 U	0.030 U	0.027 U	0.029 U	0.026 U	0.11 U	0.027 U	0.027 U	0.026 U
Acetone	500	mg/kg	42 U	3.1 U	0.028 UB	22 U	0.027 UB	0.66 U	0.65 U	0.027 UB	0.027 UB	0.026 UB	0.030 UB	0.027 UB	0.029 U	0.026 UB	0.11 UB	0.027 UB	0.027 UB	0.026 UB
Acrylonitrile	- -	mg/kg	170 U	12 U	0.11 U	89 U	0.11 U	2.6 U	2.6 U	0.11 U	0.11 U	0.10 U	0.12 U	0.11 U	0.12 U	0.10 U	0.44 U	0.11 U	0.11 U	0.10 U
Benzene	44	mg/kg	82	23	0.0060 U	4.5 U	0.0050 U	1.3	1.2	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0050 U	0.018 J	0.0050 U	0.60 D	0.0010 J
Bromochloromethane	- -	mg/kg	8.3 U	0.61 U	0.0060 U	4.5 U	0.0050 U	0.13 U	0.13 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0050 U	0.022 U	0.0050 U	0.0050 U	0.0050 U
Bromodichloromethane	- -	mg/kg	8.3 U	0.61 U	0.0060 U	4.5 U	0.0050 U	0.13 U	0.13 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0050 U	0.022 U	0.0050 U	0.0050 U	0.0050 U
Bromoform	- -	mg/kg	8.3 U	0.61 U	0.0060 U	4.5 U	0.0050 U	0.13 U	0.13 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0050 U	0.022 U	0.0050 U	0.0050 U	0.0050 U
Bromomethane	- -	mg/kg	8.3 U	0.61 U	0.0060 U	4.5 U	0.0050 U	0.13 UJ	0.13 UJ	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0050 U	0.022 U	0.0050 U	0.0050 U	0.0050 U
Carbon Disulfide	- -	mg/kg	8.3 U	0.37 J	0.0060 U	4.5 U	0.0050 U	0.13 U	0.13 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0050 U	0.0080 J	0.0050 U	0.0010 J	0.0050 U
Carbon Tetrachloride	22	mg/kg	8.3 U	0.61 U	0.0060 U	4.5 U	0.0050 U	0.13 U	0.13 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0050 U	0.022 U	0.0050 U	0.0050 U	0.0050 U
Chlorobenzene	500	mg/kg	8.3 U	0.61 U	0.0060 U	4.5 U	0.0050 U	0.13 U	0.13 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0050 U	0.022 U	0.0050 U	0.0050 U	0.0050 U
Chloroethane	- -	mg/kg	8.3 U	0.61 UJ	0.0060 U	4.5 U	0.0050 U	0.13 U	0.13 U	0.0050 UJ	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0050 UJ	0.022 UJ	0.0050 UJ	0.0050 U	0.0050 U
Chloroform	350	mg/kg	8.3 U	0.61 U	0.0060 U	4.5 U	0.0050 U	0.13 U	0.13 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0050 U	0.022 U	0.0050 U	0.0050 U	0.0050 U
Chloromethane	- -	mg/kg	8.3 U	0.61 U	0.0060 U	4.5 U	0.0050 U	0.13 U	0.13 UJ	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0050 U	0.022 U	0.0050 U	0.0050 U	0.0050 U
cis-1,2-Dichloroethene	500	mg/kg	8.3 U	0.61 U	0.0060 U	4.5 U	0.0050 U	0.13 U	0.13 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0050 U	0.022 U	0.0050 U	0.0050 U	0.0050 U
cis-1,3-Dichloropropene	- -	mg/kg	8.3 U	0.61 U	0.0060 U	4.5 U	0.0050 U	0.13 U	0.13 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0050 U	0.022 U	0.0050 U	0.0050 U	0.0050 U
Dibromochloromethane	- -	mg/kg	8.3 U	0.61 U	0.0060 U	4.5 U	0.0050 U	0.13 U	0.13 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0050 U	0.022 U	0.0050 U	0.0050 U	0.0050 U
Ethylbenzene	390	mg/kg	120	78 DJ	0.0060 U	11	0.0050 U	1.1	0.43	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0050 U	0.30	0.0050 U	0.22	0.0050 U
Iodomethane	- -	mg/kg	8.3 U	0.61 U	0.0060 U	4.5 U	0.0050 U	0.13 U	0.13 UJ	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0050 U	0.022 U	0.0050 U	0.0050 U	0.0050 U
Methylene Chloride	500	mg/kg	8.3 UJ	0.61 UJ	0.0060 U	4.5 U	0.0050 U	0.13 U	0.13 UJ	0.0060	0.0050 U	0.0060	0.0090	0.0040 J	0.0030 J	0.0060	0.017 J	0.0070	0.012	0.018
Styrene	- -	mg/kg	21	1.6	0.0060 U	47	0.0050 U	1.0	0.15	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0050 U	0.022 U	0.0050 U	0.0050 U	0.0050 U
Tetrachloroethene	150	mg/kg	8.3 U	0.61 U	0.0060 U	4.5 U	0.0050 U	0.13 U	0.13 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0050 U	0.022 U	0.0050 U	0.0050 U	0.0050 U
Toluene	500	mg/kg	230	16	0.0060 U	36	0.0050 U	0.97	0.12 J	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0050 U	0.019 J	0.0050 U	0.017	0.0050 U
trans-1,2-Dichloroethene	500	mg/kg	8.3 U	0.61 U	0.0060 U	4.5 U	0.0050 U	0.13 U	0.13 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0050 U	0.022 U	0.0050 U	0.0050 U	0.0050 U
trans-1,3-Dichloropropene	- -	mg/kg	8.3 U	0.61 U	0.0060 U	4.5 U	0.0050 U	0.13 U	0.13 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0050 U	0.022 U	0.0050 U	0.0050 U	0.0050 U
trans-1,4-Dichloro-2-butene	- -	mg/kg	42 U	3.1 U	0.028 U	22 U	0.027 U	0.66 U	0.65 U	0.027 U	0.027 U	0.026 U	0.030 U	0.027 U	0.029 U	0.026 U	0.11 U	0.027 U	0.027 U	0.026 U
Trichloroethene	200	mg/kg	8.3 U	0.61 U	0.0060 U	4.5 U	0.0050 U	0.13 U	0.13 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0050 U	0.022 U	0.0050 U	0.0050 U	0.0050 U
Trichlorofluoromethane	- -	mg/kg	8.3 U	0.61 U	0.0060 U	4.5 U	0.0050 U	0.13 U	0.13 UJ	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0050 U	0.022 U	0.0050 U	0.0050 U	0.0050 U
Vinyl Acetate	- -	mg/kg	42 U	3.1 U	0.028 U	22 U	0.027 U	0.66 U	0.65 U	0.027 U	0.027 U	0.026 U	0.030 U	0.027 U	0.029 U	0.026 U	0.11 U	0.027 U	0.027 U	0.026 U
Vinyl Chloride	13	mg/kg	17 U	1.2 U	0.011 U	8.9 U	0.011 U	0.26 U	0.26 U	0.011 U	0.011 U	0.010 U	0.012 U	0.011 U	0.012 U	0.010 U	0.044 U	0.011 U	0.011 U	0.010 U
Xylenes (total)	500	mg/kg	370	47	0.016 U	210	0.016 U	3.4	0.61	0.016 U	0.016 U	0.016 U	0.018 U	0.016 U	0.018 U	0.015 U	1.0	0.016 U	0.088	0.015 U
Total BTEX	- -	mg/kg	800	160 J	ND	260	ND	6.8	2.4 J	ND	ND	ND	ND	ND	ND	ND	1.3 J	ND	0.93	0.0010 J
Total VOCs	- -	mg/kg	1,600	330 J	ND	560	ND	15	4.9 J	0.0060	ND	0.0060	0.0090	0.0040 J	0.0030 J	0.0060	2.7 J	0.0070	1.9 J	0.020 J

See Notes on Page 13.

Table 1. Soil Analytical Summary
NYSEG
Goshen Former MGP Site
Goshen, New York

ARCADIS Design & Consultancy for natural and built assets

Location ID:			PZ08-2	PZ08-3	SB08-1	SB08-2	SB08-2	SB08-3	SB08-3	SB08-4	SB08-5	SB08-5	SB08-6	SB08-6	SB08-7	SB08-7	SB08-8	SB08-8	SB08-9	SB08-9
Sample Depth(Feet):	NYSDEC Commercial SCOs	Units	11 - 11.5	8.5 - 9	23.5 - 24	22.5 - 23	32.5 - 33	11 - 15	28 - 30	30 - 34	22.5 - 23	31 - 31.5	6 - 8	37 - 39	18 - 18.5	29.5 - 30	22 - 24	28 - 30	22 - 24	36 - 40
Date Collected:			10/16/08	11/14/08	10/28/08	10/20/08	10/20/08	10/24/08	10/24/08	10/23/08	10/21/08	10/21/08	10/30/08	10/30/08	10/21/08	10/21/08	10/22/08	10/22/08	10/30/08	10/30/08
Semivolatile Organics																				
1,2,4-Trichlorobenzene	- -	mg/kg	4.2 U	9.0 U	0.38 U	7.6 U	0.36 U	1.9 U	0.35 U	0.37 U	NA	0.35 U	0.39 U	0.34 U	0.37 U	0.35 U	0.36 U	0.34 U	0.35 U	0.35 U
1,2-Dichlorobenzene	500	mg/kg	4.2 U	9.0 U	0.38 U	7.6 U	0.36 U	1.9 U	0.35 U	0.37 U	NA	0.35 U	0.39 U	0.34 U	0.37 U	0.35 U	0.36 U	0.34 U	0.35 U	0.35 U
1,3-Dichlorobenzene	280	mg/kg	4.2 U	9.0 U	0.38 U	7.6 U	0.36 U	1.9 U	0.35 U	0.37 U	NA	0.35 U	0.39 U	0.34 U	0.37 U	0.35 U	0.36 U	0.34 U	0.35 U	0.35 U
1,4-Dichlorobenzene	130	mg/kg	4.2 U	9.0 U	0.38 U	7.6 U	0.36 U	1.9 U	0.35 U	0.37 U	NA	0.35 U	0.39 U	0.34 U	0.37 U	0.35 U	0.36 U	0.34 U	0.35 U	0.35 U
2,2'-Oxybis(1-Chloropropane)	- -	mg/kg	2.2 U	4.6 U	0.19 U	3.9 U	0.18 U	0.96 U	0.18 U	0.19 U	NA	0.18 U	0.20 U	0.18 U	0.19 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U
2,4,5-Trichlorophenol	- -	mg/kg	2.2 U	4.6 U	0.19 U	3.9 U	0.18 U	0.96 U	0.18 U	0.19 U	NA	0.18 U	0.20 U	0.18 U	0.19 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U
2,4,6-Trichlorophenol	- -	mg/kg	2.2 U	4.6 U	0.19 U	3.9 U	0.18 U	0.96 U	0.18 U	0.19 U	NA	0.18 U	0.20 U	0.18 U	0.19 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U
2,4-Dichlorophenol	- -	mg/kg	2.2 U	4.6 U	0.19 U	3.9 U	0.18 U	0.96 U	0.18 U	0.19 U	NA	0.18 U	0.20 U	0.18 U	0.19 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U
2,4-Dimethylphenol	- -	mg/kg	2.2 U	4.6 U	0.19 U	3.9 U	0.18 U	0.96 U	0.18 U	0.19 U	NA	0.18 U	0.20 U	0.18 U	0.19 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U
2,4-Dinitrophenol	- -	mg/kg	4.2 U	9.0 UJ	0.38 U	7.6 U	0.36 U	1.9 U	0.35 U	0.37 U	NA	0.35 U	0.39 U	0.34 U	0.37 U	0.35 U	0.36 U	0.34 U	0.35 U	0.35 U
2,4-Dinitrotoluene	- -	mg/kg	2.2 U	4.6 U	0.19 U	3.9 U	0.18 U	0.96 U	0.18 U	0.19 U	NA	0.18 U	0.20 U	0.18 U	0.19 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U
2,6-Dinitrotoluene	- -	mg/kg	2.2 U	4.6 U	0.19 U	3.9 U	0.18 U	0.96 U	0.18 U	0.19 U	NA	0.18 U	0.20 U	0.18 U	0.19 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U
2-Chloronaphthalene	- -	mg/kg	2.2 U	4.6 U	0.19 U	3.9 U	0.18 U	0.96 U	0.18 U	0.19 U	NA	0.18 U	0.20 U	0.18 U	0.19 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U
2-Chlorophenol	- -	mg/kg	2.2 U	4.6 U	0.19 U	3.9 U	0.18 U	0.96 U	0.18 U	0.19 U	NA	0.18 U	0.20 U	0.18 U	0.19 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U
2-Methyl-4,6-Dinitrophenol	- -	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	- -	mg/kg	12	9.7	0.19 U	92	0.015 J	3.4	0.045 J	0.19 U	NA	0.18 U	0.20 U	0.18 U	0.19 U	0.18 U	1.8	0.18 U	0.18 U	0.052 J
2-Methylphenol	500	mg/kg	2.2 U	4.6 U	0.19 U	3.9 U	0.18 U	0.96 U	0.18 U	0.19 U	NA	0.18 U	0.20 U	0.18 U	0.19 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U
2-Nitroaniline	- -	mg/kg	4.2 U	9.0 U	0.38 U	7.6 U	0.36 U	1.9 U	0.35 U	0.37 U	NA	0.35 U	0.39 U	0.34 U	0.37 U	0.35 U	0.36 U	0.34 U	0.35 U	0.35 U
2-Nitrophenol	- -	mg/kg	2.2 U	4.6 U	0.19 U	3.9 U	0.18 U	0.96 U	0.18 U	0.19 U	NA	0.18 U	0.20 U	0.18 U	0.19 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U
3,3'-Dichlorobenzidine	- -	mg/kg	2.2 U	4.6 UJ	0.19 U	3.9 U	0.18 U	0.96 U	0.18 U	0.19 U	NA	0.18 U	0.20 U	0.18 U	0.19 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U
3-Nitroaniline	- -	mg/kg	4.2 U	9.0 U	0.38 U	7.6 U	0.36 U	1.9 U	0.35 U	0.37 U	NA	0.35 U	0.39 U	0.34 U	0.37 U	0.35 U	0.36 U	0.34 U	0.35 U	0.35 U
4,6-Dinitro-2-methylphenol	- -	mg/kg	4.2 U	9.0 U	0.38 U	7.6 U	0.36 U	1.9 U	0.35 U	0.37 U	NA	0.35 U	0.39 U	0.34 U	0.37 U	0.35 U	0.36 U	0.34 U	0.35 U	0.35 U
4-Bromophenyl-phenylether	- -	mg/kg	2.2 U	4.6 U	0.19 U	3.9 U	0.18 U	0.96 U	0.18 U	0.19 U	NA	0.18 U	0.20 U	0.18 U	0.19 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U
4-Chloro-3-Methylphenol	- -	mg/kg	2.2 U	4.6 U	0.19 U	3.9 U	0.18 U	0.96 U	0.18 U	0.19 U	NA	0.18 U	0.20 U	0.18 U	0.19 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U
4-Chloroaniline	- -	mg/kg	2.2 U	4.6 U	0.19 U	3.9 U	0.18 U	0.96 U	0.18 U	0.19 U	NA	0.18 U	0.20 U	0.18 U	0.19 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U
4-Chlorophenyl-phenylether	- -	mg/kg	2.2 U	4.6 U	0.19 U	3.9 U	0.18 U	0.96 U	0.18 U	0.19 U	NA	0.18 U	0.20 U	0.18 U	0.19 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U
4-Methylphenol	500	mg/kg	0.18 J	4.6 U	0.19 U	3.9 U	0.18 U	0.96 U	0.18 U	0.19 U	NA	0.18 U	0.20 U	0.18 U	0.19 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U
4-Nitroaniline	- -	mg/kg	4.2 U	9.0 U	0.38 U	7.6 U	0.36 U	1.9 U	0.35 U	0.37 U	NA	0.35 U	0.39 U	0.34 U	0.37 U	0.35 U	0.36 U	0.34 U	0.35 U	0.35 U
4-Nitrophenol	- -	mg/kg	4.2 U	9.0 U	0.38 U	7.6 U	0.36 U	1.9 U	0.35 U	0.37 U	NA	0.35 U	0.39 U	0.34 U	0.37 U	0.35 U	0.36 U	0.34 U	0.35 U	0.35 U
Acenaphthene	500	mg/kg	12	28	0.19 U	9.8	0.18 U	1.1	0.0090 J	0.19 U	NA	0.18 U	0.20 U	0.18 U	0.19 U	0.18 U	0.40	0.011 J	0.18 U	0.18 U
Acenaphthylene	500	mg/kg	14	8.4	0.19 U	72	0.18 U	11	0.10 J	0.19 U	NA	0.18 U	0.20 U	0.18 U	0.19 U	0.18 U	2.6	0.013 J	0.18 U	0.033 J
Anthracene	500	mg/kg	15	15	0.19 U	66	0.18 U	4.0	0.045 J	0.19 U	NA	0.18 U	0.20 U	0.18 U	0.19 U	0.18 U	1.5	0.011 J	0.18 U	0.18 U
Benzo(a)anthracene	5.6	mg/kg	17	16	0.19 U	42	0.18 U	2.6	0.034 J	0.19 U	NA	0.018 J	0.20 U	0.18 U	0.19 U	0.18 U	1.5	0.18 U	0.18 U	0.012 J
Benzo(a)pyrene	1	mg/kg	18	20	0.19 U	31	0.18 U	3.7	0.040 J	0.19 U	NA	0.010 J	0.20 U	0.18 U	0.19 U	0.18 U	1.1	0.18 U	0.18 U	0.18 U
Benzo(b)fluoranthene	5.6	mg/kg	18	22	0.19 U	33	0.18 U	3.2	0.030 J	0.19 U	NA	0.0090 J	0.20 U	0.18 U	0.19 U	0.18 U	0.87	0.18 U	0.18 U	0.18 U
Benzo(g,h,i)perylene	500	mg/kg	12	16	0.19 U	9.4	0.18 U	2.2	0.023 J	0.19 U	NA	0.18 U	0.20 U	0.18 U	0.19 U	0.18 U	0.36	0.18 U	0.18 U	0.18 U
Benzo(k)fluoranthene	56	mg/kg	6.2	6.6	0.19 U	15	0.18 U	0.96 U	0.013 J	0.19 U	NA	0.18 U	0.20 U	0.18 U	0.19 U	0.18 U	0.58	0.18 U	0.18 U	0.18 U
Benzoic Acid	- -	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzyl Alcohol	- -	mg/kg	4.2 U	9.0 U	0.38 U	7.6 U	0.36 U	1.9 U	0.35 U	0.37 U	NA	0.35 U	0.39 U	0.34 U	0.37 U	0.35 U	0.36 U	0.34 U	0.35 U	0.35 U
bis(2-Chloroethoxy)methane	- -	mg/kg	2.2 U	4.6 U	0.19 U	3.9 U	0.18 U	0.96 U	0.18 U	0.19 U	NA	0.18 U	0.20 U	0.18 U	0.19 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U
bis(2-Chloroethyl)ether	- -	mg/kg	2.2 U	4.6 U	0.19 U	3.9 U	0.18 U	0.96 U	0.18 U	0.19 U	NA	0.18 U	0.20 U	0.18 U	0.19 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U
bis(2-Ethylhexyl)phthalate	- -	mg/kg	1.2 J	4.6 U	0.19 U	3.9 U	0.18 U	0.96 U	0.11 J	0.12 J	NA	0.17 J	0.18 J	0.065 J	0.076 J	0.17 J	0.11 J	0.12 J	0.085 J	0.18 U
Butylbenzylphthalate	- -	mg/kg	2.2 U	4.6 U	0.19 U	3.9 U	0.18 U	0.96 U	0.18 U	0.19 U	NA	0.18 U	0.20 U	0.18 U	0.19 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U
Carbazole	- -	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	56	mg/kg	16	21	0.19 U	33	0.18 U	2.2	0.039 J	0.19 U	NA	0.013 J	0.20 U	0.18 U	0.19 U	0.18 U	0.99	0.18 U	0.18 U	0.0080 J
Dibenzo(a,h)anthracene	0.56	mg/kg	2.5	2.0 J	0.19 U	3.8 J	0.18 U	0.17 J	0.18 U	0.19 U	NA	0.18 U	0.20 U	0.18 U	0.19 U	0.18 U	0.14 J	0.18 U	0.18 U	0.18 U
Dibenzofuran	350	mg/kg	3.8	6.8	0.19 U	49	0.18 U	0.96 U	0.18 U	0.19 U	NA	0.18 U	0.20 U	0.18 U	0.19 U	0.18 U	2.2	0.011 J	0.18 U	0.18 U
Diethylphthalate	- -	mg/kg	2.2 U	4.6 U	0.19 U	3.9 U	0.18 U	0.96 U	0.18 U	0.19 U	NA	0.18 U	0.20 U	0.18 U	0.19 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U
Dimethylphthalate	- -	mg/kg	2.2 U	4.6 U	0.19 U	3.9 U	0.18 U	0.96 U	0.18 U	0.19 U	NA	0.18 U	0.20 U	0.18 U	0.19 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U
Di-n-Butylphthalate	- -	mg/kg	2.2 U	4.6 U	0.19 U	3.9 U	0.18 U	0.96 U	0.18 U	0.19 U	NA	0.18 U	0.20 U	0.18 U	0.19 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U
Di-n-Octylphthalate	- -	mg/kg	2.2 U	4.6 U	0.19 U	3.9 U	0.18 U	0.96 U	0.18 U	0.19 U	NA	0.18 U	0.20 U	0.18 U	0.19 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U

See Notes on Page 13.

Table 1. Soil Analytical Summary
NYSEG
Goshen Former MGP Site
Goshen, New York

Location ID:			PZ08-2	PZ08-3	SB08-1	SB08-2	SB08-2	SB08-3	SB08-3	SB08-4	SB08-5	SB08-5	SB08-6	SB08-6	SB08-7	SB08-7	SB08-8	SB08-8	SB08-9	SB08-9
Sample Depth(Feet):	NYSDEC Commercial SCOs	Units	11 - 11.5	8.5 - 9	23.5 - 24	22.5 - 23	32.5 - 33	11 - 15	28 - 30	30 - 34	22.5 - 23	31 - 31.5	6 - 8	37 - 39	18 - 18.5	29.5 - 30	22 - 24	28 - 30	22 - 24	36 - 40
Date Collected:			10/16/08	11/14/08	10/28/08	10/20/08	10/20/08	10/24/08	10/24/08	10/23/08	10/21/08	10/21/08	10/30/08	10/30/08	10/21/08	10/21/08	10/22/08	10/22/08	10/30/08	10/30/08
Semivolatile Organics (Cont.)																				
Fluoranthene	500	mg/kg	47	73	0.19 U	110	0.18 U	12	0.13 J	0.19 U	NA	0.020 J	0.017 J	0.18 U	0.19 U	0.18 U	3.5	0.026 J	0.0080 J	0.017 J
Fluorene	500	mg/kg	14	24	0.19 U	60	0.18 U	4.5	0.045 J	0.19 U	NA	0.18 U	0.20 U	0.18 U	0.19 U	0.18 U	2.6	0.017 J	0.18 U	0.18 U
Hexachlorobenzene	6	mg/kg	2.2 U	4.6 U	0.19 U	3.9 U	0.18 U	0.96 U	0.18 U	0.19 U	NA	0.18 U	0.20 U	0.18 U	0.19 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U
Hexachlorobutadiene	- -	mg/kg	2.2 U	4.6 U	0.19 U	3.9 U	0.18 U	0.96 U	0.18 U	0.19 U	NA	0.18 U	0.20 U	0.18 U	0.19 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U
Hexachlorocyclopentadiene	- -	mg/kg	2.2 U	4.6 U	0.19 U	3.9 U	0.18 U	0.96 U	0.18 U	0.19 U	NA	0.18 U	0.20 U	0.18 U	0.19 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U
Hexachloroethane	- -	mg/kg	2.2 U	4.6 U	0.19 U	3.9 U	0.18 U	0.96 U	0.18 U	0.19 U	NA	0.18 U	0.20 U	0.18 U	0.19 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U
Indeno(1,2,3-cd)pyrene	5.6	mg/kg	9.9	12	0.19 U	11	0.18 U	1.4	0.014 J	0.19 U	NA	0.18 U	0.20 U	0.18 U	0.19 U	0.18 U	0.38	0.18 U	0.18 U	0.18 U
Isophorone	- -	mg/kg	2.2 U	4.6 U	0.19 U	3.9 U	0.18 U	0.96 U	0.18 U	0.19 U	NA	0.18 U	0.20 U	0.18 U	0.19 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U
Naphthalene	500	mg/kg	100 D	58	0.19 UB	380 D	0.11 J	35 D	0.50	0.032 J	NA	0.011 J	0.021 J	0.18 U	0.19 U	0.18 U	19 D	0.048 J	0.034 J	0.39
Nitrobenzene	- -	mg/kg	2.2 U	4.6 U	0.19 U	3.9 U	0.18 U	0.96 U	0.18 U	0.19 U	NA	0.18 U	0.20 U	0.18 U	0.19 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U
N-Nitrosodimethylamine	- -	mg/kg	4.2 U	9.0 U	0.38 U	7.6 U	0.36 U	1.9 U	0.35 U	0.37 U	NA	0.35 U	0.39 U	0.34 U	0.37 U	0.35 U	0.36 U	0.34 U	0.35 U	0.35 U
N-Nitroso-di-n-propylamine	- -	mg/kg	2.2 U	4.6 U	0.19 U	3.9 U	0.18 U	0.96 U	0.18 U	0.19 U	NA	0.18 U	0.20 U	0.18 U	0.19 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U
N-Nitrosodiphenylamine	- -	mg/kg	2.2 U	4.6 U	0.19 U	3.9 U	0.18 U	0.96 U	0.18 U	0.19 U	NA	0.18 U	0.20 U	0.18 U	0.19 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U
Pentachlorophenol	6.7	mg/kg	4.2 U	9.0 U	0.38 U	7.6 U	0.36 U	1.9 U	0.35 U	0.37 U	NA	0.35 U	0.39 U	0.34 U	0.37 U	0.35 U	0.36 U	0.34 U	0.35 U	0.35 U
Phenanthrene	500	mg/kg	59	110	0.014 J	180 D	0.014 J	20	0.21	0.19 U	NA	0.040 J	0.024 J	0.0090 J	0.19 U	0.18 U	11 D	0.040 J	0.016 J	0.029 J
Phenol	500	mg/kg	2.2 U	4.6 U	0.19 U	3.9 U	0.18 U	0.96 U	0.18 U	0.19 U	NA	0.18 U	0.20 U	0.18 U	0.19 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U
Pyrene	500	mg/kg	45	70	0.19 U	59	0.18 U	15	0.15 J	0.19 U	NA	0.027 J	0.015 J	0.18 U	0.19 U	0.18 U	2.3	0.016 J	0.0080 J	0.011 J
Total PAHs	- -	mg/kg	420	510 J	0.014 J	1,200 J	0.14 J	120 J	1.4 J	0.032 J	NA	0.15 J	0.077 J	0.0090 J	ND	ND	51 J	0.18 J	0.066 J	0.55 J
Total SVOCs	- -	mg/kg	840 J	1,000 J	0.028 J	2,500 J	0.28 J	240 J	3.0 J	0.18 J	NA	0.47 J	0.33 J	0.083 J	0.076 J	0.17 J	100 J	0.50 J	0.22 J	1.1 J
Inorganics																				
Aluminum	- -	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	- -	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	16	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	400	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	9.3	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	- -	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	270	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide	27	mg/kg	5.10	1.50	0.710 U	0.660 U	0.900 U	0.970 U	0.920 U	1.10 U	1.00 U	0.860 U	1.00 U	1.00 U	1.10 U	1.00 U	0.850 U	1.00 U	0.840 U	0.640 U
Cyanide, Amenable	- -	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heat Content	- -	BTU/LB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	- -	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	1,000	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	10,000	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	2.8	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	310	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics (Cont.)																				
Reactive Cyanide	- -	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Reactive Sulfide	- -	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	1,500	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	1,500	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Petroleum Hydrocarbons	- -	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	- -	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	10,000	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Miscellaneous																				
Percent Solids	- -	%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See Notes on Page 13.

Table 1. Soil Analytical Summary
NYSEG
Goshen Former MGP Site
Goshen, New York

ARCADIS Design & Consultancy for natural and built assets

Location ID:			SB08-10	SB08-10	SB08-11	SB08-11	SB08-12	SB08-13	SB08-14	SB08-15	SB08-16	SB08-16	SB08-16	SB08-17	SB08-17	SB08-18	SB08-18	SB08-18	SB08-19	SB08-19
Sample Depth(Feet):	NYSDEC Commercial SCOs	Units	38.5 - 39	41.5 - 42	12 - 12.5	16 - 16.5	4 - 4.5	4 - 4.5	4 - 4.5	4 - 4.5	13 - 13.5	19 - 19.5	30.5 - 31	19 - 19.5	31 - 31.5	19 - 19.5	24.5 - 25	31 - 31.5	12 - 12.5	20 - 20.5
Date Collected:			10/22/08	10/22/08	10/15/08	10/15/08	10/15/08	10/14/08	10/14/08	10/14/08	10/17/08	10/17/08	10/17/08	10/16/08	10/16/08	10/16/08	10/16/08	10/16/08	10/15/08	10/15/08
Volatile Organics																				
1,1,1,2-Tetrachloroethane	- -	mg/kg	0.025 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	1.5 U	0.027 U	0.0050 U	0.0050 U	0.0050 U
1,1,1-Trichloroethane	500	mg/kg	0.025 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	1.5 U	0.027 U	0.0050 U	0.0050 U	0.0050 U
1,1,2,2-Tetrachloroethane	- -	mg/kg	0.025 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	1.5 U	0.027 U	0.0050 U	0.0050 U	0.0050 U
1,1,2-Trichloroethane	- -	mg/kg	0.025 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	1.5 U	0.027 U	0.0050 U	0.0050 U	0.0050 U
1,1-Dichloroethane	240	mg/kg	0.025 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	1.5 U	0.027 U	0.0050 U	0.0050 U	0.0050 U
1,1-Dichloroethene	500	mg/kg	0.025 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	1.5 U	0.027 U	0.0050 U	0.0050 U	0.0050 U
1,2,3-Trichloropropane	- -	mg/kg	0.025 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	1.5 U	0.027 U	0.0050 U	0.0050 U	0.0050 U
1,2-Dibromo-3-chloropropane	- -	mg/kg	0.025 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	1.5 U	0.027 U	0.0050 U	0.0050 U	0.0050 U
1,2-Dibromoethane	- -	mg/kg	0.025 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	1.5 U	0.027 U	0.0050 U	0.0050 U	0.0050 U
1,2-Dichlorobenzene	500	mg/kg	0.025 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	1.5 U	0.027 U	0.0050 U	0.0050 U	0.0050 U
1,2-Dichloroethane	30	mg/kg	0.025 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	1.5 U	0.027 U	0.0050 U	0.0050 U	0.0050 U
1,2-Dichloroethene (total)	- -	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	- -	mg/kg	0.025 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	1.5 U	0.027 U	0.0050 U	0.0050 U	0.0050 U
1,3-Dichlorobenzene	280	mg/kg	0.025 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	1.5 U	0.027 U	0.0050 U	0.0050 U	0.0050 U
1,4-Dichlorobenzene	130	mg/kg	0.025 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	1.5 U	0.027 U	0.0050 U	0.0050 U	0.0050 U
2-Butanone	500	mg/kg	0.12 U	0.026 U	0.027 U	0.025 U	0.030 U	0.026 U	0.028 U	0.030 U	0.027 U	0.026 U	0.027 U	0.026 U	0.025 U	7.4 U	0.13 U	0.025 U	0.026 U	0.027 U
2-Chloroethylvinylether	- -	mg/kg	0.12 U	0.026 U	0.027 U	0.025 U	0.030 U	0.026 U	0.028 U	0.030 U	0.027 U	0.026 U	0.027 U	0.026 U	0.025 U	7.4 U	0.13 U	0.025 U	0.026 U	0.027 U
2-Hexanone	- -	mg/kg	0.12 U	0.026 U	0.027 U	0.025 U	0.030 U	0.026 U	0.028 U	0.030 U	0.027 U	0.026 U	0.027 U	0.026 U	0.025 U	7.4 U	0.13 U	0.025 U	0.026 U	0.027 U
4-Methyl-2-pentanone	- -	mg/kg	0.12 U	0.026 U	0.027 U	0.025 U	0.030 U	0.026 U	0.028 U	0.030 U	0.027 U	0.026 U	0.027 U	0.026 U	0.025 U	7.4 U	0.13 U	0.025 U	0.026 U	0.027 U
Acetone	500	mg/kg	0.063 J	0.032 UB	0.027 U	0.025 U	0.030 U	0.026 U	0.028 U	0.030 U	0.027 U	0.026 U	0.027 U	0.026 U	0.025 U	7.4 U	0.13 U	0.025 U	0.026 U	0.027 U
Acrylonitrile	- -	mg/kg	0.50 U	0.10 U	0.11 U	0.10 U	0.12 U	0.10 U	0.11 U	0.12 U	0.11 U	0.10 U	0.11 U	0.10 U	0.10 U	30 U	0.53 U	0.10 U	0.10 U	0.11 U
Benzene	44	mg/kg	0.080	0.0060	0.10 DJ	0.0020 J	0.0060 U	0.0050 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.049	0.0050 U	**340 DJ**	4.6 DJ	0.0060	31 D	0.0040 J
Bromochloromethane	- -	mg/kg	0.025 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	1.5 U	0.027 U	0.0050 U	0.0050 U	0.0050 U
Bromodichloromethane	- -	mg/kg	0.025 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	1.5 U	0.027 U	0.0050 U	0.0050 U	0.0050 U
Bromoform	- -	mg/kg	0.025 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	1.5 U	0.027 U	0.0050 U	0.0050 U	0.0050 U
Bromomethane	- -	mg/kg	0.025 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	1.5 U	0.027 U	0.0050 U	0.0050 U	0.0050 U
Carbon Disulfide	- -	mg/kg	0.0050 J	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0060 U	0.0050 UJ	0.0050 UJ	0.0050 UJ	0.0050 UJ	0.0050 UJ	1.5 U	0.027 U	0.0050 U	0.0050 U	0.0050 U
Carbon Tetrachloride	22	mg/kg	0.025 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	1.5 U	0.027 U	0.0050 U	0.0050 U	0.0050 U
Chlorobenzene	500	mg/kg	0.025 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0060 U	0.0050 U	0.0050 UJ	0.0050 U	0.0050 U	0.0050 U	1.5 U	0.027 U	0.0050 U	0.0050 U	0.0050 U
Chloroethane	- -	mg/kg	0.025 UJ	0.0050 UJ	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	1.5 U	0.027 U	0.0050 U	0.0050 U	0.0050 U
Chloroform	350	mg/kg	0.025 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	1.5 U	0.027 U	0.0050 U	0.0050 U	0.0050 U
Chloromethane	- -	mg/kg	0.025 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	1.5 U	0.027 U	0.0050 U	0.0050 U	0.0050 U
cis-1,2-Dichloroethene	500	mg/kg	0.025 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	1.5 U	0.027 U	0.0050 U	0.0050 U	0.0050 U
cis-1,3-Dichloropropene	- -	mg/kg	0.025 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	1.5 U	0.027 U	0.0050 U	0.0050 U	0.0050 U
Dibromochloromethane	- -	mg/kg	0.025 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	1.5 U	0.027 U	0.0050 U	0.0050 U	0.0050 U
Ethylbenzene	390	mg/kg	0.18	0.0050 U	0.016	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.087	0.0050 U	110	0.23	0.0050 U	0.0050 U	0.0050 U
Iodomethane	- -	mg/kg	0.025 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0060 U	0.0050 UJ	0.0050 UJ	0.0050 UJ	0.0050 UJ	0.0050 UJ	1.5 U	0.027 U	0.0050 U	0.0050 U	0.0050 U
Methylene Chloride	500	mg/kg	0.031	0.0020 J	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0060 U	0.0050 UJ	0.0050 UJ	0.0050 UJ	0.0050 UJ	0.0050 UJ	1.5 UJ	0.027 UJ	0.0050 UJ	0.0020 J	0.0050 UJ
Styrene	- -	mg/kg	0.025 U	0.0050 U	0.069	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.33 EJ	0.0050 U	600 DJ	4.5 DJ	0.0050 U	0.0050 U	0.0050 U
Tetrachloroethene	150	mg/kg	0.025 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	1.5 U	0.027 U	0.0050 U	0.0050 U	0.0050 U
Toluene	500	mg/kg	0.066	0.0050 U	0.17 D	0.0030 J	0.0060 U	0.0050 U	0.0060 U	0.0060 U	0.0050 U	0.0050 UJ	0.0050 U	0.20	0.0050 U	**1,800 DJ**	10 DJ	0.0050	1.0 DJ	0.0050 U
trans-1,2-Dichloroethene	500	mg/kg	0.025 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	1.5 U	0.027 U	0.0050 U	0.0050 U	0.0050 U
trans-1,3-Dichloropropene	- -	mg/kg	0.025 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	1.5 U	0.027 U	0.0050 U	0.0050 U	0.0050 U
trans-1,4-Dichloro-2-butene	- -	mg/kg	0.12 U	0.026 U	0.027 U	0.025 U	0.030 U	0.026 U	0.028 U	0.030 U	0.027 U	0.026 U	0.027 U	0.026 U	0.025 U	7.4 U	0.13 U	0.025 U	0.026 U	0.027 U
Trichloroethene	200	mg/kg	0.025 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0060 U	0.0050 U	0.0050 UJ	0.0050 U	0.0050 U	0.0050 U	1.5 U	0.027 U	0.0050 U	0.0050 U	0.0050 U
Trichlorofluoromethane	- -	mg/kg	0.025 U	0.0050 U	0.0050 U	0.0050 U	0.0060 U	0.0050 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	1.5 U	0.027 U	0.0050 U	0.0050 U	0.0050 U
Vinyl Acetate	- -	mg/kg	0.12 U	0.026 U	0.027 U	0.025 U	0.030 U	0.026 U	0.028 U	0.030 U	0.027 U	0.026 U	0.027 U	0.026 U	0.025 U	7.4 U	0.13 U	0.025 U	0.026 U	0.027 U
Vinyl Chloride	13	mg/kg	0.050 U	0.010 U	0.011 U	0.010 U	0.012 U	0.010 U	0.011 U	0.012 U	0.011 U	0.010 U	0.011 U	0.010 U	0.010 U	3.0 U	0.053 U	0.010 U	0.010 U	0.011 U
Xylenes (total)	500	mg/kg	0.42	0.016 U	0.27	0.015 U	0.018 U	0.016 U	0.017 U	0.018 U	0.016 U	0.016 U	0.016 U	2.8 DJ	0.015 U	**2,500 DJ**	12 DJ	0.0040 J	0.016 U	0.016 U
Total BTEX	- -	mg/kg	0.75	0.0060	0.56 J	0.0050 J	ND	ND	ND	ND	ND	ND	ND	3.1 J	ND	4,800 J	27 J	0.015 J	32 J	0.0040 J
Total VOCs	- -	mg/kg	1.6 J	0.014 J	1.2 J	0.010 J	ND	ND	ND	ND	ND	ND	ND	6.6 J	ND	10,000 J	58 J	0.030 J	64 J	0.0080 J

See Notes on Page 13.

Table 1. Soil Analytical Summary
NYSEG
Goshen Former MGP Site
Goshen, New York

ARCADIS Design & Consultancy for natural and built assets

Location ID:			SB08-10	SB08-10	SB08-11	SB08-11	SB08-12	SB08-13	SB08-14	SB08-15	SB08-16	SB08-16	SB08-16	SB08-17	SB08-17	SB08-18	SB08-18	SB08-18	SB08-19	SB08-19
Sample Depth(Feet):	NYSDEC Commercial SCOs	Units	38.5 - 39	41.5 - 42	12 - 12.5	16 - 16.5	4 - 4.5	4 - 4.5	4 - 4.5	4 - 4.5	13 - 13.5	19 - 19.5	30.5 - 31	19 - 19.5	31 - 31.5	19 - 19.5	24.5 - 25	31 - 31.5	12 - 12.5	20 - 20.5
Date Collected:			10/22/08	10/22/08	10/15/08	10/15/08	10/15/08	10/14/08	10/14/08	10/14/08	10/17/08	10/17/08	10/17/08	10/16/08	10/16/08	10/16/08	10/16/08	10/16/08	10/15/08	10/15/08
Semivolatile Organics																				
1,2,4-Trichlorobenzene	- -	mg/kg	0.35 U	0.36 U	0.36 U	0.35 U	0.40 U	0.36 U	0.40 U	1.9 U	0.36 U	0.36 U	0.35 U	0.35 U	0.36 U	7.4 U	0.35 U	0.35 U	0.35 U	0.35 U
1,2-Dichlorobenzene	500	mg/kg	0.35 U	0.36 U	0.36 U	0.35 U	0.40 U	0.36 U	0.40 U	1.9 U	0.36 U	0.36 U	0.35 U	0.35 U	0.36 U	7.4 U	0.35 U	0.35 U	0.35 U	0.35 U
1,3-Dichlorobenzene	280	mg/kg	0.35 U	0.36 U	0.36 U	0.35 U	0.40 U	0.36 U	0.40 U	1.9 U	0.36 U	0.36 U	0.35 U	0.35 U	0.36 U	7.4 U	0.35 U	0.35 U	0.35 U	0.35 U
1,4-Dichlorobenzene	130	mg/kg	0.35 U	0.36 U	0.36 U	0.35 U	0.40 U	0.36 U	0.40 U	1.9 U	0.36 U	0.36 U	0.35 U	0.35 U	0.36 U	7.4 U	0.35 U	0.35 U	0.35 U	0.35 U
2,2'-Oxybis(1-Chloropropane)	- -	mg/kg	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.18 U	0.20 U	1.0 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	3.8 U	0.18 U	0.18 U	0.18 U	0.18 U
2,4,5-Trichlorophenol	- -	mg/kg	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.18 U	0.20 U	1.0 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	3.8 U	0.18 U	0.18 U	0.18 U	0.18 U
2,4,6-Trichlorophenol	- -	mg/kg	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.18 U	0.20 U	1.0 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	3.8 U	0.18 U	0.18 U	0.18 U	0.18 U
2,4-Dichlorophenol	- -	mg/kg	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.18 U	0.20 U	1.0 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	3.8 U	0.18 U	0.18 U	0.18 U	0.18 U
2,4-Dimethylphenol	- -	mg/kg	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.18 U	0.20 U	1.0 U	0.18 U	0.18 U	0.18 U	0.51	0.18 U	3.6 J	1.1	0.18 U	0.91	0.18 U
2,4-Dinitrophenol	- -	mg/kg	0.35 U	0.36 U	0.36 U	0.35 U	0.40 U	0.36 U	0.40 U	1.9 U	0.36 U	0.36 U	0.35 U	0.35 U	0.36 U	7.4 U	0.35 U	0.35 U	0.35 U	0.35 U
2,4-Dinitrotoluene	- -	mg/kg	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.18 U	0.20 U	1.0 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	3.8 U	0.18 U	0.18 U	0.18 U	0.18 U
2,6-Dinitrotoluene	- -	mg/kg	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.18 U	0.20 U	1.0 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	3.8 U	0.18 U	0.18 U	0.18 U	0.18 U
2-Chloronaphthalene	- -	mg/kg	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.18 U	0.20 U	1.0 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	3.8 U	0.18 U	0.18 U	0.18 U	0.18 U
2-Chlorophenol	- -	mg/kg	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.18 U	0.20 U	1.0 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	3.8 U	0.18 U	0.18 U	0.18 U	0.18 U
2-Methyl-4,6-Dinitrophenol	- -	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	- -	mg/kg	0.32	0.011 J	0.010 J	0.18 U	0.20 U	0.18 U	0.20 U	0.51 J	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	380 D	0.80	0.076 J	0.011 J	0.0090 J
2-Methylphenol	500	mg/kg	0.18 U	0.18 U	1.0	0.18 U	0.20 U	0.18 U	0.20 U	1.0 U	0.18 U	0.18 U	0.18 U	1.4	0.18 U	3.8 U	0.65	0.18 U	2.5	0.18 U
2-Nitroaniline	- -	mg/kg	0.35 U	0.36 U	0.36 U	0.35 U	0.40 U	0.36 U	0.40 U	1.9 U	0.36 U	0.36 U	0.35 U	0.35 U	0.36 U	7.4 U	0.35 U	0.35 U	0.35 U	0.35 U
2-Nitrophenol	- -	mg/kg	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.18 U	0.20 U	1.0 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	3.8 U	0.18 U	0.18 U	0.18 U	0.18 U
3,3'-Dichlorobenzidine	- -	mg/kg	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.18 U	0.20 U	1.0 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	3.8 U	0.18 U	0.18 U	0.18 U	0.18 U
3-Nitroaniline	- -	mg/kg	0.35 U	0.36 U	0.36 U	0.35 U	0.40 U	0.36 U	0.40 U	1.9 U	0.36 U	0.36 U	0.35 U	0.35 U	0.36 U	7.4 U	0.35 U	0.35 U	0.35 U	0.35 U
4,6-Dinitro-2-methylphenol	- -	mg/kg	0.35 U	0.36 U	0.36 U	0.35 U	0.40 U	0.36 U	0.40 U	1.9 U	0.36 U	0.36 U	0.35 U	0.35 U	0.36 U	7.4 U	0.35 U	0.35 U	0.35 U	0.35 U
4-Bromophenyl-phenylether	- -	mg/kg	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.18 U	0.20 U	1.0 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	3.8 U	0.18 U	0.18 U	0.18 U	0.18 U
4-Chloro-3-Methylphenol	- -	mg/kg	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.18 U	0.20 U	1.0 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	3.8 U	0.18 U	0.18 U	0.18 U	0.18 U
4-Chloroaniline	- -	mg/kg	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.18 U	0.20 U	1.0 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	3.8 U	0.18 U	0.18 U	0.18 U	0.18 U
4-Chlorophenyl-phenylether	- -	mg/kg	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.18 U	0.20 U	1.0 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	3.8 U	0.18 U	0.18 U	0.18 U	0.18 U
4-Methylphenol	500	mg/kg	0.18 U	0.18 U	1.0	0.18 U	0.20 U	0.18 U	0.20 U	1.0 U	0.18 U	0.18 U	0.18 U	3.0	0.18 U	3.0 J	0.87	0.18 U	0.92	0.18 U
4-Nitroaniline	- -	mg/kg	0.35 U	0.36 U	0.36 U	0.35 U	0.40 U	0.36 U	0.40 U	1.9 U	0.36 U	0.36 U	0.35 U	0.35 U	0.36 U	7.4 U	0.35 U	0.35 U	0.35 U	0.35 U
4-Nitrophenol	- -	mg/kg	0.35 U	0.36 U	0.36 U	0.35 U	0.40 U	0.36 U	0.40 U	1.9 U	0.36 U	0.36 U	0.35 U	0.35 U	0.36 U	7.4 U	0.35 U	0.35 U	0.35 U	0.35 U
Acenaphthene	500	mg/kg	0.40	0.012 J	0.18 U	0.18 U	0.20 U	0.18 U	0.20 U	2.3	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	38	0.048 J	0.18 U	0.18 U	0.18 U
Acenaphthylene	500	mg/kg	0.34	0.030 J	0.18 U	0.18 U	0.020 J	0.18 U	0.052 J	0.70 J	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	260 D	0.39	0.039 J	0.18 U	0.18 U
Anthracene	500	mg/kg	0.73	0.047 J	0.18 U	0.18 U	0.038 J	0.18 U	0.054 J	4.2	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	220 D	0.34	0.050 J	0.019 J	0.023 J
Benzo(a)anthracene	5.6	mg/kg	0.26	0.054 J	0.18 U	0.18 U	0.087 J	0.18 U	0.32	**8.8**	0.18 U	0.18 U	0.18 U	0.18 U	0.0080 J	**170 D**	0.24	0.045 J	0.039 J	0.032 J
Benzo(a)pyrene	1	mg/kg	0.12 J	0.036 J	0.18 U	0.18 U	0.066 J	0.18 U	0.30	**8.2**	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	**120 D**	0.18	0.032 J	0.029 J	0.022 J
Benzo(b)fluoranthene	5.6	mg/kg	0.13 J	0.040 J	0.18 U	0.18 U	0.085 J	0.18 U	0.41	**11**	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	**120 D**	0.17 J	0.030 J	0.039 J	0.023 J
Benzo(g,h,i)perylene	500	mg/kg	0.041 J	0.012 J	0.18 U	0.18 U	0.040 J	0.18 U	0.12 J	3.4	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	54	0.077 J	0.014 J	0.019 J	0.18 U
Benzo(k)fluoranthene	56	mg/kg	0.062 J	0.017 J	0.18 U	0.18 U	0.030 J	0.18 U	0.099 J	2.7	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	**57**	0.11 J	0.016 J	0.010 J	0.012 J
Benzoic Acid	- -	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzyl Alcohol	- -	mg/kg	0.35 U	0.36 U	1.3	0.35 U	0.40 U	0.36 U	0.40 U	1.9 U	0.36 U	0.36 U	0.35 U	0.35 U	0.36 U	7.4 U	0.35 U	0.35 U	0.35 U	0.35 U
bis(2-Chloroethoxy)methane	- -	mg/kg	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.18 U	0.20 U	1.0 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	3.8 U	0.18 U	0.18 U	0.18 U	0.18 U
bis(2-Chloroethyl)ether	- -	mg/kg	0.18 U	0.18 U	0.020 J	0.18 U	0.20 U	0.18 U	0.20 U	1.0 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	3.8 U	0.18 U	0.18 U	0.18 U	0.18 U
bis(2-Ethylhexyl)phthalate	- -	mg/kg	0.18 U	0.18 U	0.13 J	0.11 J	0.20 U	0.073 J	0.079 J	1.0 U	0.18 UB	0.18 UB	0.18 UB	0.18 UB	0.18 UB	3.8 U	0.18 U	0.097 J	0.16 J	0.26
Butylbenzylphthalate	- -	mg/kg	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.18 U	0.20 U	1.0 U	0.18 U	0.18 U	0.18 U	0.18 UB	0.18 U	3.8 U	0.18 U	0.18 U	0.18 U	0.18 U
Carbazole	- -	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	56	mg/kg	0.13 J	0.038 J	0.18 U	0.18 U	0.068 J	0.18 U	0.26	7.9	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	**130 D**	0.18	0.031 J	0.029 J	0.025 J
Dibenzo(a,h)anthracene	0.56	mg/kg	0.016 J	0.18 U	0.18 U	0.18 U	0.0090 J	0.18 U	0.031 J	**0.81 J**	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	**23**	0.014 J	0.18 U	0.18 U	0.18 U
Dibenzofuran	350	mg/kg	0.68	0.031 J	0.18 U	0.18 U	0.017 J	0.18 U	0.010 J	1.5	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	190 D	0.24	0.036 J	0.010 J	0.18 U
Diethylphthalate	- -	mg/kg	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.18 U	0.20 U	1.0 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	3.8 U	0.18 U	0.18 U	0.18 U	0.18 U
Dimethylphthalate	- -	mg/kg	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.18 U	0.20 U	1.0 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	3.8 U	0.18 U	0.18 U	0.18 U	0.18 U
Di-n-Butylphthalate	- -	mg/kg	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.18 U	0.20 U	1.0 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	3.8 U	0.18 U	0.18 U	0.18 U	0.18 U
Di-n-Octylphthalate	- -	mg/kg	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.18 U	0.20 U	1.0 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	3.8 U	0.18 U	0.18 U	0.18 U	0.18 U

See Notes on Page 13.

Table 1. Soil Analytical Summary
NYSEG
Goshen Former MGP Site
Goshen, New York

Location ID:			SB08-10	SB08-10	SB08-11	SB08-11	SB08-12	SB08-13	SB08-14	SB08-15	SB08-16	SB08-16	SB08-16	SB08-17	SB08-17	SB08-18	SB08-18	SB08-18	SB08-19	SB08-19
Sample Depth(Feet):	NYSDEC Commercial SCOs	Units	38.5 - 39	41.5 - 42	12 - 12.5	16 - 16.5	4 - 4.5	4 - 4.5	4 - 4.5	4 - 4.5	13 - 13.5	19 - 19.5	30.5 - 31	19 - 19.5	31 - 31.5	19 - 19.5	24.5 - 25	31 - 31.5	12 - 12.5	20 - 20.5
Date Collected:			10/22/08	10/22/08	10/15/08	10/15/08	10/15/08	10/14/08	10/14/08	10/14/08	10/17/08	10/17/08	10/17/08	10/16/08	10/16/08	10/16/08	10/16/08	10/16/08	10/15/08	10/15/08
Semivolatile Organics (Cont.)																				
Fluoranthene	500	mg/kg	1.0	0.11 J	0.18 U	0.18 U	0.20	0.18 U	0.56	21	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	380 D	0.55	0.098 J	0.080 J	0.061 J
Fluorene	500	mg/kg	0.79	0.040 J	0.18 U	0.18 U	0.014 J	0.18 U	0.016 J	2.3	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	230 D	0.26	0.039 J	0.18 U	0.18 U
Hexachlorobenzene	6	mg/kg	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.18 U	0.20 U	1.0 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	3.8 U	0.18 U	0.18 U	0.18 U	0.18 U
Hexachlorobutadiene	- -	mg/kg	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.18 U	0.20 U	1.0 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	3.8 U	0.18 U	0.18 U	0.18 U	0.18 U
Hexachlorocyclopentadiene	- -	mg/kg	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.18 U	0.20 U	1.0 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	3.8 U	0.18 U	0.18 U	0.18 U	0.18 U
Hexachloroethane	- -	mg/kg	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.18 U	0.20 U	1.0 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	3.8 U	0.18 U	0.18 U	0.18 U	0.18 U
Indeno(1,2,3-cd)pyrene	5.6	mg/kg	0.045 J	0.013 J	0.18 U	0.18 U	0.036 J	0.18 U	0.12 J	3.0	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	**58**	0.088 J	0.011 J	0.016 J	0.010 J
Isophorone	- -	mg/kg	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.18 U	0.20 U	1.0 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	0.22 J	0.18 U	0.18 U	0.18 U	0.18 U
Naphthalene	500	mg/kg	2.7	0.18	0.078 J	0.074 J	0.016 J	0.18 U	0.032 J	2.2	0.18 U	0.18 U	0.18 U	0.18 UB	0.18 UB	**1,700 D**	12 D	0.50	0.073 J	0.076 J
Nitrobenzene	- -	mg/kg	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.18 U	0.20 U	1.0 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	3.8 U	0.18 U	0.18 U	0.18 U	0.18 U
N-Nitrosodimethylamine	- -	mg/kg	0.35 U	0.36 U	0.36 U	0.35 U	0.40 U	0.36 U	0.40 U	1.9 U	0.36 U	0.36 U	0.35 U	0.35 U	0.36 U	7.4 U	0.35 U	0.35 U	0.35 U	0.35 U
N-Nitroso-di-n-propylamine	- -	mg/kg	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.18 U	0.20 U	1.0 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	3.8 U	0.18 U	0.18 U	0.18 U	0.18 U
N-Nitrosodiphenylamine	- -	mg/kg	0.18 U	0.18 U	0.18 U	0.18 U	0.20 U	0.18 U	0.20 U	1.0 U	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	3.8 U	0.18 U	0.18 U	0.18 U	0.18 U
Pentachlorophenol	6.7	mg/kg	0.35 U	0.36 U	0.36 U	0.35 U	0.40 U	0.36 U	0.40 U	1.9 U	0.36 U	0.36 U	0.35 U	0.35 U	0.36 U	7.4 U	0.35 U	0.35 U	0.35 U	0.35 U
Phenanthrene	500	mg/kg	2.1	0.16 J	0.18 U	0.18 U	0.19 J	0.18 U	0.20	18	0.18 U	0.18 U	0.18 UB	0.18 UB	0.18 U	**610 D**	0.83	0.14 J	0.070 J	0.045 J
Phenol	500	mg/kg	0.18 U	0.18 U	3.0	0.18 U	0.20 U	0.18 U	0.20 U	1.0 U	0.18 U	0.18 U	0.18 U	0.50	0.18 U	1.0 J	0.33	0.18 U	0.51	0.18 U
Pyrene	500	mg/kg	0.66	0.078 J	0.18 U	0.18 U	0.15 J	0.18 U	0.39	14	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U	240 D	0.39	0.068 J	0.070 J	0.050 J
Total PAHs	- -	mg/kg	9.8 J	0.88 J	0.088 J	0.074 J	1.0 J	ND	3.0 J	110 J	ND	ND	ND	ND	0.0080 J	4,800	17 J	1.2 J	0.50 J	0.39 J
Total SVOCs	- -	mg/kg	20 J	1.8 J	6.6 J	0.26 J	2.1 J	0.073 J	6.0 J	220 J	ND	ND	ND	5.4	0.016 J	9,800 J	37 J	2.5 J	6.0 J	1.0 J
Inorganics																				
Aluminum	- -	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	- -	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	16	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	400	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	9.3	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	- -	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	270	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide	27	mg/kg	0.990 U	0.930 U	1.00 U	1.00 U	1.20 U	0.780 U	1.20 U	1.00 U	1.10 U	0.930 U	0.560 U	0.630 U	0.710 U	0.600 U	0.730 U	0.700 U	0.810 U	0.680 U
Cyanide, Amenable	- -	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heat Content	- -	BTU/LB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	- -	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	1,000	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	10,000	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	2.8	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	310	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics (Cont.)																				
Reactive Cyanide	- -	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Reactive Sulfide	- -	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	1,500	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	1,500	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Petroleum Hydrocarbons	- -	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	- -	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	10,000	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Miscellaneous																				
Percent Solids	- -	%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See Notes on Page 13.

Table 1. Soil Analytical Summary
NYSEG
Goshen Former MGP Site
Goshen, New York

ARCADIS Design & Consultancy for natural and built assets

Location ID:			SB08-20	SB08-21	SB08-22	SB08-23	SB08-24	SB08-25	SB08-26	SB08-26	SB08-27	SB08-28	SB08-28	SB08-29	SB08-29	SB08-30	SB08-30	SB08-31	SB08-31
Sample Depth(Feet):	NYSDEC Commercial SCOs	Units	2 - 3	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	9 - 11	34 - 36	10 - 12	14 - 16	34 - 36	18.5 - 19	38 - 42	10 - 12	38 - 40	14 - 17	36 - 38
Date Collected:			11/17/08	11/17/08	11/17/08	11/17/08	11/17/08	11/17/08	11/03/08	11/03/08	10/30/08	11/04/08	11/04/08	10/28/08	10/29/08	10/29/08	10/29/08	11/04/08	11/04/08
Volatile Organics																			
1,1,1,2-Tetrachloroethane	- -	mg/kg	0.0060 U [0.0060 U]	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.60 U	0.0050 U	0.13 U	0.0050 U	0.0050 U	0.0060 U
1,1,1-Trichloroethane	500	mg/kg	0.0060 U [0.0060 U]	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.60 U	0.0050 U	0.13 U	0.0050 U	0.0050 U	0.0060 U
1,1,2,2-Tetrachloroethane	- -	mg/kg	0.0060 U [0.0060 U]	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.60 U	0.0050 U	0.13 U	0.0050 U	0.0050 U	0.0060 U
1,1,2-Trichloroethane	- -	mg/kg	0.0060 U [0.0060 U]	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.60 U	0.0050 U	0.13 U	0.0050 U	0.0050 U	0.0060 U
1,1-Dichloroethane	240	mg/kg	0.0060 U [0.0060 U]	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.60 U	0.0050 U	0.13 U	0.0050 U	0.0050 U	0.018
1,1-Dichloroethene	500	mg/kg	0.0060 U [0.0060 U]	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.60 U	0.0050 U	0.13 U	0.0050 U	0.0050 U	0.0060 U
1,2,3-Trichloropropane	- -	mg/kg	0.0060 U [0.0060 U]	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.60 U	0.0050 U	0.13 U	0.0050 U	0.0050 U	0.0060 U
1,2-Dibromo-3-chloropropane	- -	mg/kg	0.0060 U [0.0060 U]	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.60 U	0.0050 U	0.13 U	0.0050 U	0.0050 U	0.0060 U
1,2-Dibromoethane	- -	mg/kg	0.0060 U [0.0060 U]	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.60 U	0.0050 U	0.13 U	0.0050 U	0.0050 U	0.0060 U
1,2-Dichlorobenzene	500	mg/kg	0.0060 U [0.0060 U]	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.60 U	0.0050 U	0.13 U	0.0050 U	0.0050 U	0.0060 U
1,2-Dichloroethane	30	mg/kg	0.0060 U [0.0060 U]	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.60 U	0.0050 U	0.13 U	0.0050 U	0.0050 U	0.0060 U
1,2-Dichloroethene (total)	- -	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	- -	mg/kg	0.0060 U [0.0060 U]	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.60 U	0.0050 U	0.13 U	0.0050 U	0.0050 U	0.0060 U
1,3-Dichlorobenzene	280	mg/kg	0.0060 U [0.0060 U]	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.60 U	0.0050 U	0.13 U	0.0050 U	0.0050 U	0.0060 U
1,4-Dichlorobenzene	130	mg/kg	0.0060 U [0.0060 U]	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.30 J	0.0050 U	0.13 U	0.0050 U	0.0050 U	0.0010 J
2-Butanone	500	mg/kg	0.028 U [0.029 U]	0.029 U	0.030 U	0.028 U	0.028 U	0.030 U	0.027 U	0.026 U	0.026 U	0.027 U	0.026 U	3.0 U	0.025 U	0.66 U	0.027 U	0.027 U	0.030 U
2-Chloroethylvinylether	- -	mg/kg	0.028 U [0.029 U]	0.029 U	0.030 U	0.028 U	0.028 U	0.030 U	0.027 U	0.026 U	0.026 U	0.027 U	0.026 U	3.0 U	0.025 U	0.66 U	0.027 U	0.027 U	0.030 U
2-Hexanone	- -	mg/kg	0.028 U [0.029 U]	0.029 U	0.030 U	0.028 U	0.028 U	0.030 U	0.027 U	0.026 U	0.026 U	0.027 U	0.026 U	3.0 U	0.025 U	0.66 U	0.027 U	0.027 U	0.030 U
4-Methyl-2-pentanone	- -	mg/kg	0.028 U [0.029 U]	0.029 U	0.030 U	0.028 U	0.028 U	0.030 U	0.027 U	0.026 U	0.026 U	0.027 U	0.026 U	3.0 U	0.025 U	0.66 U	0.027 U	0.027 U	0.030 U
Acetone	500	mg/kg	0.0090 J [0.014 J]	0.017 J	0.013 J	0.010 J	0.022 J	0.0070 J	0.027 UB	0.026 UB	0.026 UB	0.027 UB	0.026 UB	3.0 U	0.025 UB	0.66 U	0.027 UB	0.027 UB	0.050 UB
Acrylonitrile	- -	mg/kg	0.11 U [0.12 U]	0.11 U	0.12 U	0.11 U	0.11 U	0.12 U	0.11 U	0.10 U	0.10 U	0.11 U	0.10 U	12 U	0.10 U	2.6 U	0.11 U	0.11 U	0.12 U
Benzene	44	mg/kg	0.0060 U [0.0060 U]	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	47	0.0030 J	0.62	0.0050 U	0.0020 J	0.0060 U
Bromochloromethane	- -	mg/kg	0.0060 U [0.0060 U]	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.60 U	0.0050 U	0.13 U	0.0050 U	0.0050 U	0.0060 U
Bromodichloromethane	- -	mg/kg	0.0060 U [0.0060 U]	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.60 U	0.0050 U	0.13 U	0.0050 U	0.0050 U	0.0060 U
Bromoform	- -	mg/kg	0.0060 U [0.0060 U]	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.60 U	0.0050 U	0.13 U	0.0050 U	0.0050 U	0.0060 U
Bromomethane	- -	mg/kg	0.0060 U [0.0060 U]	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.60 U	0.0050 U	0.13 U	0.0050 U	0.0050 U	0.0060 U
Carbon Disulfide	- -	mg/kg	0.0060 U [0.0060 U]	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.60 U	0.0050 U	0.13 U	0.0050 U	0.0050 UJ	0.0020 J
Carbon Tetrachloride	22	mg/kg	0.0060 U [0.0060 U]	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.60 U	0.0050 U	0.13 U	0.0050 U	0.0050 U	0.0060 U
Chlorobenzene	500	mg/kg	0.0060 U [0.0060 U]	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.60 U	0.0050 U	0.13 U	0.0050 U	0.0050 U	0.0060 U
Chloroethane	- -	mg/kg	0.0060 U [0.0060 U]	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.60 U	0.0050 U	0.13 U	0.0050 U	0.0050 U	0.0030 J
Chloroform	350	mg/kg	0.0060 U [0.0060 U]	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.60 U	0.0050 U	0.13 U	0.0050 U	0.0050 U	0.0060 U
Chloromethane	- -	mg/kg	0.0060 U [0.0060 U]	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.60 U	0.0050 U	0.13 U	0.0050 U	0.0050 UJ	0.0060 UJ
cis-1,2-Dichloroethene	500	mg/kg	0.0060 U [0.0060 U]	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.60 U	0.0050 U	0.13 U	0.0050 U	0.0050 U	0.0060 U
cis-1,3-Dichloropropene	- -	mg/kg	0.0060 U [0.0060 U]	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.60 U	0.0050 U	0.13 U	0.0050 U	0.0050 U	0.0060 U
Dibromochloromethane	- -	mg/kg	0.0060 U [0.0060 U]	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.60 U	0.0050 U	0.13 U	0.0050 U	0.0050 U	0.0060 U
Ethylbenzene	390	mg/kg	0.0060 U [0.0060 U]	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	25	0.0050 U	4.2	0.0050 U	0.0050 U	0.0060 U
Iodomethane	- -	mg/kg	0.0060 U [0.0060 U]	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.60 U	0.0050 U	0.13 U	0.0050 U	0.0050 U	0.0060 U
Methylene Chloride	500	mg/kg	0.010 UB [0.014 UB]	0.014 UB	0.012 UB	0.013 UB	0.014 UB	0.0090 UB	0.0020 J	0.0040 J	0.0060	0.0050 UJ	0.0050 UJ	0.60 UJ	0.0020 J	0.13 UJ	0.017	0.0050 UJ	0.0040 J
Styrene	- -	mg/kg	0.0060 U [0.0060 U]	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	140 DJ	0.0050 U	0.18	0.0050 U	0.0050 U	0.0060 U
Tetrachloroethene	150	mg/kg	0.0060 U [0.0060 U]	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.60 U	0.0050 U	0.13 U	0.0050 U	0.0050 U	0.0060 U
Toluene	500	mg/kg	0.0060 U [0.0060 U]	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	360 DJ	0.0020 J	0.16	0.0050 U	0.0050 U	0.0060 U
trans-1,2-Dichloroethene	500	mg/kg	0.0060 U [0.0060 U]	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.60 U	0.0050 U	0.13 U	0.0050 U	0.0050 U	0.0060 U
trans-1,3-Dichloropropene	- -	mg/kg	0.0060 U [0.0060 U]	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.60 U	0.0050 U	0.13 U	0.0050 U	0.0050 U	0.0060 U
trans-1,4-Dichloro-2-butene	- -	mg/kg	0.028 U [0.029 U]	0.029 U	0.030 U	0.028 U	0.028 U	0.030 U	0.027 U	0.026 U	0.026 U	0.027 U	0.026 U	3.0 U	0.025 U	0.66 U	0.027 U	0.027 U	0.030 U
Trichloroethene	200	mg/kg	0.0060 U [0.0060 U]	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.60 U	0.0050 U	0.13 U	0.0050 U	0.0050 U	0.0060 U
Trichlorofluoromethane	- -	mg/kg	0.0060 U [0.0060 U]	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0060 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.60 U	0.0050 U	0.13 U	0.0050 U	0.0050 U	0.0060 U
Vinyl Acetate	- -	mg/kg	0.028 U [0.029 U]	NA	NA	NA	NA	NA	0.027 U	0.026 U	0.026 U	0.027 U	0.026 U	3.0 U	0.025 U	0.66 U	0.027 U	0.027 U	0.030 U
Vinyl Chloride	13	mg/kg	0.011 U [0.012 U]	0.011 U	0.012 U	0.011 U	0.011 U	0.012 U	0.011 U	0.010 U	0.010 U	0.011 U	0.010 U	1.2 U	0.010 U	0.26 U	0.011 U	0.011 U	0.012 U
Xylenes (total)	500	mg/kg	0.017 U [0.017 U]	0.027	0.018 U	0.016 U	0.017 U	0.018 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	530 DJ	0.015 U	7.7	0.016 U	0.016 U	0.018 U
Total BTEX	- -	mg/kg	ND [ND]	0.027	ND	ND	ND	ND	ND	ND	ND	ND	ND	960 J	0.0050 J	13	ND	0.0020 J	ND
Total VOCs	- -	mg/kg	0.0090 J [0.014 J]	0.071 J	0.013 J	0.010 J	0.022 J	0.0070 J	0.0020 J	0.0040 J	0.0060	ND	ND	2,100 J	0.012 J	26	0.017	0.0040 J	0.028 J

See Notes on Page 13.

Table 1. Soil Analytical Summary
NYSEG
Goshen Former MGP Site
Goshen, New York

ARCADIS Design & Consultancy for natural and built assets

Location ID:			SB08-20	SB08-21	SB08-22	SB08-23	SB08-24	SB08-25	SB08-26	SB08-26	SB08-27	SB08-28	SB08-28	SB08-29	SB08-29	SB08-30	SB08-30	SB08-31	SB08-31
Sample Depth(Feet):	NYSDEC Commercial SCOs	Units	2 - 3	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	9 - 11	34 - 36	10 - 12	14 - 16	34 - 36	18.5 - 19	38 - 42	10 - 12	38 - 40	14 - 17	36 - 38
Date Collected:			11/17/08	11/17/08	11/17/08	11/17/08	11/17/08	11/17/08	11/03/08	11/03/08	10/30/08	11/04/08	11/04/08	10/28/08	10/29/08	10/29/08	10/29/08	11/04/08	11/04/08
Semivolatile Organics																			
1,2,4-Trichlorobenzene	- -	mg/kg	0.084 U [0.080 U]	0.40 U	0.40 U	0.079 U	0.073 U	0.076 U	0.37 U	0.36 U	0.36 U	1.8 U	0.35 U	15 U	0.36 U	0.37 U	1.8 U	0.36 U	0.35 U
1,2-Dichlorobenzene	500	mg/kg	0.084 U [0.080 U]	0.40 U	0.40 U	0.079 U	0.073 U	0.076 U	0.37 U	0.36 U	0.36 U	1.8 U	0.35 U	15 U	0.36 U	0.37 U	1.8 U	0.36 U	0.35 U
1,3-Dichlorobenzene	280	mg/kg	0.084 U [0.080 U]	0.40 U	0.40 U	0.079 U	0.073 U	0.076 U	0.37 U	0.36 U	0.36 U	1.8 U	0.35 U	15 U	0.36 U	0.37 U	1.8 U	0.36 U	0.35 U
1,4-Dichlorobenzene	130	mg/kg	0.084 U [0.080 U]	0.40 U	0.40 U	0.079 U	0.073 U	0.076 U	0.37 U	0.36 U	0.36 U	1.8 U	0.35 U	15 U	0.36 U	0.37 U	1.8 U	0.36 U	0.35 U
2,2'-Oxybis(1-Chloropropane)	- -	mg/kg	0.084 U [0.080 U]	0.40 U	0.40 U	0.079 U	0.073 U	0.076 U	0.19 U	0.19 U	0.19 U	0.91 U	0.18 U	7.8 U	0.18 U	0.19 U	0.94 U	0.19 U	0.18 U
2,4,5-Trichlorophenol	- -	mg/kg	0.42 UJ [0.40 UJ]	2.0 U	2.0 UJ	0.39 UJ	0.36 UJ	0.38 UJ	0.19 U	0.19 U	0.19 U	0.91 U	0.18 U	7.8 U	0.18 U	0.19 U	0.94 U	0.19 U	0.18 U
2,4,6-Trichlorophenol	- -	mg/kg	0.42 U [0.40 U]	2.0 U	2.0 U	0.39 U	0.36 U	0.38 U	0.19 U	0.19 U	0.19 U	0.91 U	0.18 U	7.8 U	0.18 U	0.19 U	0.94 U	0.19 U	0.18 U
2,4-Dichlorophenol	- -	mg/kg	0.084 U [0.080 U]	0.40 U	0.40 U	0.079 U	0.073 U	0.076 U	0.19 U	0.19 U	0.19 U	0.91 U	0.18 U	7.8 U	0.18 U	0.19 U	0.94 U	0.19 U	0.18 U
2,4-Dimethylphenol	- -	mg/kg	0.42 U [0.40 U]	2.0 U	2.0 U	0.39 U	0.47	0.38 U	0.19 U	0.19 U	0.19 U	0.91 U	0.18 U	2.6 J	0.18 U	0.19 U	0.29 J	0.055 J	0.18 U
2,4-Dinitrophenol	- -	mg/kg	2.1 UJ [2.0 UJ]	10 UJ	10 UJ	2.0 UJ	1.8 UJ	1.9 UJ	0.37 U	0.36 U	0.36 U	1.8 U	0.35 U	15 U	0.36 U	0.37 U	1.8 U	0.36 U	0.35 U
2,4-Dinitrotoluene	- -	mg/kg	0.42 U [0.40 U]	2.0 U	2.0 U	0.39 U	0.36 U	0.38 U	0.19 U	0.19 U	0.19 U	0.91 U	0.18 U	7.8 U	0.18 U	0.19 U	0.94 U	0.19 UJ	0.18 UJ
2,6-Dinitrotoluene	- -	mg/kg	0.42 U [0.40 U]	2.0 U	2.0 U	0.39 U	0.36 U	0.38 U	0.19 U	0.19 U	0.19 U	0.91 U	0.18 U	7.8 U	0.18 U	0.19 U	0.94 U	0.19 U	0.18 U
2-Chloronaphthalene	- -	mg/kg	0.084 U [0.080 U]	0.40 U	0.40 U	0.079 U	0.073 U	0.076 U	0.19 U	0.19 U	0.19 U	0.91 U	0.18 U	7.8 U	0.18 U	0.19 U	0.94 U	0.19 U	0.18 U
2-Chlorophenol	- -	mg/kg	0.42 U [0.40 U]	2.0 U	2.0 U	0.39 U	0.36 U	0.38 U	0.19 U	0.19 U	0.19 U	0.91 U	0.18 U	7.8 U	0.18 U	0.19 U	0.94 U	0.19 U	0.18 U
2-Methyl-4,6-Dinitrophenol	- -	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	- -	mg/kg	0.084 U [0.080 U]	36	0.42	0.14	0.073 U	0.076 U	0.19 U	0.19 U	0.19 U	0.078 J	0.18 U	250 DJ	0.043 J	0.19 U	0.16 J	0.11 J	0.18 U
2-Methylphenol	500	mg/kg	0.42 U [0.40 U]	2.0 U	2.0 U	0.39 U	0.36 U	0.38 U	0.19 U	0.19 U	0.19 U	0.91 U	0.18 U	7.8 U	0.18 U	0.19 U	0.60 J	0.047 J	0.18 U
2-Nitroaniline	- -	mg/kg	2.1 U [2.0 U]	10 U	10 U	2.0 U	1.8 U	1.9 U	0.37 U	0.36 U	0.36 U	1.8 U	0.35 U	15 U	0.36 U	0.37 U	1.8 U	0.36 U	0.35 U
2-Nitrophenol	- -	mg/kg	0.42 U [0.40 U]	2.0 U	2.0 U	0.39 U	0.36 U	0.38 U	0.19 U	0.19 U	0.19 U	0.91 U	0.18 U	7.8 U	0.18 U	0.19 U	0.94 U	0.19 U	0.18 U
3,3'-Dichlorobenzidine	- -	mg/kg	0.42 U [0.40 U]	2.0 U	2.0 U	0.39 U	0.36 U	0.38 U	0.19 U	0.19 U	0.19 U	0.91 U	0.18 U	7.8 U	0.18 U	0.19 U	0.94 U	0.19 U	0.18 U
3-Nitroaniline	- -	mg/kg	2.1 U [2.0 U]	10 U	10 U	2.0 U	1.8 U	1.9 U	0.37 U	0.36 U	0.36 U	1.8 U	0.35 U	15 U	0.36 U	0.37 U	1.8 U	0.36 U	0.35 U
4,6-Dinitro-2-methylphenol	- -	mg/kg	2.1 UJ [2.0 UJ]	10 UJ	10 UJ	2.0 UJ	1.8 UJ	1.9 UJ	0.37 U	0.36 U	0.36 U	1.8 U	0.35 U	15 U	0.36 U	0.37 U	1.8 U	0.36 U	0.35 U
4-Bromophenyl-phenylether	- -	mg/kg	0.42 U [0.40 U]	2.0 U	2.0 U	0.39 U	0.36 U	0.38 U	0.19 U	0.19 U	0.19 U	0.91 U	0.18 U	7.8 U	0.18 U	0.19 U	0.94 U	0.19 U	0.18 U
4-Chloro-3-Methylphenol	- -	mg/kg	0.42 U [0.40 U]	2.0 U	2.0 U	0.39 U	0.36 U	0.38 U	0.19 U	0.19 U	0.19 U	0.91 U	0.18 U	7.8 U	0.18 U	0.19 U	0.94 U	0.19 U	0.18 U
4-Chloroaniline	- -	mg/kg	0.42 U [0.40 U]	2.0 U	2.0 U	0.39 U	0.36 U	0.38 U	0.19 U	0.19 U	0.19 U	0.91 U	0.18 U	7.8 U	0.18 U	0.19 U	0.94 U	0.19 U	0.18 U
4-Chlorophenyl-phenylether	- -	mg/kg	0.42 U [0.40 U]	2.0 U	2.0 U	0.39 U	0.36 U	0.38 U	0.19 U	0.19 U	0.19 U	0.91 U	0.18 U	7.8 U	0.18 U	0.19 U	0.94 U	0.19 U	0.18 U
4-Methylphenol	500	mg/kg	0.42 U [0.40 U]	2.0 U	2.0 U	0.39 U	0.17 J	0.38 U	0.19 U	0.19 U	0.19 U	0.91 U	0.18 U	7.8 U	0.18 U	0.19 U	1.6	0.054 J	0.18 U
4-Nitroaniline	- -	mg/kg	2.1 U [2.0 U]	10 U	10 U	2.0 U	1.8 U	1.9 U	0.37 U	0.36 U	0.36 U	1.8 U	0.35 U	15 U	0.36 U	0.37 U	1.8 U	0.36 U	0.35 U
4-Nitrophenol	- -	mg/kg	2.1 U [2.0 U]	10 U	10 U	2.0 U	1.8 U	1.9 U	0.37 U	0.36 U	0.36 U	1.8 U	0.35 U	15 U	0.36 U	0.37 U	1.8 U	0.36 U	0.35 U
Acenaphthene	500	mg/kg	0.084 U [0.080 U]	7.1	0.66	0.079 U	0.030 J	0.076 U	0.19 U	0.19 U	0.19 U	0.91 U	0.18 U	24	0.18 U	0.076 J	0.20 J	0.024 J	0.18 U
Acenaphthylene	500	mg/kg	0.084 U [0.080 U]	28	4.1	0.64	0.086	0.023 J	0.19 U	0.19 U	0.19 U	0.10 J	0.18 U	180	0.028 J	0.050 J	0.19 J	0.092 J	0.18 U
Anthracene	500	mg/kg	0.084 U [0.080 U]	79	11	0.22	0.28	0.076 U	0.19 U	0.19 U	0.010 J	0.24 J	0.18 U	150	0.020 J	0.046 J	0.39 J	0.19 U	0.18 U
Benzo(a)anthracene	5.6	mg/kg	0.084 U [0.080 U]	**69**	**30**	2.6	0.83	0.050 J	0.19 U	0.19 U	0.032 J	0.36 J	0.0080 J	**110**	0.021 J	0.044 J	1.1	0.19 U	0.18 U
Benzo(a)pyrene	1	mg/kg	0.084 U [0.080 U]	**62**	**28**	**3.5**	0.56	0.059 J	0.19 U	0.19 U	0.021 J	0.41 J	0.18 U	**77**	0.013 J	0.039 J	1.0	0.19 U	0.18 U
Benzo(b)fluoranthene	5.6	mg/kg	0.084 U [0.080 U]	**88**	**42**	4.1	0.72	0.062 J	0.19 U	0.19 U	0.025 J	0.48 J	0.0090 J	**82**	0.014 J	0.040 J	1.0	0.19 U	0.18 U
Benzo(g,h,i)perylene	500	mg/kg	0.084 U [0.080 U]	33	20	3.5	0.54	0.11	0.19 U	0.19 U	0.014 J	0.29 J	0.18 U	26	0.18 U	0.034 J	0.66 J	0.19 U	0.18 U
Benzo(k)fluoranthene	56	mg/kg	0.084 U [0.080 U]	0.40 U	0.40 U	0.079 U	0.31	0.036 J	0.19 U	0.19 U	0.010 J	0.12 J	0.18 U	26	0.18 U	0.011 J	0.32 J	0.19 U	0.18 U
Benzoic Acid	- -	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzyl Alcohol	- -	mg/kg	0.42 U [0.40 U]	2.0 U	2.0 U	0.39 U	0.36 U	0.38 U	0.37 U	0.36 U	0.36 U	1.8 U	0.35 U	15 U	0.36 U	0.37 U	0.84 J	0.36 U	0.35 U
bis(2-Chloroethoxy)methane	- -	mg/kg	0.42 U [0.40 U]	2.0 U	2.0 U	0.39 U	0.36 U	0.38 U	0.19 U	0.19 U	0.19 U	0.91 U	0.18 U	7.8 U	0.18 U	0.19 U	0.94 U	0.19 U	0.18 U
bis(2-Chloroethyl)ether	- -	mg/kg	0.084 U [0.080 U]						0.19 U	0.19 U	0.19 U	0.91 U	0.18 U	7.8 U	0.18 U	0.19 U	0.94 U	0.19 U	0.18 U
bis(2-Ethylhexyl)phthalate	- -	mg/kg	0.42 U [0.40 U]	2.0 U	2.0 U	0.39 U	0.079 J	0.048 J	0.094 J	0.10 J	0.12 J	0.91 U	0.19	7.8 U	0.18 U	0.19 U	0.94 U	0.073 J	0.16 J
Butylbenzylphthalate	- -	mg/kg	0.42 U [0.40 U]	2.0 U	2.0 U	0.39 U	0.36 U	0.38 U	0.19 U	0.19 U	0.19 U	0.91 U	0.18 U	7.8 U	0.18 U	0.19 U	0.94 U	0.19 U	0.18 U
Carbazole	- -	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	56	mg/kg	0.084 U [0.080 U]	**66**	23	2.4	0.75	0.054 J	0.19 U	0.19 U	0.020 J	0.35 J	0.18 U	**85**	0.015 J	0.033 J	1.0	0.19 U	0.18 U
Dibenzo(a,h)anthracene	0.56	mg/kg	0.084 UJ [0.080 UJ]	**10 J**	**5.0 J**	0.50 J	0.14 J	0.076 UJ	0.19 U	0.19 U	0.19 U	0.91 U	0.18 U	**9.0**	0.18 U	0.19 U	0.18 J	0.19 U	0.18 U
Dibenzofuran	350	mg/kg	0.42 U [0.40 U]	37	1.5 J	0.39 U	0.025 J	0.38 U	0.19 U	0.19 U	0.19 U	0.097 J	0.18 U	130	0.023 J	0.0080 J	0.12 J	0.19 U	0.18 U
Diethylphthalate	- -	mg/kg	0.42 U [0.40 U]	2.0 U	2.0 U	0.39 U	0.36 U	0.38 U	0.19 U	0.19 U	0.19 U	0.91 U	0.18 U	7.8 U	0.18 U	0.19 U	0.94 U	0.19 U	0.18 U
Dimethylphthalate	- -	mg/kg	0.42 U [0.40 U]	2.0 U	2.0 U	0.39 U	0.36 U	0.38 U	0.19 U	0.19 U	0.19 U	0.91 U	0.18 U	7.8 U	0.18 U	0.19 U	0.94 U	0.19 U	0.18 U
Di-n-Butylphthalate	- -	mg/kg	0.42 U [0.40 U]	2.0 U	2.0 U	0.39 U	0.36 U	0.38 U	0.19 U	0.19 U	0.19 U	0.91 U	0.18 U	7.8 U	0.18 U	0.19 U	0.94 U	0.19 U	0.18 U
Di-n-Octylphthalate	- -	mg/kg	0.42 U [0.40 U]	2.0 U	2.0 U	0.39 U	0.36 U	0.38 U	0.19 U	0.19 U	0.19 U	0.91 U	0.18 U	7.8 U	0.18 U	0.19 U	0.94 U	0.19 U	0.18 U

See Notes on Page 13.

Table 1. Soil Analytical Summary
NYSEG
Goshen Former MGP Site
Goshen, New York

Location ID:			SB08-20	SB08-21	SB08-22	SB08-23	SB08-24	SB08-25	SB08-26	SB08-26	SB08-27	SB08-28	SB08-28	SB08-29	SB08-29	SB08-30	SB08-30	SB08-31	SB08-31
Sample Depth(Feet):	NYSDEC Commercial SCOs	Units	2 - 3	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	0.5 - 1	9 - 11	34 - 36	10 - 12	14 - 16	34 - 36	18.5 - 19	38 - 42	10 - 12	38 - 40	14 - 17	36 - 38
Date Collected:			11/17/08	11/17/08	11/17/08	11/17/08	11/17/08	11/17/08	11/03/08	11/03/08	10/30/08	11/04/08	11/04/08	10/28/08	10/29/08	10/29/08	10/29/08	11/04/08	11/04/08
Semivolatile Organics (Cont.)																			
Fluoranthene	500	mg/kg	0.084 U [0.080 U]	180 D	66	4.5	1.8	0.079	0.19 U	0.19 U	0.043 J	0.87 J	0.011 J	240	0.035 J	0.17 J	2.0	0.19 U	0.18 U
Fluorene	500	mg/kg	0.084 U [0.080 U]	42	2.2	0.059 J	0.044 J	0.076 U	0.19 U	0.19 U	0.19 U	0.13 J	0.18 U	150	0.022 J	0.089 J	0.17 J	0.19 U	0.18 U
Hexachlorobenzene	6	mg/kg	0.084 U [0.080 U]	0.40 U	0.40 U	0.079 U	0.073 U	0.076 U	0.19 U	0.19 U	0.19 U	0.91 U	0.18 U	7.8 U	0.18 U	0.19 U	0.94 U	0.19 U	0.18 U
Hexachlorobutadiene	- -	mg/kg	0.084 U [0.080 U]	0.40 U	0.40 U	0.079 U	0.073 U	0.076 U	0.19 U	0.19 U	0.19 U	0.91 U	0.18 U	7.8 U	0.18 U	0.19 U	0.94 U	0.19 U	0.18 U
Hexachlorocyclopentadiene	- -	mg/kg	0.42 UJ [0.40 UJ]	2.0 UJ	2.0 UJ	0.39 UJ	0.36 UJ	0.38 UJ	0.19 U	0.19 U	0.19 U	0.91 U	0.18 U	7.8 U	0.18 U	0.19 U	0.94 U	0.19 U	0.18 U
Hexachloroethane	- -	mg/kg	0.42 U [0.40 U]	2.0 U	2.0 U	0.39 U	0.36 U	0.38 U	0.19 U	0.19 U	0.19 U	0.91 U	0.18 U	7.8 U	0.18 U	0.19 U	0.94 U	0.19 U	0.18 U
Indeno(1,2,3-cd)pyrene	5.6	mg/kg	0.084 UJ [0.080 UJ]	**33 J**	**18 J**	2.4 J	0.40 J	0.090 J	0.19 U	0.19 U	0.012 J	0.26 J	0.18 U	28	0.18 U	0.023 J	0.94 U	0.19 U	0.18 U
Isophorone	- -	mg/kg	0.42 U [0.40 U]	2.0 U	2.0 U	0.39 U	0.36 U	0.38 U	0.19 U	0.19 U	0.19 U	0.91 U	0.18 U	7.8 U	0.18 U	0.19 U	0.94 U	0.19 U	0.18 U
Naphthalene	500	mg/kg	0.084 U [0.080 U]	48	1.4	0.10	0.042 J	0.076 U	0.19 U	0.19 U	0.19 U	0.26 J	0.18 U	1,300 DJ	0.29	0.40	0.68 J	2.1	0.33
Nitrobenzene	- -	mg/kg	0.084 U [0.080 U]	0.40 U	0.40 U	0.079 U	0.073 U	0.076 U	0.19 U	0.19 U	0.19 U	0.91 U	0.18 U	7.8 U	0.18 U	0.19 U	0.94 U	0.19 U	0.18 U
N-Nitrosodimethylamine	- -	mg/kg	0.42 U [0.40 U]	2.0 U	2.0 U	0.39 U	0.36 U	0.38 U	0.37 U	0.36 U	0.36 U	1.8 U	0.35 U	15 U	0.36 U	0.37 U	1.8 U	0.36 U	0.35 U
N-Nitroso-di-n-propylamine	- -	mg/kg	0.084 U [0.080 U]	0.40 U	0.40 U	0.079 U	0.073 U	0.076 U	0.19 U	0.19 U	0.19 U	0.91 U	0.18 U	7.8 U	0.18 U	0.19 U	0.94 U	0.19 U	0.18 U
N-Nitrosodiphenylamine	- -	mg/kg	0.084 U [0.080 U]	0.40 U	0.40 U	0.079 U	0.073 U	0.076 U	0.19 U	0.19 U	0.19 U	0.91 U	0.18 U	7.8 U	0.18 U	0.19 U	0.94 U	0.19 U	0.18 U
Pentachlorophenol	6.7	mg/kg	0.42 U [0.40 U]	2.0 U	2.0 U	0.39 U	0.36 U	0.38 U	0.37 U	0.36 U	0.36 U	1.8 U	0.35 U	15 U	0.36 U	0.37 U	1.8 U	0.36 U	0.35 U
Phenanthrene	500	mg/kg	0.084 U [0.080 U]	200 D	33	0.61	0.82	0.054 J	0.19 U	0.19 U	0.037 J	0.85 J	0.18 UB	400 DJ	0.062 J	0.38	1.0	0.19 U	0.18 U
Phenol	500	mg/kg	0.084 U [0.080 U]	0.40 U	0.40 U	0.079 U	0.073 U	0.076 U	0.19 U	0.19 U	0.19 U	0.91 U	0.18 U	7.8 U	0.18 U	0.19 U	1.4	0.12 J	0.18 U
Pyrene	500	mg/kg	0.084 U [0.080 U]	120 D	47	7.5	1.5	0.067 J	0.19 U	0.19 U	0.037 J	0.60 J	0.0070 J	150	0.026 J	0.23	2.3	0.19 U	0.18 U
Total PAHs	- -	mg/kg	ND [ND]	1,100 J	330 J	33 J	8.9 J	0.68 J	ND	ND	0.26 J	5.4 J	0.035 J	3,300 J	0.59 J	1.7 J	12 J	2.3 J	0.33
Total SVOCs	- -	mg/kg	ND [ND]	2,200 J	670 J	66 J	18 J	1.4 J	0.094 J	0.10 J	0.64 J	11 J	0.26 J	6,700 J	1.2 J	3.3 J	30 J	5.0 J	0.82 J
Inorganics																			
Aluminum	- -	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	- -	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	16	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	400	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	9.3	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	- -	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	270	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide	27	mg/kg	1.10 U [1.00 U]	NA	NA	NA	NA	NA	0.980 U	1.10 U	0.970 U	0.640 U	0.770 U	1.50	0.960 U	1.00 U	0.900 U	0.670 U	1.00 U
Cyanide, Amenable	- -	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heat Content	- -	BTU/LB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	- -	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	1,000	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	10,000	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	2.8	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	310	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics (Cont.)																			
Reactive Cyanide	- -	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Reactive Sulfide	- -	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	1,500	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	1,500	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Petroleum Hydrocarbons	- -	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	- -	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	10,000	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Miscellaneous																			
Percent Solids	- -	%	79.4 [83.2]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See Notes on Page 13.

Table 1. Soil Analytical Summary
NYSEG
Goshen Former MGP Site
Goshen, New York

Location ID:			SB08-32	SB08-32	SB08-33	SB08-33	TB-5	TB-6	TB-8	TB-10	TP-1	TP-2	TP-3	TP08-1	TP08-2
Sample Depth(Feet):	NYSDEC Commercial		8 - 12	36 - 38	20 - 24	34 - 38	17 - 19.5	10 - 12.5	15.5 - 20	7.2 - 10	6	4.5	2	10 - 11	10 - 11
Date Collected:	SCOs	Units	11/06/08	11/06/08	11/07/08	11/07/08	09/15/93	09/15/93	09/15/93	09/15/93	09/13/93	09/13/93	09/13/93	11/10/08	11/10/08
Volatile Organics															
1,1,1,2-Tetrachloroethane	- -	mg/kg	0.0060 U	0.0060 U	0.13 U	0.13 U	NA	NA	NA	NA	NA	NA	NA	0.0060 U	0.0060 U
1,1,1-Trichloroethane	500	mg/kg	0.0060 U	0.0060 U	0.13 U	0.13 U	0.030	4.0 U	0.70 U	0.0060 U	0.0060 U	0.0070 U [0.0070 U]	0.0060 U	0.0060 U	0.0060 U
1,1,2,2-Tetrachloroethane	- -	mg/kg	0.0060 UJ	0.0060 U	0.13 U	0.13 U	0.030 U	4.0 U	0.70 U	0.0060 U	0.0060 U	0.0070 U [0.0070 U]	0.0060 U	0.0060 U	0.0060 U
1,1,2-Trichloroethane	- -	mg/kg	0.0060 U	0.0060 U	0.13 U	0.13 U	0.030 U	4.0 U	0.70 U	0.0060 U	0.0060 U	0.0070 U [0.0070 U]	0.0060 U	0.0060 U	0.0060 U
1,1-Dichloroethane	240	mg/kg	0.0060 U	0.0060 U	0.13 U	0.13 U	0.030 U	4.0 U	0.70 U	0.0060 U	0.0060 U	0.0070 U [0.0070 U]	0.0060 U	0.0060 U	0.0060 U
1,1-Dichloroethene	500	mg/kg	0.0060 U	0.0060 U	0.13 U	0.13 U	0.030 U	4.0 U	0.70 U	0.0060 U	0.0060 U	0.0070 U [0.0070 U]	0.0060 U	0.0060 U	0.0060 U
1,2,3-Trichloropropane	- -	mg/kg	0.0060 U	0.0060 U	0.13 U	0.13 U	NA	NA	NA	NA	NA	NA	NA	0.0060 U	0.0060 U
1,2-Dibromo-3-chloropropane	- -	mg/kg	0.0060 U	0.0060 U	0.13 U	0.13 U	NA	NA	NA	NA	NA	NA	NA	0.0060 U	0.0060 U
1,2-Dibromoethane	- -	mg/kg	0.0060 U	0.0060 U	0.13 U	0.13 U	NA	NA	NA	NA	NA	NA	NA	0.0060 U	0.0060 U
1,2-Dichlorobenzene	500	mg/kg	0.0060 U	0.0060 U	0.13 U	0.13 U	NA	NA	NA	NA	NA	NA	NA	0.0060 U	0.0060 U
1,2-Dichloroethane	30	mg/kg	0.0060 U	0.0060 U	0.13 U	0.13 U	0.030 U	4.0 U	0.70 U	0.0060 U	0.0060 U	0.0070 U [0.0070 U]	0.0060 U	0.0060 U	0.0060 U
1,2-Dichloroethene (total)	- -	mg/kg	NA	NA	NA	NA	0.030 U	4.0 U	0.70 U	0.0060 U	0.0060 U	0.0070 U [0.0070 U]	0.0060 U	NA	NA
1,2-Dichloropropane	- -	mg/kg	0.0060 U	0.0060 U	0.13 U	0.13 U	0.030 U	4.0 U	0.70 U	0.0060 U	0.0060 U	0.0070 U [0.0070 U]	0.0060 U	0.0060 U	0.0060 U
1,3-Dichlorobenzene	280	mg/kg	0.0060 U	0.0060 U	0.13 U	0.13 U	NA	NA	NA	NA	NA	NA	NA	0.0060 U	0.0060 U
1,4-Dichlorobenzene	130	mg/kg	0.0060 U	0.0060 U	0.13 U	0.13 U	NA	NA	NA	NA	NA	NA	NA	0.0060 U	0.0060 U
2-Butanone	500	mg/kg	0.014 J	0.028 U	0.65 UJ	0.65 UJ	0.060 U	8.1 U	1.4 U	0.013 U	0.012 U	0.014 U [0.014 U]	0.013 U	0.031 U	0.028 U
2-Chloroethylvinylether	- -	mg/kg	0.029 U	0.028 U	0.65 U	0.65 U	NA	NA	NA	NA	NA	NA	NA	0.031 U	0.028 U
2-Hexanone	- -	mg/kg	0.029 U	0.028 U	0.65 U	0.65 U	0.060 U	8.1 U	1.4 U	0.013 U	0.012 U	0.014 U [0.014 U]	0.013 U	0.031 U	0.028 U
4-Methyl-2-pentanone	- -	mg/kg	0.029 U	0.028 U	0.65 UJ	0.65 UJ	0.060 U	8.1 U	1.4 U	0.013 U	0.012 U	0.014 U [0.014 U]	0.013 U	0.031 U	0.028 U
Acetone	500	mg/kg	0.072	0.028 UB	0.65 UJ	0.65 UJ	0.060 U	8.1 U	1.4 U	0.10	0.012 U	0.025 [0.068]	0.024	0.038 UB	0.028 UB
Acrylonitrile	- -	mg/kg	0.12 UJ	0.11 U	2.6 U	2.6 U	NA	NA	NA	NA	NA	NA	NA	0.12 U	0.11 U
Benzene	44	mg/kg	0.0060 U	0.0060 U	0.10 J	0.13 U	0.35 U	34 D	4.4	0.075	0.0060 U	0.0070 U [0.0070 U]	0.0060 U	0.0060 U	0.0060 U
Bromochloromethane	- -	mg/kg	0.0060 U	0.0060 U	0.13 U	0.13 U	NA	NA	NA	NA	NA	NA	NA	0.0060 U	0.0060 U
Bromodichloromethane	- -	mg/kg	0.0060 U	0.0060 U	0.13 U	0.13 U	0.030 D	4.0 U	0.70 U	0.0060 U	0.0060 U	0.0070 U [0.0070 U]	0.0060 U	0.0060 U	0.0060 U
Bromoform	- -	mg/kg	0.0060 U	0.0060 U	0.13 U	0.13 U	0.030 U	4.0 U	0.70 U	0.0060 U	0.0060 U	0.0070 U [0.0070 U]	0.0060 U	0.0060 U	0.0060 U
Bromomethane	- -	mg/kg	0.0060 U	0.0060 U	0.13 U	0.13 U	0.060 U	8.1 U	1.4 U	0.013 U	0.012 U	0.014 U [0.014 U]	0.013 U	0.0060 U	0.0060 U
Carbon Disulfide	- -	mg/kg	0.0060 UJ	0.0060 UJ	0.13 U	0.13 U	0.030 U	4.0 U	0.70 U	0.0060 U	0.0060 U	0.0070 U [0.0070 U]	0.0060 U	0.0060 U	0.0060 U
Carbon Tetrachloride	22	mg/kg	0.0060 U	0.0060 U	0.13 U	0.13 U	0.030 U	4.0 U	0.70 U	0.0060 U	0.0060 U	0.0070 U [0.0070 U]	0.0060 U	0.0060 U	0.0060 U
Chlorobenzene	500	mg/kg	0.0060 U	0.0060 UJ	0.13 U	0.13 U	0.030 U	4.0 U	0.70 U	0.0060 U	0.0060 U	0.0070 U [0.0070 U]	0.0060 U	0.0060 U	0.0060 U
Chloroethane	- -	mg/kg	0.0060 U	0.0060 U	0.13 U	0.13 U	0.060 U	8.1 U	1.4 U	0.013 U	0.012 U	0.014 U [0.014 U]	0.013 U	0.0060 U	0.0060 U
Chloroform	350	mg/kg	0.0060 U	0.0060 U	0.13 U	0.13 U	0.030 U	4.0 U	0.70 U	0.0060 U	0.0060 U	0.0070 U [0.0070 U]	0.0060 U	0.0060 U	0.0060 U
Chloromethane	- -	mg/kg	0.0060 UJ	0.0060 UJ	0.13 U	0.13 U	0.060 U	1.1 JD	1.4 U	0.013 U	0.012 U	0.014 U [0.014 U]	0.013 U	0.0060 U	0.0060 U
cis-1,2-Dichloroethene	500	mg/kg	0.0060 U	0.0060 U	0.13 U	0.13 U	NA	NA	NA	NA	NA	NA	NA	0.0060 U	0.0060 U
cis-1,3-Dichloropropene	- -	mg/kg	0.0060 U	0.0060 U	0.13 U	0.13 U	0.030 D	4.0 U	0.70 U	0.0060 U	0.0060 U	0.0070 U [0.0070 U]	0.0060 U	0.0060 U	0.0060 U
Dibromochloromethane	- -	mg/kg	0.0060 U	0.0060 U	0.13 U	0.13 U	0.030 U	4.0 U	0.70 U	0.0060 U	0.0060 U	0.0070 U [0.0070 U]	0.0060 U	0.0060 U	0.0060 U
Ethylbenzene	390	mg/kg	0.0050 J	0.0060 U	0.41	0.13 U	0.90 U	59 D	0.88	0.059	0.0060 U	0.0070 U [0.0070 U]	0.0060 U	0.0060 U	0.0060 U
Iodomethane	- -	mg/kg	0.0060 U	0.0060 U	0.13 U	0.13 U	NA	NA	NA	NA	NA	NA	NA	0.0060 U	0.0060 U
Methylene Chloride	500	mg/kg	0.0060 UJ	0.0060 UJ	0.13 UJ	0.13 UJ	0.030 D	1.6 JD	1.2	0.0030 J	0.0060 U	0.0070 U [0.0070 U]	0.0060 U	0.014 UBJ	0.013 UBJ
Styrene	- -	mg/kg	0.0060 U	0.0060 U	0.10 J	0.13 U	0.093 U	4.0 U	3.4	0.0060 U	0.0060 U	0.0070 U [0.0070 U]	0.0060 U	0.0060 U	0.0060 U
Tetrachloroethene	150	mg/kg	0.0060 U	0.0060 U	0.13 U	0.13 U	0.030 D	4.0 U	0.70 U	0.0060 U	0.0060 U	0.0070 U [0.0070 U]	0.0060 U	0.0060 U	0.0060 U
Toluene	500	mg/kg	0.0060 U	0.0060 UJ	0.074 J	0.13 U	0.070 U	62 D	9.6	0.040	0.0060 U	0.0070 U [0.0070 U]	0.0020 J	0.0060 U	0.0060 U
trans-1,2-Dichloroethene	500	mg/kg	0.0060 U	0.0060 U	0.13 U	0.13 U	NA	NA	NA	NA	NA	NA	NA	0.0060 U	0.0060 U
trans-1,3-Dichloropropene	- -	mg/kg	0.0060 U	0.0060 U	0.13 U	0.13 U	0.030 U	4.0 U	0.70 U	0.0060 U	0.0060 U	0.0070 U [0.0070 U]	0.0060 U	0.0060 U	0.0060 U
trans-1,4-Dichloro-2-butene	- -	mg/kg	0.029 U	0.028 U	0.65 UJ	0.65 UJ	NA	NA	NA	NA	NA	NA	NA	0.031 U	0.028 U
Trichloroethene	200	mg/kg	0.0060 U	0.0060 UJ	0.13 U	0.13 U	0.030 D	4.0 U	0.70 U	0.0060 U	0.0060 U	0.0070 U [0.0070 U]	0.0060 U	0.0060 U	0.0060 U
Trichlorofluoromethane	- -	mg/kg	0.0060 U	0.0060 U	0.13 U	0.13 U	NA	NA	NA	NA	NA	NA	NA	0.0060 U	0.0060 U
Vinyl Acetate	- -	mg/kg	0.029 UJ	0.028 U	0.65 UJ	0.65 UJ	0.060 U	8.1 U	1.4 U	0.013 U	0.012 U	0.014 U [0.014 U]	0.013 U	0.031 U	0.028 U
Vinyl Chloride	13	mg/kg	0.012 U	0.011 U	0.26 U	0.26 U	0.060 U	8.1 U	1.4 U	0.013 U	0.012 U	0.014 U [0.014 U]	0.013 U	0.012 U	0.011 U
Xylenes (total)	500	mg/kg	0.017 U	0.017 U	1.7	0.39 U	1.8 U	100 D	16	0.091	0.0060 U	0.0070 U [0.0070 U]	0.0060 U	0.018 U	0.017 U
Total BTEX	- -	mg/kg	0.0050 J	ND	2.3 J	ND	ND	260	31	0.27	ND	ND [ND]	0.0020 J	ND	ND
Total VOCs	- -	mg/kg	0.096 J	ND	4.7 J	ND	0.18	260 J	35	0.37 J	ND	0.025 [0.068]	0.026 J	ND	ND

See Notes on Page 13.

Table 1. Soil Analytical Summary
NYSEG
Goshen Former MGP Site
Goshen, New York

Location ID:			SB08-32	SB08-32	SB08-33	SB08-33	TB-5	TB-6	TB-8	TB-10	TP-1	TP-2	TP-3	TP08-1	TP08-2
Sample Depth(Feet):	NYSDEC Commercial		8 - 12	36 - 38	20 - 24	34 - 38	17 - 19.5	10 - 12.5	15.5 - 20	7.2 - 10	6	4.5	2	10 - 11	10 - 11
Date Collected:	SCOs	Units	11/06/08	11/06/08	11/07/08	11/07/08	09/15/93	09/15/93	09/15/93	09/15/93	09/13/93	09/13/93	09/13/93	11/10/08	11/10/08
Semivolatile Organics															
1,2,4-Trichlorobenzene	- -	mg/kg	2.0 U	0.36 U	0.35 U	0.0090 J	2.0 U	2.2 U	1.9 U	0.42 U	2.0 U	0.45 U [0.46 U]	0.42 U	0.40 U	1.8 U
1,2-Dichlorobenzene	500	mg/kg	2.0 U	0.36 U	0.35 U	0.36 U	2.0 U	2.2 U	1.9 U	0.42 U	2.0 U	0.45 U [0.46 U]	0.42 U	0.40 U	1.8 U
1,3-Dichlorobenzene	280	mg/kg	2.0 U	0.36 U	0.35 U	0.36 U	2.0 U	2.2 U	1.9 U	0.42 U	2.0 U	0.45 U [0.46 U]	0.42 U	0.40 U	1.8 U
1,4-Dichlorobenzene	130	mg/kg	2.0 U	0.36 U	0.35 U	0.0090 J	2.0 U	2.2 U	1.9 U	0.42 U	2.0 U	0.45 U [0.46 U]	0.42 U	0.40 U	1.8 U
2,2'-Oxybis(1-Chloropropane)	- -	mg/kg	1.0 U	0.18 U	0.18 U	0.19 U	2.0 U	2.2 U	1.9 U	0.42 U	2.0 U	0.45 U [0.46 U]	0.42 U	0.20 U	0.95 U
2,4,5-Trichlorophenol	- -	mg/kg	1.0 U	0.18 U	0.18 U	0.19 U	5.0 U	5.4 U	4.7 U	1.0 U	4.9 U	1.1 U [1.1 U]	1.0 U	0.20 U	0.95 U
2,4,6-Trichlorophenol	- -	mg/kg	1.0 U	0.18 U	0.18 U	0.19 U	2.0 U	2.2 U	1.9 U	0.42 U	2.0 U	0.45 U [0.46 U]	0.42 U	0.20 U	0.95 U
2,4-Dichlorophenol	- -	mg/kg	1.0 U	0.18 U	0.18 U	0.19 U	2.0 U	2.2 U	1.9 U	0.42 U	2.0 U	0.45 U [0.46 U]	0.42 U	0.20 U	0.95 U
2,4-Dimethylphenol	- -	mg/kg	1.0 U	0.18 U	0.18 U	0.19 U	2.0 U	2.2 U	0.29 JD	0.070 J	2.0 U	0.45 U [0.46 U]	0.42 U	0.20 U	0.95 U
2,4-Dinitrophenol	- -	mg/kg	2.0 U	0.36 U	0.35 U	0.36 U	5.0 U	5.4 U	4.7 U	1.0 U	4.9 U	1.1 U [1.1 U]	1.0 U	0.40 U	1.8 U
2,4-Dinitrotoluene	- -	mg/kg	1.0 UJ	0.18 UJ	0.18 UJ	0.19 UJ	2.0 U	2.2 U	1.9 U	0.42 U	2.0 U	0.45 U [0.46 U]	0.42 U	0.20 U	0.95 U
2,6-Dinitrotoluene	- -	mg/kg	1.0 U	0.18 U	0.18 U	0.19 U	2.0 U	2.2 U	1.9 U	0.42 U	2.0 U	0.45 U [0.46 U]	0.42 U	0.20 U	0.95 U
2-Chloronaphthalene	- -	mg/kg	1.0 U	0.18 U	0.18 U	0.19 U	2.0 U	2.2 U	1.9 U	0.42 U	2.0 U	0.45 U [0.46 U]	0.42 U	0.20 U	0.95 U
2-Chlorophenol	- -	mg/kg	1.0 U	0.18 U	0.18 U	0.010 J	2.0 U	2.2 U	1.9 U	0.42 U	2.0 U	0.45 U [0.46 U]	0.42 U	0.20 U	0.95 U
2-Methyl-4,6-Dinitrophenol	- -	mg/kg	NA	NA	NA	NA	5.0 U	5.4 U	4.7 U	1.0 U	4.9 U	1.1 U [1.1 U]	1.0 U	NA	NA
2-Methylnaphthalene	- -	mg/kg	1.0 U	0.18 U	0.18 U	0.19 U	5.9 D	12 D	6.3 D	0.51	0.48 JD	0.057 J [0.063 J]	0.42 U	0.20 U	0.95 U
2-Methylphenol	500	mg/kg	1.0 U	0.18 U	0.18 U	0.19 U	2.0 U	0.22 JD	0.30 JD	0.42 U	2.0 U	0.45 U [0.46 U]	0.42 U	0.20 U	0.95 U
2-Nitroaniline	- -	mg/kg	2.0 U	0.36 U	0.35 U	0.36 U	5.0 U	5.4 U	4.7 U	1.0 U	4.9 U	1.1 U [1.1 U]	1.0 U	0.40 U	1.8 U
2-Nitrophenol	- -	mg/kg	1.0 U	0.18 U	0.18 U	0.19 U	2.0 U	2.2 U	1.9 U	0.42 U	2.0 U	0.45 U [0.46 U]	0.42 U	0.20 U	0.95 U
3,3'-Dichlorobenzidine	- -	mg/kg	1.0 U	0.18 U	0.18 U	0.19 U	2.0 U	2.2 U	1.9 U	0.42 U	2.0 U	0.45 U [0.46 U]	0.42 U	0.20 U	0.95 U
3-Nitroaniline	- -	mg/kg	2.0 U	0.36 U	0.35 U	0.36 U	5.0 U	5.4 U	4.7 U	1.0 U	4.9 U	1.1 U [1.1 U]	1.0 U	0.40 U	1.8 U
4,6-Dinitro-2-methylphenol	- -	mg/kg	2.0 U	0.36 U	0.35 U	0.36 U	NA	NA	NA	NA	NA	NA	NA	0.40 U	1.8 U
4-Bromophenyl-phenylether	- -	mg/kg	1.0 U	0.18 U	0.18 U	0.19 U	2.0 U	2.2 U	1.9 U	0.42 U	2.0 U	0.45 U [0.46 U]	0.42 U	0.20 U	0.95 U
4-Chloro-3-Methylphenol	- -	mg/kg	1.0 U	0.18 U	0.18 U	0.19 U	2.0 U	2.2 U	1.9 U	0.42 U	2.0 U	0.45 U [0.46 U]	0.42 U	0.20 U	0.95 U
4-Chloroaniline	- -	mg/kg	1.0 U	0.18 U	0.18 U	0.19 U	2.0 U	2.2 U	1.9 U	0.42 U	2.0 U	0.45 U [0.46 U]	0.42 U	0.20 U	0.95 U
4-Chlorophenyl-phenylether	- -	mg/kg	1.0 U	0.18 U	0.18 U	0.19 U	2.0 U	2.2 U	1.9 U	0.42 U	2.0 U	0.45 U [0.46 U]	0.42 U	0.20 U	0.95 U
4-Methylphenol	500	mg/kg	1.0 U	0.18 U	0.18 U	0.19 U	2.0 U	0.60 JD	0.44 JD	0.088 J	2.0 U	0.45 U [0.46 U]	0.42 U	0.20 U	0.95 U
4-Nitroaniline	- -	mg/kg	2.0 U	0.36 U	0.35 U	0.36 U	5.0 U	5.4 U	4.7 U	1.0 U	4.9 U	1.1 U [1.1 U]	1.0 U	0.40 U	1.8 U
4-Nitrophenol	- -	mg/kg	2.0 U	0.36 U	0.35 U	0.36 U	5.0 U	5.4 U	4.7 U	1.0 U	4.9 U	1.1 U [1.1 U]	1.0 U	0.40 U	1.8 U
Acenaphthene	500	mg/kg	0.095 J	0.18 U	0.18 U	0.19 U	1.6 JD	8.3 D	0.71 JD	1.1	0.23 JD	0.33 J [0.30 J]	0.42 U	0.20 U	0.95 U
Acenaphthylene	500	mg/kg	1.0 U	0.18 U	0.18 U	0.19 U	7.2 D	8.6 D	4.3 D	0.54	1.3 JD	0.46 [0.40 J]	0.42 U	0.20 U	0.95 U
Anthracene	500	mg/kg	1.0 U	0.18 U	0.18 U	0.19 U	8.5 D	13 D	4.4 D	0.68	3.6 D	1.8 [2.8 D]	0.030 J	0.20 U	0.15 J
Benzo(a)anthracene	5.6	mg/kg	0.041 J	0.18 U	0.18 U	0.19 U	**6.6 D**	**24 D**	3.1 D	0.59	**11 D**	**5.2 [6.0 D]**	0.092 J	0.20 U	0.53 J
Benzo(a)pyrene	1	mg/kg	1.0 U	0.18 U	0.18 U	0.19 U	**4.7 D**	**24 D**	**2.2 D**	0.48	**10 D**	**4.6 [5.6 D]**	0.083 J	0.20 U	0.47 J
Benzo(b)fluoranthene	5.6	mg/kg	1.0 U	0.18 U	0.18 U	0.19 U	4.2 D	**23 D**	2.0 D	0.31 J	**12 D**	**6.0 [6.6]**	0.083 J	0.20 U	0.53 J
Benzo(g,h,i)perylene	500	mg/kg	1.0 U	0.18 U	0.18 U	0.19 U	1.7 JD	16 D	0.78 JD	0.27 J	6.8 D	2.6 [4.2 D]	0.42 U	0.20 U	0.37 J
Benzo(k)fluoranthene	56	mg/kg	1.0 U	0.18 U	0.18 U	0.19 U	3.6 D	19 D	1.8 JD	0.33 J	7.0 D	3.4 [5.2 D]	0.062 J	0.20 U	0.21 J
Benzoic Acid	- -	mg/kg	NA	NA	NA	NA	5.0 U	5.4 U	4.7 U	1.0 U	4.9 U	1.1 U [1.1 U]	1.0 U	NA	NA
Benzyl Alcohol	- -	mg/kg	2.0 U	0.36 U	0.35 U	0.36 U	2.0 U	2.2 U	1.9 U	0.42 U	2.0 U	0.45 U [0.46 U]	0.42 U	0.40 U	1.8 U
bis(2-Chloroethoxy)methane	- -	mg/kg	1.0 U	0.18 U	0.18 U	0.19 U	2.0 U	2.2 U	1.9 U	0.42 U	2.0 U	0.45 U [0.46 U]	0.42 U	0.20 U	0.95 U
bis(2-Chloroethyl)ether	- -	mg/kg	1.0 U	0.18 U	0.18 U	0.19 U	2.0 U	2.2 U	1.9 U	0.42 U	2.0 U	0.45 U [0.46 U]	0.42 U	0.20 U	0.95 U
bis(2-Ethylhexyl)phthalate	- -	mg/kg	1.0 U	0.076 J	0.18 U	0.18 J	0.19 JD	0.36 JD	0.65 JD	0.80	2.0 U	0.072 J [0.13 J]	0.42 U	0.20 U	0.95 U
Butylbenzylphthalate	- -	mg/kg	1.0 U	0.050 J	0.18 U	0.19 U	2.0 U	2.2 U	1.9 U	0.42	2.0 U	0.45 U [0.46 U]	0.42 U	0.20 U	0.95 U
Carbazole	- -	mg/kg	NA	NA	NA	NA	2.0 D	6.6 D	1.6 JD	0.27 J	1.0 JD	0.78 [0.85]	0.42 U	NA	NA
Chrysene	56	mg/kg	1.0 U	0.18 U	0.18 U	0.19 U	5.1 D	25 D	2.6 D	0.60	9.9 D	5.4 [6.1 D]	0.087 J	0.20 U	0.45 J
Dibenzo(a,h)anthracene	0.56	mg/kg	1.0 U	0.18 U	0.18 U	0.19 U	0.55 JD	**4.8 JD**	0.40 JD	0.078 J	**2.6 D**	**0.83 [0.96]**	0.42 U	0.20 U	0.10 J
Dibenzofuran	350	mg/kg	1.0 U	0.18 U	0.18 U	0.19 U	5.9 D	6.4 D	3.2 D	0.43	0.96 JD	0.75 [0.94 JD]	0.42 U	0.20 U	0.95 U
Diethylphthalate	- -	mg/kg	1.0 U	0.18 U	0.18 U	0.19 U	2.0 U	2.2 U	1.9 U	0.42 U	2.0 U	0.45 U [0.46 U]	0.42 U	0.20 U	0.95 U
Dimethylphthalate	- -	mg/kg	1.0 U	0.18 U	0.18 U	0.19 U	2.0 U	2.2 U	1.9 U	0.42 U	2.0 U	0.45 U [0.46 U]	0.42 U	0.20 U	0.95 U
Di-n-Butylphthalate	- -	mg/kg	1.0 U	0.18 U	0.18 U	0.19 U	0.51 JD	0.58 JD	0.70 JD	6.6	0.74 JD	0.21 J [0.35 J]	0.38 J	0.20 U	0.95 U
Di-n-Octylphthalate	- -	mg/kg	1.0 U	0.18 U	0.18 U	0.19 U	2.0 U	2.2 U	1.9 U	0.42 U	2.0 U	0.45 U [0.46 U]	0.42 U	0.20 U	0.95 U

See Notes on Page 13.

Table 1. Soil Analytical Summary
NYSEG
Goshen Former MGP Site
Goshen, New York

Location ID: / Sample Depth(Feet): / Date Collected:	NYSDEC Commercial SCOs	Units	SB08-32 8 - 12 11/06/08	SB08-32 36 - 38 11/06/08	SB08-33 20 - 24 11/07/08	SB08-33 34 - 38 11/07/08	TB-5 17 - 19.5 09/15/93	TB-6 10 - 12.5 09/15/93	TB-8 15.5 - 20 09/15/93	TB-10 7.2 - 10 09/15/93	TP-1 6 09/13/93	TP-2 4.5 09/13/93	TP-3 2 09/13/93	TP08-1 10 - 11 11/10/08	TP08-2 10 - 11 11/10/08
Semivolatile Organics (Cont.)															
Fluoranthene	500	mg/kg	0.13 J	0.18 U	0.18 U	0.011 J	14 D	63 D	6.9 D	2.6	20 D	11 [15 D]	0.20 J	0.20 U	1.0
Fluorene	500	mg/kg	0.064 J	0.18 U	0.18 U	0.19 U	7.5 D	13 D	3.8 D	0.88	1.0 JD	1.5 [1.8 JD]	0.42 U	0.20 U	0.95 U
Hexachlorobenzene	6	mg/kg	1.0 U	0.18 U	0.18 U	0.19 U	2.0 U	2.2 U	1.9 U	0.42 U	2.0 U	0.45 U [0.46 U]	0.42 U	0.20 U	0.95 U
Hexachlorobutadiene	- -	mg/kg	1.0 U	0.18 U	0.18 U	0.19 U	2.0 U	2.2 U	1.9 U	0.42 U	2.0 U	0.45 U [0.46 U]	0.42 U	0.20 U	0.95 U
Hexachlorocyclopentadiene	- -	mg/kg	1.0 U	0.18 U	0.18 U	0.19 U	2.0 U	2.2 U	1.9 U	0.42 U	2.0 U	0.45 U [0.46 U]	0.42 U	0.20 U	0.95 U
Hexachloroethane	- -	mg/kg	1.0 U	0.18 U	0.18 U	0.19 U	2.0 U	2.2 U	1.9 U	0.42 U	2.0 U	0.45 U [0.46 U]	0.42 U	0.20 U	0.95 U
Indeno(1,2,3-cd)pyrene	5.6	mg/kg	1.0 U	0.18 U	0.18 U	0.19 U	2.7 D	**19 D**	1.2 JD	0.32 J	**9.3 D**	3.9 [5.0 D]	0.42 U	0.20 U	0.33 J
Isophorone	- -	mg/kg	1.0 U	0.18 U	0.18 U	0.19 U	2.0 U	2.2 U	1.9 U	0.42 U	2.0 U	0.45 U [0.46 U]	0.42 U	0.20 U	0.95 U
Naphthalene	500	mg/kg	0.10 J	0.18 U	0.18 U	0.19 U	29 D	86 D	36 D	2.7	1.3 JD	0.36 J [0.38 JD]	0.059 J	0.20 U	0.95 U
Nitrobenzene	- -	mg/kg	1.0 U	0.18 U	0.18 U	0.19 U	2.0 U	2.2 U	1.9 U	0.42 U	2.0 U	0.45 U [0.46 U]	0.42 U	0.20 U	0.95 U
N-Nitrosodimethylamine	- -	mg/kg	2.0 U	0.36 U	0.35 U	0.36 U	NA	NA	NA	NA	NA	NA	NA	0.40 U	1.8 U
N-Nitroso-di-n-propylamine	- -	mg/kg	1.0 U	0.18 U	0.18 U	0.19 U	2.0 U	2.2 U	1.9 U	0.42 U	2.0 U	0.45 U [0.46 U]	0.42 U	0.20 U	0.95 U
N-Nitrosodiphenylamine	- -	mg/kg	1.0 U	0.18 U	0.18 U	0.19 U	2.0 U	2.2 U	1.9 U	0.42 U	2.0 U	0.45 U [0.46 U]	0.42 U	0.20 U	0.95 U
Pentachlorophenol	6.7	mg/kg	2.0 U	0.36 U	0.35 U	0.36 U	5.0 U	5.4 U	4.7 U	1.0 U	4.9 U	1.1 U [1.1 U]	1.0 U	0.40 U	1.8 U
Phenanthrene	500	mg/kg	0.14 J	0.18 U	0.18 U	0.19 UB	21 D	69 D	10 D	2.9	12 D	2.5 [1.9 JD]	0.092 J	0.20 U	0.55 J
Phenol	500	mg/kg	1.0 U	0.18 U	0.18 U	0.19 U	2.0 U	2.2 U	1.9 U	0.42 U	2.0 U	0.45 U [0.46 U]	0.42 U	0.20 U	0.95 U
Pyrene	500	mg/kg	0.13 J	0.18 U	0.18 U	0.0080 J	12 D	70 D	5.3 D	2.4	20 D	11 [14 D]	0.15 J	0.20 U	0.76 J
Total PAHs	- -	mg/kg	0.70 J	ND	ND	0.019 J	140 J	500 J	92 J	17 J	130 J	61 J [76 J]	0.94 J	ND	5.5 J
Total SVOCs	- -	mg/kg	1.4 J	0.13 J	ND	0.25 J	140 J	510 J	97 J	26 J	130 J	62 J [78 J]	1.3 J	ND	11 J
Inorganics															
Aluminum	- -	mg/kg	NA	NA	NA	NA	8,800	12,100	11,000	21,000	12,600	19,000 [20,500]	13,100	NA	NA
Antimony	- -	mg/kg	NA	NA	NA	NA	0.520 U	0.620 U	0.540 U	0.590 U	0.560 U	0.610 U [0.670 U]	0.550 U	NA	NA
Arsenic	16	mg/kg	NA	NA	NA	NA	6.40	8.30	4.40	11.2	16.0	7.90 [10.6]	7.90	NA	NA
Barium	400	mg/kg	NA	NA	NA	NA	28.3	76.1	52.9	147	70.9	106 [111]	60.6	NA	NA
Cadmium	9.3	mg/kg	NA	NA	NA	NA	0.420 U	0.500 U	0.430 U	0.470 U	0.890	0.490 U [0.540 U]	0.440 U	NA	NA
Chromium	- -	mg/kg	NA	NA	NA	NA	14.0	19.0	17.8	33.6	20.8	30.8 [29.5]	19.6	NA	NA
Copper	270	mg/kg	NA	NA	NA	NA	21.6	31.0	25.4	35.8	94.1	31.7 [28.8]	30.6	NA	NA
Cyanide	27	mg/kg	0.690 U	0.760 U	0.570 U	0.950 U	2.30 U	6.70	1.90 U	1.20 U	**72.6**	**39.3 [125]**	2.70 U	1.10 U	0.870 U
Cyanide, Amenable	- -	mg/kg	NA	NA	NA	NA	NA	10.0 U	NA	NA	10.0 U	10.0 U [2.50 U]	NA	NA	NA
Heat Content	- -	BTU/LB	NA	NA	NA	NA	126	NA	100 U	73.5	NA	333	100 U	NA	NA
Iron	- -	mg/kg	NA	NA	NA	NA	19,300	34,200	22,700	48,600	27,700	28,600 [27,600]	26,600	NA	NA
Lead	1,000	mg/kg	NA	NA	NA	NA	11.5	218	7.90	23.1	178	72.0 [122]	19.9	NA	NA
Manganese	10,000	mg/kg	NA	NA	NA	NA	466	798	612	329	891	286 [261]	543	NA	NA
Mercury	2.8	mg/kg	NA	NA	NA	NA	0.0600 U	0.190	0.0600 U	0.0600 J	0.180	0.0700 J [0.0700 J]	0.210	NA	NA
Nickel	310	mg/kg	NA	NA	NA	NA	17.8	24.2	23.6	44.4	27.0	30.2 [30.6]	26.7	NA	NA
Inorganics (Cont.)															
Reactive Cyanide	- -	mg/kg	NA	NA	NA	NA	100 U	NA	100 U	100 U	NA	100 U	100 U	NA	NA
Reactive Sulfide	- -	mg/kg	NA	NA	NA	NA	100 U	NA	100 U	100 U	NA	100 U	100 U	NA	NA
Selenium	1,500	mg/kg	NA	NA	NA	NA	0.110 U	0.120 U	0.100 U	0.120 U	0.0900 U	0.140 U [0.130 U]	0.110 U	NA	NA
Silver	1,500	mg/kg	NA	NA	NA	NA	0.730 U	0.870 U	0.750 U	0.830 U	0.780 U	0.860 U [0.940 U]	0.780 U	NA	NA
Total Petroleum Hydrocarbons	- -	mg/kg	NA	NA	NA	NA	270 U	NA	270 U	120	NA	70.0 U	60.0 U	NA	NA
Vanadium	- -	mg/kg	NA	NA	NA	NA	13.7	20.1	18.5	31.4	22.0	35.8 [36.2]	20.3	NA	NA
Zinc	10,000	mg/kg	NA	NA	NA	NA	48.8	95.8	65.3	93.6	287	89.9 [92.3]	77.0	NA	NA
Miscellaneous															
Percent Solids	- -	%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See Notes on Page 13.

Table 1. Soil Analytical Summary
NYSEG
Goshen Former MGP Site
Goshen, New York

Qualifier Type	Lab Qualifiers	Definition
Organic	B	Analyte was also detected in the associated method blank.
Organic	D	Compound quantitated using a secondary dilution.
Organic	E	Analyte exceeded calibration range.
General	J	Indicates an estimated value.
General	ND	None detected.
General	U	The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

Notes:
1. All concentrations reported in milligrams per kilogram (mg/kg); equivalent to parts per million (ppm).
2. [ ] Bracketed results represent the duplicate sample.
3. Exceedances of NYSDEC Part 375 Commercial Restricted Use Soil Cleanup Objectives (SCOs) for Protection of Public Health Commercial are bolded and shaded
.4. Analytical resutls of soil samples collected within ISS Treatment Area are lightened.
5. NA = not analyzed

Table 2. Sediment Analytical Summary
NYSEG
Goshen Former MGP Site
Goshen, New York

Location ID:		NYSDEC Sediment Criteria Multipliers		Number of Exceedances		SED09-01	SED09-02	SED09-03	SED09-04	SED09-05	SED09-06	SED09-07	SED09-08	SED09-09	SED09-10	SED09-11
Sample Depth(Feet):		Acute	Chronic	Total	Total	0 - 0.6	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
Date Collected:	Units	ug/g OC	ug/g OC	Acute	Chronic	01/09/09	01/09/09	01/09/09	01/12/09	01/12/09	01/12/09	01/12/09	01/12/09	01/13/09	01/13/09	01/13/09
Volatile Organics																
1,1,1,2-Tetrachloroethane	mg/kg	--	--	--	--	0.030 U	0.0069 U	0.0090 U	2.3 U	1.8 U	2.2 U	3.0 U	1.6 U	0.0052 U	0.0078 U [0.0079 U]	0.0062 U
1,1,1-Trichloroethane	mg/kg	--	--	--	--	0.030 U	0.0069 U	0.0090 U	2.3 U	1.8 U	2.2 U	3.0 U	1.6 U	0.0052 U	0.0078 U [0.0079 U]	0.0062 U
1,1,2,2-Tetrachloroethane	mg/kg	--	--	--	--	0.030 U	0.0069 U	0.0090 U	2.3 U	1.8 U	2.2 U	3.0 U	1.6 U	0.0052 U	0.0078 U [0.0079 U]	0.0062 U
1,1,2-Trichloroethane	mg/kg	--	--	--	--	0.030 U	0.0069 U	0.0090 U	2.3 U	1.8 U	2.2 U	3.0 U	1.6 U	0.0052 U	0.0078 U [0.0079 U]	0.0062 U
1,1-Dichloroethane	mg/kg	--	--	--	--	NA	NA	NA	2.3 U	1.8 U	2.2 U	3.0 U	1.6 U	NA	NA	NA
1,1-Dichloroethene	mg/kg	--	--	--	--	0.030 U	0.0069 U	0.0090 U	2.3 UJ	1.8 UJ	2.2 U	3.0 U	1.6 U	0.0052 U	0.0078 U [0.0079 U]	0.0062 U
1,2,3-Trichloropropane	mg/kg	--	--	--	--	0.030 U	0.0069 U	0.0090 U	2.3 U	1.8 U	2.2 U	3.0 U	1.6 U	0.0052 U	0.0078 U [0.0079 U]	0.0062 U
1,2-Dibromo-3-chloropropane	mg/kg	--	--	--	--	0.030 U	0.0069 U	0.0090 U	2.3 U	1.8 U	2.2 U	3.0 U	1.6 U	0.0052 U	0.0078 U [0.0079 U]	0.0062 U
1,2-Dibromoethane	mg/kg	--	--	--	--	0.030 U	0.0069 U	0.0090 U	2.3 U	1.8 U	2.2 U	3.0 U	1.6 U	0.0052 U	0.0078 U [0.0079 U]	0.0062 U
1,2-Dichlorobenzene	mg/kg	120	12	--	--	0.030 U	0.0069 U	0.0090 U	2.3 U	1.8 U	2.2 U	3.0 U	1.6 U	0.0052 U	0.0078 U [0.0079 U]	0.0062 U
1,2-Dichloroethane	mg/kg	--	--	--	--	0.030 U	0.0069 U	0.0090 U	2.3 U	1.8 U	2.2 U	3.0 U	1.6 U	0.0052 U	0.0078 U [0.0079 U]	0.0062 U
1,2-Dichloropropane	mg/kg	--	--	--	--	0.030 U	0.0069 U	0.0090 U	2.3 U	1.8 U	2.2 U	3.0 U	1.6 U	0.0052 U	0.0078 U [0.0079 U]	0.0062 U
1,3-Dichlorobenzene	mg/kg	120	12	--	--	0.030 U	0.0069 U	0.0090 U	2.3 U	1.8 U	2.2 U	3.0 U	1.6 U	0.0052 U	0.0078 U [0.0079 U]	0.0062 U
1,4-Dichlorobenzene	mg/kg	120	12	--	--	0.030 U	0.0069 U	0.0090 U	2.3 U	1.8 U	2.2 U	3.0 U	1.6 U	0.0052 U	0.0078 U [0.0079 U]	0.0062 U
2-Butanone	mg/kg	--	--	--	--	0.056 J	0.035 U	0.045 U	12 U	8.8 U	11 U	15 U	7.9 U	0.026 U	0.020 J [0.015 J]	0.031 U
2-Chloroethylvinylether	mg/kg	--	--	--	--	0.15 U	0.035 U	0.045 U	12 U	8.8 U	11 U	15 U	7.9 U	0.026 U	0.039 U [0.039 U]	0.031 U
2-Hexanone	mg/kg	--	--	--	--	0.15 U	0.035 U	0.045 U	12 U	8.8 U	11 U	15 U	7.9 U	0.026 U	0.039 U [0.039 U]	0.031 U
4-Methyl-2-pentanone	mg/kg	--	--	--	--	0.15 U	0.035 U	0.045 U	12 U	8.8 U	11 U	15 U	7.9 U	0.026 U	0.039 U [0.039 U]	0.031 U
Acetone	mg/kg	--	--	--	--	0.20	0.035 U	0.018 J	12 U	8.8 U	11 U	15 U	7.9 U	0.011 J	0.077 [0.052]	0.033
Acetonitrile	mg/kg	--	--	--	--	1.2 U	0.28 U	0.36 U	92 U	71 U	89 U	120 U	63 U	0.21 U	0.31 U [0.32 U]	0.25 U
Benzene	mg/kg	103	28	--	--	0.030 U	0.0069 U	0.0090 U	2.3 UJ	1.8 UJ	2.2 U	3.0 U	1.6 U	0.0052 U	0.0078 U [0.0079 U]	0.0062 U
Bromochloromethane	mg/kg	--	--	--	--	0.030 U	0.0069 U	0.0090 U	2.3 U	1.8 U	2.2 U	3.0 U	1.6 U	0.0052 U	0.0078 U [0.0079 U]	0.0062 U
Bromodichloromethane	mg/kg	--	--	--	--	0.030 U	0.0069 U	0.0090 U	2.3 U	1.8 U	2.2 U	3.0 U	1.6 U	0.0052 U	0.0078 U [0.0079 U]	0.0062 U
Bromoform	mg/kg	--	--	--	--	0.030 UJ	0.0069 UJ	0.0090 UJ	2.3 U	1.8 U	2.2 U	3.0 U	1.6 U	0.0052 U	0.0078 UJ [0.0079 UJ]	0.0062 U
Bromomethane	mg/kg	--	--	--	--	0.030 U	0.0069 U	0.0090 U	2.3 U	1.8 U	2.2 UJ	3.0 UJ	1.6 UJ	0.0052 U	0.0078 U [0.0079 U]	0.0062 U
Carbon Disulfide	mg/kg	--	--	--	--	0.030 U	0.0069 U	0.0090 U	2.3 U	1.8 U	2.2 U	3.0 U	1.6 U	0.0013 J	0.0078 U [0.0079 U]	0.0062 U
Carbon Tetrachloride	mg/kg	--	--	--	--	0.030 U	0.0069 U	0.0090 U	2.3 U	1.8 U	2.2 U	3.0 U	1.6 U	0.0052 U	0.0078 U [0.0079 U]	0.0062 U
Chlorobenzene	mg/kg	34.6	3.5	--	--	0.030 U	0.0069 U	0.0090 U	2.3 UJ	1.8 UJ	2.2 U	3.0 U	1.6 U	0.0052 U	0.0078 U [0.0079 U]	0.0062 U
Chloroethane	mg/kg	--	--	--	--	0.030 U	0.0069 U	0.0090 U	2.3 U	1.8 U	2.2 U	3.0 U	1.6 U	0.0052 U	0.0078 U [0.0079 U]	0.0062 U
Chloroform	mg/kg	--	--	--	--	0.030 U	0.0069 U	0.0090 U	2.3 U	1.8 U	2.2 U	3.0 U	1.6 U	0.0052 U	0.0078 U [0.0079 U]	0.0062 U
Chloromethane	mg/kg	--	--	--	--	0.030 U	0.0069 U	0.0090 U	2.3 U	1.8 U	2.2 U	3.0 U	1.6 U	0.0052 U	0.0078 U [0.0079 U]	0.0062 U
cis-1,2-Dichloroethene	mg/kg	--	--	--	--	0.030 U	0.0069 U	0.0090 U	2.3 U	1.8 U	2.2 U	3.0 U	1.6 U	0.0052 U	0.0078 U [0.0079 U]	0.0062 U
cis-1,3-Dichloropropene	mg/kg	--	--	--	--	0.030 U	0.0069 U	0.0090 U	2.3 U	1.8 U	2.2 U	3.0 U	1.6 U	0.0052 U	0.0078 U [0.0079 U]	0.0062 U
Dibromochloromethane	mg/kg	--	--	--	--	0.030 U	0.0069 U	0.0090 U	2.3 U	1.8 U	2.2 U	3.0 U	1.6 U	0.0052 U	0.0078 U [0.0079 U]	0.0062 U
Ethylbenzene	mg/kg	212	24	--	--	0.030 U	0.0069 U	0.0090 U	2.3 U	1.8 U	2.2 U	3.0 U	1.6 U	0.0052 U	0.0078 U [0.0079 U]	0.0062 U
Iodomethane	mg/kg	--	--	--	--	0.030 U	0.0069 U	0.0090 U	2.3 U	1.8 U	2.2 U	3.0 U	1.6 U	0.0052 UJ	0.0078 U [0.0079 U]	0.0062 UJ
Methylene Chloride	mg/kg	--	--	--	--	0.030 UB	0.0069 U	0.0090 UB	2.3 U	1.8 U	2.2 U	3.0 U	1.6 U	0.015 UB	0.014 UB [0.0079 UB]	0.0062 UB
Styrene	mg/kg	--	--	--	--	0.030 U	0.0069 U	0.0090 U	2.3 U	1.8 U	2.2 U	3.0 U	1.6 U	0.0052 U	0.0078 U [0.0079 U]	0.0062 U
Tetrachloroethene	mg/kg	--	--	--	--	0.030 U	0.0069 U	0.0090 U	2.3 U	1.8 U	2.2 U	3.0 U	1.6 U	0.0052 U	0.0078 U [0.0079 U]	0.0062 U
Toluene	mg/kg	235	49	--	--	0.030 U	0.0069 U	0.0090 U	2.3 UJ	1.8 UJ	2.2 U	3.0 U	1.6 U	0.0052 U	0.0078 U [0.0079 U]	0.0062 U
trans-1,2-Dichloroethene	mg/kg	--	--	--	--	0.030 U	0.0069 U	0.0090 U	2.3 U	1.8 U	2.2 U	3.0 U	1.6 U	0.0052 U	0.0078 U [0.0079 U]	0.0062 U
trans-1,3-Dichloropropene	mg/kg	--	--	--	--	0.030 U	0.0069 U	0.0090 U	2.3 U	1.8 U	2.2 U	3.0 U	1.6 U	0.0052 U	0.0078 U [0.0079 U]	0.0062 U
trans-1,4-Dichloro-2-butene	mg/kg	--	--	--	--	0.15 U	0.035 U	0.045 U	12 U	8.8 U	11 U	15 U	7.9 U	0.026 U	0.039 U [0.039 U]	0.031 U
Trichloroethene	mg/kg	--	--	--	--	0.030 U	0.0069 U	0.0090 U	2.3 UJ	1.8 UJ	2.2 U	3.0 U	1.6 U	0.0052 U	0.0078 U [0.0079 U]	0.0062 U
Trichlorofluoromethane	mg/kg	--	--	--	--	0.030 U	0.0069 U	0.0090 U	2.3 U	1.8 U	2.2 U	3.0 U	1.6 U	0.0052 U	0.0078 U [0.0079 U]	0.0062 U
Vinyl Acetate	mg/kg	--	--	--	--	0.15 U	0.035 U	0.045 U	12 U	8.8 U	11 U	15 U	7.9 U	0.026 U	0.039 U [0.039 U]	0.031 U
Vinyl Chloride	mg/kg	--	--	--	--	0.061 U	0.014 U	0.018 U	4.6 U	3.5 U	4.4 U	6.0 U	3.1 U	0.010 U	0.016 U [0.016 U]	0.012 U

See Notes on Page 13.

Table 2. Sediment Analytical Summary
NYSEG
Goshen Former MGP Site
Goshen, New York

Location ID:		NYSDEC Sediment Criteria Multipliers		Number of Exceedances		SED09-01	SED09-02	SED09-03	SED09-04	SED09-05	SED09-06	SED09-07	SED09-08	SED09-09	SED09-10	SED09-11
Sample Depth(Feet):		Acute	Chronic	Total	Total	0 - 0.6	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
Date Collected:	Units	ug/g OC	ug/g OC	Acute	Chronic	01/09/09	01/09/09	01/09/09	01/12/09	01/12/09	01/12/09	01/12/09	01/12/09	01/13/09	01/13/09	01/13/09
Volatile Organics (Cont.)																
Xylenes (total)	mg/kg	833	92	--	--	0.091 U	0.021 U	0.027 U	4.6 U	3.5 U	4.4 U	6.0 U	3.1 U	0.016 U	0.023 U [0.024 U]	0.019 U
Total BTEX	mg/kg	--	--	--	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND [ND]	ND
Total VOCs	mg/kg	--	--	--	--	0.26 J	ND	0.018 J	ND	ND	ND	ND	ND	0.012 J	0.097 J [0.067 J]	0.033
Semivolatile Organics																
1,2,4-Trichlorobenzene	mg/kg	910	91	--	--	2.5 U	4.7 UJ	12 U	4.8 U	7.7 U	9.9 U	130 UJ	71 UJ	3.6 U	5.4 U [54 U]	41 U
1,2-Dichlorobenzene	mg/kg	120	12	--	--	2.5 U	4.7 UJ	12 U	4.8 U	7.7 U	9.9 U	130 UJ	71 UJ	3.6 U	5.4 U [54 U]	41 U
1,3-Dichlorobenzene	mg/kg	120	12	--	--	2.5 U	4.7 UJ	12 U	4.8 U	7.7 U	9.9 U	130 UJ	71 UJ	3.6 U	5.4 U [54 U]	41 U
1,4-Dichlorobenzene	mg/kg	120	12	--	--	2.5 U	4.7 UJ	12 U	4.8 U	7.7 U	9.9 U	130 UJ	71 UJ	3.6 U	5.4 U [54 U]	41 U
2,2'-Oxybis(1-Chloropropane)	mg/kg	--	--	--	--	1.3 U	2.4 U	6.0 U	2.5 U	4.0 U	5.1 U	69 UJ	37 UJ	1.8 U	2.8 U [28 U]	21 U
2,4,5-Trichlorophenol	mg/kg	--	--	--	--	1.3 U	2.4 U	6.0 U	2.5 U	4.0 U	5.1 U	69 UJ	37 UJ	1.8 U	2.8 U [R]	21 U
2,4,6-Trichlorophenol	mg/kg	--	--	--	--	1.3 U	2.4 U	6.0 U	2.5 U	4.0 U	5.1 U	69 UJ	37 UJ	1.8 U	2.8 U [R]	21 U
2,4-Dichlorophenol	mg/kg	--	--	--	--	1.3 U	2.4 U	6.0 U	2.5 U	4.0 U	5.1 U	69 UJ	37 UJ	1.8 U	2.8 U [R]	21 U
2,4-Dimethylphenol	mg/kg	--	--	--	--	1.3 U	2.4 U	6.0 U	2.5 U	4.0 U	5.1 U	69 UJ	37 UJ	1.8 U	2.8 U [R]	21 U
2,4-Dinitrophenol	mg/kg	--	--	--	--	2.5 UJ	4.7 UJ	12 UJ	4.8 UJ	7.7 U	9.9 U	130 UJ	71 UJ	3.6 UJ	5.4 UJ [R]	41 UJ
2,4-Dinitrotoluene	mg/kg	--	--	--	--	1.3 U	2.4 UJ	6.0 U	2.5 U	4.0 U	5.1 U	69 UJ	37 UJ	1.8 U	2.8 U [28 U]	21 U
2,6-Dinitrotoluene	mg/kg	--	--	--	--	1.3 U	2.4 UJ	6.0 U	2.5 U	4.0 U	5.1 U	69 UJ	37 UJ	1.8 U	2.8 U [28 U]	21 U
2-Chloronaphthalene	mg/kg	--	--	--	--	1.3 U	2.4 UJ	6.0 U	2.5 U	4.0 U	5.1 U	69 UJ	37 UJ	1.8 U	2.8 U [28 U]	21 U
2-Chlorophenol	mg/kg	--	--	--	--	1.3 UJ	2.4 UJ	6.0 UJ	2.5 UJ	4.0 U	5.1 U	69 UJ	37 UJ	1.8 U	2.8 U [R]	21 U
2-Methylnaphthalene	mg/kg	304	34	--	1	0.31 J	2.4 UJ	6.0 U	0.17 J	4.0 U	5.1 U	69 UJ	37 UJ	1.8 U	2.8 U [28 U]	21 U
2-Methylphenol	mg/kg	--	--	--	--	1.3 U	2.4 U	6.0 U	2.5 U	4.0 U	5.1 U	69 UJ	37 UJ	1.8 U	2.8 U [R]	21 U
2-Nitroaniline	mg/kg	--	--	--	--	2.5 U	4.7 UJ	12 U	4.8 U	7.7 U	9.9 U	130 UJ	71 UJ	3.6 U	5.4 U [54 U]	41 U
2-Nitrophenol	mg/kg	--	--	--	--	1.3 U	2.4 U	6.0 U	2.5 U	4.0 U	5.1 U	69 UJ	37 UJ	1.8 U	2.8 U [R]	21 U
3&4-Methylphenol	mg/kg	--	--	--	--	NA	NA	NA	9.6 UJ	15 U	20 U	270 UJ	140 UJ	NA	NA	NA
3,3'-Dimethylbenzidine	mg/kg	--	--	--	--	2.5 U	4.7 UJ	12 U	4.8 U	7.7 U	9.9 U	130 UJ	71 UJ	3.6 U	5.4 U [54 U]	41 U
3-Nitroaniline	mg/kg	--	--	--	--	2.5 U	4.7 UJ	12 U	4.8 U	7.7 U	9.9 U	130 UJ	71 UJ	3.6 U	5.4 U [54 U]	41 U
4,6-Dinitro-2-methylphenol	mg/kg	--	--	--	--	2.5 U	4.7 U	12 U	4.8 U	7.7 U	9.9 U	130 UJ	71 UJ	3.6 U	5.4 U [R]	41 U
4-Bromophenyl-phenylether	mg/kg	--	--	--	--	1.3 U	2.4 UJ	6.0 U	2.5 U	4.0 U	5.1 U	69 UJ	37 UJ	1.8 U	2.8 U [28 U]	21 U
4-Chloro-3-Methylphenol	mg/kg	--	--	--	--	1.3 U	2.4 U	6.0 U	2.5 U	4.0 U	5.1 U	69 UJ	37 UJ	1.8 U	2.8 U [R]	21 U
4-Chloroaniline	mg/kg	--	--	--	--	1.3 U	2.4 UJ	6.0 U	2.5 U	4.0 U	5.1 U	69 UJ	37 UJ	1.8 U	2.8 U [28 U]	21 U
4-Chlorophenyl-phenylether	mg/kg	--	--	--	--	1.3 U	2.4 UJ	6.0 U	2.5 U	4.0 U	5.1 U	69 UJ	37 UJ	1.8 U	2.8 U [28 U]	21 U
4-Methylphenol	mg/kg	--	--	--	--	1.3 U	2.4 U	6.0 U	NA	NA	NA	NA	NA	1.8 U	2.8 U [R]	21 U
4-Nitroaniline	mg/kg	--	--	--	--	2.5 UJ	4.7 UJ	12 UJ	4.8 UJ	7.7 U	9.9 U	130 UJ	71 UJ	3.6 U	5.4 U [54 U]	41 U
4-Nitrophenol	mg/kg	--	--	--	--	2.5 U	4.7 UJ	12 U	4.8 U	7.7 U	9.9 U	130 UJ	71 UJ	3.6 UJ	5.4 UJ [R]	41 UJ
Acenaphthene	mg/kg	--	140	--	1	1.4	0.77 J	0.96 J	1.1 J	0.22 J	0.73 J	69 UJ	37 UJ	0.92 J	0.55 J [28 U]	1.3 J
Acenaphthylene	mg/kg	--	--	--	--	3.2	1.5 J	2.7 J	1.6 J	0.80 J	0.59 J	69 UJ	37 UJ	0.42 J	2.0 J [2.2 J]	5.5 J
Anthracene	mg/kg	986	107	--	3	4.2	3.5 J	5.9 J	3.9	1.7 J	1.2 J	69 UJ	37 UJ	0.64 J	1.6 J [2.0 J]	5.6 J
Benzo(a)anthracene	mg/kg	94	12	17	32	**14**	**8.8 J**	**17**	**11**	**5.0**	2.9 J	**10 J**	**6.5 J**	3.2	**7.2 [9.0 J]**	**14 J**
Benzo(a)pyrene	mg/kg	--	--	--	--	15	8.9 J	18	11	4.5	3.1 J	12 J	5.8 J	3.0	8.3 [9.5 J]	14 J
Benzo(b)fluoranthene	mg/kg	--	--	--	--	16	8.4 J	20	15	4.7	2.9 J	69 UJ	6.0 J	4.0	9.2 [10 J]	15 J
Benzo(g,h,i)perylene	mg/kg	--	--	--	--	9.8	5.3 J	10	4.7	4.9	8.2	95 J	48 J	3.1	5.2 [7.1 J]	15 J
Benzo(k)fluoranthene	mg/kg	--	--	--	--	5.7	2.9 J	7.4	4.7	2.0 J	1.8 J	69 UJ	2.1 J	1.1 J	3.5 [3.2 J]	6.1 J
Benzyl Alcohol	mg/kg	--	--	--	--	2.5 U	4.7 U	12 U	4.8 U	7.7 U	9.9 U	130 UJ	71 UJ	3.6 U	5.4 U [R]	41 U
bis(2-Chloroethoxy)methane	mg/kg	--	--	--	--	1.3 U	2.4 UJ	6.0 U	2.5 U	4.0 U	5.1 U	69 UJ	37 UJ	1.8 U	2.8 U [28 U]	21 U
bis(2-Chloroethyl)ether	mg/kg	--	--	--	--	1.3 U	2.4 UJ	6.0 U	2.5 U	4.0 U	5.1 U	69 UJ	37 UJ	1.8 U	2.8 U [28 U]	21 U
bis(2-Ethylhexyl)phthalate	mg/kg	--	199.5	--	--	0.60 J	1.6 J	2.5 J	2.3 J	4.0 U	5.1 U	69 UJ	37 UJ	0.65 J	2.8 U [28 U]	7.1 J
Butylbenzylphthalate	mg/kg	--	--	--	--	1.3 U	2.4 UJ	6.0 U	2.5 U	4.0 U	5.1 U	69 UJ	37 UJ	1.8 U	2.8 U [28 U]	21 U
Carbazole	mg/kg	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See Notes on Page 13.

Table 2. Sediment Analytical Summary
NYSEG
Goshen Former MGP Site
Goshen, New York

Location ID:		NYSDEC Sediment Criteria Multipliers		Number of Exceedances		SED09-01	SED09-02	SED09-03	SED09-04	SED09-05	SED09-06	SED09-07	SED09-08	SED09-09	SED09-10	SED09-11
Sample Depth(Feet):		Acute	Chronic	Total	Total	0 - 0.6	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
Date Collected:	Units	ug/g OC	ug/g OC	Acute	Chronic	01/09/09	01/09/09	01/09/09	01/12/09	01/12/09	01/12/09	01/12/09	01/12/09	01/13/09	01/13/09	01/13/09
Semivolatile Organics (Cont.)																
Chrysene	mg/kg	--	--	--	--	15	7.7 J	16	9.8	5.4	3.2 J	11 J	5.4 J	2.7	6.6 [8.2 J]	12 J
Dibenzo(a,h)anthracene	mg/kg	--	--	--	--	2.3	1.3 J	2.8 J	1.2 J	7.3 J	8.8 J	110 J	57 J	2.4	2.2 J [1.5 J]	7.7 J
Dibenzofuran	mg/kg	--	--	--	--	0.60 J	0.48 J	0.52 J	0.69 J	0.20 J	5.1 U	69 UJ	37 UJ	1.8 U	0.18 J [28 UJ]	21 U
Diethylphthalate	mg/kg	--	--	--	--	1.3 U	2.4 UJ	6.0 U	2.5 U	4.0 U	5.1 U	69 UJ	37 UJ	1.8 U	2.8 U [28 U]	21 U
Dimethylphthalate	mg/kg	--	--	--	--	1.3 U	2.4 UJ	6.0 U	2.5 U	4.0 U	5.1 U	69 UJ	37 UJ	1.8 U	2.8 U [28 U]	21 U
Di-n-Butylphthalate	mg/kg	--	--	--	--	1.3 U	2.4 UJ	6.0 U	2.5 U	4.0 U	5.1 U	69 UJ	37 UJ	1.8 U	2.8 U [28 U]	21 U
Di-n-Octylphthalate	mg/kg	--	--	--	--	1.3 U	0.11 J	6.0 U	2.5 U	0.26 J	5.1 U	69 UJ	37 UJ	1.8 U	2.8 U [28 U]	21 U
Fluoranthene	mg/kg	--	1,020	--	1	28	17 J	34	23	11	6.7	17 J	11 J	6.8	14 [15 J]	27
Fluorene	mg/kg	73	8	4	19	2.5	1.4 J	1.6 J	1.7 J	0.46 J	0.50 J	69 UJ	37 UJ	0.20 J	0.66 J [28 UJ]	3.2 J
Hexachlorobenzene	mg/kg	9,081	5,570	--	--	1.3 U	2.4 UJ	6.0 U	2.5 U	4.0 U	5.1 U	69 UJ	37 UJ	1.8 U	2.8 U [28 U]	21 U
Hexachlorobutadiene	mg/kg	55	5.5	--	--	1.3 U	2.4 UJ	6.0 U	2.5 U	4.0 U	5.1 U	69 UJ	37 UJ	1.8 U	2.8 U [28 U]	21 U
Hexachlorocyclopentadiene	mg/kg	44	4.4	--	--	1.3 UJ	2.4 UJ	6.0 UJ	2.5 UJ	4.0 U	5.1 U	69 UJ	37 UJ	1.8 U	2.8 U [28 U]	21 U
Hexachloroethane	mg/kg	--	--	--	--	1.3 U	2.4 UJ	6.0 U	2.5 U	4.0 U	5.1 U	69 UJ	37 UJ	1.8 U	2.8 U [28 U]	21 U
Indeno(1,2,3-cd)pyrene	mg/kg	--	--	--	--	8.2	5.0 J	9.2	4.6	8.2	8.7	100 J	52 J	3.3	4.9 [6.4 J]	12 J
Isophorone	mg/kg	--	--	--	--	1.3 U	2.4 UJ	6.0 U	2.5 U	4.0 U	5.1 U	69 UJ	37 UJ	1.8 U	2.8 U [28 U]	21 U
Naphthalene	mg/kg	258	30	--	1	0.49 J	0.20 J	0.43 J	0.26 J	4.0 U	5.1 U	69 UJ	37 UJ	1.8 U	0.33 J [28 UJ]	21 U
Nitrobenzene	mg/kg	--	--	--	--	1.3 U	2.4 UJ	6.0 U	2.5 U	4.0 U	5.1 U	69 UJ	37 UJ	1.8 U	2.8 U [28 U]	21 U
N-Nitrosodimethylamine	mg/kg	--	--	--	--	2.5 U	4.7 UJ	12 U	4.8 U	7.7 U	9.9 U	130 UJ	71 UJ	3.6 U	5.4 U [54 U]	41 U
N-Nitroso-di-n-propylamine	mg/kg	--	--	--	--	1.3 U	2.4 UJ	6.0 U	2.5 U	4.0 U	5.1 U	69 UJ	37 UJ	1.8 UJ	2.8 UJ [28 U]	21 UJ
N-Nitrosodiphenylamine	mg/kg	--	--	--	--	1.1 J	2.4 UJ	6.0 U	0.56 J	4.0 U	5.1 U	69 UJ	37 UJ	1.8 U	2.8 U [28 U]	21 U
Pentachlorophenol	mg/kg	100	40	--	--	2.5 U	4.7 U	12 U	4.8 U	7.7 U	9.9 U	130 UJ	71 UJ	3.6 U	5.4 U [R]	41 U
Phenanthrene	mg/kg	--	120	--	16	18	10 J	17	13	5.4	2.6 J	7.6 J	4.2 J	2.0	5.4 [6.3 J]	21 J
Phenol	mg/kg	--	0.5	--	--	1.3 UJ	2.4 UJ	6.0 UJ	2.5 UJ	4.0 U	5.1 U	69 UJ	37 UJ	1.8 U	2.8 U [R]	21 U
p-Toluidine	mg/kg	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	mg/kg	8,775	961	--	1	29	16 J	30	17	10	5.1 J	13 J	8.7 J	5.1	11 [15 J]	22
Total PAHs	mg/kg	10000	4	1 [b]	32 [d]	170 J	99 J	190 J	120 J	72 J	57 J	380 J	210 J	39 J	83 J [95 J]	180 J
Total SVOCs	mg/kg	--	--	--	--	350 J	200 J	390 J	250 J	140 J	110 J	750 J	410 J	78 J	170 J [190 J]	370 J
Inorganics																
Aluminum	mg/kg	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	mg/kg	33	6	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	mg/kg	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/kg	9	0.6	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	mg/kg	110	26	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/kg	110	16	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide	mg/kg	--	--	--	--	1.33 U	1.24 U	1.76 U	1.36 U	1.18 U	1.49 U	2.00 U	1.10	0.958 U	1.47 U [1.43 U]	1.09 U
Iron	mg/kg	40000	20000	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	mg/kg	110	31	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/kg	1100	460	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/kg	1.3	0.15	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	mg/kg	50	16	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	mg/kg	2.2	1	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/kg	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	mg/kg	270	120	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Miscellaneous																
Percent Solids	%	--	--	--	--	66	68	56	68	85	66	49	92	92	60 [60]	80
Total Organic Carbon	mg/kg	--	--	--	--	80,400	76,000	80,200	92,100	34,800	43,300	95,800	46,300	48,600	94,200 [95,400]	106,000
Total Organic Carbon	gOC/kg	--	--	--	--	80.4	76	80.2	92.1	34.8	43.3	95.8	46.3	48.6	94.8	106

See Notes on Page 13.

Table 2. Sediment Analytical Summary
NYSEG
Goshen Former MGP Site
Goshen, New York

Location ID:		NYSDEC Sediment Criteria Multipliers		Number of Exceedances		SED09-12	SED09-13	SED09-14	SED09-15	SED09-16	SED09-17	SED09-18	SEDGRAB09-01	SEDGRAB09-02
Sample Depth(Feet):		Acute	Chronic	Total	Total	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
Date Collected:	Units	ug/g OC	ug/g OC	Acute	Chronic	01/13/09	01/13/09	01/14/09	01/14/09	01/14/09	01/14/09	01/14/09	01/08/09	01/08/09
Volatile Organics														
1,1,1,2-Tetrachloroethane	mg/kg	--	--	--	--	0.0068 U	0.0054 U	0.0079 U [0.0083 U]	0.0067 U	0.0060 U [0.0058 U]	0.0055 U	0.0097 U	0.0066 U	2.0 UJ
1,1,1-Trichloroethane	mg/kg	--	--	--	--	0.0068 U	0.0054 U	0.0079 U [0.0083 U]	0.0067 U	0.0060 U [0.0058 U]	0.0055 U	0.0097 U	0.0066 U	2.0 UJ
1,1,2,2-Tetrachloroethane	mg/kg	--	--	--	--	0.0068 U	0.0054 U	0.0079 U [0.0083 U]	0.0067 U	0.0060 U [0.0058 U]	0.0055 U	0.0097 U	0.0066 U	2.0 UJ
1,1,2-Trichloroethane	mg/kg	--	--	--	--	0.0068 U	0.0054 U	0.0079 U [0.0083 U]	0.0067 U	0.0060 U [0.0058 U]	0.0055 U	0.0097 U	0.0066 U	2.0 UJ
1,1-Dichloroethane	mg/kg	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	mg/kg	--	--	--	--	0.0068 U	0.0054 U	0.0079 U [0.0083 U]	0.0067 UJ	0.0060 U [0.0058 U]	0.0055 U	0.0097 U	0.0066 U	2.0 UJ
1,2,3-Trichloropropane	mg/kg	--	--	--	--	0.0068 U	0.0054 U	0.0079 U [0.0083 U]	0.0067 U	0.0060 U [0.0058 U]	0.0055 U	0.0097 U	0.0066 U	2.0 UJ
1,2-Dibromo-3-chloropropane	mg/kg	--	--	--	--	0.0068 U	0.0054 U	0.0079 U [0.0083 U]	0.0067 U	0.0060 U [0.0058 U]	0.0055 U	0.0097 U	0.0066 U	2.0 UJ
1,2-Dibromoethane	mg/kg	--	--	--	--	0.0068 U	0.0054 U	0.0079 U [0.0083 U]	0.0067 U	0.0060 U [0.0058 U]	0.0055 U	0.0097 U	0.0066 U	2.0 UJ
1,2-Dichlorobenzene	mg/kg	120	12	--	--	0.0068 U	0.0054 U	0.0079 U [0.0083 U]	0.0067 U	0.0060 U [0.0058 U]	0.0055 U	0.0097 U	0.0066 U	2.0 UJ
1,2-Dichloroethane	mg/kg	--	--	--	--	0.0068 U	0.0054 U	0.0079 U [0.0083 U]	0.0067 U	0.0060 U [0.0058 U]	0.0055 U	0.0097 U	0.0066 U	2.0 UJ
1,2-Dichloropropane	mg/kg	--	--	--	--	0.0068 U	0.0054 U	0.0079 U [0.0083 U]	0.0067 U	0.0060 U [0.0058 U]	0.0055 U	0.0097 U	0.0066 U	2.0 UJ
1,3-Dichlorobenzene	mg/kg	120	12	--	--	0.0068 U	0.0054 U	0.0079 U [0.0083 U]	0.0067 U	0.0060 U [0.0058 U]	0.0055 U	0.0097 U	0.0066 U	2.0 UJ
1,4-Dichlorobenzene	mg/kg	120	12	--	--	0.0068 U	0.0054 U	0.0079 U [0.0083 U]	0.0067 U	0.0060 U [0.0058 U]	0.0055 U	0.0097 U	0.0066 U	2.0 UJ
2-Butanone	mg/kg	--	--	--	--	0.034 U	0.027 U	0.040 U [0.042 U]	0.033 U	0.030 U [0.029 U]	0.027 U	0.048 U	0.033 U	10 UJ
2-Chloroethylvinylether	mg/kg	--	--	--	--	0.034 U	0.027 U	0.040 U [0.042 U]	0.033 U	0.030 U [0.029 U]	0.027 U	0.048 U	0.033 U	10 UJ
2-Hexanone	mg/kg	--	--	--	--	0.034 U	0.027 U	0.040 U [0.042 U]	0.033 U	0.030 U [0.029 U]	0.027 U	0.048 U	0.033 U	10 UJ
4-Methyl-2-pentanone	mg/kg	--	--	--	--	0.034 U	0.027 U	0.040 U [0.042 U]	0.033 U	0.030 U [0.029 U]	0.027 U	0.048 U	0.033 U	10 UJ
Acetone	mg/kg	--	--	--	--	0.025 J	0.027 U	0.019 J [0.047]	0.025 J	0.030 U [0.029 U]	0.027 U	0.048 U	0.033 U	10 UJ
Acetonitrile	mg/kg	--	--	--	--	0.27 U	0.22 U	0.32 U [0.33 U]	0.27 U	0.24 U [0.23 U]	0.22 U	0.39 U	0.26 U	81 UJ
Benzene	mg/kg	103	28	--	--	0.0068 U	0.0054 U	0.0079 U [0.0083 U]	0.0067 UJ	0.0060 U [0.0058 U]	0.0055 U	0.0097 U	0.0066 U	2.0 UJ
Bromochloromethane	mg/kg	--	--	--	--	0.0068 U	0.0054 U	0.0079 U [0.0083 U]	0.0067 U	0.0060 U [0.0058 U]	0.0055 U	0.0097 U	0.0066 U	2.0 UJ
Bromodichloromethane	mg/kg	--	--	--	--	0.0068 U	0.0054 U	0.0079 U [0.0083 U]	0.0067 U	0.0060 U [0.0058 U]	0.0055 U	0.0097 U	0.0066 U	2.0 UJ
Bromoform	mg/kg	--	--	--	--	0.0068 U	0.0054 U	0.0079 U [0.0083 U]	0.0067 U	0.0060 U [0.0058 U]	0.0055 U	0.0097 U	0.0066 UJ	2.0 UJ
Bromomethane	mg/kg	--	--	--	--	0.0068 U	0.0054 U	0.0079 U [0.0083 U]	0.0067 U	0.0060 U [0.0058 U]	0.0055 U	0.0097 U	0.0066 U	2.0 UJ
Carbon Disulfide	mg/kg	--	--	--	--	0.0068 U	0.0054 U	0.0079 U [0.0083 U]	0.0067 U	0.0060 U [0.0058 U]	0.0055 U	0.0097 U	0.0066 U	2.0 UJ
Carbon Tetrachloride	mg/kg	--	--	--	--	0.0068 U	0.0054 U	0.0079 U [0.0083 U]	0.0067 U	0.0060 U [0.0058 U]	0.0055 U	0.0097 U	0.0066 U	2.0 UJ
Chlorobenzene	mg/kg	34.6	3.5	--	--	0.0068 U	0.0054 U	0.0079 U [0.0083 U]	0.0067 UJ	0.0060 U [0.0058 U]	0.0055 U	0.0097 U	0.0066 U	2.0 UJ
Chloroethane	mg/kg	--	--	--	--	0.0068 U	0.0054 U	0.0079 U [0.0083 U]	0.0067 U	0.0060 U [0.0058 U]	0.0055 U	0.0097 U	0.0066 U	2.0 UJ
Chloroform	mg/kg	--	--	--	--	0.0068 U	0.0054 U	0.0079 U [0.0083 U]	0.0067 U	0.0060 U [0.0058 U]	0.0055 U	0.0097 U	0.0066 U	2.0 UJ
Chloromethane	mg/kg	--	--	--	--	0.0068 U	0.0054 U	0.0079 U [0.0083 U]	0.0067 U	0.0060 U [0.0058 U]	0.0055 U	0.0097 U	0.0066 U	2.0 UJ
cis-1,2-Dichloroethene	mg/kg	--	--	--	--	0.0068 U	0.0054 U	0.0079 U [0.0083 U]	0.0067 U	0.0060 U [0.0058 U]	0.0055 U	0.0097 U	0.0066 U	2.0 UJ
cis-1,3-Dichloropropene	mg/kg	--	--	--	--	0.0068 U	0.0054 U	0.0079 U [0.0083 U]	0.0067 U	0.0060 U [0.0058 U]	0.0055 U	0.0097 U	0.0066 U	2.0 UJ
Dibromochloromethane	mg/kg	--	--	--	--	0.0068 U	0.0054 U	0.0079 U [0.0083 U]	0.0067 U	0.0060 U [0.0058 U]	0.0055 U	0.0097 U	0.0066 U	2.0 UJ
Ethylbenzene	mg/kg	212	24	--	--	0.0068 U	0.0054 U	0.0079 U [0.0083 U]	0.0067 U	0.0060 U [0.0058 U]	0.0055 U	0.0097 U	0.0066 U	2.0 UJ
Iodomethane	mg/kg	--	--	--	--	0.0068 UJ	0.0054 UJ	0.0079 U [0.0083 U]	0.0067 U	0.0060 U [0.0058 U]	0.0055 U	0.0097 U	0.0066 U	2.0 UJ
Methylene Chloride	mg/kg	--	--	--	--	0.0068 UB	0.0054 UB	0.0079 U [0.0083 UB]	0.0067 UB	0.0060 UB [0.0060 UB]	0.0055 UB	0.0097 UB	0.0066 U	2.0 UJ
Styrene	mg/kg	--	--	--	--	0.0068 U	0.0054 U	0.0079 U [0.0083 U]	0.0067 U	0.0060 U [0.0058 U]	0.0055 U	0.0097 U	0.0066 U	2.0 UJ
Tetrachloroethene	mg/kg	--	--	--	--	0.0068 U	0.0054 U	0.0079 U [0.0083 U]	0.0067 U	0.0060 U [0.0058 U]	0.0055 U	0.0097 U	0.0066 U	2.0 UJ
Toluene	mg/kg	235	49	--	--	0.0068 U	0.0054 U	0.0079 U [0.0083 U]	0.0067 UJ	0.0060 U [0.0058 U]	0.0055 U	0.0097 U	0.0066 U	2.0 UJ
trans-1,2-Dichloroethene	mg/kg	--	--	--	--	0.0068 U	0.0054 U	0.0079 U [0.0083 U]	0.0067 U	0.0060 U [0.0058 U]	0.0055 U	0.0097 U	0.0066 U	2.0 UJ
trans-1,3-Dichloropropene	mg/kg	--	--	--	--	0.0068 U	0.0054 U	0.0079 U [0.0083 U]	0.0067 U	0.0060 U [0.0058 U]	0.0055 U	0.0097 U	0.0066 U	2.0 UJ
trans-1,4-Dichloro-2-butene	mg/kg	--	--	--	--	0.034 U	0.027 U	0.040 U [0.042 U]	0.033 U	0.030 U [0.029 U]	0.027 U	0.048 U	0.033 U	10 UJ
Trichloroethene	mg/kg	--	--	--	--	0.0068 U	0.0054 U	0.0079 U [0.0083 U]	0.0067 UJ	0.0060 U [0.0058 U]	0.0055 U	0.0097 U	0.0066 U	2.0 UJ
Trichlorofluoromethane	mg/kg	--	--	--	--	0.0068 U	0.0054 U	0.0079 U [0.0083 U]	0.0067 U	0.0060 U [0.0058 U]	0.0055 U	0.0097 U	0.0066 U	2.0 UJ
Vinyl Acetate	mg/kg	--	--	--	--	0.034 U	0.027 U	0.040 U [0.042 U]	0.033 U	0.030 U [0.029 U]	0.027 U	0.048 U	0.033 U	10 UJ
Vinyl Chloride	mg/kg	--	--	--	--	0.014 U	0.011 U	0.016 U [0.017 U]	0.013 U	0.012 U [0.012 U]	0.011 U	0.019 U	0.013 U	4.1 UJ

See Notes on Page 13.

Table 2. Sediment Analytical Summary
NYSEG
Goshen Former MGP Site
Goshen, New York

Location ID:		NYSDEC Sediment Criteria Multipliers		Number of Exceedances		SED09-12	SED09-13	SED09-14	SED09-15	SED09-16	SED09-17	SED09-18	SEDGRAB09-01	SEDGRAB09-02
Sample Depth(Feet):		Acute	Chronic	Total	Total	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
Date Collected:	Units	ug/g OC	ug/g OC	Acute	Chronic	01/13/09	01/13/09	01/14/09	01/14/09	01/14/09	01/14/09	01/14/09	01/08/09	01/08/09
Volatile Organics (Cont.)														
Xylenes (total)	mg/kg	833	92	--	--	0.021 U	0.016 U	0.016 U [0.017 U]	0.013 U	0.012 U [0.012 U]	0.011 U	0.019 U	0.020 U	2.0 UJ
Total BTEX	mg/kg	--	--	--	--	ND	ND	ND [ND]	ND	ND [ND]	ND	ND	ND	ND
Total VOCs	mg/kg	--	--	--	--	0.025 J	ND	0.019 J [0.047]	0.025 J	ND [ND]	ND	ND	ND	ND
Semivolatile Organics														
1,2,4-Trichlorobenzene	mg/kg	910	91	--	--	4.4 U	3.7 U	11 U [11 U]	9.1 U	7.8 U [7.6 U]	7.3 U	12 U	2.2 U	8.9 U
1,2-Dichlorobenzene	mg/kg	120	12	--	--	4.4 U	3.7 U	11 U [11 U]	9.1 U	7.8 U [7.6 U]	7.3 U	12 U	2.2 U	8.9 U
1,3-Dichlorobenzene	mg/kg	120	12	--	--	4.4 U	3.7 U	11 U [11 U]	9.1 U	7.8 U [7.6 U]	7.3 U	12 U	2.2 U	8.9 U
1,4-Dichlorobenzene	mg/kg	120	12	--	--	4.4 U	3.7 U	11 U [11 U]	9.1 U	7.8 U [7.6 U]	7.3 U	12 U	2.2 U	8.9 U
2,2'-Oxybis(1-Chloropropane)	mg/kg	--	--	--	--	2.3 U	1.9 U	5.7 U [5.9 U]	4.7 U	4.0 U [3.9 U]	3.8 U	6.4 U	1.1 U	4.6 U
2,4,5-Trichlorophenol	mg/kg	--	--	--	--	2.3 U	1.9 U	5.7 U [5.9 U]	4.7 U	4.0 U [3.9 U]	3.8 U	6.4 U	1.1 U	4.6 U
2,4,6-Trichlorophenol	mg/kg	--	--	--	--	2.3 U	1.9 U	5.7 U [5.9 U]	4.7 U	4.0 U [3.9 U]	3.8 U	6.4 U	1.1 U	4.6 U
2,4-Dichlorophenol	mg/kg	--	--	--	--	2.3 U	1.9 U	5.7 U [5.9 U]	4.7 U	4.0 U [3.9 U]	3.8 U	6.4 U	1.1 U	4.6 U
2,4-Dimethylphenol	mg/kg	--	--	--	--	2.3 U	1.9 U	5.7 U [5.9 U]	4.7 U	4.0 U [3.9 U]	3.8 U	6.4 U	1.1 U	4.6 U
2,4-Dinitrophenol	mg/kg	--	--	--	--	4.4 UJ	3.7 U	11 U [11 U]	9.1 U	7.8 U [7.6 U]	7.3 U	12 U	2.2 UJ	8.9 UJ
2,4-Dinitrotoluene	mg/kg	--	--	--	--	2.3 U	1.9 U	5.7 U [5.9 U]	4.7 U	4.0 U [3.9 U]	3.8 U	6.4 U	0.19 J	4.6 U
2,6-Dinitrotoluene	mg/kg	--	--	--	--	2.3 U	1.9 U	5.7 U [5.9 U]	4.7 U	4.0 U [3.9 U]	3.8 U	6.4 U	1.1 U	4.6 U
2-Chloronaphthalene	mg/kg	--	--	--	--	2.3 U	1.9 U	5.7 U [5.9 U]	4.7 U	4.0 U [3.9 U]	3.8 U	6.4 U	1.1 U	4.6 U
2-Chlorophenol	mg/kg	--	--	--	--	2.3 U	1.9 U	5.7 U [5.9 U]	4.7 U	4.0 U [3.9 U]	3.8 U	6.4 U	1.1 UJ	4.6 UJ
2-Methylnaphthalene	mg/kg	304	34	--	1	2.3 U	1.9 U	5.7 U [5.9 U]	4.7 U	4.0 U [3.9 U]	3.8 U	6.4 U	0.19 J	4.6 U
2-Methylphenol	mg/kg	--	--	--	--	2.3 U	1.9 U	5.7 U [5.9 U]	4.7 U	4.0 U [3.9 U]	3.8 U	6.4 U	1.1 U	4.6 U
2-Nitroaniline	mg/kg	--	--	--	--	4.4 U	3.7 U	11 U [11 U]	9.1 U	7.8 U [7.6 U]	7.3 U	12 U	2.2 U	8.9 U
2-Nitrophenol	mg/kg	--	--	--	--	2.3 U	1.9 U	5.7 U [5.9 U]	4.7 U	4.0 U [3.9 U]	3.8 U	6.4 U	1.1 U	4.6 U
3&4-Methylphenol	mg/kg	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dimethylbenzidine	mg/kg	--	--	--	--	4.4 U	3.7 U	11 U [11 U]	9.1 U	7.8 U [7.6 U]	7.3 U	12 U	2.2 U	8.9 U
3-Nitroaniline	mg/kg	--	--	--	--	4.4 U	3.7 U	11 U [11 U]	9.1 U	7.8 U [7.6 U]	7.3 U	12 U	2.2 U	8.9 U
4,6-Dinitro-2-methylphenol	mg/kg	--	--	--	--	4.4 U	3.7 U	11 U [11 U]	9.1 U	7.8 U [7.6 U]	7.3 U	12 U	2.2 U	8.9 U
4-Bromophenyl-phenylether	mg/kg	--	--	--	--	2.3 U	1.9 U	5.7 U [5.9 U]	4.7 U	4.0 U [3.9 U]	3.8 U	6.4 U	1.1 U	4.6 U
4-Chloro-3-Methylphenol	mg/kg	--	--	--	--	2.3 U	1.9 U	5.7 U [5.9 U]	4.7 U	4.0 U [3.9 U]	3.8 U	6.4 U	1.1 U	4.6 U
4-Chloroaniline	mg/kg	--	--	--	--	2.3 U	1.9 U	5.7 U [5.9 U]	4.7 U	4.0 U [3.9 U]	3.8 U	6.4 U	1.1 U	4.6 U
4-Chlorophenyl-phenylether	mg/kg	--	--	--	--	2.3 U	1.9 U	5.7 U [5.9 U]	4.7 U	4.0 U [3.9 U]	3.8 U	6.4 U	1.1 U	4.6 U
4-Methylphenol	mg/kg	--	--	--	--	2.3 U	1.9 U	5.7 U [5.9 U]	4.7 U	4.0 U [3.9 U]	3.8 U	6.4 U	1.1 U	4.6 U
4-Nitroaniline	mg/kg	--	--	--	--	4.4 U	3.7 U	11 U [11 U]	9.1 U	7.8 U [7.6 U]	7.3 U	12 U	2.2 UJ	8.9 UJ
4-Nitrophenol	mg/kg	--	--	--	--	4.4 UJ	3.7 U	11 U [11 U]	9.1 U	7.8 U [7.6 U]	7.3 U	12 U	2.2 U	8.9 U
Acenaphthene	mg/kg	--	140	--	1	2.4	0.25 J	5.7 U [5.9 U]	4.7 U	4.0 U [0.72 J]	0.87 J	6.4 U	0.60 J	22
Acenaphthylene	mg/kg	--	--	--	--	0.84 J	1.3 J	5.7 U [5.9 U]	4.7 U	0.54 J [1.3 J]	1.5 J	0.86 J	2.8	2.5 J
Anthracene	mg/kg	986	107	--	3	0.86 J	2.1	0.42 J [0.77 J]	4.7 U	1.3 J [2.2 J]	4.2	1.7 J	6.4	12
Benzo(a)anthracene	mg/kg	94	12	17	32	4.0	7.7	2.1 J [3.0 J]	0.82 J	3.9 J [4.9]	**7.7**	5.4 J	**13**	7.2
Benzo(a)pyrene	mg/kg	--	--	--	--	4.5	6.2	2.1 J [3.1 J]	0.77 J	3.5 J [4.5]	7.2	5.6 J	13	6.5
Benzo(b)fluoranthene	mg/kg	--	--	--	--	6.1	7.9	2.1 J [3.9 J]	0.76 J	3.4 J [5.0]	8.4	6.8	14	8.7
Benzo(g,h,i)perylene	mg/kg	--	--	--	--	2.2 J	4.1	7.6 [8.6]	5.5	6.2 [5.9]	6.4	8.9	6.4	3.4 J
Benzo(k)fluoranthene	mg/kg	--	--	--	--	1.8 J	2.0	1.2 J [1.0 J]	0.45 J	2.0 J [3.2 J]	3.2 J	4.1 J	7.2	3.3 J
Benzyl Alcohol	mg/kg	--	--	--	--	4.4 U	3.7 U	11 U [11 U]	9.1 U	7.8 U [7.6 U]	7.3 U	12 U	2.2 U	8.9 U
bis(2-Chloroethoxy)methane	mg/kg	--	--	--	--	2.3 U	1.9 U	5.7 U [5.9 U]	4.7 U	4.0 U [3.9 U]	3.8 U	6.4 U	1.1 U	4.6 U
bis(2-Chloroethyl)ether	mg/kg	--	--	--	--	2.3 U	1.9 U	5.7 U [5.9 U]	4.7 U	4.0 U [3.9 U]	3.8 U	6.4 U	1.1 U	4.6 U
bis(2-Ethylhexyl)phthalate	mg/kg	--	199.5	--	--	2.3 U	1.9 U	5.7 U [5.9 U]	4.7 U	4.0 U [3.9 U]	3.8 U	6.4 U	0.98 J	3.6 J
Butylbenzylphthalate	mg/kg	--	--	--	--	2.3 U	1.9 U	5.7 U [5.9 U]	4.7 U	4.0 U [3.9 U]	3.8 U	6.4 U	1.1 U	4.6 U
Carbazole	mg/kg	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA

See Notes on Page 13.

Table 2. Sediment Analytical Summary
NYSEG
Goshen Former MGP Site
Goshen, New York

Location ID:		NYSDEC Sediment Criteria Multipliers		Number of Exceedances		SED09-12	SED09-13	SED09-14	SED09-15	SED09-16	SED09-17	SED09-18	SEDGRAB09-01	SEDGRAB09-02
Sample Depth(Feet):		Acute	Chronic	Total	Total	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
Date Collected:	Units	ug/g OC	ug/g OC	Acute	Chronic	01/13/09	01/13/09	01/14/09	01/14/09	01/14/09	01/14/09	01/14/09	01/08/09	01/08/09
Semivolatile Organics (Cont.)														
Chrysene	mg/kg	--	--	--	--	4.6	6.5	2.5 J [3.6 J]	0.68 J	4.3 [6.0]	7.5	6.2 J	12	6.8
Dibenzo(a,h)anthracene	mg/kg	--	--	--	--	0.72 J	1.3 J	8.5 J [8.8 J]	4.7 UJ	6.4 J [6.2 J]	6.1 J	9.9 J	1.4	0.85 J
Dibenzofuran	mg/kg	--	--	--	--	0.16 J	0.22 J	5.7 U [5.9 U]	4.7 U	0.27 J [0.97 J]	0.87 J	6.4 U	0.99 J	6.1
Diethylphthalate	mg/kg	--	--	--	--	2.3 U	1.9 U	0.43 J [0.43 J]	4.7 U	4.0 U [0.25 J]	3.8 U	6.4 U	1.1 U	4.6 U
Dimethylphthalate	mg/kg	--	--	--	--	2.3 U	1.9 U	5.7 U [5.9 U]	4.7 U	4.0 U [3.9 U]	3.8 U	6.4 U	1.1 U	4.6 U
Di-n-Butylphthalate	mg/kg	--	--	--	--	2.3 U	1.9 U	5.7 U [5.9 U]	4.7 U	4.0 U [3.9 U]	3.8 U	6.4 U	1.1 U	4.6 U
Di-n-Octylphthalate	mg/kg	--	--	--	--	2.3 U	1.9 U	5.7 U [5.9 U]	4.7 U	4.0 U [0.25 J]	0.23 J	6.4 U	1.1 U	4.6 U
Fluoranthene	mg/kg	--	1,020	--	1	11	16	4.5 J [6.6]	1.3 J	9.2 [16]	19	12	29	30
Fluorene	mg/kg	73	8	4	19	0.38 J	0.63 J	5.7 U [0.40 J]	4.7 U	0.52 J [1.4 J]	2.1 J	0.67 J	2.0	**13**
Hexachlorobenzene	mg/kg	9,081	5,570	--	--	2.3 U	1.9 U	5.7 U [5.9 U]	4.7 U	4.0 U [3.9 U]	3.8 U	6.4 U	1.1 U	4.6 U
Hexachlorobutadiene	mg/kg	55	5.5	--	--	2.3 U	1.9 U	5.7 U [5.9 U]	4.7 U	4.0 U [3.9 U]	3.8 U	6.4 U	1.1 U	4.6 U
Hexachlorocyclopentadiene	mg/kg	44	4.4	--	--	2.3 U	1.9 U	5.7 U [5.9 U]	4.7 U	4.0 U [3.9 U]	3.8 U	6.4 U	1.1 UJ	4.6 UJ
Hexachloroethane	mg/kg	--	--	--	--	2.3 U	1.9 U	5.7 U [5.9 U]	4.7 U	4.0 U [3.9 U]	3.8 U	6.4 U	1.1 U	4.6 U
Indeno(1,2,3-cd)pyrene	mg/kg	--	--	--	--	2.0 J	4.0	8.2 [9.0]	6.3	6.7 [6.5]	7.0	9.8	6.3	2.7 J
Isophorone	mg/kg	--	--	--	--	2.3 U	1.9 U	5.7 U [5.9 U]	4.7 U	4.0 U [3.9 U]	3.8 U	6.4 U	1.1 U	4.6 U
Naphthalene	mg/kg	258	30	--	1	2.3 U	0.13 J	5.7 U [5.9 U]	4.7 U	4.0 U [3.9 U]	0.24 J	6.4 U	0.44 J	4.6 U
Nitrobenzene	mg/kg	--	--	--	--	2.3 U	1.9 U	5.7 U [5.9 U]	4.7 U	4.0 U [3.9 U]	3.8 U	6.4 U	1.1 U	4.6 U
N-Nitrosodimethylamine	mg/kg	--	--	--	--	4.4 U	3.7 U	11 U [11 U]	9.1 U	7.8 U [7.6 U]	7.3 U	12 U	2.2 U	8.9 U
N-Nitroso-di-n-propylamine	mg/kg	--	--	--	--	2.3 UJ	1.9 U	5.7 U [5.9 U]	4.7 U	4.0 U [3.9 U]	3.8 U	6.4 U	1.1 U	4.6 U
N-Nitrosodiphenylamine	mg/kg	--	--	--	--	2.3 U	1.9 U	5.7 U [5.9 U]	4.7 U	4.0 U [3.9 U]	3.8 U	6.4 U	0.21 J	24
Pentachlorophenol	mg/kg	100	40	--	--	4.4 U	3.7 U	11 U [11 U]	9.1 U	7.8 U [7.6 U]	7.3 U	12 U	2.2 U	8.9 U
Phenanthrene	mg/kg	--	120	--	16	5.5	8.5	2.4 J [3.7 J]	0.69 J	5.9 [14]	14	6.0 J	18	27
Phenol	mg/kg	--	0.5	--	--	2.3 U	1.9 U	5.7 U [5.9 U]	4.7 U	4.0 U [3.9 U]	3.8 U	6.4 U	1.1 UJ	4.6 UJ
p-Toluidine	mg/kg	--	--	--	--	NA	NA	11 U [11 U]	9.1 U	7.8 U [7.6 U]	7.3 U	12 U	NA	NA
Pyrene	mg/kg	8,775	961	--	1	7.0	13	4.3 J [6.0]	1.3 J	7.1 [10]	12	7.8	23	21
Total PAHs	mg/kg	10000	4	1 [b]	32 [a]	54 J	82 J	46 J [58 J]	19 J	61 J [88 J]	110 J	86 J	160 J	170 J
Total SVOCs	mg/kg	--	--	--	--	110 J	160 J	92 J [120 J]	37 J	120 J [180 J]	220 J	170 J	310 J	370 J
Inorganics														
Aluminum	mg/kg	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	mg/kg	33	6	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	mg/kg	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	mg/kg	9	0.6	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	mg/kg	110	26	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/kg	110	16	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide	mg/kg	--	--	--	--	1.10 J	0.986 U	1.46 UJ [1.34 UJ]	1.11 UJ	0.900 UJ [1.15 UJ]	1.01 UJ	1.91 UJ	1.24 U	1.17 U
Iron	mg/kg	40000	20000	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	mg/kg	110	31	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	mg/kg	1100	460	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	mg/kg	1.3	0.15	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	mg/kg	50	16	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	mg/kg	2.2	1	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	mg/kg	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	mg/kg	270	120	--	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Miscellaneous														
Percent Solids	%	--	--	--	--	74	88	60 [57]	72	83 [86]	89	51	75	74
Total Organic Carbon	mg/kg	--	--	--	--	71,000	129,000	186,000 [156,000]	46,800	97,400 [131,000]	77,500	183,000	53,000	113,000
Total Organic Carbon	gOC/kg	--	--	--	--	71	129	171	46.8	114.2	77.5	183	53	113

See Notes on Page 13.

Table 2. Sediment Analytical Summary
NYSEG
Goshen Former MGP Site
Goshen, New York

ARCADIS Design & Consultancy for natural and built assets

Location ID:		NYSDEC Sediment Criteria Multipliers		Number of Exceedances		SEDGRAB09-03	SEDGRAB09-04	SEDGRAB09-05	SEDGRAB09-06	SS-1	SS-2	SS-3	SS-4
Sample Depth(Feet):		Acute	Chronic	Total	Total	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 1.2	0 - 1.9	0 - 1.7	0 - 1.5
Date Collected:	Units	ug/g OC	ug/g OC	Acute	Chronic	01/08/09	01/08/09	01/08/09	01/08/09	10/28/93	10/28/93	10/28/93	10/28/93
Volatile Organics													
1,1,1,2-Tetrachloroethane	mg/kg	--	--	--	--	0.0073 U	0.0067 U	0.0088 U	0.0097 U	NA	NA	NA	NA
1,1,1-Trichloroethane	mg/kg	--	--	--	--	0.0073 U	0.0067 U	0.0088 U	0.0097 U	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	mg/kg	--	--	--	--	0.0073 U	0.0067 U	0.0088 U	0.0097 U	NA	NA	NA	NA
1,1,2-Trichloroethane	mg/kg	--	--	--	--	0.0073 U	0.0067 U	0.0088 U	0.0097 U	NA	NA	NA	NA
1,1-Dichloroethane	mg/kg	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	mg/kg	--	--	--	--	0.0073 U	0.0067 U	0.0088 U	0.0097 U	NA	NA	NA	NA
1,2,3-Trichloropropane	mg/kg	--	--	--	--	0.0073 U	0.0067 U	0.0088 U	0.0097 U	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	mg/kg	--	--	--	--	0.0073 U	0.0067 U	0.0088 U	0.0097 U	NA	NA	NA	NA
1,2-Dibromoethane	mg/kg	--	--	--	--	0.0073 U	0.0067 U	0.0088 U	0.0097 U	NA	NA	NA	NA
1,2-Dichlorobenzene	mg/kg	120	12	--	--	0.0073 U	0.0067 U	0.0088 U	0.0097 U	NA	NA	NA	NA
1,2-Dichloroethane	mg/kg	--	--	--	--	0.0073 U	0.0067 U	0.0088 U	0.0097 U	NA	NA	NA	NA
1,2-Dichloropropane	mg/kg	--	--	--	--	0.0073 U	0.0067 U	0.0088 U	0.0097 U	NA	NA	NA	NA
1,3-Dichlorobenzene	mg/kg	120	12	--	--	0.0073 U	0.0067 U	0.0088 U	0.0097 U	NA	NA	NA	NA
1,4-Dichlorobenzene	mg/kg	120	12	--	--	0.0073 U	0.0067 U	0.0088 U	0.0097 U	NA	NA	NA	NA
2-Butanone	mg/kg	--	--	--	--	0.037 U	0.033 U	0.044 U	0.049 U	0.014 U	0.062 UD [0.066 UD]	0.032 UD	0.027
2-Chloroethylvinylether	mg/kg	--	--	--	--	0.037 U	0.033 U	0.044 U	0.049 U	NA	NA	NA	NA
2-Hexanone	mg/kg	--	--	--	--	0.037 U	0.033 U	0.044 U	0.049 U	NA	NA	NA	NA
4-Methyl-2-pentanone	mg/kg	--	--	--	--	0.037 U	0.033 U	0.044 U	0.049 U	NA	NA	NA	NA
Acetone	mg/kg	--	--	--	--	0.037 U	0.033 U	0.044 U	0.049 U	0.081	0.13 D [0.13 D]	0.15 D	0.14
Acetonitrile	mg/kg	--	--	--	--	0.29 U	0.27 U	0.35 U	0.39 U	NA	NA	NA	NA
Benzene	mg/kg	103	28	--	--	0.0073 U	0.0067 U	0.0088 U	0.0097 U	NA	NA	NA	NA
Bromochloromethane	mg/kg	--	--	--	--	0.0073 U	0.0067 U	0.0088 U	0.0097 U	NA	NA	NA	NA
Bromodichloromethane	mg/kg	--	--	--	--	0.0073 U	0.0067 U	0.0088 U	0.0097 U	NA	NA	NA	NA
Bromoform	mg/kg	--	--	--	--	0.0073 U	0.0067 U	0.0088 U	0.0097 U	NA	NA	NA	NA
Bromomethane	mg/kg	--	--	--	--	0.0073 U	0.0067 U	0.0088 U	0.0097 U	NA	NA	NA	NA
Carbon Disulfide	mg/kg	--	--	--	--	0.0073 U	0.0067 U	0.0088 U	0.0097 U	0.0070 U	0.031 UD [0.033 UD]	0.016 UD	0.0090 U
Carbon Tetrachloride	mg/kg	--	--	--	--	0.0073 U	0.0067 U	0.0088 U	0.0097 U	NA	NA	NA	NA
Chlorobenzene	mg/kg	34.6	3.5	--	--	0.0073 U	0.0067 U	0.0088 U	0.0097 U	NA	NA	NA	NA
Chloroethane	mg/kg	--	--	--	--	0.0073 U	0.0067 U	0.0088 U	0.0097 U	NA	NA	NA	NA
Chloroform	mg/kg	--	--	--	--	0.0073 U	0.0067 U	0.0088 U	0.0097 U	NA	NA	NA	NA
Chloromethane	mg/kg	--	--	--	--	0.0073 U	0.0067 U	0.0088 U	0.0097 U	0.014 U	0.062 UD [0.066 UD]	0.021 JD	0.018 U
cis-1,2-Dichloroethene	mg/kg	--	--	--	--	0.0073 U	0.0067 U	0.0088 U	0.0097 U	NA	NA	NA	NA
cis-1,3-Dichloropropene	mg/kg	--	--	--	--	0.0073 U	0.0067 U	0.0088 U	0.0097 U	NA	NA	NA	NA
Dibromochloromethane	mg/kg	--	--	--	--	0.0073 U	0.0067 U	0.0088 U	0.0097 U	NA	NA	NA	NA
Ethylbenzene	mg/kg	212	24	--	--	0.0073 U	0.0067 U	0.0088 U	0.0097 U	0.0040 J	0.031 UD [0.033 UD]	0.016 UD	0.0090 U
Iodomethane	mg/kg	--	--	--	--	0.0073 U	0.0067 U	0.0088 U	0.0097 U	NA	NA	NA	NA
Methylene Chloride	mg/kg	--	--	--	--	0.0073 U	0.0067 U	0.0088 U	0.0097 U	0.0070 U	0.020 JD [0.033 UD]	0.013 JD	0.0090 U
Styrene	mg/kg	--	--	--	--	0.0073 U	0.0067 U	0.0088 U	0.0097 U	NA	NA	NA	NA
Tetrachloroethene	mg/kg	--	--	--	--	0.0073 U	0.0067 U	0.0088 U	0.0097 U	NA	NA	NA	NA
Toluene	mg/kg	235	49	--	--	0.0073 U	0.0067 U	0.0088 U	0.0097 U	0.0070 U	0.0070 JD [0.033 UD]	0.016 UD	0.0090 U
trans-1,2-Dichloroethene	mg/kg	--	--	--	--	0.0073 U	0.0067 U	0.0088 U	0.0097 U	NA	NA	NA	NA
trans-1,3-Dichloropropene	mg/kg	--	--	--	--	0.0073 U	0.0067 U	0.0088 U	0.0097 U	NA	NA	NA	NA
trans-1,4-Dichloro-2-butene	mg/kg	--	--	--	--	0.037 U	0.033 U	0.044 U	0.049 U	NA	NA	NA	NA
Trichloroethene	mg/kg	--	--	--	--	0.0073 U	0.0067 U	0.0088 U	0.0097 U	NA	NA	NA	NA
Trichlorofluoromethane	mg/kg	--	--	--	--	0.0073 U	0.0067 U	0.0088 U	0.0097 U	NA	NA	NA	NA
Vinyl Acetate	mg/kg	--	--	--	--	0.037 U	0.033 U	0.044 U	0.049 U	NA	NA	NA	NA
Vinyl Chloride	mg/kg	--	--	--	--	0.015 U	0.013 U	0.018 U	0.019 U	NA	NA	NA	NA

See Notes on Page 13.

Table 2. Sediment Analytical Summary
NYSEG
Goshen Former MGP Site
Goshen, New York

ARCADIS Design & Consultancy for natural and built assets

Location ID:		NYSDEC Sediment Criteria Multipliers		Number of Exceedances		SEDGRAB09-03	SEDGRAB09-04	SEDGRAB09-05	SEDGRAB09-06	SS-1	SS-2	SS-3	SS-4
Sample Depth(Feet):		Acute	Chronic	Total	Total	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 1.2	0 - 1.9	0 - 1.7	0 - 1.5
Date Collected:	Units	ug/g OC	ug/g OC	Acute	Chronic	01/08/09	01/08/09	01/08/09	01/08/09	10/28/93	10/28/93	10/28/93	10/28/93
Volatile Organics (Cont.)													
Xylenes (total)	mg/kg	833	92	--	--	0.022 U	0.020 U	0.026 U	0.029 U	0.0090	0.031 UD [0.033 UD]	0.016 UD	0.0090 U
Total BTEX	mg/kg	--	--	--	--	ND	ND	ND	ND	0.013 J	0.0070 J [ND]	ND	ND
Total VOCs	mg/kg	--	--	--	--	ND	ND	ND	ND	0.094 J	0.16 J [0.13]	0.18 J	0.17
Semivolatile Organics													
1,2,4-Trichlorobenzene	mg/kg	910	91	--	--	25 U	4.4 U	5.8 U	3.4 U	NA	NA	NA	NA
1,2-Dichlorobenzene	mg/kg	120	12	--	--	25 U	4.4 U	5.8 U	3.4 U	NA	NA	NA	NA
1,3-Dichlorobenzene	mg/kg	120	12	--	--	25 U	4.4 U	5.8 U	3.4 U	NA	NA	NA	NA
1,4-Dichlorobenzene	mg/kg	120	12	--	--	25 U	4.4 U	5.8 U	3.4 U	NA	NA	NA	NA
2,2'-Oxybis(1-Chloropropane)	mg/kg	--	--	--	--	13 U	2.2 U	3.0 U	1.7 U	NA	NA	NA	NA
2,4,5-Trichlorophenol	mg/kg	--	--	--	--	13 U	2.2 U	3.0 U	1.7 U	NA	NA	NA	NA
2,4,6-Trichlorophenol	mg/kg	--	--	--	--	13 U	2.2 U	3.0 U	1.7 U	NA	NA	NA	NA
2,4-Dichlorophenol	mg/kg	--	--	--	--	13 U	2.2 U	3.0 U	1.7 U	NA	NA	NA	NA
2,4-Dimethylphenol	mg/kg	--	--	--	--	13 U	2.2 U	3.0 U	1.7 U	NA	NA	NA	NA
2,4-Dinitrophenol	mg/kg	--	--	--	--	25 UJ	4.4 UJ	5.8 UJ	3.4 UJ	NA	NA	NA	NA
2,4-Dinitrotoluene	mg/kg	--	--	--	--	13 U	2.2 U	3.0 U	1.7 U	NA	NA	NA	NA
2,6-Dinitrotoluene	mg/kg	--	--	--	--	13 U	2.2 U	3.0 U	1.7 U	NA	NA	NA	NA
2-Chloronaphthalene	mg/kg	--	--	--	--	13 U	2.2 U	3.0 U	1.7 U	NA	NA	NA	NA
2-Chlorophenol	mg/kg	--	--	--	--	13 UJ	2.2 UJ	3.0 UJ	1.7 UJ	NA	NA	NA	NA
2-Methylnaphthalene	mg/kg	304	34	--	1	2.7 J	2.2 U	3.0 U	1.7 U	1.4 JD	0.32 JD [0.40 JD]	1.8 D	0.088 J
2-Methylphenol	mg/kg	--	--	--	--	13 U	2.2 U	3.0 U	1.7 U	NA	NA	NA	NA
2-Nitroaniline	mg/kg	--	--	--	--	25 U	4.4 U	5.8 U	3.4 U	NA	NA	NA	NA
2-Nitrophenol	mg/kg	--	--	--	--	13 U	2.2 U	3.0 U	1.7 U	NA	NA	NA	NA
3&4-Methylphenol	mg/kg	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
3,3'-Dimethylbenzidine	mg/kg	--	--	--	--	25 U	4.4 U	5.8 U	3.4 U	NA	NA	NA	NA
3-Nitroaniline	mg/kg	--	--	--	--	25 U	4.4 U	5.8 U	3.4 U	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	mg/kg	--	--	--	--	25 U	4.4 U	5.8 U	3.4 U	NA	NA	NA	NA
4-Bromophenyl-phenylether	mg/kg	--	--	--	--	13 U	2.2 U	3.0 U	1.7 U	NA	NA	NA	NA
4-Chloro-3-Methylphenol	mg/kg	--	--	--	--	13 U	2.2 U	3.0 U	1.7 U	NA	NA	NA	NA
4-Chloroaniline	mg/kg	--	--	--	--	13 U	2.2 U	3.0 U	1.7 U	NA	NA	NA	NA
4-Chlorophenyl-phenylether	mg/kg	--	--	--	--	13 U	2.2 U	3.0 U	1.7 U	NA	NA	NA	NA
4-Methylphenol	mg/kg	--	--	--	--	13 U	2.2 U	3.0 U	1.7 U	NA	NA	NA	NA
4-Nitroaniline	mg/kg	--	--	--	--	25 U	4.4 UJ	5.8 UJ	3.4 UJ	NA	NA	NA	NA
4-Nitrophenol	mg/kg	--	--	--	--	25 UJ	4.4 U	5.8 U	3.4 U	NA	NA	NA	NA
Acenaphthene	mg/kg	--	140	--	1	5.2 J	0.15 J	0.20 J	0.11 J	2.3 D	4.0 D [4.3 D]	3.0 D	3.6
Acenaphthylene	mg/kg	--	--	--	--	28	0.54 J	0.51 J	0.79 J	1.1 JD	1.1 JD [1.4 JD]	0.77 JD	0.63
Anthracene	mg/kg	986	107	--	3	90	0.88 J	0.99 J	0.86 J	4.9 D	5.3 D [5.7 D]	2.8 D	1.2
Benzo(a)anthracene	mg/kg	94	12	17	32	**150**	3.5	4.7	4.1	**14 D**	**12 D [14 D]**	**8.9 D**	4.0
Benzo(a)pyrene	mg/kg	--	--	--	--	120	4.1	5.6	4.6	12 D	9.8 D [12 D]	7.5 D	3.5
Benzo(b)fluoranthene	mg/kg	--	--	--	--	130	5.2	7.5	6.4	13 D	10 D [10 D]	8.0 D	4.3
Benzo(g,h,i)perylene	mg/kg	--	--	--	--	72	2.3	3.0	2.6	6.0 D	4.6 D [5.2 D]	3.6 D	1.6
Benzo(k)fluoranthene	mg/kg	--	--	--	--	56	2.0 J	2.6 J	2.2	7.9 D	6.8 D [10 D]	5.2 D	2.8
Benzyl Alcohol	mg/kg	--	--	--	--	25 U	4.4 U	5.8 U	3.4 U	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	mg/kg	--	--	--	--	13 U	2.2 U	3.0 U	1.7 U	NA	NA	NA	NA
bis(2-Chloroethyl)ether	mg/kg	--	--	--	--	13 U	2.2 U	3.0 U	1.7 U	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	mg/kg	--	199.5	--	--	13 U	1.2 J	1.7 J	0.64 J	1.7 JD	1.1 JD [1.1 JD]	1.1 JD	1.6
Butylbenzylphthalate	mg/kg	--	--	--	--	13 U	2.2 U	3.0 U	1.7 U	1.5 JD	0.58 JD [0.58 JD]	1.7 UD	0.46 J
Carbazole	mg/kg	--	--	--	--	NA	NA	NA	NA	0.74 JD	0.62 JD [0.90 JD]	0.37 JD	0.33 J

See Notes on Page 13.

Table 2. Sediment Analytical Summary
NYSEG
Goshen Former MGP Site
Goshen, New York

Location ID:		NYSDEC Sediment Criteria Multipliers		Number of Exceedances		SEDGRAB09-03	SEDGRAB09-04	SEDGRAB09-05	SEDGRAB09-06	SS-1	SS-2	SS-3	SS-4
Sample Depth(Feet):		Acute	Chronic	Total	Total	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 1.2	0 - 1.9	0 - 1.7	0 - 1.5
Date Collected:	Units	ug/g OC	ug/g OC	Acute	Chronic	01/08/09	01/08/09	01/08/09	01/08/09	10/28/93	10/28/93	10/28/93	10/28/93
Semivolatile Organics (Cont.)													
Chrysene	mg/kg	--	--	--	--	130	3.9	5.4	4.5	14 D	11 D [12 D]	8.6 D	4.2
Dibenzo(a,h)anthracene	mg/kg	--	--	--	--	23	0.30 J	0.83 J	0.61 J	1.9 UD	2.0 JD [2.4 D]	1.4 JD	0.72
Dibenzofuran	mg/kg	--	--	--	--	16	2.2 U	3.0 U	0.079 J	1.1 JD	1.4 JD [1.6 JD]	0.88 JD	0.66
Diethylphthalate	mg/kg	--	--	--	--	13 U	2.2 U	3.0 U	1.7 U	NA	NA	NA	NA
Dimethylphthalate	mg/kg	--	--	--	--	13 U	2.2 U	3.0 U	1.7 U	NA	NA	NA	NA
Di-n-Butylphthalate	mg/kg	--	--	--	--	13 U	2.2 U	3.0 U	1.7 U	4.3 D	3.7 D [1.8 JD]	2.8 D	5.2
Di-n-Octylphthalate	mg/kg	--	--	--	--	13 U	2.2 U	3.0 U	1.7 U	1.9 UD	2.1 UD [2.2 UD]	1.7 UD	0.048 J
Fluoranthene	mg/kg	--	1,020	--	1	300	6.3	8.9	7.0	26 D	24 D [26 D]	17 D	7.7
Fluorene	mg/kg	73	8	4	19	**29 J**	0.22 J	0.33 J	0.25 J	**3.4 D**	**4.7 D [5.3 D]**	3.1 D	1.7
Hexachlorobenzene	mg/kg	9,081	5,570	--	--	13 U	2.2 U	3.0 U	1.7 U	NA	NA	NA	NA
Hexachlorobutadiene	mg/kg	55	5.5	--	--	13 U	2.2 U	3.0 U	1.7 U	NA	NA	NA	NA
Hexachlorocyclopentadiene	mg/kg	44	4.4	--	--	13 U	2.2 UJ	3.0 UJ	1.7 UJ	NA	NA	NA	NA
Hexachloroethane	mg/kg	--	--	--	--	13 U	2.2 U	3.0 U	1.7 U	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	mg/kg	--	--	--	--	72	1.9 J	2.8	2.3	8.7 D	7.0 D [8.3 D]	5.3 D	2.4
Isophorone	mg/kg	--	--	--	--	13 U	2.2 U	3.0 U	1.7 U	NA	NA	NA	NA
Naphthalene	mg/kg	258	30	--	1	4.4 J	2.2 U	3.0 U	1.7 U	0.38 JD	0.42 JD [0.48 JD]	0.41 JD	0.25 J
Nitrobenzene	mg/kg	--	--	--	--	13 U	2.2 U	3.0 U	1.7 U	NA	NA	NA	NA
N-Nitrosodimethylamine	mg/kg	--	--	--	--	25 U	4.4 U	5.8 U	3.4 U	NA	NA	NA	NA
N-Nitroso-di-n-propylamine	mg/kg	--	--	--	--	13 U	2.2 U	3.0 U	1.7 U	NA	NA	NA	NA
N-Nitrosodiphenylamine	mg/kg	--	--	--	--	13 U	2.2 U	3.0 U	1.7 U	NA	NA	NA	NA
Pentachlorophenol	mg/kg	100	40	--	--	25 U	4.4 U	5.8 U	3.4 U	NA	NA	NA	NA
Phenanthrene	mg/kg	--	120	--	16	230	3.1	4.5	3.2	18 D	16 D [18 D]	11 D	4.0
Phenol	mg/kg	--	0.5	--	--	13 U	2.2 UJ	3.0 UJ	1.7 UJ	NA	NA	NA	NA
p-Toluidine	mg/kg	--	--	--	--	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	mg/kg	8,775	961	--	1	230	5.6	8.0	6.5	29 D	24 D [27 D]	20 D	11
Total PAHs	mg/kg	10000	4	1 [b]	32 [d]	**1,700 J**	40 J	56 J	46 J	160 J	140 J [160 J]	110 J	54 J
Total SVOCs	mg/kg	--	--	--	--	3,400 J	81 J	110 J	93 J	170 J	150 J [170 J]	110 J	62 J
Inorganics													
Aluminum	mg/kg	--	--	--	--	NA	NA	NA	NA	11,900	5,420 [9,380]	9,930	11,400
Arsenic	mg/kg	33	6	--	--	NA	NA	NA	NA	6.80	3.20 [5.40]	7.20	12.1
Barium	mg/kg	--	--	--	--	NA	NA	NA	NA	130	56.1 [197]	151	136
Cadmium	mg/kg	9	0.6	--	--	NA	NA	NA	NA	4.60	0.940 [1.80]	2.50	1.60
Chromium	mg/kg	110	26	--	--	NA	NA	NA	NA	26.1	13.8 [14.8]	19.5	28.2
Copper	mg/kg	110	16	--	--	NA	NA	NA	NA	88.4	43.3 [138]	84.3	97.6
Cyanide	mg/kg	--	--	--	--	1.30 J	1.18 U	1.50 U	2.01 U	1.4 U	1.2 U [1.1 U]	1.2 U	16.2
Iron	mg/kg	40000	20000	--	--	NA	NA	NA	NA	26,900	15,500 [15,900]	22,600	29,800
Lead	mg/kg	110	31	--	--	NA	NA	NA	NA	**344**	**203 [195]**	**284**	**332**
Manganese	mg/kg	1100	460	--	--	NA	NA	NA	NA	392	181 [185]	333	391
Mercury	mg/kg	1.3	0.15	--	--	NA	NA	NA	NA	0.230	0.160 [0.110 J]	0.180	0.420
Nickel	mg/kg	50	16	--	--	NA	NA	NA	NA	25.7	13.3 [13.9]	21.9	25.0
Silver	mg/kg	2.2	1	--	--	NA	NA	NA	NA	1.20 U	**0.820 J [4.10]**	0.990 U	1.40 U
Vanadium	mg/kg	--	--	--	--	NA	NA	NA	NA	26.6	12.1 [12.6]	22.3	24.5
Zinc	mg/kg	270	120	--	--	NA	NA	NA	NA	**879**	127 [244]	236	**406**
Miscellaneous													
Percent Solids	%	--	--	--	--	65	75	56	48	NA	NA	NA	NA
Total Organic Carbon	mg/kg	--	--	--	--	94,300	86,000	81,100	63,900	36,000	58,000 [25,000]	56,000	60,000
Total Organic Carbon	gOC/kg	--	--	--	--	94.3	86	81.1	63.9	36	70.5	56	60

See Notes on Page 13.

Table 2. Sediment Analytical Summary
NYSEG
Goshen Former MGP Site
Goshen, New York

Location ID:		NYSDEC Sediment Criteria Multipliers		Number of Exceedances		SS-5	SS-6	SS-7	SS-8
Sample Depth(Feet):		Acute	Chronic	Total	Total	0 - 1.5	0 - 1	0 - 1.7	0 - 2.2
Date Collected:	Units	ug/g OC	ug/g OC	Acute	Chronic	10/28/93	10/28/93	10/28/93	10/28/93
Volatile Organics									
1,1,1,2-Tetrachloroethane	mg/kg	--	--	--	--	NA	NA	NA	NA
1,1,1-Trichloroethane	mg/kg	--	--	--	--	NA	NA	NA	NA
1,1,2,2-Tetrachloroethane	mg/kg	--	--	--	--	NA	NA	NA	NA
1,1,2-Trichloroethane	mg/kg	--	--	--	--	NA	NA	NA	NA
1,1-Dichloroethane	mg/kg	--	--	--	--	NA	NA	NA	NA
1,1-Dichloroethene	mg/kg	--	--	--	--	NA	NA	NA	NA
1,2,3-Trichloropropane	mg/kg	--	--	--	--	NA	NA	NA	NA
1,2-Dibromo-3-chloropropane	mg/kg	--	--	--	--	NA	NA	NA	NA
1,2-Dibromoethane	mg/kg	--	--	--	--	NA	NA	NA	NA
1,2-Dichlorobenzene	mg/kg	120	12	--	--	NA	NA	NA	NA
1,2-Dichloroethane	mg/kg	--	--	--	--	NA	NA	NA	NA
1,2-Dichloropropane	mg/kg	--	--	--	--	NA	NA	NA	NA
1,3-Dichlorobenzene	mg/kg	120	12	--	--	NA	NA	NA	NA
1,4-Dichlorobenzene	mg/kg	120	12	--	--	NA	NA	NA	NA
2-Butanone	mg/kg	--	--	--	--	0.017 U	0.029	0.019 U	0.027
2-Chloroethylvinylether	mg/kg	--	--	--	--	NA	NA	NA	NA
2-Hexanone	mg/kg	--	--	--	--	NA	NA	NA	NA
4-Methyl-2-pentanone	mg/kg	--	--	--	--	NA	NA	NA	NA
Acetone	mg/kg	--	--	--	--	0.060	0.14	0.052	0.12
Acetonitrile	mg/kg	--	--	--	--	NA	NA	NA	NA
Benzene	mg/kg	103	28	--	--	NA	NA	NA	NA
Bromochloromethane	mg/kg	--	--	--	--	NA	NA	NA	NA
Bromodichloromethane	mg/kg	--	--	--	--	NA	NA	NA	NA
Bromoform	mg/kg	--	--	--	--	NA	NA	NA	NA
Bromomethane	mg/kg	--	--	--	--	NA	NA	NA	NA
Carbon Disulfide	mg/kg	--	--	--	--	0.0080 U	0.0090 U	0.0090 U	0.0020 J
Carbon Tetrachloride	mg/kg	--	--	--	--	NA	NA	NA	NA
Chlorobenzene	mg/kg	34.6	3.5	--	--	NA	NA	NA	NA
Chloroethane	mg/kg	--	--	--	--	NA	NA	NA	NA
Chloroform	mg/kg	--	--	--	--	NA	NA	NA	NA
Chloromethane	mg/kg	--	--	--	--	0.017 U	0.018 U	0.019 U	0.016 U
cis-1,2-Dichloroethene	mg/kg	--	--	--	--	NA	NA	NA	NA
cis-1,3-Dichloropropene	mg/kg	--	--	--	--	NA	NA	NA	NA
Dibromochloromethane	mg/kg	--	--	--	--	NA	NA	NA	NA
Ethylbenzene	mg/kg	212	24	--	--	0.0080 U	0.0090 U	0.0090 U	0.0080 U
Iodomethane	mg/kg	--	--	--	--	NA	NA	NA	NA
Methylene Chloride	mg/kg	--	--	--	--	0.0080 U	0.0090 U	0.0090 U	0.0080 U
Styrene	mg/kg	--	--	--	--	NA	NA	NA	NA
Tetrachloroethene	mg/kg	--	--	--	--	NA	NA	NA	NA
Toluene	mg/kg	235	49	--	--	0.0080 U	0.0090 U	0.0090 U	0.0020 J
trans-1,2-Dichloroethene	mg/kg	--	--	--	--	NA	NA	NA	NA
trans-1,3-Dichloropropene	mg/kg	--	--	--	--	NA	NA	NA	NA
trans-1,4-Dichloro-2-butene	mg/kg	--	--	--	--	NA	NA	NA	NA
Trichloroethene	mg/kg	--	--	--	--	NA	NA	NA	NA
Trichlorofluoromethane	mg/kg	--	--	--	--	NA	NA	NA	NA
Vinyl Acetate	mg/kg	--	--	--	--	NA	NA	NA	NA
Vinyl Chloride	mg/kg	--	--	--	--	NA	NA	NA	NA

See Notes on Page 13.

Table 2. Sediment Analytical Summary
NYSEG
Goshen Former MGP Site
Goshen, New York

Location ID:		NYSDEC Sediment Criteria Multipliers		Number of Exceedances		SS-5	SS-6	SS-7	SS-8
Sample Depth(Feet):		Acute	Chronic	Total	Total	0 - 1.5	0 - 1	0 - 1.7	0 - 2.2
Date Collected:	Units	ug/g OC	ug/g OC	Acute	Chronic	10/28/93	10/28/93	10/28/93	10/28/93
Volatile Organics (Cont.)									
Xylenes (total)	mg/kg	833	92	--	--	0.0080 U	0.0090 U	0.0090 U	0.0080 U
Total BTEX	mg/kg	--	--	--	--	ND	ND	ND	0.0020 J
Total VOCs	mg/kg	--	--	--	--	0.060	0.17	0.052	0.15 J
Semivolatile Organics									
1,2,4-Trichlorobenzene	mg/kg	910	91	--	--	NA	NA	NA	NA
1,2-Dichlorobenzene	mg/kg	120	12	--	--	NA	NA	NA	NA
1,3-Dichlorobenzene	mg/kg	120	12	--	--	NA	NA	NA	NA
1,4-Dichlorobenzene	mg/kg	120	12	--	--	NA	NA	NA	NA
2,2'-Oxybis(1-Chloropropane)	mg/kg	--	--	--	--	NA	NA	NA	NA
2,4,5-Trichlorophenol	mg/kg	--	--	--	--	NA	NA	NA	NA
2,4,6-Trichlorophenol	mg/kg	--	--	--	--	NA	NA	NA	NA
2,4-Dichlorophenol	mg/kg	--	--	--	--	NA	NA	NA	NA
2,4-Dimethylphenol	mg/kg	--	--	--	--	NA	NA	NA	NA
2,4-Dinitrophenol	mg/kg	--	--	--	--	NA	NA	NA	NA
2,4-Dinitrotoluene	mg/kg	--	--	--	--	NA	NA	NA	NA
2,6-Dinitrotoluene	mg/kg	--	--	--	--	NA	NA	NA	NA
2-Chloronaphthalene	mg/kg	--	--	--	--	NA	NA	NA	NA
2-Chlorophenol	mg/kg	--	--	--	--	NA	NA	NA	NA
2-Methylnaphthalene	mg/kg	304	34	--	1	0.16 JD	0.055 J	0.19 JD	0.37 JD
2-Methylphenol	mg/kg	--	--	--	--	NA	NA	NA	NA
2-Nitroaniline	mg/kg	--	--	--	--	NA	NA	NA	NA
2-Nitrophenol	mg/kg	--	--	--	--	NA	NA	NA	NA
3&4-Methylphenol	mg/kg	--	--	--	--	NA	NA	NA	NA
3,3'-Dimethylbenzidine	mg/kg	--	--	--	--	NA	NA	NA	NA
3-Nitroaniline	mg/kg	--	--	--	--	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	mg/kg	--	--	--	--	NA	NA	NA	NA
4-Bromophenyl-phenylether	mg/kg	--	--	--	--	NA	NA	NA	NA
4-Chloro-3-Methylphenol	mg/kg	--	--	--	--	NA	NA	NA	NA
4-Chloroaniline	mg/kg	--	--	--	--	NA	NA	NA	NA
4-Chlorophenyl-phenylether	mg/kg	--	--	--	--	NA	NA	NA	NA
4-Methylphenol	mg/kg	--	--	--	--	NA	NA	NA	NA
4-Nitroaniline	mg/kg	--	--	--	--	NA	NA	NA	NA
4-Nitrophenol	mg/kg	--	--	--	--	NA	NA	NA	NA
Acenaphthene	mg/kg	--	140	--	1	0.47 JD	0.12 J	0.72 JD	0.87 JD
Acenaphthylene	mg/kg	--	--	--	--	0.39 JD	0.12 J	0.27 JD	0.55 JD
Anthracene	mg/kg	986	107	--	3	1.2 D	0.29 J	1.0 JD	2.5 JD
Benzo(a)anthracene	mg/kg	94	12	17	32	**5.1 D**	1.4	4.0 D	**7.3 D**
Benzo(a)pyrene	mg/kg	--	--	--	--	4.4 D	1.4	3.5 D	6.4 D
Benzo(b)fluoranthene	mg/kg	--	--	--	--	5.1 D	1.7	4.4 D	6.3 D
Benzo(g,h,i)perylene	mg/kg	--	--	--	--	2.3 D	0.71	1.9 D	3.0 D
Benzo(k)fluoranthene	mg/kg	--	--	--	--	3.3 D	1.2	2.6 D	5.4 D
Benzyl Alcohol	mg/kg	--	--	--	--	NA	NA	NA	NA
bis(2-Chloroethoxy)methane	mg/kg	--	--	--	--	NA	NA	NA	NA
bis(2-Chloroethyl)ether	mg/kg	--	--	--	--	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	mg/kg	--	199.5	--	--	1.6 D	1.4	13 D	1.5 JD
Butylbenzylphthalate	mg/kg	--	--	--	--	1.1 UD	0.60 U	1.2 UD	2.7 UD
Carbazole	mg/kg	--	--	--	--	0.35 JD	0.079 J	0.22 JD	0.36 JD

See Notes on Page 13.

Table 2. Sediment Analytical Summary
NYSEG
Goshen Former MGP Site
Goshen, New York

Location ID:		NYSDEC Sediment Criteria Multipliers		Number of Exceedances		SS-5	SS-6	SS-7	SS-8
Sample Depth(Feet):		Acute	Chronic	Total	Total	0 - 1.5	0 - 1	0 - 1.7	0 - 2.2
Date Collected:	Units	ug/g OC	ug/g OC	Acute	Chronic	10/28/93	10/28/93	10/28/93	10/28/93
Semivolatile Organics (Cont.)									
Chrysene	mg/kg	--	--	--	--	5.2 D	1.8	4.4 D	8.1 D
Dibenzo(a,h)anthracene	mg/kg	--	--	--	--	0.96 JD	0.29 J	1.2 UD	2.7 UD
Dibenzofuran	mg/kg	--	--	--	--	0.21 JD	0.051 J	0.23 JD	0.43 JD
Diethylphthalate	mg/kg	--	--	--	--	NA	NA	NA	NA
Dimethylphthalate	mg/kg	--	--	--	--	NA	NA	NA	NA
Di-n-Butylphthalate	mg/kg	--	--	--	--	0.77 JD	1.5	3.9 D	1.2 JD
Di-n-Octylphthalate	mg/kg	--	--	--	--	1.1 UD	0.60 U	1.2 UD	2.7 UD
Fluoranthene	mg/kg	--	1,020	--	1	10 D	2.7	8.8 D	16 D
Fluorene	mg/kg	73	8	4	19	0.73 JD	0.18 J	1.1 JD	1.6 JD
Hexachlorobenzene	mg/kg	9,081	5,570	--	--	NA	NA	NA	NA
Hexachlorobutadiene	mg/kg	55	5.5	--	--	NA	NA	NA	NA
Hexachlorocyclopentadiene	mg/kg	44	4.4	--	--	NA	NA	NA	NA
Hexachloroethane	mg/kg	--	--	--	--	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	mg/kg	--	--	--	--	3.4 D	0.93	2.7 D	4.3 D
Isophorone	mg/kg	--	--	--	--	NA	NA	NA	NA
Naphthalene	mg/kg	258	30	--	1	0.34 JD	0.051 J	0.21 JD	0.26 JD
Nitrobenzene	mg/kg	--	--	--	--	NA	NA	NA	NA
N-Nitrosodimethylamine	mg/kg	--	--	--	--	NA	NA	NA	NA
N-Nitroso-di-n-propylamine	mg/kg	--	--	--	--	NA	NA	NA	NA
N-Nitrosodiphenylamine	mg/kg	--	--	--	--	NA	NA	NA	NA
Pentachlorophenol	mg/kg	100	40	--	--	NA	NA	NA	NA
Phenanthrene	mg/kg	--	120	--	16	6.2 D	1.0	5.4 D	12 D
Phenol	mg/kg	--	0.5	--	--	NA	NA	NA	NA
p-Toluidine	mg/kg	--	--	--	--	NA	NA	NA	NA
Pyrene	mg/kg	8,775	961	--	1	11 D	3.9	9.6 D	17 D
Total PAHs	mg/kg	10000	4	1 [b]	32 [a]	60 J	18 J	51 J	92 J
Total SVOCs	mg/kg	--	--	--	--	63 J	21 J	68 J	95 J
Inorganics									
Aluminum	mg/kg	--	--	--	--	11,100	11,400	10,800	10,100
Arsenic	mg/kg	33	6	--	--	8.50	12.0	10.0	8.50
Barium	mg/kg	--	--	--	--	83.1	95.4	101	111
Cadmium	mg/kg	9	0.6	--	--	0.750	1.30	1.60	1.20
Chromium	mg/kg	110	26	--	--	31.2	24.5	22.5	19.5
Copper	mg/kg	110	16	--	--	70.1	**120**	73.2	57.6
Cyanide	mg/kg	--	--	--	--	1.5 U	3.2 U	3.4 U	3.5 U
Iron	mg/kg	40000	20000	--	--	23,100	22,600	22,900	20,200
Lead	mg/kg	110	31	--	--	**306**	**334**	**604**	**326**
Manganese	mg/kg	1100	460	--	--	205	269	289	268
Mercury	mg/kg	1.3	0.15	--	--	**1.50**	0.690	0.420	0.520
Nickel	mg/kg	50	16	--	--	23.8	24.8	22.5	20.6
Silver	mg/kg	2.2	1	--	--	1.20 J	1.20 U	1.40 U	1.20 U
Vanadium	mg/kg	--	--	--	--	21.0	26.1	22.5	19.7
Zinc	mg/kg	270	120	--	--	240	**423**	**360**	**292**
Miscellaneous									
Percent Solids	%	--	--	--	--	NA	NA	NA	NA
Total Organic Carbon	mg/kg	--	--	--	--	46,000	70,000	95,000	76,000
Total Organic Carbon	gOC/kg	--	--	--	--	46	70	95	76

See Notes on Page 13.

Table 2. Sediment Analytical Summary
NYSEG
Goshen Former MGP Site
Goshen, New York

Qualifier Type	Lab Qualifiers	Definition
Organic	B	Analyte was also detected in the associated method blank.
Organic	D	Compound quantitated using a secondary dilution.
General	J	Indicates an estimated value.
General	ND	None detected.
General	R	Rejected.
General	U	The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
Organic	D02	Dilution required due to sample matrix effects

Notes:

1. All concentrations reported in milligrams per kilogram (mg/kg); equivalent to parts per million (ppm).
2. [ ] Bracketed results represent the duplicate sample.
3. '-- = Sample not analyzed for specified constituent/no criteria available.
4. Benthic aquatic life criteria are from NYSDEC (1999) Technical Guidance for Screening Contaminated Sediments.
5. Organics criteria are presented in ug/gOC and are adjusted on a sample-specific basis for total organic carbon.
6. Inorganic criteria are presented in mg/kg and represent Lowest Effect Levels (LELs) and Severe Effect Levels (SELs) from NYSDEC (1999).
   (a) Total PAH chronic criterion represents the Lowest Effect Level from Ontario Ministry of Environment and Energy (1993) Guidelines for the Protection and Management of Aquatic Sediment Quality in Ontario. This criterion is presented in ppm and is not adjusted for TOC on a sample-specific basis.
   (b) Total PAH acute criterion represents the Severe Effect Level from Ontario Ministry of Environment and Energy (1993) Guidelines for the Protection and Management of Aquatic Sediment Quality in Ontario. This criterion is presented in ug/g OC and is adjusted for TOC on a sample-specific basis.
7. Exceedances of benthic aquatic life chronic toxicity criterion are shaded.
8. Exceedances of benthic aquatic life chronic and acute toxicity criteria are bolded and shaded.
9. NA = not analyzed

Table 3. Groundwater Analytical Summary
NYSEG
Goshen Former MGP Site
Goshen, New York

Location ID: / Date Collected:	TOGS Standards and Guidance Values	Units	MW-08-4D 12/16/08	MW-08-04D 03/31/09	MW-08-4S 12/16/08	MW-08-04S 03/31/09	MW-08-05D 12/16/08	MW-08-05D 03/31/09	MW-08-05S 12/17/08	MW-08-05S 04/01/09	MW-08-06D 12/17/08	MW-08-06D 04/01/09	MW-08-06S 12/17/08	MW-08-06S 04/01/09
PCBs														
Aroclor-1016	0.09	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1221	0.09	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1232	0.09	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1242	0.09	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1248	0.09	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1254	0.09	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1260	0.09	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Volatile Organics														
1,1,1,2-Tetrachloroethane	5	ug/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	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,1-Trichloroethane	5	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U [1.0 U]	0.34 J	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	5	ug/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	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	1	ug/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	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	5	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U [1.0 U]	0.81 J	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	5	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U [1.0 UJ]	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2,3-Trichloropropane	- -	ug/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	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dibromo-3-chloropropane	0.04	ug/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	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dibromoethane	0.0006	ug/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	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene	3	ug/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	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	0.6	ug/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	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,2-Dichloroethene (total)	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	1	ug/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	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene	3	ug/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	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	3	ug/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	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
2-Butanone	50	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U [5.0 U]	5.0 U	25 U	5.0 U	5.0 U	5.0 U	5.0 U
2-Chloroethylvinylether	- -	ug/L	5.0 U	5.0 UJ	5.0 U	5.0 UJ	5.0 U	5.0 UJ [5.0 UJ]	5.0 U	25 U	5.0 U	5.0 U	5.0 U	5.0 U
2-Hexanone	50	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U [5.0 U]	5.0 U	25 U	5.0 U	5.0 U	5.0 U	5.0 U
4-Methyl-2-pentanone	- -	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U [5.0 U]	5.0 U	25 U	5.0 U	5.0 U	5.0 U	5.0 U
Acetone	50	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U [5.0 U]	2.6 J	25 U	2.5 J	5.0 U	4.7 J	5.0 U
Acrylonitrile	- -	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U [5.0 U]	5.0 U	25 U	5.0 U	5.0 U	5.0 U	5.0 U
Benzene	1	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	**290 D**	**230 D [230 D]**	**4,400 D**	**4,900 D**	0.72 J	1.0 U	1.0 U	**1.3**
Bromochloromethane	- -	ug/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	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromodichloromethane	50	ug/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	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Bromoform	50	ug/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	5.0 UJ	1.0 U	1.0 UJ	1.0 U	1.0 UJ
Bromomethane	5	ug/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	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Carbon Disulfide	60	ug/L	1.0 UJ	1.0 U	1.0 UJ	1.0 U	1.0 UJ	1.0 U [1.0 U]	1.0 UJ	5.0 U	1.0 UJ	1.0 U	1.0 UJ	1.0 U
Carbon Tetrachloride	5	ug/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	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chlorobenzene	5	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U [1.0 UJ]	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroethane	5	ug/L	1.0 U	1.0 UJ	1.0 U	1.0 UJ	1.0 U	1.0 UJ [1.0 UJ]	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform	7	ug/L	1.1	0.78 J	1.0 U	1.0 U	1.0 U	1.0 U [1.0 U]	0.68 J	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloromethane	5	ug/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	5.0 U	2.3	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	5	ug/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	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
cis-1,3-Dichloropropene	0.4	ug/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	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Dibromochloromethane	50	ug/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	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	5	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	**88**	**61 [74]**	**240 D**	**360 J**	1.0 U	1.0 U	1.0 U	1.0 U
Iodomethane	- -	ug/L	1.0 UJ	1.0 U	1.0 UJ	1.0 U	1.0 UJ	1.0 U [1.0 U]	1.0 UJ	5.0 U	1.0 UJ	1.0 U	1.0 UJ	1.0 U
Methylene Chloride	5	ug/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	5.0 U	1.0 U	1.0 U	1.0 UJ	1.0 U

See Notes on Page 21.

Table 3. Groundwater Analytical Summary
NYSEG
Goshen Former MGP Site
Goshen, New York

Location ID: / Date Collected:	TOGS Standards and Guidance Values	Units	MW-08-4D 12/16/08	MW-08-04D 03/31/09	MW-08-4S 12/16/08	MW-08-04S 03/31/09	MW-08-05D 12/16/08	MW-08-05D 03/31/09	MW-08-05S 12/17/08	MW-08-05S 04/01/09	MW-08-06D 12/17/08	MW-08-06D 04/01/09	MW-08-06S 12/17/08	MW-08-06S 04/01/09
Volatile Organics (Cont.)														
Styrene	5	ug/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	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Tetrachloroethene	5	ug/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	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	5	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	2.6	1.2 [1.2 J]	**680 D**	**950 D**	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	5	ug/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	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	0.4	ug/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	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
trans-1,4-Dichloro-2-butene	- -	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U [5.0 U]	5.0 U	25 U	5.0 U	5.0 U	5.0 U	5.0 U
Trichloroethene	5	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U [1.0 UJ]	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Trichlorofluoromethane	5	ug/L	1.0 U	1.0 UJ	1.0 U	1.0 UJ	1.0 U	1.0 UJ [1.0 UJ]	1.0 U	5.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl Acetate	- -	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U [5.0 U]	5.0 U	25 U	5.0 U	5.0 U	5.0 U	5.0 U
Vinyl Chloride	2	ug/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	5.0 U	1.0 U	1.0 U	1.0 U	0.29 J
Xylenes (total)	5	ug/L	3.0 U	2.0 U	3.0 U	2.0 U	**59**	**56 [57]**	**590 D**	**800 J**	3.0 U	2.0 U	3.0 U	2.0 U
Total BTEX	- -	ug/L	ND	ND	ND	ND	440	350 [360 J]	5,900	7,000 J	0.72 J	ND	ND	1.3
Total VOCs	- -	ug/L	1.1	0.78 J	ND	ND	880	700 [720 J]	12,000 J	14,000 J	6.2 J	ND	4.7 J	2.9 J
Semivolatile Organics														
1,2,4-Trichlorobenzene	5	ug/L	9.0 U	9.4 U	9.0 U	9.7 U	10 U	9.6 U [9.4 U]	240 U	9.9 U	10 U	9.8 U	10 U	9.5 U
1,2-Dichlorobenzene	3	ug/L	9.0 U	9.4 U	9.0 U	9.7 U	10 U	9.6 U [9.4 U]	240 U	9.9 U	10 U	9.8 U	10 U	9.5 U
1,3-Dichlorobenzene	3	ug/L	9.0 U	9.4 U	9.0 U	9.7 U	10 U	9.6 U [9.4 U]	240 U	9.9 U	10 U	9.8 U	10 U	9.5 U
1,4-Dichlorobenzene	3	ug/L	9.0 U	9.4 U	9.0 U	9.7 U	10 U	9.6 U [9.4 U]	240 U	9.9 U	10 U	9.8 U	10 U	9.5 U
2,2'-Oxybis(1-Chloropropane)	5	ug/L	5.0 U	4.7 U	5.0 U	4.9 U	5.0 U	4.8 U [4.7 U]	120 U	5.0 U	5.0 U	4.9 U	5.0 U	4.8 U
2,4,5-Trichlorophenol	1	ug/L	5.0 U	4.7 U	5.0 U	4.9 U	5.0 U	4.8 U [4.7 U]	120 U	5.0 U	5.0 U	4.9 U	5.0 U	4.8 U
2,4,6-Trichlorophenol	1	ug/L	5.0 U	4.7 U	5.0 U	4.9 U	5.0 U	4.8 U [4.7 U]	120 U	5.0 U	5.0 U	4.9 U	5.0 U	4.8 U
2,4-Dichlorophenol	5	ug/L	5.0 U	4.7 U	5.0 U	4.9 U	5.0 U	4.8 U [4.7 U]	120 U	5.0 U	5.0 U	4.9 U	5.0 U	4.8 U
2,4-Dimethylphenol	50	ug/L	5.0 U	4.7 U	5.0 U	4.9 U	5.0 U	4.8 U [4.7 U]	**140**	**51**	5.0 U	4.9 U	5.0 U	4.8 U
2,4-Dinitrophenol	10	ug/L	9.0 U	9.4 U	9.0 U	9.7 U	10 U	9.6 U [9.4 U]	240 U	9.9 U	10 U	9.8 U	10 U	9.5 U
2,4-Dinitrotoluene	5	ug/L	5.0 U	4.7 U	5.0 U	4.9 U	5.0 U	4.8 U [4.7 U]	120 U	5.0 U	5.0 U	4.9 U	5.0 U	4.8 U
2,6-Dinitrotoluene	5	ug/L	5.0 U	4.7 U	5.0 U	4.9 U	5.0 U	4.8 U [4.7 U]	120 U	5.0 U	5.0 U	4.9 U	5.0 U	4.8 U
2-Chloronaphthalene	10	ug/L	5.0 U	4.7 U	5.0 U	4.9 U	5.0 U	4.8 U [4.7 U]	120 U	5.0 U	5.0 U	4.9 U	5.0 U	4.8 U
2-Chlorophenol	1	ug/L	5.0 U	4.7 U	5.0 U	4.9 U	5.0 U	4.8 U [4.7 U]	120 U	5.0 U	5.0 U	4.9 U	5.0 U	4.8 U
2-Methyl-4,6-Dinitrophenol	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	- -	ug/L	5.0 U	4.7 U	5.0 U	4.9 U	5.0 U	4.8 U [4.7 U]	290	170 D	5.0 U	4.9 U	5.0 U	4.8 U
2-Methylphenol	1	ug/L	5.0 U	4.7 U	5.0 U	4.9 U	5.0 U	4.8 U [4.7 U]	**21 J**	**1.3 J**	5.0 U	4.9 U	5.0 U	4.8 U
2-Nitroaniline	5	ug/L	9.0 U	9.4 U	9.0 U	9.7 U	10 U	9.6 U [9.4 U]	240 U	9.9 U	10 U	9.8 U	10 U	9.5 U
2-Nitrophenol	1	ug/L	5.0 U	4.7 U	5.0 U	4.9 U	5.0 U	4.8 U [4.7 U]	120 U	5.0 U	5.0 U	4.9 U	5.0 U	4.8 U
3,3'-Dichlorobenzidine	5	ug/L	5.0 U	4.7 U	5.0 U	4.9 U	5.0 U	4.8 U [4.7 U]	120 U	5.0 U	5.0 U	4.9 U	5.0 U	4.8 U
3-Nitroaniline	5	ug/L	9.0 U	9.4 U	9.0 U	9.7 U	10 U	9.6 U [9.4 U]	240 U	9.9 U	10 U	9.8 U	10 U	9.5 U
4,6-Dinitro-2-methylphenol	1	ug/L	9.0 U	9.4 U	9.0 U	9.7 U	10 U	9.6 U [9.4 U]	240 U	9.9 U	10 U	9.8 U	10 U	9.5 U
4-Bromophenyl-phenylether	- -	ug/L	5.0 U	4.7 U	5.0 U	4.9 U	5.0 U	4.8 U [4.7 U]	120 U	5.0 U	5.0 U	4.9 U	5.0 U	4.8 U
4-Chloro-3-Methylphenol	1	ug/L	5.0 U	4.7 U	5.0 U	4.9 U	5.0 U	4.8 U [4.7 U]	120 U	5.0 U	5.0 U	4.9 U	5.0 U	4.8 U
4-Chloroaniline	5	ug/L	5.0 U	4.7 U	5.0 U	4.9 U	5.0 U	4.8 U [4.7 U]	120 UJ	5.0 U	5.0 U	4.9 U	5.0 U	4.8 U
4-Chlorophenyl-phenylether	- -	ug/L	5.0 U	4.7 U	5.0 U	4.9 U	5.0 U	4.8 U [4.7 U]	120 U	5.0 U	5.0 U	4.9 U	5.0 U	4.8 U
4-Methylphenol	1	ug/L	5.0 U	9.4 U	5.0 U	9.7 U	5.0 U	9.6 U [9.4 U]	**16 J**	9.9 UID7	5.0 U	9.8 UID7	5.0 U	9.5 UID7
4-Nitroaniline	5	ug/L	9.0 U	9.4 U	9.0 U	9.7 U	10 U	9.6 U [9.4 U]	240 U	9.9 U	10 U	9.8 U	10 U	9.5 U
4-Nitrophenol	1	ug/L	9.0 U	9.4 U	9.0 U	9.7 U	10 U	9.6 U [9.4 U]	240 U	9.9 U	10 U	9.8 U	10 U	9.5 U
Acenaphthene	20	ug/L	0.20 J	4.7 U	5.0 U	4.9 U	5.0 U	4.8 U [4.7 U]	**32 J**	**21**	5.0 U	4.9 U	5.0 U	4.8 U
Acenaphthylene	- -	ug/L	5.0 U	4.7 U	5.0 U	4.9 U	5.0 U	4.8 U [4.7 U]	42 J	38	5.0 U	4.9 U	5.0 U	4.8 U
Anthracene	50	ug/L	5.0 U	4.7 U	5.0 U	4.9 U	5.0 U	4.8 U [4.7 U]	15 J	12	5.0 U	4.9 U	5.0 U	4.8 U

See Notes on Page 21.

Table 3. Groundwater Analytical Summary
NYSEG
Goshen Former MGP Site
Goshen, New York

Location ID: / Date Collected:	TOGS Standards and Guidance Values	Units	MW-08-4D 12/16/08	MW-08-04D 03/31/09	MW-08-4S 12/16/08	MW-08-04S 03/31/09	MW-08-05D 12/16/08	MW-08-05D 03/31/09	MW-08-05S 12/17/08	MW-08-05S 04/01/09	MW-08-06D 12/17/08	MW-08-06D 04/01/09	MW-08-06S 12/17/08	MW-08-06S 04/01/09
Semivolatile Organics (Cont.)														
Benzo(a)anthracene	0.002	ug/L	5.0 UB	4.7 U	5.0 U	4.9 U	5.0 U	**4.8 U [0.20 J]**	120 U	**0.59 J**	5.0 U	4.9 U	**0.20 J**	4.8 U
Benzo(a)pyrene	ND	ug/L	5.0 U	4.7 U	5.0 U	4.9 U	5.0 U	4.8 U [4.7 U]	120 U	5.0 U	5.0 U	4.9 U	5.0 U	0.19 J
Benzo(b)fluoranthene	0.002	ug/L	5.0 U	4.7 U	5.0 U	4.9 U	5.0 U	4.8 U [4.7 U]	120 U	5.0 U	5.0 U	4.9 U	5.0 U	4.8 U
Benzo(g,h,i)perylene	- -	ug/L	5.0 U	4.7 U	5.0 U	4.9 U	5.0 U	4.8 U [4.7 U]	120 UJ	5.0 U	5.0 U	4.9 U	5.0 U	4.8 U
Benzo(k)fluoranthene	0.002	ug/L	5.0 U	4.7 U	5.0 U	4.9 U	5.0 U	4.8 U [4.7 U]	120 U	5.0 U	5.0 U	4.9 U	5.0 U	4.8 U
Benzoic Acid	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzyl Alcohol	- -	ug/L	19 U	19 U	19 U	19 U	20 U	19 U [19 U]	470 U	20 U	20 U	20 U	19 U	19 U
bis(2-Chloroethoxy)methane	5	ug/L	5.0 U	4.7 U	5.0 U	4.9 U	5.0 U	4.8 U [4.7 U]	120 U	5.0 U	5.0 U	4.9 U	5.0 U	4.8 U
bis(2-Chloroethyl)ether	1	ug/L	5.0 U	4.7 U	5.0 U	4.9 U	5.0 U	4.8 U [4.7 U]	120 U	5.0 U	5.0 U	4.9 U	5.0 U	4.8 U
bis(2-Chloroisopropyl)ether	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	5	ug/L	5.0 U	4.7 U	5.0 U	4.9 U	5.0 U	4.8 U [4.7 U]	120 U	5.0 U	5.0 U	4.9 U	5.0 U	4.8 U
Butylbenzylphthalate	50	ug/L	5.0 U	4.7 U	5.0 U	4.9 U	5.0 U	4.8 U [4.7 U]	120 U	5.0 U	5.0 U	4.9 U	5.0 U	4.8 U
Carbazole	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	0.002	ug/L	5.0 U	4.7 U	5.0 U	4.9 U	5.0 U	4.8 U [4.7 U]	120 U	**0.40 J**	5.0 U	4.9 U	5.0 U	4.8 U
Dibenzo(a,h)anthracene	- -	ug/L	5.0 U	4.7 U	5.0 U	4.9 U	5.0 U	4.8 U [4.7 U]	120 UJ	5.0 U	5.0 U	4.9 U	5.0 U	4.8 U
Dibenzofuran	- -	ug/L	5.0 U	4.7 U	5.0 U	4.9 U	5.0 U	4.8 U [4.7 U]	94 J	69	5.0 U	4.9 U	5.0 U	4.8 U
Diethylphthalate	50	ug/L	5.0 U	4.7 U	5.0 U	4.9 U	5.0 U	4.8 U [4.7 U]	120 U	5.0 U	5.0 U	0.40 J	5.0 U	4.8 U
Dimethylphthalate	50	ug/L	5.0 U	4.7 U	5.0 U	4.9 U	5.0 U	4.8 U [4.7 U]	120 U	5.0 U	5.0 U	4.9 U	5.0 U	4.8 U
Di-n-Butylphthalate	50	ug/L	5.0 UB	4.7 U	5.0 UB	0.73 J	5.0 UB	0.69 J [4.7 U]	120 U	5.0 U	5.0 UB	4.9 U	5.0 UB	4.8 UB
Di-n-Octylphthalate	50	ug/L	5.0 U	4.7 U	5.0 U	4.9 U	5.0 U	4.8 U [4.7 U]	120 U	5.0 U	5.0 U	4.9 U	5.0 U	4.8 U
Fluoranthene	50	ug/L	0.30 J	4.7 U	5.0 U	4.9 U	5.0 U	4.8 U [4.7 U]	10 J	8.4	5.0 U	4.9 U	5.0 U	4.8 U
Fluorene	50	ug/L	0.20 J	4.7 U	5.0 U	4.9 U	5.0 U	4.8 U [4.7 U]	**80 J**	**60**	5.0 U	4.9 U	5.0 U	4.8 U
Hexachlorobenzene	0.04	ug/L	5.0 U	4.7 U	5.0 U	4.9 U	5.0 U	4.8 U [4.7 U]	120 U	5.0 U	5.0 U	4.9 U	5.0 U	4.8 U
Hexachlorobutadiene	0.5	ug/L	5.0 U	4.7 U	5.0 U	4.9 U	5.0 U	4.8 U [4.7 U]	120 U	5.0 U	5.0 U	4.9 U	5.0 U	4.8 U
Hexachlorocyclopentadiene	5	ug/L	5.0 U	4.7 U	5.0 U	4.9 U	5.0 U	4.8 U [4.7 U]	120 U	5.0 U	5.0 U	4.9 U	5.0 U	4.8 U
Hexachloroethane	5	ug/L	5.0 U	4.7 U	5.0 U	4.9 U	5.0 U	4.8 U [4.7 U]	120 U	5.0 U	5.0 U	4.9 U	5.0 U	4.8 U
Indeno(1,2,3-cd)pyrene	0.002	ug/L	5.0 U	4.7 U	5.0 U	4.9 U	5.0 U	4.8 U [4.7 U]	120 UJ	5.0 U	5.0 U	4.9 U	5.0 U	4.8 U
Isophorone	50	ug/L	5.0 U	4.7 U	5.0 U	4.9 U	5.0 U	4.8 U [4.7 U]	120 U	5.0 U	5.0 U	4.9 U	5.0 U	4.8 U
Naphthalene	10	ug/L	5.0 U	4.7 U	5.0 U	4.9 U	**21**	6.4 [5.0]	**2,500**	**1,600 D**	5.0 UB	0.31 J	5.0 UB	0.40 J
Nitrobenzene	0.4	ug/L	5.0 U	4.7 U	5.0 U	4.9 U	5.0 U	4.8 U [4.7 U]	120 U	5.0 U	5.0 U	4.9 U	5.0 U	4.8 U
N-Nitrosodimethylamine	- -	ug/L	9.0 U	9.4 U	9.0 U	9.7 U	10 U	9.6 U [9.4 U]	240 U	9.9 U	10 U	9.8 U	10 U	9.5 U
N-Nitroso-di-n-propylamine	- -	ug/L	5.0 U	4.7 U	5.0 U	4.9 U	5.0 U	4.8 U [4.7 U]	120 U	5.0 U	5.0 U	4.9 U	5.0 U	4.8 U
N-Nitrosodiphenylamine	50	ug/L	5.0 U	4.7 U	5.0 U	4.9 U	5.0 U	4.8 U [4.7 U]	120 U	5.0 U	5.0 U	4.9 U	5.0 U	4.8 U
Pentachlorophenol	1	ug/L	9.0 U	9.4 U	9.0 U	9.7 U	10 U	9.6 U [9.4 U]	240 U	9.9 U	10 U	9.8 U	10 U	9.5 U
Phenanthrene	50	ug/L	0.30 J	4.7 U	5.0 U	4.9 U	5.0 U	4.8 U [4.7 U]	**92 J**	**65**	5.0 U	4.9 U	5.0 U	4.8 U
Phenol	1	ug/L	5.0 U	4.7 U	5.0 U	4.9 U	**2.0 J**	**0.65 J [1.7 J]**	120 U	5.0 U	5.0 U	4.9 U	5.0 U	4.8 U
Pyrene	50	ug/L	0.40 J	4.7 U	5.0 U	4.9 U	5.0 U	4.8 U [4.7 U]	7.0 J	6.3	5.0 U	4.9 U	5.0 U	4.8 U
Total PAHs	- -	ug/L	1.4 J	ND	ND	ND	21	6.4 [5.2 J]	3,100 J	2,000 J	ND	0.31 J	0.20 J	0.59 J
Total SVOCs	- -	ug/L	2.8 J	ND	ND	0.73 J	44 J	14 J [12 J]	6,400 J	4,100 J	ND	1.0 J	0.40 J	1.2 J
Inorganics														
Aluminum	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	25	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	1,000	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	50	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See Notes on Page 21.

Table 3. Groundwater Analytical Summary
NYSEG
Goshen Former MGP Site
Goshen, New York

Location ID: / Date Collected:	TOGS Standards and Guidance Values	Units	MW-08-4D 12/16/08	MW-08-04D 03/31/09	MW-08-4S 12/16/08	MW-08-04S 03/31/09	MW-08-05D 12/16/08	MW-08-05D 03/31/09	MW-08-05S 12/17/08	MW-08-05S 04/01/09	MW-08-06D 12/17/08	MW-08-06D 04/01/09	MW-08-06S 12/17/08	MW-08-06S 04/01/09
Inorganics (Cont.)														
Copper	200	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide	200	ug/L	10.0 UJ	28.1	10.0 UJ	10.0 U	10.0 UJ	10.0 U [10.0 U]	10.0 J	30.6	10.0 UJ	10.0 U	97.0 J	130
Cyanide, Amenable	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	300	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	25	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	300	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	0.7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	100	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	10	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	50	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	2,000	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See Notes on Page 21.

Table 3. Groundwater Analytical Summary
NYSEG
Goshen Former MGP Site
Goshen, New York

Location ID: / Date Collected:	TOGS Standards and Guidance Values	Units	MW-08-07D 12/16/08	MW-08-07D 03/31/09	MW-08-07S 12/17/08	MW-08-07S 03/31/09	MW-08-08D 12/16/08	MW-08-08D 03/31/09	MW-08-08S 12/17/08	MW-08-08S 04/01/09	MW-08-09D 12/17/08	MW-08-09D 04/01/09	MW-08-09S 12/17/08	MW-08-09S 04/01/09
PCBs														
Aroclor-1016	0.09	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1221	0.09	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1232	0.09	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1242	0.09	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1248	0.09	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1254	0.09	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1260	0.09	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Volatile Organics														
1,1,1,2-Tetrachloroethane	5	ug/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	1.0 U	1.0 U	1.0 U
1,1,1-Trichloroethane	5	ug/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	1.0 U	1.0 U	1.0 U
1,1,2,2-Tetrachloroethane	5	ug/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	1.0 U	1.0 U	1.0 U
1,1,2-Trichloroethane	1	ug/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	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	5	ug/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	1.0 U	1.0 U	1.0 U
1,1-Dichloroethene	5	ug/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	1.0 U	1.0 U	1.0 U
1,2,3-Trichloropropane	- -	ug/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	1.0 U	1.0 U	1.0 U
1,2-Dibromo-3-chloropropane	0.04	ug/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	1.0 U	1.0 U	1.0 U
1,2-Dibromoethane	0.0006	ug/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	1.0 U	1.0 U	1.0 U
1,2-Dichlorobenzene	3	ug/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	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	0.6	ug/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	1.0 U	1.0 U	1.0 U
1,2-Dichloroethene (total)	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	1	ug/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	1.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene	3	ug/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	1.0 U	1.0 U	1.0 U
1,4-Dichlorobenzene	3	ug/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	1.0 U	1.0 U	1.0 U
2-Butanone	50	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U [5.0 U]	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
2-Chloroethylvinylether	- -	ug/L	5.0 U	5.0 UJ	5.0 U	5.0 U	5.0 U	5.0 UJ	5.0 U [5.0 U]	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
2-Hexanone	50	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U [5.0 U]	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
4-Methyl-2-pentanone	- -	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U [5.0 U]	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Acetone	50	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U [5.0 U]	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Acrylonitrile	- -	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U [5.0 U]	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Benzene	1	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**18 [17]**	**16**	1.0 U	1.0 U	1.0 U	0.23 J
Bromochloromethane	- -	ug/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	1.0 U	1.0 U	1.0 U
Bromodichloromethane	50	ug/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	1.0 U	1.0 U	1.0 U
Bromoform	50	ug/L	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 U	1.0 U	1.0 U [1.0 U]	1.0 UJ	1.0 U	1.0 UJ	1.0 U	1.0 UJ
Bromomethane	5	ug/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	1.0 U	1.0 U	1.0 U
Carbon Disulfide	60	ug/L	1.0 UJ	1.0 U	1.0 UJ	1.0 U	1.0 UJ	1.0 U	1.0 UJ [1.0 UJ]	1.0 U	1.0 UJ	1.0 U	1.0 UJ	1.0 U
Carbon Tetrachloride	5	ug/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	1.0 U	1.0 U	1.0 U
Chlorobenzene	5	ug/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	1.0 U	1.0 U	1.0 U
Chloroethane	5	ug/L	1.0 U	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 U [1.0 U]	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chloroform	7	ug/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	0.36 J	1.0 U	1.0 U	1.0 U
Chloromethane	5	ug/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	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	5	ug/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	1.0 U	1.0 U	1.0 U
cis-1,3-Dichloropropene	0.4	ug/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	1.0 U	1.0 U	1.0 U
Dibromochloromethane	50	ug/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	1.0 U	1.0 U	1.0 U
Ethylbenzene	5	ug/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	1.0 U	1.0 U	1.0 U
Iodomethane	- -	ug/L	1.0 UJ	1.0 U	1.0 UJ	1.0 U	1.0 UJ	1.0 U	1.0 UJ [1.0 UJ]	1.0 U	1.0 UJ	1.0 U	1.0 UJ	1.0 U
Methylene Chloride	5	ug/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	1.0 U	1.0 U	1.0 U

See Notes on Page 21.

Table 3. Groundwater Analytical Summary
NYSEG
Goshen Former MGP Site
Goshen, New York

Location ID: / Date Collected:	TOGS Standards and Guidance Values	Units	MW-08-07D 12/16/08	MW-08-07D 03/31/09	MW-08-07S 12/17/08	MW-08-07S 03/31/09	MW-08-08D 12/16/08	MW-08-08D 03/31/09	MW-08-08S 12/17/08	MW-08-08S 04/01/09	MW-08-09D 12/17/08	MW-08-09D 04/01/09	MW-08-09S 12/17/08	MW-08-09S 04/01/09
Volatile Organics (Cont.)														
Styrene	5	ug/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	1.0 U	1.0 U	1.0 U
Tetrachloroethene	5	ug/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	1.0 U	1.0 U	1.0 U
Toluene	5	ug/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	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	5	ug/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	1.0 U	1.0 U	1.0 U
trans-1,3-Dichloropropene	0.4	ug/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	1.0 U	1.0 U	1.0 U
trans-1,4-Dichloro-2-butene	- -	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U [5.0 U]	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Trichloroethene	5	ug/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	1.0 U	1.0 U	1.0 U
Trichlorofluoromethane	5	ug/L	1.0 U	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 U [1.0 U]	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Vinyl Acetate	- -	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U [5.0 U]	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Vinyl Chloride	2	ug/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	1.0 U	1.0 U	1.0 U
Xylenes (total)	5	ug/L	3.0 U	2.0 U	3.0 U	2.0 U	3.0 U	2.0 U	3.0 U [3.0 U]	2.0 U	3.0 U	2.0 U	3.0 U	2.0 U
Total BTEX	- -	ug/L	ND	ND	ND	ND	ND	ND	18 [17]	16	ND	ND	ND	0.23 J
Total VOCs	- -	ug/L	ND	ND	ND	ND	ND	ND	36 [34]	32	0.36 J	ND	ND	0.46 J
Semivolatile Organics														
1,2,4-Trichlorobenzene	5	ug/L	10 U	9.4 U	10 U	9.5 U	10 U	9.5 U	10 U [10 U]	9.5 U	10 U	9.5 U	10 U	9.6 U
1,2-Dichlorobenzene	3	ug/L	5.0 UB	9.4 U	10 U	9.5 U	10 U	9.5 U	10 U [10 U]	9.5 U	10 U	9.5 U	10 U	9.6 U
1,3-Dichlorobenzene	3	ug/L	5.0 UB	9.4 U	10 U	9.5 U	10 U	9.5 U	10 U [10 U]	9.5 U	10 U	9.5 U	10 U	9.6 U
1,4-Dichlorobenzene	3	ug/L	5.0 UB	9.4 U	10 U	9.5 U	10 U	9.5 U	10 U [10 U]	9.5 U	10 U	9.5 U	10 U	9.6 U
2,2'-Oxybis(1-Chloropropane)	5	ug/L	5.0 U	4.7 U	5.0 U	4.8 U	5.0 U	4.8 U	5.0 U [5.0 U]	4.8 U	5.0 U	4.8 U	5.0 U	4.8 U
2,4,5-Trichlorophenol	1	ug/L	5.0 U	4.7 U	5.0 U	4.8 U	5.0 U	4.8 U	5.0 U [5.0 U]	4.8 U	5.0 U	4.8 U	5.0 U	4.8 U
2,4,6-Trichlorophenol	1	ug/L	5.0 U	4.7 U	5.0 U	4.8 U	5.0 U	4.8 U	5.0 U [5.0 U]	4.8 U	5.0 U	4.8 U	5.0 U	4.8 U
2,4-Dichlorophenol	5	ug/L	5.0 U	4.7 U	5.0 U	4.8 U	5.0 U	4.8 U	5.0 U [5.0 U]	4.8 U	5.0 U	4.8 U	5.0 U	4.8 U
2,4-Dimethylphenol	50	ug/L	5.0 U	4.7 U	5.0 U	4.8 U	5.0 U	4.8 U	5.0 U [5.0 U]	4.8 U	5.0 U	4.8 U	5.0 U	4.8 U
2,4-Dinitrophenol	10	ug/L	10 U	9.4 U	10 U	9.5 U	10 U	9.5 U	10 U [10 U]	9.5 U	10 U	9.5 U	10 U	9.6 U
2,4-Dinitrotoluene	5	ug/L	5.0 U	4.7 U	5.0 U	4.8 U	5.0 U	4.8 U	5.0 U [5.0 U]	4.8 U	5.0 U	4.8 U	5.0 U	4.8 U
2,6-Dinitrotoluene	5	ug/L	5.0 U	4.7 U	5.0 U	4.8 U	5.0 U	4.8 U	5.0 U [5.0 U]	4.8 U	5.0 U	4.8 U	5.0 U	4.8 U
2-Chloronaphthalene	10	ug/L	5.0 U	4.7 U	5.0 U	4.8 U	5.0 U	4.8 U	5.0 U [5.0 U]	4.8 U	5.0 U	4.8 U	5.0 U	4.8 U
2-Chlorophenol	1	ug/L	5.0 U	4.7 U	5.0 U	4.8 U	5.0 U	4.8 U	5.0 U [5.0 U]	4.8 U	5.0 U	4.8 U	5.0 U	4.8 U
2-Methyl-4,6-Dinitrophenol	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	- -	ug/L	5.0 U	4.7 U	5.0 U	4.8 U	5.0 U	4.8 U	5.0 U [5.0 U]	4.8 U	5.0 U	4.8 U	5.0 U	4.8 U
2-Methylphenol	1	ug/L	5.0 U	4.7 U	5.0 U	4.8 U	5.0 U	4.8 U	5.0 U [5.0 U]	4.8 U	5.0 U	4.8 U	5.0 U	4.8 U
2-Nitroaniline	5	ug/L	10 U	9.4 U	10 U	9.5 U	10 U	9.5 U	10 U [10 U]	9.5 U	10 U	9.5 U	10 U	9.6 U
2-Nitrophenol	1	ug/L	5.0 U	4.7 U	5.0 U	4.8 U	5.0 U	4.8 U	5.0 U [5.0 U]	4.8 U	5.0 U	4.8 U	5.0 U	4.8 U
3,3'-Dichlorobenzidine	5	ug/L	5.0 U	4.7 U	5.0 U	4.8 U	5.0 U	4.8 U	5.0 U [5.0 U]	4.8 U	5.0 U	4.8 U	5.0 U	4.8 U
3-Nitroaniline	5	ug/L	10 U	9.4 U	10 U	9.5 U	10 U	9.5 U	10 U [10 U]	9.5 U	10 U	9.5 U	10 U	9.6 U
4,6-Dinitro-2-methylphenol	1	ug/L	10 U	9.4 U	10 U	9.5 U	10 U	9.5 U	10 U [10 U]	9.5 U	10 U	9.5 U	10 U	9.6 U
4-Bromophenyl-phenylether	- -	ug/L	5.0 U	4.7 U	5.0 U	4.8 U	5.0 U	4.8 U	5.0 U [5.0 U]	4.8 U	5.0 U	4.8 U	5.0 U	4.8 U
4-Chloro-3-Methylphenol	1	ug/L	5.0 U	4.7 U	5.0 U	4.8 U	5.0 U	4.8 U	5.0 U [5.0 U]	4.8 U	5.0 U	4.8 U	5.0 U	4.8 U
4-Chloroaniline	5	ug/L	5.0 UJ	4.7 U	0.40 J	4.8 U	5.0 UJ	4.8 U	5.0 U [5.0 U]	4.8 U	5.0 U	4.8 U	5.0 U	4.8 U
4-Chlorophenyl-phenylether	- -	ug/L	5.0 U	4.7 U	5.0 U	4.8 U	5.0 U	4.8 U	5.0 U [5.0 U]	4.8 U	5.0 U	4.8 U	5.0 U	4.8 U
4-Methylphenol	1	ug/L	5.0 U	9.4 U	5.0 U	9.5 UID7	5.0 U	9.5 U	5.0 U [5.0 U]	9.5 UID7	5.0 U	9.5 UID7	5.0 U	9.6 UID7
4-Nitroaniline	5	ug/L	10 U	9.4 U	10 U	9.5 U	10 U	9.5 U	**7.0 J [5.0 J]**	9.5 U	10 U	9.5 U	10 U	9.6 U
4-Nitrophenol	1	ug/L	10 U	9.4 U	10 U	9.5 U	10 U	9.5 U	10 U [10 U]	9.5 U	10 U	9.5 U	10 U	9.6 U
Acenaphthene	20	ug/L	5.0 U	4.7 U	5.0 U	4.8 U	5.0 U	4.8 U	5.0 U [5.0 U]	4.8 U	0.20 J	4.8 U	5.0 U	4.8 U
Acenaphthylene	- -	ug/L	5.0 U	4.7 U	5.0 U	4.8 U	5.0 U	4.8 U	5.0 U [5.0 U]	4.8 U	0.30 J	0.55 J	5.0 U	4.8 U
Anthracene	50	ug/L	5.0 U	4.7 U	5.0 U	4.8 U	5.0 U	4.8 U	5.0 U [5.0 U]	4.8 U	5.0 U	4.8 U	5.0 U	4.8 U

See Notes on Page 21.

Table 3. Groundwater Analytical Summary
NYSEG
Goshen Former MGP Site
Goshen, New York

Location ID: / Date Collected:	TOGS Standards and Guidance Values	Units	MW-08-07D 12/16/08	MW-08-07D 03/31/09	MW-08-07S 12/17/08	MW-08-07S 03/31/09	MW-08-08D 12/16/08	MW-08-08D 03/31/09	MW-08-08S 12/17/08	MW-08-08S 04/01/09	MW-08-09D 12/17/08	MW-08-09D 04/01/09	MW-08-09S 12/17/08	MW-08-09S 04/01/09
Semivolatile Organics (Cont.)														
Benzo(a)anthracene	0.002	ug/L	5.0 U	4.7 U	5.0 U	4.8 U	5.0 U	4.8 U	5.0 U [5.0 U]	4.8 U	5.0 U	4.8 U	5.0 U	4.8 U
Benzo(a)pyrene	ND	ug/L	0.30 J	4.7 U	5.0 U	4.8 U	5.0 U	4.8 U	5.0 U [0.20 J]	4.8 U	5.0 U	4.8 U	0.20 J	0.20 J
Benzo(b)fluoranthene	0.002	ug/L	**0.30 J**	4.7 U	5.0 U	4.8 U	5.0 U	4.8 U	5.0 U [5.0 U]	4.8 U	5.0 U	4.8 U	5.0 U	4.8 U
Benzo(g,h,i)perylene	- -	ug/L	0.60 J	4.7 U	5.0 U	4.8 U	5.0 UJ	4.8 U	5.0 U [5.0 U]	4.8 U	5.0 U	4.8 U	5.0 U	4.8 U
Benzo(k)fluoranthene	0.002	ug/L	5.0 U	4.7 U	5.0 U	4.8 U	5.0 U	4.8 U	5.0 U [5.0 U]	4.8 U	5.0 U	4.8 U	5.0 U	4.8 U
Benzoic Acid	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzyl Alcohol	- -	ug/L	20 U	19 U	19 U	19 U	20 U	19 U	20 U [20 U]	19 U	19 U	19 U	19 U	19 U
bis(2-Chloroethoxy)methane	5	ug/L	5.0 U	4.7 U	5.0 U	4.8 U	5.0 U	4.8 U	5.0 U [5.0 U]	4.8 U	5.0 U	4.8 U	5.0 U	4.8 U
bis(2-Chloroethyl)ether	1	ug/L	5.0 U	4.7 U	5.0 U	4.8 U	5.0 U	4.8 U	5.0 U [5.0 U]	4.8 U	5.0 U	4.8 U	5.0 U	4.8 U
bis(2-Chloroisopropyl)ether	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	5	ug/L	5.0 U	4.7 U	5.0 U	4.8 U	5.0 U	4.8 U	5.0 U [5.0 U]	4.8 U	5.0 U	4.8 U	5.0 U	4.8 U
Butylbenzylphthalate	50	ug/L	5.0 U	4.7 U	5.0 U	4.8 U	5.0 U	4.8 U	5.0 U [5.0 U]	4.8 U	5.0 U	4.8 U	5.0 U	4.8 U
Carbazole	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	0.002	ug/L	5.0 U	4.7 U	5.0 U	4.8 U	5.0 U	4.8 U	5.0 U [5.0 U]	4.8 U	5.0 U	4.8 U	5.0 U	4.8 U
Dibenzo(a,h)anthracene	- -	ug/L	0.30 J	4.7 U	5.0 U	4.8 U	5.0 UJ	4.8 U	5.0 U [5.0 U]	4.8 U	5.0 U	4.8 U	5.0 U	4.8 U
Dibenzofuran	- -	ug/L	5.0 U	4.7 U	5.0 U	4.8 U	5.0 U	4.8 U	5.0 U [5.0 U]	4.8 U	5.0 U	4.8 U	5.0 U	4.8 U
Diethylphthalate	50	ug/L	5.0 U	4.7 U	5.0 U	0.39 J	5.0 U	4.8 U	5.0 U [5.0 U]	4.8 U	5.0 U	0.24 J	5.0 U	4.8 U
Dimethylphthalate	50	ug/L	5.0 U	4.7 U	5.0 U	4.8 U	5.0 U	4.8 U	5.0 U [5.0 U]	4.8 U	5.0 U	4.8 U	5.0 U	4.8 U
Di-n-Butylphthalate	50	ug/L	5.0 UB	4.7 U	5.0 UB	4.8 U	5.0 UB	4.8 U	5.0 UB [5.0 UB]	4.8 U	5.0 UB	4.8 U	5.0 UB	4.8 U
Di-n-Octylphthalate	50	ug/L	5.0 U	4.7 U	5.0 U	4.8 U	5.0 U	4.8 U	5.0 U [5.0 U]	4.8 U	5.0 U	4.8 U	5.0 U	4.8 U
Fluoranthene	50	ug/L	5.0 U	4.7 U	5.0 U	4.8 U	5.0 U	4.8 U	5.0 U [5.0 U]	4.8 U	0.30 J	4.8 U	5.0 U	4.8 U
Fluorene	50	ug/L	5.0 U	4.7 U	5.0 U	4.8 U	5.0 U	4.8 U	5.0 U [5.0 U]	4.8 U	5.0 U	4.8 U	5.0 U	4.8 U
Hexachlorobenzene	0.04	ug/L	5.0 U	4.7 U	5.0 U	4.8 U	5.0 U	4.8 U	5.0 U [5.0 U]	4.8 U	5.0 U	4.8 U	5.0 U	4.8 U
Hexachlorobutadiene	0.5	ug/L	5.0 U	4.7 U	5.0 U	4.8 U	5.0 U	4.8 U	5.0 U [5.0 U]	4.8 U	5.0 U	4.8 U	5.0 U	4.8 U
Hexachlorocyclopentadiene	5	ug/L	5.0 U	4.7 U	5.0 U	4.8 U	5.0 U	4.8 U	5.0 U [5.0 U]	4.8 U	5.0 U	4.8 U	5.0 U	4.8 U
Hexachloroethane	5	ug/L	5.0 U	4.7 U	5.0 U	4.8 U	5.0 U	4.8 U	5.0 U [5.0 U]	4.8 U	5.0 U	4.8 U	5.0 U	4.8 U
Indeno(1,2,3-cd)pyrene	0.002	ug/L	**0.40 J**	4.7 U	5.0 U	4.8 U	5.0 UJ	4.8 U	5.0 U [5.0 U]	4.8 U	5.0 U	4.8 U	5.0 U	4.8 U
Isophorone	50	ug/L	5.0 U	4.7 U	5.0 U	4.8 U	5.0 U	4.8 U	5.0 U [5.0 U]	4.8 U	5.0 U	4.8 U	5.0 U	4.8 U
Naphthalene	10	ug/L	5.0 UB	4.7 U	5.0 UB	4.8 U	5.0 U	4.8 U	5.0 UB [5.0 U]	4.8 U	5.0 U	1.1 J	5.0 U	0.21 J
Nitrobenzene	0.4	ug/L	5.0 U	4.7 U	5.0 U	4.8 U	5.0 U	4.8 U	5.0 U [5.0 U]	4.8 U	5.0 U	4.8 U	5.0 U	4.8 U
N-Nitrosodimethylamine	- -	ug/L	10 U	9.4 U	10 U	9.5 U	10 U	9.5 U	10 U [10 U]	9.5 U	10 U	9.5 U	10 U	9.6 U
N-Nitroso-di-n-propylamine	- -	ug/L	5.0 U	4.7 U	5.0 U	4.8 U	5.0 U	4.8 U	5.0 U [5.0 U]	4.8 U	5.0 U	4.8 U	5.0 U	4.8 U
N-Nitrosodiphenylamine	50	ug/L	5.0 U	4.7 U	5.0 U	4.8 U	5.0 U	4.8 U	5.0 U [5.0 U]	4.8 U	5.0 U	4.8 U	5.0 U	4.8 U
Pentachlorophenol	1	ug/L	10 U	9.4 U	10 U	9.5 U	10 U	9.5 U	10 U [10 U]	9.5 U	10 U	9.5 U	10 U	9.6 U
Phenanthrene	50	ug/L	5.0 U	4.7 U	5.0 U	4.8 U	0.20 J	4.8 U	5.0 U [5.0 U]	4.8 U	0.20 J	0.21 J	5.0 U	4.8 U
Phenol	1	ug/L	5.0 U	4.7 U	5.0 U	4.8 U	5.0 U	4.8 U	5.0 U [5.0 U]	4.8 U	5.0 U	4.8 U	5.0 U	4.8 U
Pyrene	50	ug/L	5.0 U	4.7 U	5.0 U	4.8 U	5.0 U	4.8 U	5.0 U [5.0 U]	4.8 U	0.30 J	4.8 U	5.0 U	4.8 U
Total PAHs	- -	ug/L	1.9 J	ND	ND	ND	0.20 J	ND	ND [0.20 J]	ND	1.3 J	1.9 J	0.20 J	0.41 J
Total SVOCs	- -	ug/L	3.8 J	ND	0.40 J	0.39 J	0.40 J	ND	7.0 J [5.4 J]	ND	2.6 J	4.0 J	0.40 J	0.82 J
Inorganics														
Aluminum	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	3	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	25	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	1,000	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	5	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	50	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See Notes on Page 21.

Table 3. Groundwater Analytical Summary
NYSEG
Goshen Former MGP Site
Goshen, New York

Location ID: / Date Collected:	TOGS Standards and Guidance Values	Units	MW-08-07D 12/16/08	MW-08-07D 03/31/09	MW-08-07S 12/17/08	MW-08-07S 03/31/09	MW-08-08D 12/16/08	MW-08-08D 03/31/09	MW-08-08S 12/17/08	MW-08-08S 04/01/09	MW-08-09D 12/17/08	MW-08-09D 04/01/09	MW-08-09S 12/17/08	MW-08-09S 04/01/09
Inorganics (Cont.)														
Copper	200	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide	200	ug/L	10.0 UJ	10.0 U	10.0 UJ	10.0 U	10.0 UJ	10.0 U	10.0 UJ [10.0 UJ]	10.0 U	10.0 UJ	10.0 U	10.0 UJ	10.0 U
Cyanide, Amenable	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	300	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	25	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	300	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	0.7	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	100	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	10	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	50	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	2,000	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See Notes on Page 21.

Table 3. Groundwater Analytical Summary
NYSEG
Goshen Former MGP Site
Goshen, New York

Location ID: / Date Collected:	TOGS Standards and Guidance Values	Units	MW93-1D 10/18/93	MW93-1D 01/24/94	MW93-1D 04/27/94	MW93-1D 07/20/94	MW93-1D 10/07/08	MW93-1S 10/18/93	MW93-1S 01/24/94	MW93-1S 04/27/94	MW93-1S 07/20/94	MW93-1S 10/06/08	MW93-2D 10/18/93	MW93-2D 01/24/94	MW93-2D 04/27/94	MW93-2D 07/20/94	MW93-2D 10/08/08
PCBs																	
Aroclor-1016	0.09	ug/L	1.0 U	NA	NA	NA	NA	1.0 U	NA	NA	NA	NA	0.96 U	NA	NA	NA	NA
Aroclor-1221	0.09	ug/L	1.0 U	NA	NA	NA	NA	1.0 U	NA	NA	NA	NA	0.96 U	NA	NA	NA	NA
Aroclor-1232	0.09	ug/L	1.0 U	NA	NA	NA	NA	1.0 U	NA	NA	NA	NA	0.96 U	NA	NA	NA	NA
Aroclor-1242	0.09	ug/L	1.0 U	NA	NA	NA	NA	1.0 U	NA	NA	NA	NA	0.96 U	NA	NA	NA	NA
Aroclor-1248	0.09	ug/L	1.0 U	NA	NA	NA	NA	1.0 U	NA	NA	NA	NA	0.96 U	NA	NA	NA	NA
Aroclor-1254	0.09	ug/L	1.0 U	NA	NA	NA	NA	1.0 U	NA	NA	NA	NA	0.96 U	NA	NA	NA	NA
Aroclor-1260	0.09	ug/L	1.0 U	NA	NA	NA	NA	1.0 U	NA	NA	NA	NA	0.96 U	NA	NA	NA	NA
Volatile Organics																	
1,1,1,2-Tetrachloroethane	5	ug/L	NA	NA	NA	NA	1.0 U	NA	NA	NA	NA	1.0 U	NA	NA	NA	NA	1.0 U
1,1,1-Trichloroethane	5	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U
1,1,2,2-Tetrachloroethane	5	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.0 UJ
1,1,2-Trichloroethane	1	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U
1,1-Dichloroethane	5	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U
1,1-Dichloroethene	5	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U
1,2,3-Trichloropropane	- -	ug/L	NA	NA	NA	NA	1.0 U	NA	NA	NA	NA	1.0 U	NA	NA	NA	NA	1.0 U
1,2-Dibromo-3-chloropropane	0.04	ug/L	NA	NA	NA	NA	1.0 U	NA	NA	NA	NA	1.0 U	NA	NA	NA	NA	1.0 U
1,2-Dibromoethane	0.0006	ug/L	NA	NA	NA	NA	1.0 U	NA	NA	NA	NA	1.0 U	NA	NA	NA	NA	1.0 U
1,2-Dichlorobenzene	3	ug/L	NA	NA	NA	NA	1.0 U	NA	NA	NA	NA	1.0 U	NA	NA	NA	NA	1.0 U
1,2-Dichloroethane	0.6	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U
1,2-Dichloroethene (total)	- -	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	NA	5.0 U	5.0 U	5.0 U	5.0 U	NA	5.0 U	5.0 U	5.0 U	5.0 U	NA
1,2-Dichloropropane	1	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U
1,3-Dichlorobenzene	3	ug/L	NA	NA	NA	NA	1.0 U	NA	NA	NA	NA	1.0 U	NA	NA	NA	NA	1.0 U
1,4-Dichlorobenzene	3	ug/L	NA	NA	NA	NA	1.0 U	NA	NA	NA	NA	1.0 U	NA	NA	NA	NA	1.0 U
2-Butanone	50	ug/L	10 U	10 U	10 U	10 U	5.0 U	10 U	10 U	10 U	10 U	5.0 U	10 U	10 U	10 U	10 U	5.0 UJ
2-Chloroethylvinylether	- -	ug/L	NA	NA	NA	NA	5.0 U	NA	NA	NA	NA	5.0 U	NA	NA	NA	NA	5.0 U
2-Hexanone	50	ug/L	10 U	10 U	10 U	10 U	5.0 U	10 U	10 U	10 U	10 U	5.0 U	10 U	10 U	10 U	10 U	5.0 UJ
4-Methyl-2-pentanone	- -	ug/L	10 U	10 U	10 U	10 U	5.0 U	10 U	10 U	10 U	10 U	5.0 U	10 U	10 U	10 U	10 U	5.0 UJ
Acetone	50	ug/L	11 B	10 U	10 U	10 U	5.0 U	10 B	6.0 J	10 U	11	5.0 U	14 B	10 U	10 U	3.0 J	5.0 UJ
Acrylonitrile	- -	ug/L	NA	NA	NA	NA	5.0 U	NA	NA	NA	NA	5.0 U	NA	NA	NA	NA	5.0 UJ
Benzene	1	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U
Bromochloromethane	- -	ug/L	NA	NA	NA	NA	1.0 U	NA	NA	NA	NA	1.0 U	NA	NA	NA	NA	1.0 U
Bromodichloromethane	50	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U
Bromoform	50	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U
Bromomethane	5	ug/L	10 U	10 U	10 U	10 U	1.0 U	10 U	10 U	10 U	10 U	1.0 U	10 U	10 U	10 U	10 U	1.0 U
Carbon Disulfide	60	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U
Carbon Tetrachloride	5	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U
Chlorobenzene	5	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U
Chloroethane	5	ug/L	10 U	10 U	10 U	10 U	1.0 U	10 U	10 U	10 U	10 U	1.0 U	10 U	10 U	10 U	10 U	1.0 U
Chloroform	7	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U
Chloromethane	5	ug/L	10 U	10 U	10 U	10 U	1.0 U	10 U	10 U	10 U	10 U	1.0 U	10 U	10 U	10 U	10 U	1.0 U
cis-1,2-Dichloroethene	5	ug/L	NA	NA	NA	NA	1.0 U	NA	NA	NA	NA	1.0 U	NA	NA	NA	NA	1.0 U
cis-1,3-Dichloropropene	0.4	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U
Dibromochloromethane	50	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U
Ethylbenzene	5	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U
Iodomethane	- -	ug/L	NA	NA	NA	NA	1.0 U	NA	NA	NA	NA	1.0 U	NA	NA	NA	NA	1.0 U
Methylene Chloride	5	ug/L	**19 B**	5.0 U	5.0 U	4.0 J	1.0 U	**18 B**	5.0 U	5.0 U	5.0 U	1.0 U	**19 B**	5.0 U	5.0 U	5.0 U	1.0 U

See Notes on Page 21.

Table 3. Groundwater Analytical Summary
NYSEG
Goshen Former MGP Site
Goshen, New York

Location ID: / Date Collected:	TOGS Standards and Guidance Values	Units	MW93-1D 10/18/93	MW93-1D 01/24/94	MW93-1D 04/27/94	MW93-1D 07/20/94	MW93-1D 10/07/08	MW93-1S 10/18/93	MW93-1S 01/24/94	MW93-1S 04/27/94	MW93-1S 07/20/94	MW93-1S 10/06/08	MW93-2D 10/18/93	MW93-2D 01/24/94	MW93-2D 04/27/94	MW93-2D 07/20/94	MW93-2D 10/08/08
Volatile Organics (Cont.)																	
Styrene	5	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U
Tetrachloroethene	5	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U
Toluene	5	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U
trans-1,2-Dichloroethene	5	ug/L	NA	NA	NA	NA	1.0 U	NA	NA	NA	NA	1.0 U	NA	NA	NA	NA	1.0 U
trans-1,3-Dichloropropene	0.4	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U
trans-1,4-Dichloro-2-butene	- -	ug/L	NA	NA	NA	NA	5.0 UJ	NA	NA	NA	NA	5.0 UJ	NA	NA	NA	NA	5.0 UJ
Trichloroethene	5	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U
Trichlorofluoromethane	5	ug/L	NA	NA	NA	NA	1.0 U	NA	NA	NA	NA	1.0 U	NA	NA	NA	NA	1.0 U
Vinyl Acetate	- -	ug/L	10 U	10 U	10 U	10 U	5.0 U	10 U	10 U	10 U	10 U	5.0 U	10 U	10 U	10 U	10 U	5.0 UJ
Vinyl Chloride	2	ug/L	10 U	10 U	10 U	10 U	1.0 U	10 U	10 U	10 U	10 U	1.0 U	10 U	10 U	10 U	10 U	1.0 U
Xylenes (total)	5	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	3.0 U	5.0 U	5.0 U	5.0 U	5.0 U	3.0 U	5.0 U	5.0 U	5.0 U	5.0 U	3.0 U
Total BTEX	- -	ug/L	ND	ND	ND	NA	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA	ND
Total VOCs	- -	ug/L	30	ND	ND	4.0	ND	28	6.0 J	ND	11	ND	33	ND	ND	3.0	ND
Semivolatile Organics																	
1,2,4-Trichlorobenzene	5	ug/L	10 U	10 U	10 U	12 U	10 U	10 U	12 U	10 U	10 U	11 U	10 U	11 U	10 U	10 U	10 U
1,2-Dichlorobenzene	3	ug/L	10 U	10 U	10 U	12 U	10 U	10 U	12 U	10 U	10 U	11 U	10 U	11 U	10 U	10 U	10 U
1,3-Dichlorobenzene	3	ug/L	10 U	10 U	10 U	12 U	10 U	10 U	12 U	10 U	10 U	11 U	10 U	11 U	10 U	10 U	10 U
1,4-Dichlorobenzene	3	ug/L	10 U	10 U	10 U	12 U	10 U	10 U	12 U	10 U	10 U	11 U	10 U	11 U	10 U	10 U	10 U
2,2'-Oxybis(1-Chloropropane)	5	ug/L	10 U	NA	NA	NA	5.0 U	10 U	NA	NA	NA	5.0 U	10 U	NA	NA	NA	5.0 U
2,4,5-Trichlorophenol	1	ug/L	25 U	25 U	25 U	30 U	5.0 U	24 U	30 U	26 U	24 U	5.0 U	25 U	29 U	25 U	24 U	5.0 U
2,4,6-Trichlorophenol	1	ug/L	10 U	10 U	10 U	12 U	5.0 U	10 U	12 U	10 U	10 U	5.0 U	10 U	11 U	10 U	10 U	5.0 U
2,4-Dichlorophenol	5	ug/L	10 U	10 U	10 U	12 U	5.0 U	10 U	12 U	10 U	10 U	5.0 U	10 U	11 U	10 U	10 U	5.0 U
2,4-Dimethylphenol	50	ug/L	10 U	10 U	10 U	12 U	5.0 U	10 U	12 U	10 U	10 U	5.0 U	10 U	11 U	10 U	10 U	5.0 U
2,4-Dinitrophenol	10	ug/L	25 U	25 U	25 U	30 U	10 U	24 U	30 U	26 U	24 U	11 U	25 U	29 U	25 U	24 U	10 U
2,4-Dinitrotoluene	5	ug/L	10 U	10 U	10 U	12 U	5.0 U	10 U	12 U	10 U	10 U	5.0 U	10 U	11 U	10 U	10 U	5.0 U
2,6-Dinitrotoluene	5	ug/L	10 U	10 U	10 U	12 U	5.0 U	10 U	12 U	10 U	10 U	5.0 U	10 U	11 U	10 U	10 U	5.0 U
2-Chloronaphthalene	10	ug/L	10 U	10 U	10 U	12 U	5.0 U	10 U	12 U	10 U	10 U	5.0 U	10 U	11 U	10 U	10 U	5.0 U
2-Chlorophenol	1	ug/L	10 U	10 U	10 U	12 U	5.0 UJ	10 U	12 U	10 U	10 U	5.0 U	10 U	11 U	10 U	10 U	5.0 U
2-Methyl-4,6-Dinitrophenol	- -	ug/L	25 U	25 U	25 U	30 U	NA	24 U	30 U	26 U	24 U	NA	25 U	29 U	25 U	24 U	NA
2-Methylnaphthalene	- -	ug/L	10 U	10 U	10 U	12 U	5.0 U	10 U	12 U	10 U	10 U	5.0 U	10 U	11 U	10 U	10 U	5.0 U
2-Methylphenol	1	ug/L	10 U	10 U	10 U	12 U	5.0 U	10 U	12 U	10 U	10 U	5.0 U	10 U	11 U	10 U	10 U	5.0 U
2-Nitroaniline	5	ug/L	25 U	25 U	25 U	30 U	10 U	24 U	30 U	26 U	24 U	11 U	25 U	29 U	25 U	24 U	10 U
2-Nitrophenol	1	ug/L	10 U	10 U	10 U	12 U	5.0 U	10 U	12 U	10 U	10 U	5.0 U	10 U	11 U	10 U	10 U	5.0 U
3,3'-Dichlorobenzidine	5	ug/L	10 U	10 U	10 U	12 U	5.0 U	10 U	12 U	10 U	10 U	5.0 U	10 U	11 U	10 U	10 U	5.0 U
3-Nitroaniline	5	ug/L	25 U	25 U	25 U	30 U	10 U	24 U	30 U	26 U	24 U	11 U	25 U	29 U	25 U	24 U	10 U
4,6-Dinitro-2-methylphenol	1	ug/L	NA	NA	NA	NA	10 U	NA	NA	NA	NA	11 U	NA	NA	NA	NA	10 U
4-Bromophenyl-phenylether	- -	ug/L	10 U	10 U	10 U	12 U	5.0 U	10 U	12 U	10 U	10 U	5.0 U	10 U	11 U	10 U	10 U	5.0 U
4-Chloro-3-Methylphenol	1	ug/L	10 U	10 U	10 U	12 U	5.0 U	10 U	12 U	10 U	10 U	5.0 U	10 U	11 U	10 U	10 U	5.0 U
4-Chloroaniline	5	ug/L	10 U	10 U	10 U	12 U	5.0 U	10 U	12 U	10 U	10 U	5.0 U	10 U	11 U	10 U	10 U	2.0 J
4-Chlorophenyl-phenylether	- -	ug/L	10 U	10 U	10 U	12 U	5.0 U	10 U	12 U	10 U	10 U	5.0 U	10 U	11 U	10 U	10 U	5.0 U
4-Methylphenol	1	ug/L	10 U	10 U	10 U	12 U	5.0 U	10 U	12 U	10 U	10 U	5.0 U	10 U	11 U	10 U	10 U	5.0 U
4-Nitroaniline	5	ug/L	25 U	25 U	25 U	30 U	10 U	24 U	30 U	26 U	24 U	11 U	25 U	29 U	25 U	24 U	10 U
4-Nitrophenol	1	ug/L	10 U	10 U	10 U	12 U	10 U	10 U	12 U	10 U	10 U	11 U	10 U	11 U	10 U	10 U	10 U
Acenaphthene	20	ug/L	10 U	10 U	10 U	12 U	5.0 U	10 U	12 U	10 U	10 U	5.0 U	10 U	11 U	10 U	10 U	5.0 U
Acenaphthylene	- -	ug/L	10 U	10 U	10 U	12 U	5.0 U	10 U	12 U	10 U	10 U	5.0 U	10 U	11 U	10 U	10 U	5.0 U
Anthracene	50	ug/L	10 U	10 U	10 U	12 U	5.0 U	10 U	12 U	10 U	10 U	5.0 U	10 U	11 U	10 U	10 U	5.0 U

See Notes on Page 21.

Table 3. Groundwater Analytical Summary
NYSEG
Goshen Former MGP Site
Goshen, New York

Location ID: / Date Collected:	TOGS Standards and Guidance Values	Units	MW93-1D 10/18/93	MW93-1D 01/24/94	MW93-1D 04/27/94	MW93-1D 07/20/94	MW93-1D 10/07/08	MW93-1S 10/18/93	MW93-1S 01/24/94	MW93-1S 04/27/94	MW93-1S 07/20/94	MW93-1S 10/06/08	MW93-2D 10/18/93	MW93-2D 01/24/94	MW93-2D 04/27/94	MW93-2D 07/20/94	MW93-2D 10/08/08
Semivolatile Organics (Cont.)																	
Benzo(a)anthracene	0.002	ug/L	10 U	10 U	10 U	12 U	5.0 U	10 U	12 U	10 U	10 U	**0.60 J**	10 U	11 U	10 U	10 U	5.0 U
Benzo(a)pyrene	ND	ug/L	10 U	10 U	10 U	12 U	5.0 U	10 U	12 U	10 U	10 U	0.80 J	10 U	11 U	10 U	10 U	5.0 U
Benzo(b)fluoranthene	0.002	ug/L	10 U	10 U	10 U	12 U	5.0 U	10 U	12 U	10 U	10 U	**1.0 J**	10 U	11 U	10 U	10 U	5.0 U
Benzo(g,h,i)perylene	- -	ug/L	10 U	10 U	10 U	12 U	5.0 U	10 U	12 U	10 U	10 U	0.70 J	10 U	11 U	10 U	10 U	5.0 U
Benzo(k)fluoranthene	0.002	ug/L	10 U	10 U	10 U	12 U	5.0 U	10 U	12 U	10 U	10 U	**0.50 J**	10 U	11 U	10 U	10 U	5.0 U
Benzoic Acid	- -	ug/L	25 U	25 U	25 U	30 U	NA	24 U	30 U	26 U	24 U	NA	25 U	29 U	25 U	24 U	NA
Benzyl Alcohol	- -	ug/L	10 U	10 U	10 U	12 U	19 U	10 U	12 U	10 U	10 U	21 U	10 U	11 U	10 U	10 U	19 U
bis(2-Chloroethoxy)methane	5	ug/L	10 U	10 U	10 U	12 U	5.0 U	10 U	12 U	10 U	10 U	5.0 U	10 U	11 U	10 U	10 U	5.0 U
bis(2-Chloroethyl)ether	1	ug/L	10 U	10 U	10 U	12 U	5.0 U	10 U	12 U	10 U	10 U	5.0 U	10 U	11 U	10 U	10 U	5.0 U
bis(2-Chloroisopropyl)ether	- -	ug/L	NA	10 U	10 U	12 U	NA	NA	12 U	10 U	10 U	NA	NA	11 U	10 U	10 U	NA
bis(2-Ethylhexyl)phthalate	5	ug/L	10 U	10 U	**10**	12 U	5.0 U	10 U	12 U	10 U	10 U	5.0 U	10 U	11 U	**10**	10 U	5.0 U
Butylbenzylphthalate	50	ug/L	10 U	10 U	10 U	12 U	5.0 U	10 U	12 U	10 U	10 U	5.0 U	10 U	11 U	10 U	10 U	5.0 U
Carbazole	- -	ug/L	10 U	10 U	10 U	12 U	NA	10 U	12 U	10 U	10 U	NA	10 U	11 U	10 U	10 U	NA
Chrysene	0.002	ug/L	10 U	10 U	10 U	12 U	5.0 U	10 U	12 U	10 U	10 U	**0.50 J**	10 U	11 U	10 U	10 U	5.0 U
Dibenzo(a,h)anthracene	- -	ug/L	10 U	10 U	10 U	12 U	5.0 U	10 U	12 U	10 U	10 U	5.0 U	10 U	11 U	10 U	10 U	5.0 U
Dibenzofuran	- -	ug/L	10 U	10 U	10 U	12 U	5.0 U	10 U	12 U	10 U	10 U	5.0 U	10 U	11 U	10 U	10 U	5.0 U
Diethylphthalate	50	ug/L	10 U	10 U	10 U	12 U	5.0 U	10 U	12 U	10 U	10 U	5.0 U	10 U	11 U	10 U	10 U	5.0 U
Dimethylphthalate	50	ug/L	10 U	10 U	10 U	12 U	5.0 U	10 U	12 U	10 U	10 U	5.0 U	10 U	11 U	10 U	10 U	5.0 U
Di-n-Butylphthalate	50	ug/L	10 U	10 U	10 U	12 U	0.30 J	10 U	12 U	10 U	10 U	5.0 UB	10 U	11 U	10 U	10 U	5.0 U
Di-n-Octylphthalate	50	ug/L	10 U	10 U	10 U	12 U	5.0 U	10 U	12 U	10 U	10 U	5.0 U	10 U	11 U	10 U	10 U	5.0 U
Fluoranthene	50	ug/L	10 U	10 U	10 U	12 U	5.0 U	10 U	12 U	10 U	10 U	0.90 J	10 U	11 U	10 U	10 U	5.0 U
Fluorene	50	ug/L	10 U	10 U	10 U	12 U	5.0 U	10 U	12 U	10 U	10 U	5.0 U	10 U	11 U	10 U	10 U	5.0 U
Hexachlorobenzene	0.04	ug/L	10 U	10 U	10 U	12 U	5.0 U	10 U	12 U	10 U	10 U	5.0 U	10 U	11 U	10 U	10 U	5.0 U
Hexachlorobutadiene	0.5	ug/L	10 U	10 U	10 U	12 U	5.0 U	10 U	12 U	10 U	10 U	5.0 U	10 U	11 U	10 U	10 U	5.0 U
Hexachlorocyclopentadiene	5	ug/L	10 U	10 U	10 U	12 U	5.0 U	10 U	12 U	10 U	10 U	5.0 U	10 U	11 U	10 U	10 U	5.0 U
Hexachloroethane	5	ug/L	10 U	10 U	10 U	12 U	5.0 U	10 U	12 U	10 U	10 U	5.0 U	10 U	11 U	10 U	10 U	5.0 U
Indeno(1,2,3-cd)pyrene	0.002	ug/L	10 U	10 U	10 U	12 U	5.0 U	10 U	12 U	10 U	10 U	**0.60 J**	10 U	11 U	10 U	10 U	5.0 U
Isophorone	50	ug/L	10 U	10 U	10 U	12 U	5.0 U	10 U	12 U	10 U	10 U	5.0 U	10 U	11 U	10 U	10 U	5.0 U
Naphthalene	10	ug/L	10 U	10 U	10 U	12 U	5.0 U	10 U	12 U	10 U	10 U	5.0 U	10 U	11 U	10 U	10 U	5.0 U
Nitrobenzene	0.4	ug/L	10 U	10 U	10 U	12 U	5.0 U	10 U	12 U	10 U	10 U	5.0 U	10 U	11 U	10 U	10 U	5.0 U
N-Nitrosodimethylamine	- -	ug/L	NA	NA	NA	NA	10 U	NA	NA	NA	NA	11 U	NA	NA	NA	NA	10 U
N-Nitroso-di-n-propylamine	- -	ug/L	10 U	10 U	10 U	12 U	5.0 U	10 U	12 U	10 U	10 U	5.0 U	10 U	11 U	10 U	10 U	5.0 U
N-Nitrosodiphenylamine	50	ug/L	10 U	10 U	10 U	12 U	5.0 U	10 U	12 U	10 U	10 U	5.0 U	10 U	11 U	10 U	10 U	5.0 U
Pentachlorophenol	1	ug/L	25 U	25 U	25 U	30 U	10 U	24 U	30 U	26 U	24 U	11 U	25 U	29 U	25 U	24 U	10 U
Phenanthrene	50	ug/L	10 U	10 U	10 U	12 U	5.0 U	10 U	12 U	10 U	10 U	5.0 U	10 U	11 U	10 U	10 U	5.0 U
Phenol	1	ug/L	10 U	10 U	10 U	12 U	5.0 U	10 U	12 U	10 U	10 U	5.0 U	10 U	11 U	10 U	10 U	5.0 U
Pyrene	50	ug/L	10 U	10 U	10 U	12 U	5.0 U	10 U	12 U	10 U	10 U	0.80 J	10 U	11 U	10 U	10 U	5.0 U
Total PAHs	- -	ug/L	ND	ND	ND	NA	ND	ND	ND	ND	NA	6.4 J	ND	ND	ND	NA	ND
Total SVOCs	- -	ug/L	ND	ND	10	NA	0.30 J	ND	ND	ND	NA	13 J	ND	ND	10	NA	2.0 J
Inorganics																	
Aluminum	- -	ug/L	9,050 N	3,780 N	15,400	9,300	NA	29,500 N	3,410 N	23,600	24,700	NA	16,800 N	1,960 N	12,300	7,610	NA
Antimony	3	ug/L	5.00 U	3.00 U	3.00 U	3.00 U	NA	5.00 U	3.00 U	3.00 U	3.00 U	NA	5.00 U	3.00 U	3.00 U	3.00 U	NA
Arsenic	25	ug/L	7.10 J	2.00 J	10.6	6.30 B	NA	16.3 N	4.70 J	19.2	22.1	NA	10.6 N	3.20 J	9.40 B	6.50 B	NA
Barium	1,000	ug/L	141 J	156 J	205	168 B	NA	298 N	232 N	281	286	NA	219 N	193 J	225	203	NA
Cadmium	5	ug/L	4.00 U	3.00 U	3.00 U	4.00 U	NA	4.00 U	4.00 J	3.00 U	4.00 U	NA	4.00 U	3.00 U	3.00 U	**15.0**	NA
Chromium	50	ug/L	23.0 N	8.00 J	31.0	15.0	NA	**59.0 N**	8.00 J	**205**	**140**	NA	39.0 N	10.0 N	**62.0**	50.0	NA

See Notes on Page 21.

Table 3. Groundwater Analytical Summary
NYSEG
Goshen Former MGP Site
Goshen, New York

Location ID: / Date Collected:	TOGS Standards and Guidance Values	Units	MW93-1D 10/18/93	MW93-1D 01/24/94	MW93-1D 04/27/94	MW93-1D 07/20/94	MW93-1D 10/07/08	MW93-1S 10/18/93	MW93-1S 01/24/94	MW93-1S 04/27/94	MW93-1S 07/20/94	MW93-1S 10/06/08	MW93-2D 10/18/93	MW93-2D 01/24/94	MW93-2D 04/27/94	MW93-2D 07/20/94	MW93-2D 10/08/08
Inorganics (Cont.)																	
Copper	200	ug/L	33.0 N	25.0 N	42.0	24.0 B	NA	87.0 N	41.0 N	68.0	67.0	NA	50.0 N	28.0 N	41.0	20.0 B	NA
Cyanide	200	ug/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 UJ
Cyanide, Amenable	- -	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	300	ug/L	**16,900 N**	**5,360 N**	**31,800**	**15,400**	NA	**59,100 N**	**9,030 N**	**48,000**	**50,500**	NA	**29,900 N**	**4,720 N**	**24,500**	**13,100**	NA
Lead	25	ug/L	7.20 N	1.10 J	13.5	9.90	NA	21.8 N	10.7 N	**29.1**	**33.2**	NA	12.5 N	5.40 N	14.0	9.40	NA
Manganese	300	ug/L	**1,050 N**	**1,460 N**	**1,700**	**1,190**	NA	**2,570 N**	**3,250 N**	**2,050**	**2,340**	NA	**2,130 N**	**2,290 N**	**1,880**	**1,480**	NA
Mercury	0.7	ug/L	0.100 U	0.100 U	0.100 U	0.100 U	NA	0.120 J	0.170 J	0.100 U	0.100 U	NA	0.100 U	0.100 U	0.100 U	0.100 U	NA
Nickel	100	ug/L	29.0 J	9.00 J	36.0 B	18.0 B	NA	82.0 N	27.0 J	66.0	59.0	NA	43.0 N	10.0 J	31.0 B	38.0 B	NA
Selenium	10	ug/L	1.00 U	1.00 U	1.00 U	1.00 U	NA	1.00 U	1.00 U	1.00 U	1.00 U	NA	1.00 U	1.00 U	1.00 U	1.00 U	NA
Silver	50	ug/L	7.00 U	3.00 U	4.00 B	7.00 U	NA	7.00 U	3.00 U	15.0	7.00 U	NA	7.00 U	3.00 U	3.00 U	7.00 U	NA
Vanadium	- -	ug/L	22.0 J	16.0 J	38.0 B	17.0 B	NA	58.0 N	22.0 J	57.0	46.0 B	NA	37.0 J	19.0 J	38.0 B	20.0 B	NA
Zinc	2,000	ug/L	68.0 N	31.0 N	93.0	45.0	NA	173 N	33.0 N	142	144	NA	104 N	28.0 N	248	54.0	NA

See Notes on Page 21.

Table 3. Groundwater Analytical Summary
NYSEG
Goshen Former MGP Site
Goshen, New York

Location ID: / Date Collected:	TOGS Standards and Guidance Values	Units	MW93-2S 10/18/93	MW93-2S 01/24/94	MW93-2S 04/27/94	MW93-2S 07/20/94	MW93-2S 10/07/08	MW93-3D 10/18/93	MW93-3D 01/24/94	MW93-3D 04/27/94	MW93-3D 07/20/94	MW93-3D 10/08/08	MW93-3S 10/18/93
PCBs													
Aroclor-1016	0.09	ug/L	1.0 U	NA	NA	NA	NA	1.0 U [1.0 U]	NA	NA	NA	NA	0.96 U
Aroclor-1221	0.09	ug/L	1.0 U	NA	NA	NA	NA	1.0 U [1.0 U]	NA	NA	NA	NA	0.96 U
Aroclor-1232	0.09	ug/L	1.0 U	NA	NA	NA	NA	1.0 U [1.0 U]	NA	NA	NA	NA	0.96 U
Aroclor-1242	0.09	ug/L	1.0 U	NA	NA	NA	NA	1.0 U [1.0 U]	NA	NA	NA	NA	0.96 U
Aroclor-1248	0.09	ug/L	1.0 U	NA	NA	NA	NA	1.0 U [1.0 U]	NA	NA	NA	NA	0.96 U
Aroclor-1254	0.09	ug/L	1.0 U	NA	NA	NA	NA	1.0 U [1.0 U]	NA	NA	NA	NA	0.96 U
Aroclor-1260	0.09	ug/L	1.0 U	NA	NA	NA	NA	1.0 U [1.0 U]	NA	NA	NA	NA	0.96 U
Volatile Organics													
1,1,1,2-Tetrachloroethane	5	ug/L	NA	NA	NA	NA	1.0 U	NA	NA	NA	NA	1.0 U	NA
1,1,1-Trichloroethane	5	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U [5.0 U]	5.0 U [5.0 U]	5.0 U	5.0 U [5.0 U]	1.0 U	5.0 U
1,1,2,2-Tetrachloroethane	5	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U [5.0 U]	5.0 U [5.0 U]	5.0 U	5.0 U [5.0 U]	1.0 UJ	5.0 U
1,1,2-Trichloroethane	1	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U [5.0 U]	5.0 U [5.0 U]	5.0 U	5.0 U [5.0 U]	1.0 U	5.0 U
1,1-Dichloroethane	5	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U [5.0 U]	5.0 U [5.0 U]	5.0 U	5.0 U [5.0 U]	1.0 U	5.0 U
1,1-Dichloroethene	5	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U [5.0 U]	5.0 U [5.0 U]	5.0 U	5.0 U [5.0 U]	1.0 U	5.0 U
1,2,3-Trichloropropane	- -	ug/L	NA	NA	NA	NA	1.0 U	NA	NA	NA	NA	1.0 U	NA
1,2-Dibromo-3-chloropropane	0.04	ug/L	NA	NA	NA	NA	1.0 U	NA	NA	NA	NA	1.0 U	NA
1,2-Dibromoethane	0.0006	ug/L	NA	NA	NA	NA	1.0 U	NA	NA	NA	NA	1.0 U	NA
1,2-Dichlorobenzene	3	ug/L	NA	NA	NA	NA	1.0 U	NA	NA	NA	NA	1.0 U	NA
1,2-Dichloroethane	0.6	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U [5.0 U]	5.0 U [5.0 U]	5.0 U	5.0 U [5.0 U]	1.0 U	5.0 U
1,2-Dichloroethene (total)	- -	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	NA	5.0 U [5.0 U]	5.0 U [5.0 U]	5.0 U	5.0 U [5.0 U]	NA	5.0 U
1,2-Dichloropropane	1	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U [5.0 U]	5.0 U [5.0 U]	5.0 U	5.0 U [5.0 U]	1.0 U	5.0 U
1,3-Dichlorobenzene	3	ug/L	NA	NA	NA	NA	1.0 U	NA	NA	NA	NA	1.0 U	NA
1,4-Dichlorobenzene	3	ug/L	NA	NA	NA	NA	1.0 U	NA	NA	NA	NA	1.0 U	NA
2-Butanone	50	ug/L	10 U	10 U	10 U	10 U	5.0 U	10 U [10 U]	3.0 J [10 U]	10 U	10 U [10 U]	5.0 UJ	10 U
2-Chloroethylvinylether	- -	ug/L	NA	NA	NA	NA	5.0 U	NA	NA	NA	NA	5.0 U	NA
2-Hexanone	50	ug/L	10 U	10 U	10 U	10 U	5.0 U	10 U [10 U]	10 U [10 U]	10 U	10 U [10 U]	5.0 UJ	10 U
4-Methyl-2-pentanone	- -	ug/L	10 U	10 U	10 U	10 U	5.0 U	10 U [10 U]	10 U [10 U]	10 U	10 U [10 U]	5.0 UJ	10 U
Acetone	50	ug/L	11 B	10 U	10 U	6.0 J	5.0 U	11 B [12 B]	7.0 J [12 N]	10 U	5.0 J [10 U]	5.0 UJ	12 B
Acrylonitrile	- -	ug/L	NA	NA	NA	NA	5.0 U	NA	NA	NA	NA	5.0 UJ	NA
Benzene	1	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U [5.0 U]	**2.0 J [2.0 J]**	5.0 U	5.0 U [5.0 U]	1.0 U	5.0 U
Bromochloromethane	- -	ug/L	NA	NA	NA	NA	1.0 U	NA	NA	NA	NA	1.0 U	NA
Bromodichloromethane	50	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U [5.0 U]	5.0 U [5.0 U]	5.0 U	5.0 U [5.0 U]	1.0 U	5.0 U
Bromoform	50	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U [5.0 U]	5.0 U [5.0 U]	5.0 U	5.0 U [5.0 U]	1.0 U	5.0 U
Bromomethane	5	ug/L	10 U	10 U	10 U	10 U	1.0 U	10 U [10 U]	10 U [10 U]	10 U	10 U [10 U]	1.0 U	10 U
Carbon Disulfide	60	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U [5.0 U]	5.0 U [5.0 U]	5.0 U	5.0 U [5.0 U]	1.0 U	5.0 U
Carbon Tetrachloride	5	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U [5.0 U]	5.0 U [5.0 U]	5.0 U	5.0 U [5.0 U]	1.0 U	5.0 U
Chlorobenzene	5	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U [5.0 U]	5.0 U [5.0 U]	5.0 U	5.0 U [5.0 U]	1.0 U	5.0 U
Chloroethane	5	ug/L	10 U	10 U	10 U	10 U	1.0 U	10 U [10 U]	10 U [10 U]	10 U	10 U [10 U]	1.0 U	10 U
Chloroform	7	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U [5.0 U]	5.0 U [5.0 U]	5.0 U	5.0 U [5.0 U]	1.0 U	5.0 U
Chloromethane	5	ug/L	10 U	10 U	10 U	10 U	1.0 U	10 U [10 U]	10 U [10 U]	10 U	10 U [10 U]	1.0 U	10 U
cis-1,2-Dichloroethene	5	ug/L	NA	NA	NA	NA	1.0 U	NA	NA	NA	NA	1.0 U	NA
cis-1,3-Dichloropropene	0.4	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U [5.0 U]	5.0 U [5.0 U]	5.0 U	5.0 U [5.0 U]	1.0 U	5.0 U
Dibromochloromethane	50	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U [5.0 U]	5.0 U [5.0 U]	5.0 U	5.0 U [5.0 U]	1.0 U	5.0 U
Ethylbenzene	5	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U [5.0 U]	5.0 U [5.0 U]	5.0 U	5.0 U [5.0 U]	1.0 U	5.0 U
Iodomethane	- -	ug/L	NA	NA	NA	NA	1.0 U	NA	NA	NA	NA	1.0 U	NA
Methylene Chloride	5	ug/L	**19 B**	5.0 U	0.70 JB	5.0 U	1.0 U	**20 B [19 B]**	5.0 U [5.0 U]	0.70 JB	5.0 U [5.0 U]	1.0 U	**19 B**

See Notes on Page 21.

Table 3. Groundwater Analytical Summary
NYSEG
Goshen Former MGP Site
Goshen, New York

Location ID: / Date Collected:	TOGS Standards and Guidance Values	Units	MW93-2S 10/18/93	MW93-2S 01/24/94	MW93-2S 04/27/94	MW93-2S 07/20/94	MW93-2S 10/07/08	MW93-3D 10/18/93	MW93-3D 01/24/94	MW93-3D 04/27/94	MW93-3D 07/20/94	MW93-3D 10/08/08	MW93-3S 10/18/93
Volatile Organics (Cont.)													
Styrene	5	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U [5.0 U]	5.0 U [5.0 U]	5.0 U	5.0 U [5.0 U]	1.0 U	5.0 U
Tetrachloroethene	5	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U [5.0 U]	5.0 U [5.0 U]	5.0 U	5.0 U [5.0 U]	1.0 U	5.0 U
Toluene	5	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U [5.0 U]	5.0 U [5.0 U]	5.0 U	5.0 U [5.0 U]	1.0 U	5.0 U
trans-1,2-Dichloroethene	5	ug/L	NA	NA	NA	NA	1.0 U	NA	NA	NA	NA	1.0 U	NA
trans-1,3-Dichloropropene	0.4	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U [5.0 U]	5.0 U [5.0 U]	5.0 U	5.0 U [5.0 U]	1.0 U	5.0 U
trans-1,4-Dichloro-2-butene	- -	ug/L	NA	NA	NA	NA	5.0 UJ	NA	NA	NA	NA	5.0 UJ	NA
Trichloroethene	5	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	1.0 U	5.0 U [5.0 U]	5.0 U [5.0 U]	5.0 U	5.0 U [5.0 U]	1.0 U	5.0 U
Trichlorofluoromethane	5	ug/L	NA	NA	NA	NA	1.0 U	NA	NA	NA	NA	1.0 U	NA
Vinyl Acetate	- -	ug/L	10 U	10 U	10 U	10 U	5.0 U	10 U [10 U]	10 U [10 U]	10 U	10 U [10 U]	5.0 UJ	10 U
Vinyl Chloride	2	ug/L	10 U	10 U	10 U	10 U	1.0 U	10 U [10 U]	10 U [10 U]	10 U	10 U [10 U]	1.0 U	10 U
Xylenes (total)	5	ug/L	5.0 U	5.0 U	5.0 U	5.0 U	3.0 U	5.0 U [5.0 U]	5.0 U [5.0 U]	5.0 U	5.0 U [5.0 U]	3.0 U	5.0 U
Total BTEX	- -	ug/L	ND	ND	ND	NA	ND	ND [ND]	2.0 J [2.0 J]	ND	NA	ND	ND
Total VOCs	- -	ug/L	30	ND	0.70 J	6.0	ND	31 [31]	12 J [14 J]	0.70 J	5.0	ND	31
Semivolatile Organics													
1,2,4-Trichlorobenzene	5	ug/L	10 U	10 U	10 U	11 U	10 U	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	10 U	13 U
1,2-Dichlorobenzene	3	ug/L	10 U	10 U	10 U	11 U	10 U	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	10 U	13 U
1,3-Dichlorobenzene	3	ug/L	10 U	10 U	10 U	11 U	10 U	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	10 U	13 U
1,4-Dichlorobenzene	3	ug/L	10 U	10 U	10 U	11 U	10 U	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	10 U	13 U
2,2'-Oxybis(1-Chloropropane)	5	ug/L	10 U	NA	NA	NA	5.0 U	12 U [10 U]	NA	NA	NA	5.0 U	13 U
2,4,5-Trichlorophenol	1	ug/L	25 U	24 U	26 U	28 U	5.0 U	31 U [24 U]	25 U [30 U]	25 U	24 U [24 U]	5.0 U	32 U
2,4,6-Trichlorophenol	1	ug/L	10 U	10 U	10 U	11 U	5.0 U	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	5.0 U	13 U
2,4-Dichlorophenol	5	ug/L	10 U	10 U	10 U	11 U	5.0 U	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	5.0 U	13 U
2,4-Dimethylphenol	50	ug/L	10 U	10 U	10 U	11 U	5.0 U	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	5.0 U	13 U
2,4-Dinitrophenol	10	ug/L	25 U	24 U	26 U	28 U	10 U	31 U [24 U]	25 U [30 U]	25 U	24 U [24 U]	10 U	32 U
2,4-Dinitrotoluene	5	ug/L	10 U	10 U	10 U	11 U	5.0 U	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	5.0 U	13 U
2,6-Dinitrotoluene	5	ug/L	10 U	10 U	10 U	11 U	5.0 U	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	5.0 U	13 U
2-Chloronaphthalene	10	ug/L	10 U	10 U	10 U	11 U	5.0 U	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	5.0 U	13 U
2-Chlorophenol	1	ug/L	10 U	10 U	10 U	11 U	5.0 UJ	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	5.0 U	13 U
2-Methyl-4,6-Dinitrophenol	- -	ug/L	25 U	24 U	26 U	28 U	NA	31 U [24 U]	25 U [30 U]	25 U	24 U [24 U]	NA	32 U
2-Methylnaphthalene	- -	ug/L	10 U	10 U	10 U	11 U	5.0 U	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	5.0 U	13 U
2-Methylphenol	1	ug/L	10 U	10 U	10 U	11 U	5.0 U	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	5.0 U	13 U
2-Nitroaniline	5	ug/L	25 U	24 U	26 U	28 U	10 U	31 U [24 U]	25 U [30 U]	25 U	24 U [24 U]	10 U	32 U
2-Nitrophenol	1	ug/L	10 U	10 U	10 U	11 U	5.0 U	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	5.0 U	13 U
3,3'-Dichlorobenzidine	5	ug/L	10 U	10 U	10 U	11 U	5.0 U	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	5.0 U	13 U
3-Nitroaniline	5	ug/L	25 U	24 U	26 U	28 U	10 U	31 U [24 U]	25 U [30 U]	25 U	24 U [24 U]	10 U	32 U
4,6-Dinitro-2-methylphenol	1	ug/L	NA	NA	NA	NA	10 U	NA	NA	NA	NA	10 U	NA
4-Bromophenyl-phenylether	- -	ug/L	10 U	10 U	10 U	11 U	5.0 U	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	5.0 U	13 U
4-Chloro-3-Methylphenol	1	ug/L	10 U	10 U	10 U	11 U	5.0 U	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	5.0 U	13 U
4-Chloroaniline	5	ug/L	10 U	10 U	10 U	11 U	5.0 U	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	5.0 U	13 U
4-Chlorophenyl-phenylether	- -	ug/L	10 U	10 U	10 U	11 U	5.0 U	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	5.0 U	13 U
4-Methylphenol	1	ug/L	10 U	10 U	10 U	11 U	5.0 U	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	5.0 U	13 U
4-Nitroaniline	5	ug/L	25 U	24 U	26 U	28 U	10 U	31 U [24 U]	25 U [30 U]	25 U	24 U [24 U]	10 U	32 U
4-Nitrophenol	1	ug/L	10 U	10 U	10 U	11 U	10 U	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	10 U	13 U
Acenaphthene	20	ug/L	10 U	10 U	10 U	11 U	5.0 U	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	5.0 U	13 U
Acenaphthylene	- -	ug/L	10 U	10 U	10 U	11 U	5.0 U	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	5.0 U	13 U
Anthracene	50	ug/L	10 U	10 U	10 U	11 U	5.0 U	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	5.0 U	13 U

See Notes on Page 21.

Table 3. Groundwater Analytical Summary
NYSEG
Goshen Former MGP Site
Goshen, New York

Location ID: / Date Collected:	TOGS Standards and Guidance Values	Units	MW93-2S 10/18/93	MW93-2S 01/24/94	MW93-2S 04/27/94	MW93-2S 07/20/94	MW93-2S 10/07/08	MW93-3D 10/18/93	MW93-3D 01/24/94	MW93-3D 04/27/94	MW93-3D 07/20/94	MW93-3D 10/08/08	MW93-3S 10/18/93
Semivolatile Organics (Cont.)													
Benzo(a)anthracene	0.002	ug/L	10 U	10 U	10 U	11 U	5.0 U	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	5.0 U	13 U
Benzo(a)pyrene	ND	ug/L	10 U	10 U	10 U	11 U	5.0 U	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	5.0 U	13 U
Benzo(b)fluoranthene	0.002	ug/L	10 U	10 U	10 U	11 U	5.0 U	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	5.0 U	13 U
Benzo(g,h,i)perylene	- -	ug/L	10 U	10 U	10 U	11 U	5.0 U	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	5.0 U	13 U
Benzo(k)fluoranthene	0.002	ug/L	10 U	10 U	10 U	11 U	5.0 U	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	5.0 U	13 U
Benzoic Acid	- -	ug/L	25 U	24 U	26 U	28 U	NA	31 U [24 U]	25 U [30 U]	25 U	24 U [24 U]	NA	32 U
Benzyl Alcohol	- -	ug/L	10 U	10 U	10 U	11 U	20 U	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	20 U	13 U
bis(2-Chloroethoxy)methane	5	ug/L	10 U	10 U	10 U	11 U	5.0 U	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	5.0 U	13 U
bis(2-Chloroethyl)ether	1	ug/L	10 U	10 U	10 U	11 U	5.0 U	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	5.0 U	13 U
bis(2-Chloroisopropyl)ether	- -	ug/L	NA	10 U	10 U	11 U	NA	NA	10 U [12 U]	10 U	10 U [10 U]	NA	NA
bis(2-Ethylhexyl)phthalate	5	ug/L	10 U	10 U	10 U	11 U	5.0 U	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	5.0 U	13 U
Butylbenzylphthalate	50	ug/L	10 U	10 U	10 U	11 U	5.0 U	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	5.0 U	13 U
Carbazole	- -	ug/L	10 U	10 U	10 U	11 U	NA	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	NA	13 U
Chrysene	0.002	ug/L	10 U	10 U	10 U	11 U	5.0 U	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	5.0 U	13 U
Dibenzo(a,h)anthracene	- -	ug/L	10 U	10 U	10 U	11 U	5.0 U	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	5.0 U	13 U
Dibenzofuran	- -	ug/L	10 U	10 U	10 U	11 U	5.0 U	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	5.0 U	13 U
Diethylphthalate	50	ug/L	10 U	10 U	10 U	11 U	5.0 U	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	5.0 U	13 U
Dimethylphthalate	50	ug/L	10 U	10 U	10 U	11 U	5.0 U	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	5.0 U	13 U
Di-n-Butylphthalate	50	ug/L	10 U	10 U	10 U	11 U	0.40 J	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	5.0 UB	13 U
Di-n-Octylphthalate	50	ug/L	10 U	10 U	10 U	11 U	5.0 U	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	5.0 U	13 U
Fluoranthene	50	ug/L	10 U	10 U	10 U	11 U	5.0 U	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	5.0 U	13 U
Fluorene	50	ug/L	10 U	10 U	10 U	11 U	5.0 U	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	5.0 U	13 U
Hexachlorobenzene	0.04	ug/L	10 U	10 U	10 U	11 U	5.0 U	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	5.0 U	13 U
Hexachlorobutadiene	0.5	ug/L	10 U	10 U	10 U	11 U	5.0 U	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	5.0 U	13 U
Hexachlorocyclopentadiene	5	ug/L	10 U	10 U	10 U	11 U	5.0 U	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	5.0 U	13 U
Hexachloroethane	5	ug/L	10 U	10 U	10 U	11 U	5.0 U	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	5.0 U	13 U
Indeno(1,2,3-cd)pyrene	0.002	ug/L	10 U	10 U	10 U	11 U	5.0 U	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	5.0 U	13 U
Isophorone	50	ug/L	10 U	10 U	10 U	11 U	5.0 U	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	5.0 U	13 U
Naphthalene	10	ug/L	10 U	10 U	10 U	11 U	5.0 U	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	5.0 U	13 U
Nitrobenzene	0.4	ug/L	10 U	10 U	10 U	11 U	5.0 U	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	5.0 U	13 U
N-Nitrosodimethylamine	- -	ug/L	NA	NA	NA	NA	10 U	NA	NA	NA	NA	10 U	NA
N-Nitroso-di-n-propylamine	- -	ug/L	10 U	10 U	10 U	11 U	5.0 U	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	5.0 U	13 U
N-Nitrosodiphenylamine	50	ug/L	10 U	10 U	10 U	11 U	5.0 U	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	5.0 U	13 U
Pentachlorophenol	1	ug/L	25 U	24 U	26 U	28 U	10 U	31 U [24 U]	25 U [30 U]	25 U	24 U [24 U]	10 U	32 U
Phenanthrene	50	ug/L	10 U	10 U	10 U	11 U	5.0 U	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	5.0 U	13 U
Phenol	1	ug/L	10 U	10 U	10 U	11 U	5.0 U	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	5.0 U	13 U
Pyrene	50	ug/L	10 U	10 U	10 U	11 U	5.0 U	12 U [10 U]	10 U [12 U]	10 U	10 U [10 U]	5.0 U	13 U
Total PAHs	- -	ug/L	ND	ND	ND	NA	ND	ND [ND]	ND [ND]	ND	NA	ND	ND
Total SVOCs	- -	ug/L	ND	ND	ND	NA	0.40 J	ND [ND]	ND [ND]	ND	NA	ND	ND
Inorganics													
Aluminum	- -	ug/L	26,600 N	1,430 N	28,100	12,300	NA	20,800 N [50,400 N]	23,800 N [26,400 N]	14,800	5,100 [6,340]	NA	20,100 N
Antimony	3	ug/L	5.00 U	**3.90 J**	3.00 U	3.00 U	NA	5.00 U [5.00 U]	3.00 U [3.00 U]	3.00 U	3.00 U [3.00 U]	NA	5.00 U
Arsenic	25	ug/L	**31.7 N**	15.3 N	**59.4**	22.7	NA	**14.3 N [45.8 N]**	15.7 N [18.1 N]	12.1	6.40 B [7.60 B]	NA	14.4 N
Barium	1,000	ug/L	185 J	90.0 J	216	125 B	NA	264 N [245 N]	301 N [301 N]	255	207 [225]	NA	252 N
Cadmium	5	ug/L	4.00 U	3.00 J	3.00 U	4.00 U	NA	4.00 U [4.00 U]	**6.00 N [4.00 J]**	3.00 U	4.00 U [4.00 U]	NA	4.00 U
Chromium	50	ug/L	**61.0 N**	5.00 J	**210**	**77.0**	NA	**49.0 N [94.0 N]**	**61.0 N [82.0 N]**	**142**	33.0 [44.0]	NA	45.0 N

See Notes on Page 21.

Table 3. Groundwater Analytical Summary
NYSEG
Goshen Former MGP Site
Goshen, New York

Location ID: / Date Collected:	TOGS Standards and Guidance Values	Units	MW93-2S 10/18/93	MW93-2S 01/24/94	MW93-2S 04/27/94	MW93-2S 07/20/94	MW93-2S 10/07/08	MW93-3D 10/18/93	MW93-3D 01/24/94	MW93-3D 04/27/94	MW93-3D 07/20/94	MW93-3D 10/08/08	MW93-3S 10/18/93
Inorganics (Cont.)													
Copper	200	ug/L	86.0 N	33.0 N	98.0	42.0	NA	60.0 N [138 N]	70.0 N [73.0 N]	36.0	18.0 B [54.0]	NA	60.0 N
Cyanide	200	ug/L	75.1 N	38.9 N	49.3	66.2	67.0	10.0 U [10.0 U]	10.0 U [10.0 U]	10.0 U	10.0 U [10.0 U]	10.0 UJ	479 U
Cyanide, Amenable	- -	ug/L	10.0 U	10.0 U	10.0 U	66.2	NA	NA	NA	NA	NA	NA	52.0 N
Iron	300	ug/L	**58,300 N**	**8,610 N**	**67,800**	**30,400**	NA	**38,100 N [97,900 N]**	**43,700 N [48,000 N]**	**28,800**	**9,330 [12,500]**	NA	**37,700 N**
Lead	25	ug/L	22.5 N	6.20 N	**45.8**	19.0	NA	14.3 N [21.5 N]	20.9 N [23.1 N]	15.5	6.80 [6.10]	NA	18.3 N
Manganese	300	ug/L	**4,970 N**	**4,550 N**	**3,990**	**3,550**	NA	**2,120 N [7,880 N]**	**2,300 N [2,300 N]**	**1,790**	**1,220 [1,330]**	NA	**2,070 N**
Mercury	0.7	ug/L	0.120 J	0.100 U	0.100 U	0.100 U	NA	0.100 U [0.120 J]	0.100 U [0.100 U]	0.100 U	0.100 U [0.100 U]	NA	0.100 U
Nickel	100	ug/L	79.0 N	16.0 J	93.0	36.0 B	NA	**84.0 N [126 N]**	59.0 N [69.0 N]	53.0	13.0 B [47.0]	NA	54.0 N
Selenium	10	ug/L	1.00 U	1.00 U	1.00 U	1.00 U	NA	1.00 U [1.00 U]	1.00 U [1.00 U]	1.00 U	1.00 U [1.00 U]	NA	1.00 U
Silver	50	ug/L	7.00 U	3.00 U	3.00 B	7.00 U	NA	7.00 U [7.00 U]	3.00 U [3.00 U]	3.00 U	7.00 U [7.00 U]	NA	7.00 U
Vanadium	- -	ug/L	48.0 J	18.0 J	67.0	25.0 B	NA	41.0 J [86.0 N]	51.0 N [55.0 N]	44.0 B	15.0 B [21.0 B]	NA	38.0 J
Zinc	2,000	ug/L	176 N	32.0 N	195	85.0	NA	142 N [297 N]	118 N [130 N]	1,060	36.0 [41.0]	NA	166 N

See Notes on Page 21.

Table 3. Groundwater Analytical Summary
NYSEG
Goshen Former MGP Site
Goshen, New York

Location ID: / Date Collected:	TOGS Standards and Guidance Values	Units	MW93-3S 01/24/94	MW93-3S 04/27/94	MW93-3S 07/20/94	MW93-3S 10/07/08
PCBs						
Aroclor-1016	0.09	ug/L	NA	NA	NA	NA
Aroclor-1221	0.09	ug/L	NA	NA	NA	NA
Aroclor-1232	0.09	ug/L	NA	NA	NA	NA
Aroclor-1242	0.09	ug/L	NA	NA	NA	NA
Aroclor-1248	0.09	ug/L	NA	NA	NA	NA
Aroclor-1254	0.09	ug/L	NA	NA	NA	NA
Aroclor-1260	0.09	ug/L	NA	NA	NA	NA
Volatile Organics						
1,1,1,2-Tetrachloroethane	5	ug/L	NA	NA	NA	1.0 U
1,1,1-Trichloroethane	5	ug/L	5.0 U	5.0 U [5.0 U]	5.0 U	1.0 U
1,1,2,2-Tetrachloroethane	5	ug/L	5.0 U	5.0 U [5.0 U]	5.0 U	1.0 U
1,1,2-Trichloroethane	1	ug/L	5.0 U	5.0 U [5.0 U]	5.0 U	1.0 U
1,1-Dichloroethane	5	ug/L	5.0 U	5.0 U [5.0 U]	5.0 U	1.0 U
1,1-Dichloroethene	5	ug/L	5.0 U	5.0 U [5.0 U]	5.0 U	1.0 U
1,2,3-Trichloropropane	- -	ug/L	NA	NA	NA	1.0 U
1,2-Dibromo-3-chloropropane	0.04	ug/L	NA	NA	NA	1.0 U
1,2-Dibromoethane	0.0006	ug/L	NA	NA	NA	1.0 U
1,2-Dichlorobenzene	3	ug/L	NA	NA	NA	1.0 U
1,2-Dichloroethane	0.6	ug/L	5.0 U	5.0 U [5.0 U]	5.0 U	1.0 U
1,2-Dichloroethene (total)	- -	ug/L	5.0 U	5.0 U [5.0 U]	5.0 U	NA
1,2-Dichloropropane	1	ug/L	5.0 U	5.0 U [5.0 U]	5.0 U	1.0 U
1,3-Dichlorobenzene	3	ug/L	NA	NA	NA	1.0 U
1,4-Dichlorobenzene	3	ug/L	NA	NA	NA	1.0 U
2-Butanone	50	ug/L	10 U	10 U [10 U]	10 U	5.0 U
2-Chloroethylvinylether	- -	ug/L	NA	NA	NA	5.0 U
2-Hexanone	50	ug/L	10 U	10 U [10 U]	10 U	5.0 U
4-Methyl-2-pentanone	- -	ug/L	10 U	10 U [10 U]	10 U	5.0 U
Acetone	50	ug/L	4.0 J	10 U [10 U]	10 U	5.0 U
Acrylonitrile	- -	ug/L	NA	NA	NA	5.0 U
Benzene	1	ug/L	5.0 U	5.0 U [5.0 U]	5.0 U	1.0 U
Bromochloromethane	- -	ug/L	NA	NA	NA	1.0 U
Bromodichloromethane	50	ug/L	5.0 U	5.0 U [5.0 U]	5.0 U	1.0 U
Bromoform	50	ug/L	5.0 U	5.0 U [5.0 U]	5.0 U	1.0 U
Bromomethane	5	ug/L	10 U	10 U [10 U]	10 U	1.0 U
Carbon Disulfide	60	ug/L	5.0 U	5.0 U [5.0 U]	5.0 U	1.0 U
Carbon Tetrachloride	5	ug/L	5.0 U	5.0 U [5.0 U]	5.0 U	1.0 U
Chlorobenzene	5	ug/L	5.0 U	5.0 U [5.0 U]	5.0 U	1.0 U
Chloroethane	5	ug/L	10 U	10 U [10 U]	10 U	1.0 U
Chloroform	7	ug/L	5.0 U	5.0 U [5.0 U]	5.0 U	1.0 U
Chloromethane	5	ug/L	10 U	10 U [10 U]	10 U	1.0 U
cis-1,2-Dichloroethene	5	ug/L	NA	NA	NA	1.0 U
cis-1,3-Dichloropropene	0.4	ug/L	5.0 U	5.0 U [5.0 U]	5.0 U	1.0 U
Dibromochloromethane	50	ug/L	5.0 U	5.0 U [5.0 U]	5.0 U	1.0 U
Ethylbenzene	5	ug/L	5.0 U	5.0 U [5.0 U]	5.0 U	1.0 U
Iodomethane	- -	ug/L	NA	NA	NA	1.0 U
Methylene Chloride	5	ug/L	5.0 U	0.70 JB [0.70 JB]	2.0 JB	1.0 U

See Notes on Page 21.

Table 3. Groundwater Analytical Summary
NYSEG
Goshen Former MGP Site
Goshen, New York

Location ID: / Date Collected:	TOGS Standards and Guidance Values	Units	MW93-3S 01/24/94	MW93-3S 04/27/94	MW93-3S 07/20/94	MW93-3S 10/07/08
Volatile Organics (Cont.)						
Styrene	5	ug/L	5.0 U	5.0 U [5.0 U]	5.0 U	1.0 U
Tetrachloroethene	5	ug/L	5.0 U	5.0 U [5.0 U]	5.0 U	1.0 U
Toluene	5	ug/L	5.0 U	5.0 U [5.0 U]	5.0 U	1.0 U
trans-1,2-Dichloroethene	5	ug/L	NA	NA	NA	1.0 U
trans-1,3-Dichloropropene	0.4	ug/L	5.0 U	5.0 U [5.0 U]	5.0 U	1.0 U
trans-1,4-Dichloro-2-butene	- -	ug/L	NA	NA	NA	5.0 UJ
Trichloroethene	5	ug/L	5.0 U	5.0 U [5.0 U]	5.0 U	1.0 U
Trichlorofluoromethane	5	ug/L	NA	NA	NA	1.0 U
Vinyl Acetate	- -	ug/L	10 U	10 U [10 U]	10 U	5.0 U
Vinyl Chloride	2	ug/L	10 U	10 U [10 U]	10 U	1.0 U
Xylenes (total)	5	ug/L	5.0 U	5.0 U [5.0 U]	5.0 U	3.0 U
Total BTEX	- -	ug/L	ND	ND [ND]	NA	ND
Total VOCs	- -	ug/L	4.0 J	0.70 J [0.70 J]	2.0	ND
Semivolatile Organics						
1,2,4-Trichlorobenzene	5	ug/L	10 U	10 U [10 U]	12 U	10 U
1,2-Dichlorobenzene	3	ug/L	10 U	10 U [10 U]	12 U	10 U
1,3-Dichlorobenzene	3	ug/L	10 U	10 U [10 U]	12 U	10 U
1,4-Dichlorobenzene	3	ug/L	10 U	10 U [10 U]	12 U	10 U
2,2'-Oxybis(1-Chloropropane)	5	ug/L	NA	NA	NA	5.0 U
2,4,5-Trichlorophenol	1	ug/L	25 U	25 U [25 U]	29 U	5.0 U
2,4,6-Trichlorophenol	1	ug/L	10 U	10 U [10 U]	12 U	5.0 U
2,4-Dichlorophenol	5	ug/L	10 U	10 U [10 U]	12 U	5.0 U
2,4-Dimethylphenol	50	ug/L	10 U	10 U [10 U]	12 U	5.0 U
2,4-Dinitrophenol	10	ug/L	25 U	25 U [25 U]	29 U	10 U
2,4-Dinitrotoluene	5	ug/L	10 U	10 U [10 U]	12 U	5.0 U
2,6-Dinitrotoluene	5	ug/L	10 U	10 U [10 U]	12 U	5.0 U
2-Chloronaphthalene	10	ug/L	10 U	10 U [10 U]	12 U	5.0 U
2-Chlorophenol	1	ug/L	10 U	10 U [10 U]	12 U	5.0 UJ
2-Methyl-4,6-Dinitrophenol	- -	ug/L	25 U	25 U [25 U]	29 U	NA
2-Methylnaphthalene	- -	ug/L	10 U	10 U [10 U]	12 U	5.0 U
2-Methylphenol	1	ug/L	10 U	10 U [10 U]	12 U	5.0 U
2-Nitroaniline	5	ug/L	25 U	25 U [25 U]	29 U	10 U
2-Nitrophenol	1	ug/L	10 U	10 U [10 U]	12 U	5.0 U
3,3'-Dichlorobenzidine	5	ug/L	10 U	10 U [10 U]	12 U	5.0 U
3-Nitroaniline	5	ug/L	25 U	25 U [25 U]	29 U	10 U
4,6-Dinitro-2-methylphenol	1	ug/L	NA	NA	NA	10 U
4-Bromophenyl-phenylether	- -	ug/L	10 U	10 U [10 U]	12 U	5.0 U
4-Chloro-3-Methylphenol	1	ug/L	10 U	10 U [10 U]	12 U	5.0 U
4-Chloroaniline	5	ug/L	10 U	10 U [10 U]	12 U	5.0 U
4-Chlorophenyl-phenylether	- -	ug/L	10 U	10 U [10 U]	12 U	5.0 U
4-Methylphenol	1	ug/L	10 U	10 U [10 U]	12 U	5.0 U
4-Nitroaniline	5	ug/L	25 U	25 U [25 U]	29 U	10 U
4-Nitrophenol	1	ug/L	10 U	10 U [10 U]	12 U	10 U
Acenaphthene	20	ug/L	10 U	10 U [10 U]	12 U	5.0 U
Acenaphthylene	- -	ug/L	10 U	10 U [10 U]	12 U	5.0 U
Anthracene	50	ug/L	10 U	10 U [10 U]	12 U	5.0 U

See Notes on Page 21.

Table 3. Groundwater Analytical Summary
NYSEG
Goshen Former MGP Site
Goshen, New York

Location ID: / Date Collected:	TOGS Standards and Guidance Values	Units	MW93-3S 01/24/94	MW93-3S 04/27/94	MW93-3S 07/20/94	MW93-3S 10/07/08
Semivolatile Organics (Cont.)						
Benzo(a)anthracene	0.002	ug/L	10 U	10 U [10 U]	12 U	5.0 U
Benzo(a)pyrene	ND	ug/L	10 U	10 U [10 U]	12 U	5.0 U
Benzo(b)fluoranthene	0.002	ug/L	10 U	10 U [10 U]	12 U	5.0 U
Benzo(g,h,i)perylene	- -	ug/L	10 U	10 U [10 U]	12 U	5.0 U
Benzo(k)fluoranthene	0.002	ug/L	10 U	10 U [10 U]	12 U	5.0 U
Benzoic Acid	- -	ug/L	25 U	25 U [25 U]	29 U	NA
Benzyl Alcohol	- -	ug/L	10 U	10 U [10 U]	12 U	20 U
bis(2-Chloroethoxy)methane	5	ug/L	10 U	10 U [10 U]	12 U	5.0 U
bis(2-Chloroethyl)ether	1	ug/L	10 U	10 U [10 U]	12 U	5.0 U
bis(2-Chloroisopropyl)ether	- -	ug/L	10 U	10 U [10 U]	12 U	NA
bis(2-Ethylhexyl)phthalate	5	ug/L	10 U	10 U [10 U]	12 U	5.0 U
Butylbenzylphthalate	50	ug/L	10 U	10 U [10 U]	12 U	5.0 U
Carbazole	- -	ug/L	10 U	10 U [10 U]	12 U	NA
Chrysene	0.002	ug/L	10 U	10 U [10 U]	12 U	5.0 U
Dibenzo(a,h)anthracene	- -	ug/L	10 U	10 U [10 U]	12 U	5.0 U
Dibenzofuran	- -	ug/L	10 U	10 U [10 U]	12 U	5.0 U
Diethylphthalate	50	ug/L	10 U	10 U [10 U]	12 U	5.0 U
Dimethylphthalate	50	ug/L	10 U	10 U [10 U]	12 U	5.0 U
Di-n-Butylphthalate	50	ug/L	10 U	10 U [10 U]	12 U	0.40 J
Di-n-Octylphthalate	50	ug/L	10 U	10 U [10 U]	12 U	5.0 U
Fluoranthene	50	ug/L	4.0 J	3.0 J [10 U]	12 U	5.0 U
Fluorene	50	ug/L	10 U	10 U [10 U]	12 U	5.0 U
Hexachlorobenzene	0.04	ug/L	10 U	10 U [10 U]	12 U	5.0 U
Hexachlorobutadiene	0.5	ug/L	10 U	10 U [10 U]	12 U	5.0 U
Hexachlorocyclopentadiene	5	ug/L	10 U	10 U [10 U]	12 U	5.0 U
Hexachloroethane	5	ug/L	10 U	10 U [10 U]	12 U	5.0 U
Indeno(1,2,3-cd)pyrene	0.002	ug/L	10 U	10 U [10 U]	12 U	5.0 U
Isophorone	50	ug/L	10 U	10 U [10 U]	12 U	5.0 U
Naphthalene	10	ug/L	10 U	10 U [10 U]	12 U	5.0 U
Nitrobenzene	0.4	ug/L	10 U	10 U [10 U]	12 U	5.0 U
N-Nitrosodimethylamine	- -	ug/L	NA	NA	NA	10 U
N-Nitroso-di-n-propylamine	- -	ug/L	10 U	10 U [10 U]	12 U	5.0 U
N-Nitrosodiphenylamine	50	ug/L	10 U	10 U [10 U]	12 U	5.0 U
Pentachlorophenol	1	ug/L	25 U	25 U [25 U]	29 U	10 U
Phenanthrene	50	ug/L	5.0 J	4.0 J [10 U]	12 U	5.0 U
Phenol	1	ug/L	10 U	10 U [10 U]	12 U	5.0 U
Pyrene	50	ug/L	5.0 J	4.0 J [10 U]	12 U	5.0 U
Total PAHs	- -	ug/L	14 J	11 J [ND]	NA	ND
Total SVOCs	- -	ug/L	14 J	11 J [ND]	NA	0.40 J
Inorganics						
Aluminum	- -	ug/L	41,100 N	32,300 [14,400]	15,700	NA
Antimony	3	ug/L	3.00 U	3.00 U [3.00 U]	3.00 U	NA
Arsenic	25	ug/L	**33.0 N**	**71.3 [11.3]**	18.7 B	NA
Barium	1,000	ug/L	209 N	178 B [254]	105	NA
Cadmium	5	ug/L	**6.00 N**	3.00 U [3.00 U]	4.00 U	NA
Chromium	50	ug/L	**102 N**	**118 [143]**	33.0	NA

See Notes on Page 21.

Table 3. Groundwater Analytical Summary
NYSEG
Goshen Former MGP Site
Goshen, New York

Location ID: / Date Collected:	TOGS Standards and Guidance Values	Units	MW93-3S 01/24/94	MW93-3S 04/27/94	MW93-3S 07/20/94	MW93-3S 10/07/08
Inorganics (Cont.)						
Copper	200	ug/L	186 N	88.0 [38.0]	41.0	NA
Cyanide	200	ug/L	**476 N**	**237 [10.0 U]**	**371**	**330**
Cyanide, Amenable	- -	ug/L	10.0 U	24.9	371	NA
Iron	300	ug/L	**75,000 N**	**66,600 [28,000]**	**28,900**	NA
Lead	25	ug/L	1.00 U	**33.6 [15.4]**	13.0	NA
Manganese	300	ug/L	**6,230 N**	**6,170 [1,740]**	**5,500**	NA
Mercury	0.7	ug/L	0.150 J	0.240 [0.100 U]	0.100 U	NA
Nickel	100	ug/L	**104 N**	76.0 [49.0]	43.0	NA
Selenium	10	ug/L	1.00 U	1.00 U [1.00 U]	1.00 U	NA
Silver	50	ug/L	3.00 U	3.00 U [3.00 U]	7.00 U	NA
Vanadium	- -	ug/L	83.0 N	71.0 [37.0 B]	42.0 B	NA
Zinc	2,000	ug/L	281 N	661 [276]	920	NA

See Notes on Page 21.

Table 3. Groundwater Analytical Summary
NYSEG
Goshen Former MGP Site
Goshen, New York

Qualifier Type	Lab Qualifiers	Definition
Organic	B	Analyte was also detected in the associated method blank.
Organic	D	Compound quantitated using a secondary dilution.
General	J	Indicates an estimated value.
Inorganic	N	Spike sample recovery not within control limits.
General	ND	None detected.
General	R	Rejected.
General	U	The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

Notes:
1. Results reported in micrograms per liter (ug/L); also expressed as parts per billion (ppb).
2. [ ] Bracketed results represent the duplicate sample.
3. NYSDEC TOGS 1.1.1 Standards and Guidance Values for Groundwater exceedances are bolded and shaded.

Table 4. Well Construction Summary
NYSEG
Goshen Former MGP Site
Goshen, New York

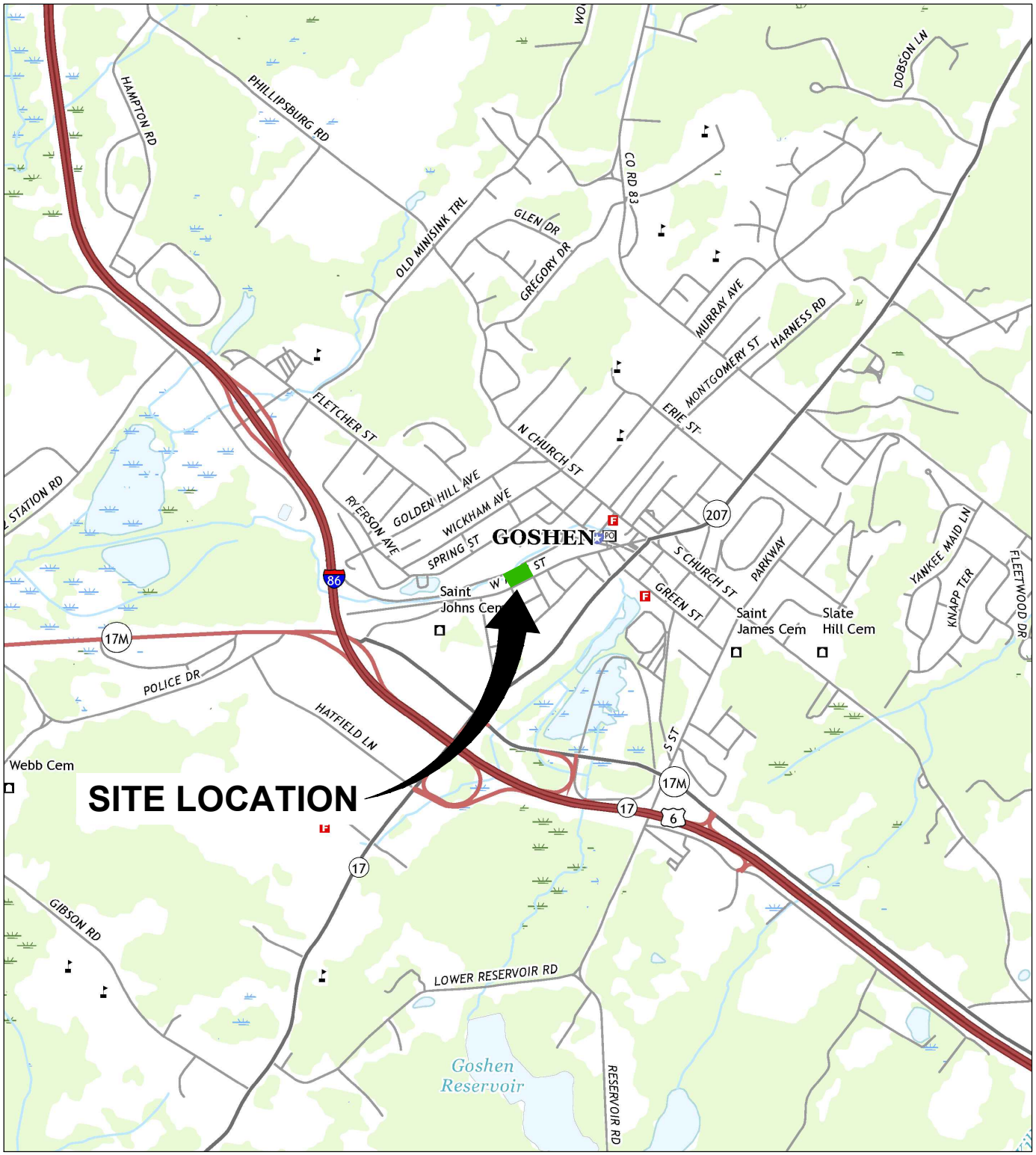
ARCADIS Design & Consultancy for natural and built assets

Location ID	Date Completed	Well Diameter (in.)	Casing/ Screen Type	Screen Slot Size (in.)	Screen Length (ft.)	Sump Length (ft.)	Depth to Screened Interval (ft. bgs)		Total Well Depth
							Top	Bottom	ft. bgs
MW93-01S	9/22/93	2	SS	0.01	5.0	NS	32.1	37.1	37.4
MW93-01D	9/22/93	2	SS	0.01	10.0	NS	12.7	22.7	23.0
MW93-02S	9/23/93	2	SS	0.01	10.0	NS	11.6	21.6	22.0
MW93-02D	9/23/93	2	SS	0.01	5.0	NS	31.0	36.0	36.4
~~MW08-04S~~	~~11/12/08~~	~~2~~	~~PVC~~	~~0.01~~	~~10.0~~	~~NS~~	~~9.8~~	~~19.8~~	~~19.8~~
~~MW08-04D~~	~~11/12/08~~	~~2~~	~~PVC~~	~~0.01~~	~~10.0~~	~~NS~~	~~29.4~~	~~39.4~~	~~39.4~~
MW18-04S	12/10/18	2	PVC	0.01	10.0	NS	9.8	19.8	19.8
MW18-04D	12/11/18	2	PVC	0.01	10.0	NS	29.2	39.2	39.2
MW08-05S	11/7/08	2	PVC	0.01	10.0	NS	9.9	19.9	19.9
MW08-05D	11/7/08	2	PVC	0.01	10.0	NS	29.6	39.6	39.6
MW08-06S	11/13/08	2	PVC	0.01	10.0	NS	9.7	19.7	19.7
MW08-06D	11/13/08	2	PVC	0.01	10.0	NS	29.6	39.6	39.6
MW08-07S	10/16/08	1	PVC	0.01	10.0	NS	5.4	15.4	15.4
MW08-07D	10/16/08	1	PVC	0.01	10.0	NS	29.0	39.0	39.0
MW08-08S	11/5/08	2	PVC	0.01	10.0	NS	9.6	19.6	19.6
~~MW08-08D~~	~~11/5/08~~	~~2~~	~~PVC~~	~~0.01~~	~~10.0~~	~~NS~~	~~29.5~~	~~39.5~~	~~39.5~~
MW18-08D	12/12/18	2	PVC	0.01	10.0	NS	24.2	36.2	36.2
NMW08-02	11/18/08	2	PVC	0.02	10.0	2.0	13.0	23.0	25.0
NMW16-01	11/7/16	6	PVC	0.01	20.0	5.0	3.0	23.0	28.0
NMW16-02	11/8/16	6	PVC	0.01	33.0	5.0	2.5	35.5	40.5
NMW16-03	11/10/16	6	PVC	0.01	20.0	5.0	6.3	26.3	31.3
NMW16-04	11/14/16	6	PVC	0.01	25.0	5.0	2.4	27.4	32.4
NMW16-05	11/16/16	6	PVC	0.01	25.0	5.0	2.0	27.0	32.0

Notes:

1. ft. bgs = feet below ground surface.
2. PVC = Polyvinyl chloride; SS = Stainless Steel.
3. NS = No sump installed at this location.
4. Depths in feet below ground surface (ft. bgs).
5. Monitorings with strikethrough were found to be destroyed and replaced.

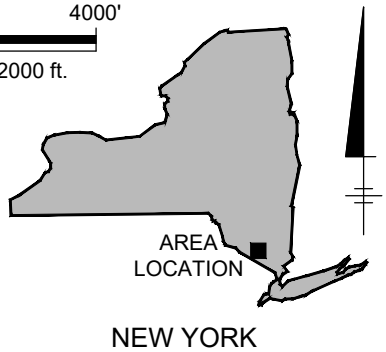
FIGURES



REFERENCE: BASE MAP USGS 7.5. MIN. TOPO. QUAD., GOSHEN, NY, 2016.

0 2000' 4000'

Approximate Scale: 1 in. = 2000 ft.

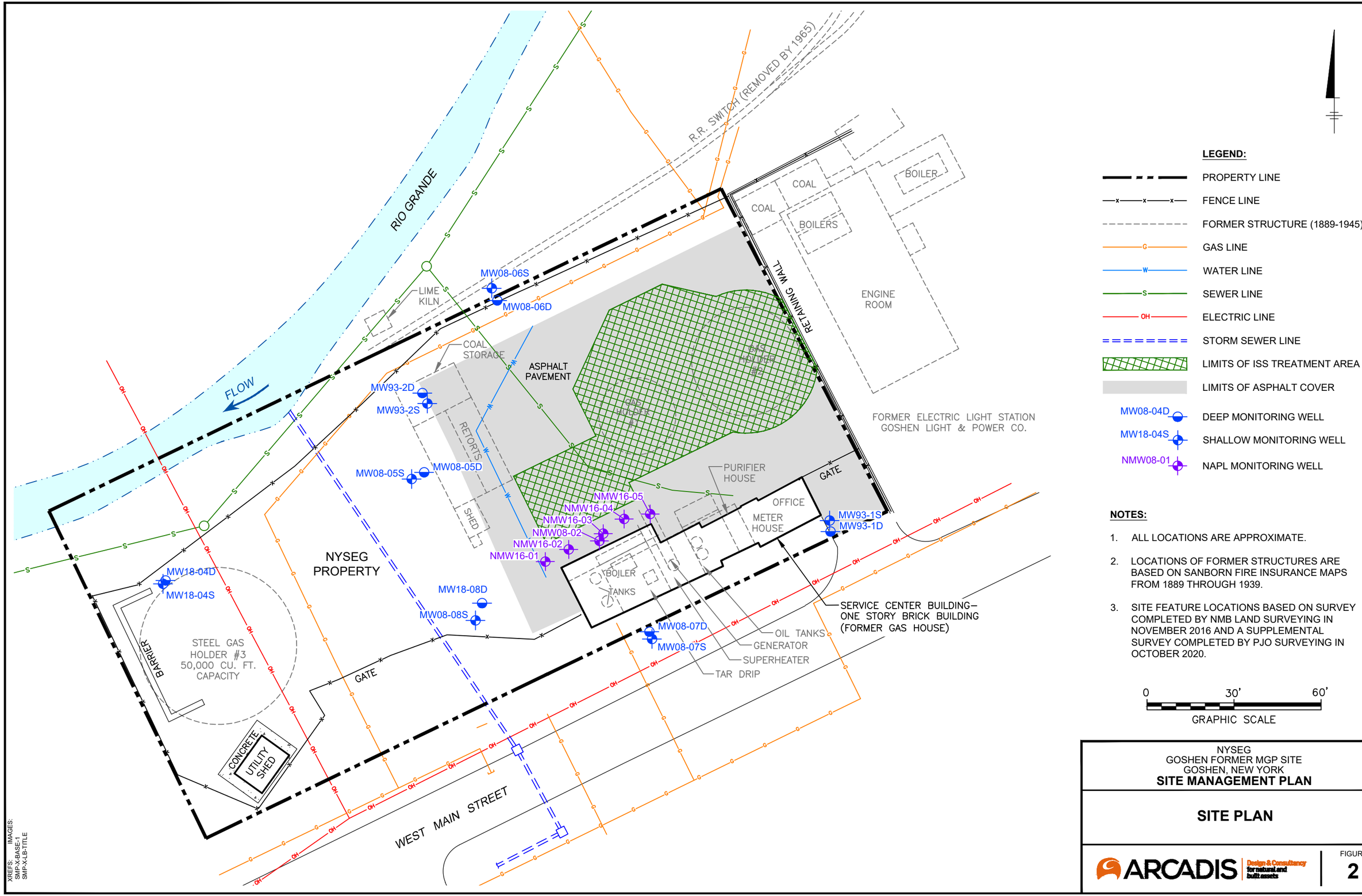


NYSEG
GOSHEN FORMER MGP SITE
GOSHEN, NEW YORK
SITE MANAGEMENT PLAN

SITE LOCATION MAP

ARCADIS Design & Consultancy for natural and built assets

FIGURE 1



LEGEND:

- PROPERTY LINE
- FENCE LINE
- FORMER STRUCTURE (1889-1945)
- GAS LINE
- WATER LINE
- SEWER LINE
- ELECTRIC LINE
- STORM SEWER LINE
- LIMITS OF ISS TREATMENT AREA
- LIMITS OF ASPHALT COVER
- MW08-04D — DEEP MONITORING WELL
- MW18-04S — SHALLOW MONITORING WELL
- NMW08-01 — NAPL MONITORING WELL

NOTES:

1. ALL LOCATIONS ARE APPROXIMATE.
2. LOCATIONS OF FORMER STRUCTURES ARE BASED ON SANBORN FIRE INSURANCE MAPS FROM 1889 THROUGH 1939.
3. SITE FEATURE LOCATIONS BASED ON SURVEY COMPLETED BY NMB LAND SURVEYING IN NOVEMBER 2016 AND A SUPPLEMENTAL SURVEY COMPLETED BY PJO SURVEYING IN OCTOBER 2020.

0 30' 60'

GRAPHIC SCALE

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

SITE PLAN

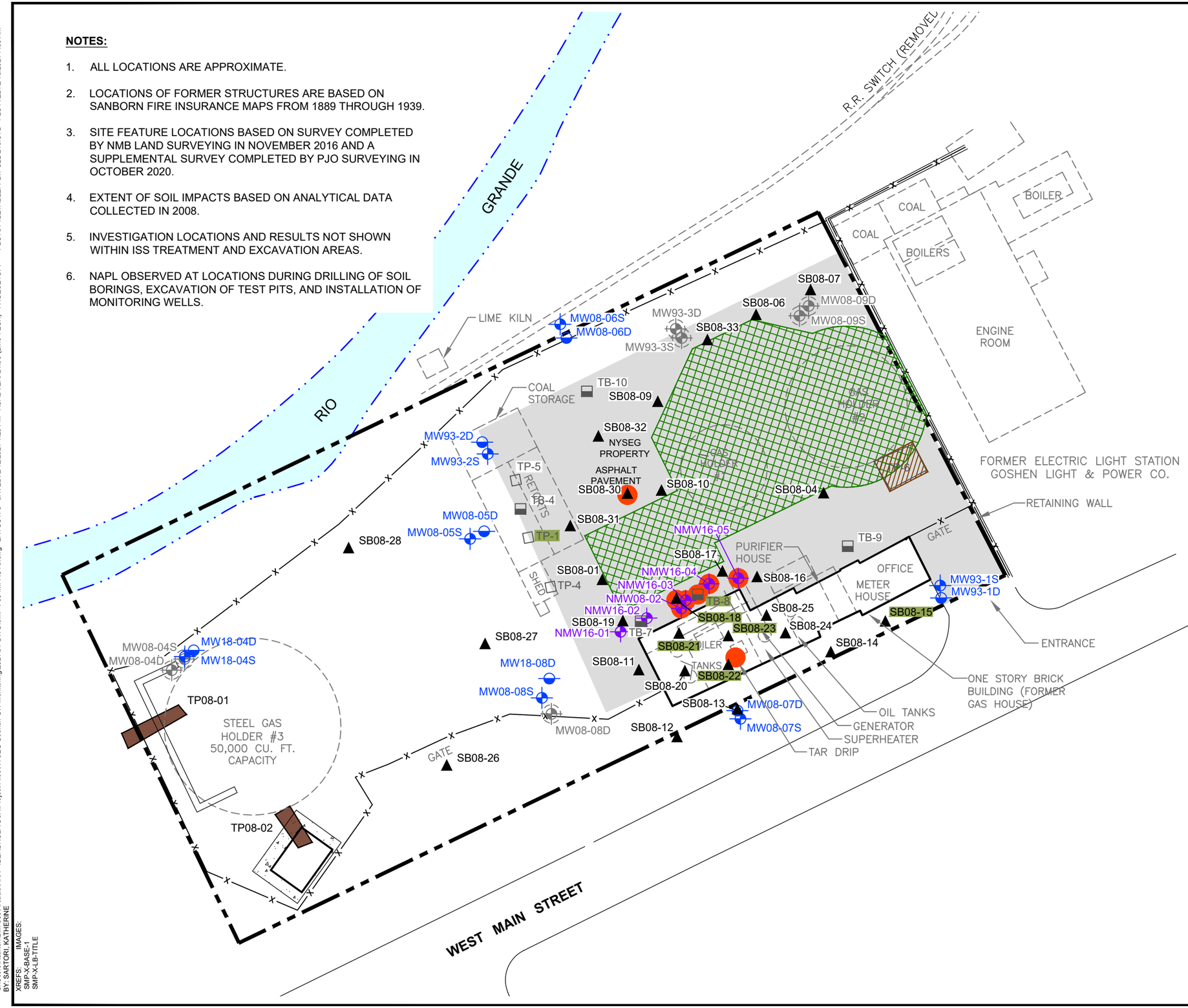
ARCADIS Design & Consultancy for natural and built assets

FIGURE 2

XREFS: IMAGES:
SMP-X-BASE-1
SMP-X-LB-TITLE

NOTES:

1. ALL LOCATIONS ARE APPROXIMATE.
2. LOCATIONS OF FORMER STRUCTURES ARE BASED ON SANBORN FIRE INSURANCE MAPS FROM 1889 THROUGH 1939.
3. SITE FEATURE LOCATIONS BASED ON SURVEY COMPLETED BY NMB LAND SURVEYING IN NOVEMBER 2016 AND A SUPPLEMENTAL SURVEY COMPLETED BY PJO SURVEYING IN OCTOBER 2020.
4. EXTENT OF SOIL IMPACTS BASED ON ANALYTICAL DATA COLLECTED IN 2008.
5. INVESTIGATION LOCATIONS AND RESULTS NOT SHOWN WITHIN ISS TREATMENT AND EXCAVATION AREAS.
6. NAPL OBSERVED AT LOCATIONS DURING DRILLING OF SOIL BORINGS, EXCAVATION OF TEST PITS, AND INSTALLATION OF MONITORING WELLS.



LEGEND:

- PROPERTY LINE
- FENCE LINE
- FORMER STRUCTURE (1889-1945)
- LIMITS OF ISS TREATMENT AREA
- EXTENT OF SOIL REMOVAL
- LIMITS OF ASPHALT COVER
- TB-6 — TEST BORING
- SB08-06 — SOIL BORING
- TP-6 — TEST PIT
- TEST PIT
- MONITORING WELL OR PIEZOMETER DECOMMISSIONED OR ABANDONED
- MW08-04D — DEEP MONITORING WELL
- MW18-04S — SHALLOW MONITORING WELL
- MW16-03 — NAPL MONITORING WELL
- NAPL OBSERVED AT THIS LOCATION (SEE NOTE 4)
- SHADING INDICATES THAT ONE OR MORE COMPOUNDS EXCEED NYSDEC PART 375 RESTRICTED USE COMMERCIAL SOIL CLEANUP OBJECTIVES (SEE NOTE 4)

0 30' 60'

GRAPHIC SCALE

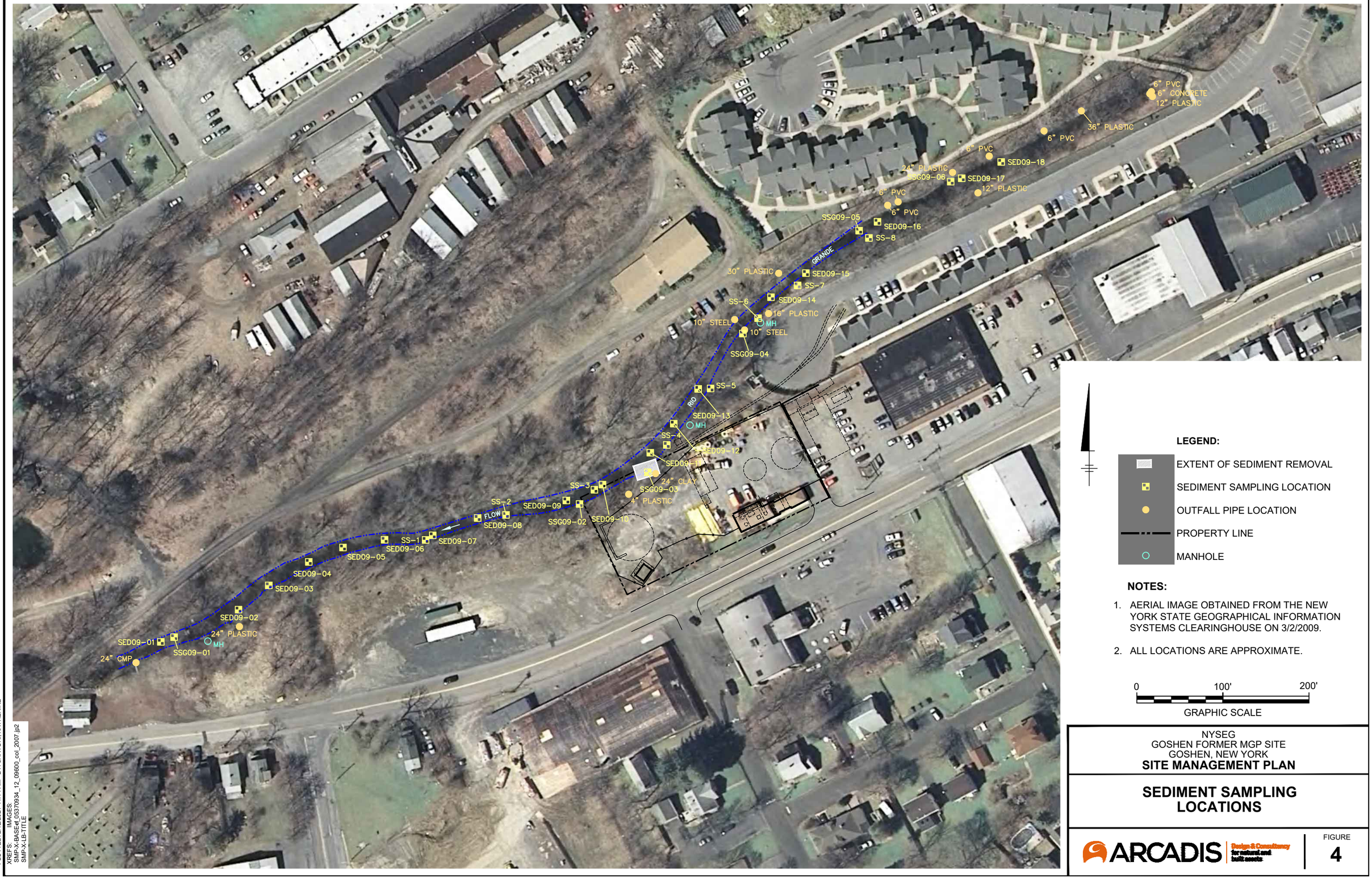
NYSEG
GOSHEN FORMER MGP SITE
GOSHEN, NEW YORK
SITE MANAGEMENT PLAN

EXTENT OF REMAINING SOIL IMPACTS

ARCADIS Design & Consultancy for natural and built assets

FIGURE 3

CITY: SYRACUSE NY DIV/GROUP: ENVCAD DB: E. KRAHMER, K.SARTORI PIC: PM: TM: TR: J.BISTROVICH LYR:(On)ON=*;OFF=*REF*
C:\Users\ksartori\BIM 360\Arcadis\ANA - IBERDROLA USA\Project Files\NYSEG Goshen GW Monitoring\2021101-DWG\SMP-F03-IMPACTS.dwg LAYOUT: 3 SAVED: 2/12/2021 1:29 PM ACADVER: 24.0S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: PLTFULL-240.CTB PLOTTED: 2/16/2021 7:38 AM
BY: SARTORI, KATHERINE
XREFS: IMAGES:
SMP-X-BASE-1
SMP-X-LB-TITLE



LEGEND:

- EXTENT OF SEDIMENT REMOVAL
- SEDIMENT SAMPLING LOCATION
- OUTFALL PIPE LOCATION
- PROPERTY LINE
- MANHOLE

NOTES:

1. AERIAL IMAGE OBTAINED FROM THE NEW YORK STATE GEOGRAPHICAL INFORMATION SYSTEMS CLEARINGHOUSE ON 3/2/2009.
2. ALL LOCATIONS ARE APPROXIMATE.

0 100' 200'

GRAPHIC SCALE

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

SEDIMENT SAMPLING LOCATIONS

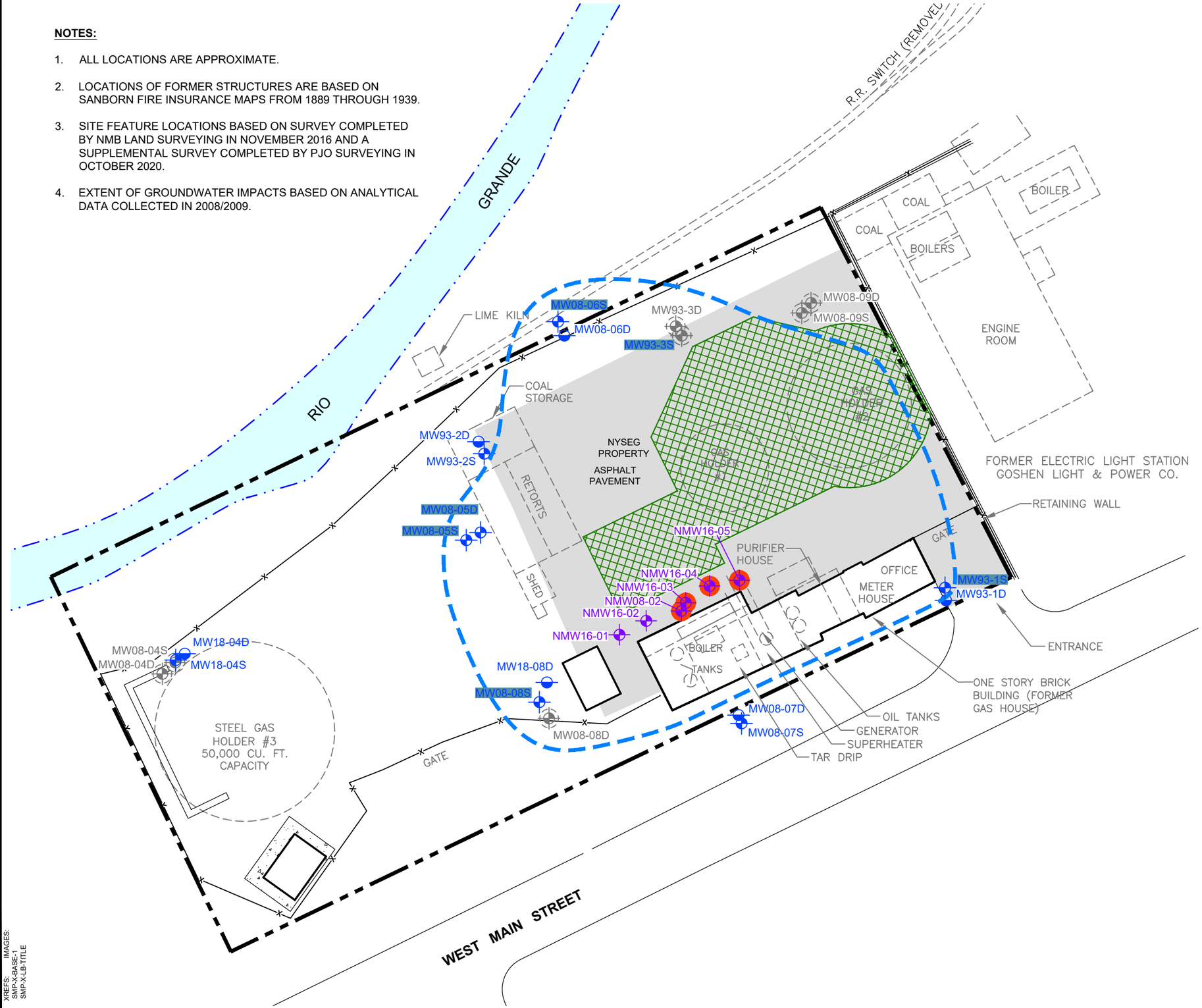
ARCADIS Design & Consultancy for natural and built assets

FIGURE
4

CITY:SYRACUSE, N.Y. DIV/GROUP:ENVCAD-141 DB:AMS, R.ALLEN LD:(Opt) PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:ON=*;OFF=*REF*
C:\Users\ksatton\BIM 360\Arcadis\ANA - IBERDROLA USA\Project Files\NYSEG Goshen GW Monitoring\2021\01-DWG\SMP-F04-SAMPLES.dwg LAYOUT: 4 SAVED: 1/23/2017 10:34 AM ACADVER: 24.0S (LMS TECH) PAGESETUP: C-LB-NY4P33 XEROX 7300N PLOTSTYLETABLE: PLTFULL.CTB
PLOTTED: 2/12/2021 11:14 AM BY: SARTORI, KATHERINE
XREFS: IMAGES:
SMP-X-BASE.tif, 05370934_12_09600_col_2007.jp2
SMP-X-LB-TITLE

NOTES:

1. ALL LOCATIONS ARE APPROXIMATE.
2. LOCATIONS OF FORMER STRUCTURES ARE BASED ON SANBORN FIRE INSURANCE MAPS FROM 1889 THROUGH 1939.
3. SITE FEATURE LOCATIONS BASED ON SURVEY COMPLETED BY NMB LAND SURVEYING IN NOVEMBER 2016 AND A SUPPLEMENTAL SURVEY COMPLETED BY PJO SURVEYING IN OCTOBER 2020.
4. EXTENT OF GROUNDWATER IMPACTS BASED ON ANALYTICAL DATA COLLECTED IN 2008/2009.



LEGEND:

- PROPERTY LINE
- FENCE LINE
- FORMER STRUCTURE (1889-1945)
- LIMITS OF ISS TREATMENT AREA
- EXTENT OF SOIL REMOVAL
- LIMITS OF ASPHALT COVER
- MONITORING WELL OR PIEZOMETER DECOMMISSIONED OR ABANDONED
- MW08-04D — DEEP MONITORING WELL
- MW18-04S — SHALLOW MONITORING WELL
- MW16-03 — NAPL MONITORING WELL
- NAPL OBSERVED AT THIS LOCATION (SEE NOTE 4)
- SHADING INDICATES THAT ONE OR MORE COMPOUNDS EXCEED NYSDEC CLASS GA STANDARDS OR GUIDANCE VALUES (SEE NOTE 4)
- INFERRED EXTENT OF GROUNDWATER CONCENTRATIONS ABOVE NYSDEC CLASS GA GROUNDWATER STANDARDS AND GUIDANCE VALUES

0 30' 60'
GRAPHIC SCALE

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

EXTENT OF REMAINING GROUNDWATER IMPACTS

ARCADIS Design & Consultancy for natural and built assets

FIGURE 5

APPENDIX A

Environmental Easement

BARCLAY DAMON LLP

Danielle E. Mettler-LaFeir
Partner

December 11, 2020

CERTIFIED MAIL, RETURN RECEIPT REQUESTED

Michael Nuzzolese
Mayor, Village of Goshen
Village Hall
276 Main Street
Goshen, NY 10924

Re: Environmental Easement

Dear Mayor Nuzzolese:

Attached please find a copy of an environmental easement granted to the New York State Department of Environmental Conservation ("Department")

on November 3, 2020,
by New York State Electric & Gas Corporation,
for property at 250 West Main Street, Goshen, New York,
Tax Map No. 111.10-16.2,
DEC Site No: 336046.

This Environmental Easement restricts future use of the above-referenced property to commercial and industrial uses. Any on-site activity must be done in accordance with the Environmental Easement and the Site Management Plan which is incorporated into the Environmental Easement. Department approval is also required prior to any groundwater use.

Article 71, Section 71-3607 of the New York State Environmental Conservation Law requires that:

> 1. Whenever the department is granted an environmental easement, it shall provide each affected local government with a copy of such easement and shall also provide a copy of any documents modifying or terminating such environmental easement.

2000 Five Star Bank Plaza - 100 Chestnut Street - Rochester, New York 14604 barclaydamon.com
DMettler@barclaydamon.com Direct: (585) 295-4358 Fax: (585) 295-8470

> 2. Whenever an affected local government receives an application for a building permit or any other application affecting land use or development of land that is subject to an environmental easement and that may relate to or impact such easement, the affected local government shall notify the department and refer such application to the department. The department shall evaluate whether the application is consistent with the environmental easement and shall notify the affected local government of its determination in a timely fashion, considering the time frame for the local government's review of the application. The affected local government shall not approve the application until it receives approval from the department.

An electronic version of every environmental easement that has been accepted by the Department is available to the public at: http://www.dec.ny.gov/chemical/36045.html. Please forward this notice to your building and/or planning departments, as applicable, to ensure your compliance with these provisions of New York State Environmental Conservation Law. If you have any questions or comments regarding this matter, please do not hesitate to contact me.

Very truly yours,

/s/ Danielle E. Mettler-LaFeir

Danielle E. Mettler-LaFeir
Barclay Damon LLP

Enclosure

ORANGE COUNTY – STATE OF NEW YORK

ANN G. RABBITT, COUNTY CLERK
255 MAIN STREET
GOSHEN, NEW YORK 10924

COUNTY CLERK'S RECORDING PAGE

THIS PAGE IS PART OF THE DOCUMENT – DO NOT DETACH

BOOK/PAGE: 14860 / 1506
INSTRUMENT #: 20200067707

Receipt#: 2843033
Clerk: MP
Rec Date: 12/11/2020 08:04:10 AM
Doc Grp: D
Descrip: RT WY
Num Pgs: 10
Rec'd Frm: STEWART TITLE INSURANCE COMPANY - UPSTATE

Party1: NEW YORK STATE ELECTRIC & GAS CORPORATION
Party2: PEOPLE OF THE STATE OF NEW YORK
Town: GOSHEN (TN)
110-10-16.2

Recording:

Recording Fee	70.00
Cultural Ed	14.25
Records Management - Coun	1.00
Records Management - Stat	4.75
TP584	5.00
Sub Total:	95.00

Transfer Tax

Transfer Tax - State	0.00
Sub Total:	0.00
Total:	95.00

**** NOTICE: THIS IS NOT A BILL ****

***** Transfer Tax *****
Transfer Tax #: 4159
Transfer Tax Consideration: 0.00

Total: 0.00

Payment Type:
Check ___
Cash ___
Charge ___
No Fee ___

Comment: _____

Ann G. Rabbitt
Orange County Clerk

Record and Return To:

ELECTRONICALLY RECORDED BY INGEO

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

THIS INDENTURE made this 3rd day of November, 2020 between Owner, New York State Electric & Gas Corporation, having an office at 89 East Avenue, Rochester, County of Monroe, 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 250 West Main Street in the Village of Goshen, County of Orange and State of New York, known and designated on the tax map of the County Clerk of Orange as tax map parcel numbers: Section 111 Block 10 Lot 16.2, being the same as that property conveyed to Grantor by the following two deeds:

- Deed dated March 18, 1932 and recorded in the Orange County Clerk's Office in Liber 727, Page 428; and
- Deed dated August 5, 2003 and recorded in the Orange County Clerk's Office in Liber 11140, Page 1261.

The property subject to this Environmental Easement (the "Controlled Property") comprises approximately 0.74 +/- acres, and is hereinafter more fully described in the Land Title Survey dated December 14, 2018 prepared by Paul James Olszewski, P.L.S., 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:

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) The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the Orange 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;

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

(6) 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;

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

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

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

(10) 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 this Environmental Easement.

B. The Controlled Property shall not be used for Residential or Restricted Residential purposes as defined in 6NYCRR 375-1.8(g)(2)(i) and (ii), 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, at such time as NYSDEC may require, 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 by 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: 336046
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.

11. Consistency with the SMP. To the extent there is any conflict or inconsistency between the terms of this Environmental Easement and the SMP, regarding matters specifically addressed by the SMP, the terms of the SMP will control.

Remainder of Page Intentionally Left Blank

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

New York State Electric & Gas Corporation:

By: _____

Print Name: Timothy Altier

Title: Manager - Real Estate Date: 9/8/20

Grantor's Acknowledgment

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

On the 8 day of September, in the year 2020, before me, the undersigned, personally appeared Timothy Altier, 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

Amanda S Deegan
Notary Public State of NY
No. 01DE6315681
Qualified in Orleans County
Commission Expires 12/01/22

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: _____
Michael J. Ryan, Director
Division of Environmental Remediation

Grantee's Acknowledgment

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

On the 3rd day of November, in the year 2020 before me, the undersigned, personally appeared Michael J. Ryan, 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/ executed the same in his/her/ capacity as Designee of the Commissioner of the State of New York Department of Environmental Conservation, and that by his/her/ 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

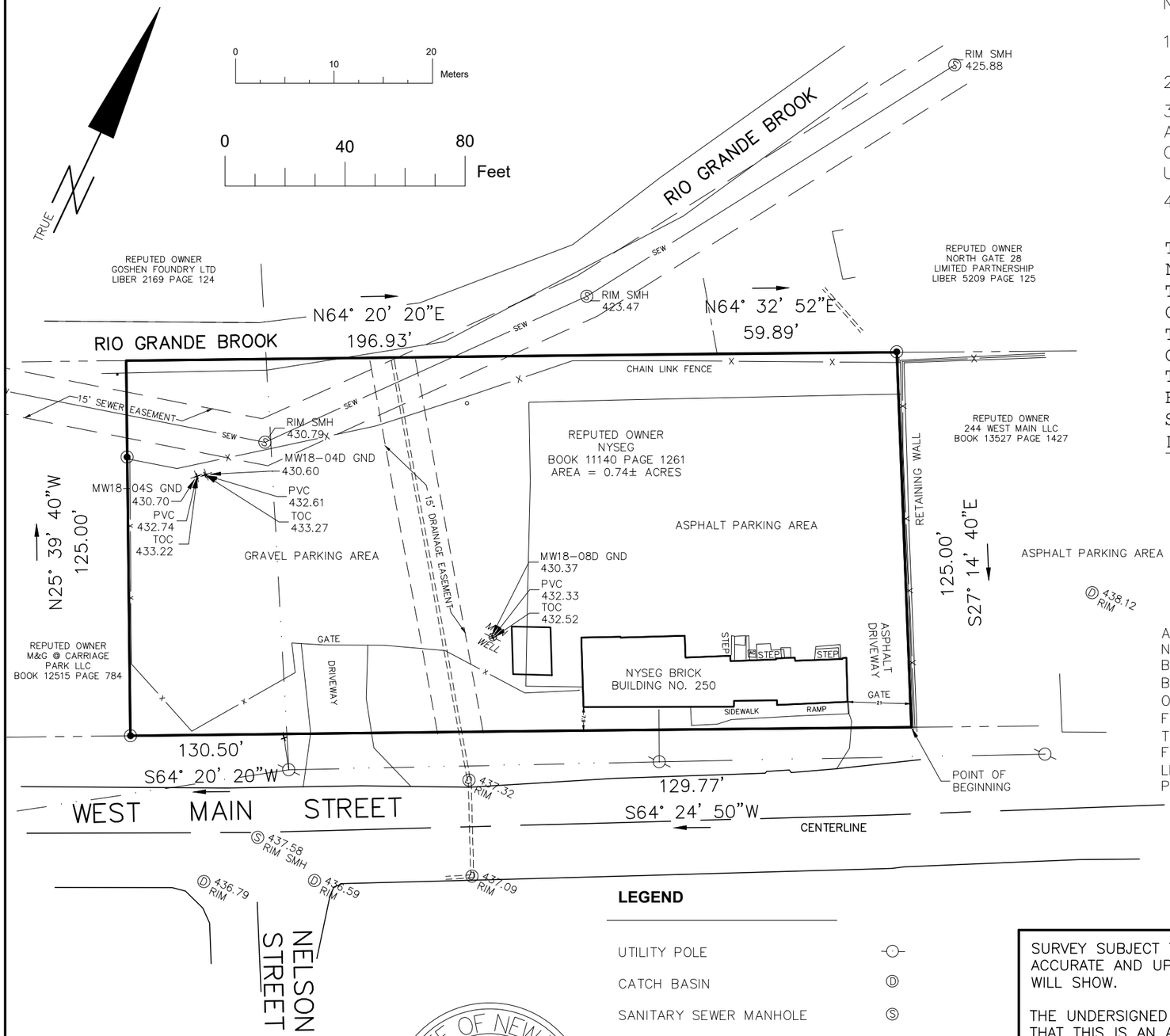
JUSTIN F STENERSON
NOTARY PUBLIC, STATE OF NEW YORK
Registration No. 02ST6383061
Qualified in Ulster County
Commission Expires November 13, 2022

SCHEDULE "A" PROPERTY DESCRIPTION

NEW YORK STATE ELECTRIC AND GAS
WEST MAIN STREET, GOSHEN, NEW YORK
TAX MAP NO. 111-10-16.2

ALL THAT TRACT OR PARCEL OF LAND SITUATE IN THE VILLAGE OF GOSHEN, COUNTY OF ORANGE AND STATE OF NEW YORK BOUNDED AND DESCRIBED AS FOLLOWS: BEGINNING AT A POINT ON THE NORTHERLY ROAD LINE OF WEST MAIN STREET AT THE SOUTHWESTERLY CORNER OF LANDS OWNED BY 244 WEST MAIN LLC BY DEED RECORDED IN THE COUNTY CLERKS OFFICE BOOK 13527 PAGE 1427; THENCE S64°24'50"W, ALONG SAID NORTHERLY ROAD LINE FOR A DISTANCE OF 129.77 FEET TO A POINT; THENCE S64°20'20"W, CONTINUING ALONG SAID NORTHERLY ROAD LINE FOR A DISTANCE OF 130.50 FEET TO A POINT; THENCE N25°39'40"W FOR A DISTANCE OF 125 FEET TO A POINT; THENCE N64°20'20"E FOR A DISTANCE OF 196.93 FEET TO A POINT; THENCE N64°32'52"E FOR A DISTANCE OF 59.89 FEET TO A POINT ON THE WESTERLY BOUNDARY OF SAID 244 WEST MAIN LLC; THENCE S27°14'40"E ALONG SAID WESTERLY BOUNDARY, FOR A DISTANCE OF 125 FEET TO A POINT AND PLACE OF BEGINNING, CONTAINING 0.74 PLUS OR MINUS OF AN ACRE OF LAND.

SUBJECT TO ALL COVENANTS, EASEMENTS AND RESTRICTIONS OF RECORD



NOTES

1 FEMA FLOOD ZONE AE, CREEK FLOOD ELEVATION = 423 FEET

2 DATUMS HORIZONTAL NAD83/CORS/96 EAST ZONE AND VERTICAL NAVD88

3 UNDERGROUND FACILITIES, STRUCTURES AND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE SURVEYS AND RECORDS, AND THEREFORE THERE LOCATIONS MUST BE CONSIDERED APPROXIMATE ONLY. THERE MAY BE OTHERS, THE EXISTENCE OF WHICH IS UNKNOWN.

4 RIO GRANDE CREEK LIMITS SHOWN MEASURED SEPTEMBER 30, 2013.

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 NEW YORK ENVIRONMENTAL CONSERVATION LAW. THE ENGINEERING AND INSTITUTIONAL CONTROLS FOR THIS EASEMENT ARE SET FORTH IN THE SITE MANAGEMENT PLAN (SMP). A COPY OF THE SMP MUST BE OBTAINED BY ANY PARTY WITH AN INTEREST IN THE PROPERTY. THE SMP CAN BE OBTAINED FROM NYS DEPARTMENT OF ENVIRONMENTAL CONSERVATION, DIVISION OF ENVIRONMENTAL REMEDIATION, SITE CONTROL SECTION, 625 BROADWAY, ALBANY, NY 12233 OR AT DERWEB@DEC.NY.GOV

SURVEYORS LEGAL DESCRIPTION
NEW YORK STATE ELECTRIC AND GAS
250 WEST MAIN STREET
TAX MAP NO. 111-10-16.2

ALL THAT TRACT OR PARCEL OF LAND SITUATE IN THE VILLAGE OF GOSHEN, COUNTY OF ORANGE AND STATE OF NEW YORK BOUNDED AND DESCRIBED AS FOLLOWS: BEGINNING AT A POINT ON THE NORTHERLY ROAD LINE OF WEST MAIN STREET AT THE SOUTHWESTERLY CORNER OF OF LANDS OWNED BY 244 WEST MAIN LLC BY DEED RECORDED IN THE COUNTY CLERKS OFFICE BOOK 13527 PAGE 1427; THENCE S64°24'50"W, ALONG SAID NORTHERLY ROAD LINE FOR A DISTANCE OF 129.77 FEET TO A POINT; THENCE S64°20'20"W, CONTINUING ALONG SAID NORTHERLY ROAD LINE FOR A DISTANCE OF 130.50 FEET TO A POINT; THENCE N25°39'40"W FOR A DISTANCE OF 125.00 FEET TO A POINT; THENCE N64°20'20"E FOR A DISTANCE OF 196.93 FEET TO A POINT; THENCE N64°32'52"E FOR A DISTANCE OF 59.89 FEET TO A POINT ON THE WESTERLY BOUNDARY OF SAID 244 WEST MAIN LLC; THENCE S27°14'40"E ALONG SAID WESTERLY BOUNDARY, FOR A DISTANCE OF 125 FEET TO A AND PLACE OF BEGINNING, CONTAINING 0.74 PLUS OR MINUS OF AN ACRE OF LAND.
SUBJECT TO ALL COVENANTS, EASEMENTS AND RESTRICTIONS OF RECORD.

LEGEND

- UTILITY POLE
- CATCH BASIN
- SANITARY SEWER MANHOLE
- OVER HEAD WIRE
- DEED DIVISION LINE
- PROPERTY LINE
- DRAINAGE EASEMENT
- SEWER EASEMENT
- IRON ROD SET

REFERENCE;

LOT LINE CHANGE SUBDIVISION OF PROPERTY FOR NEW YORK STATE ELECTRIC & GAS CORPORATION & MCBRIDE DEVELOPMENT CORPORATION. FILED IN THE ORANGE COUNTY CLERKS OFFICE ON 02-13-2003 AS MAP NO. 28-03.

STATE OF NEW YORK
PAUL JAMES OLSZEWSKI
LICENSED LAND SURVEYOR
EXCELSIOR
050212

SURVEY SUBJECT TO ANY STATE OF FACTS AN ACCURATE AND UP TO DATE ABSTRACT OF TITLE WILL SHOW.

THE UNDERSIGNED SURVEYOR HEREBY CERTIFIES THAT THIS IS AN ACCURATE MAP OF AN ACTUAL SURVEY COMPLETED 12-13-2018

PAUL J. OLSZEWSKI, P.L.S. LICENSE No. 50212

GOSHEN
NEW YORK STATE ELECTRIC
AND GAS CORPORATION

VILLAGE OF GOSHEN

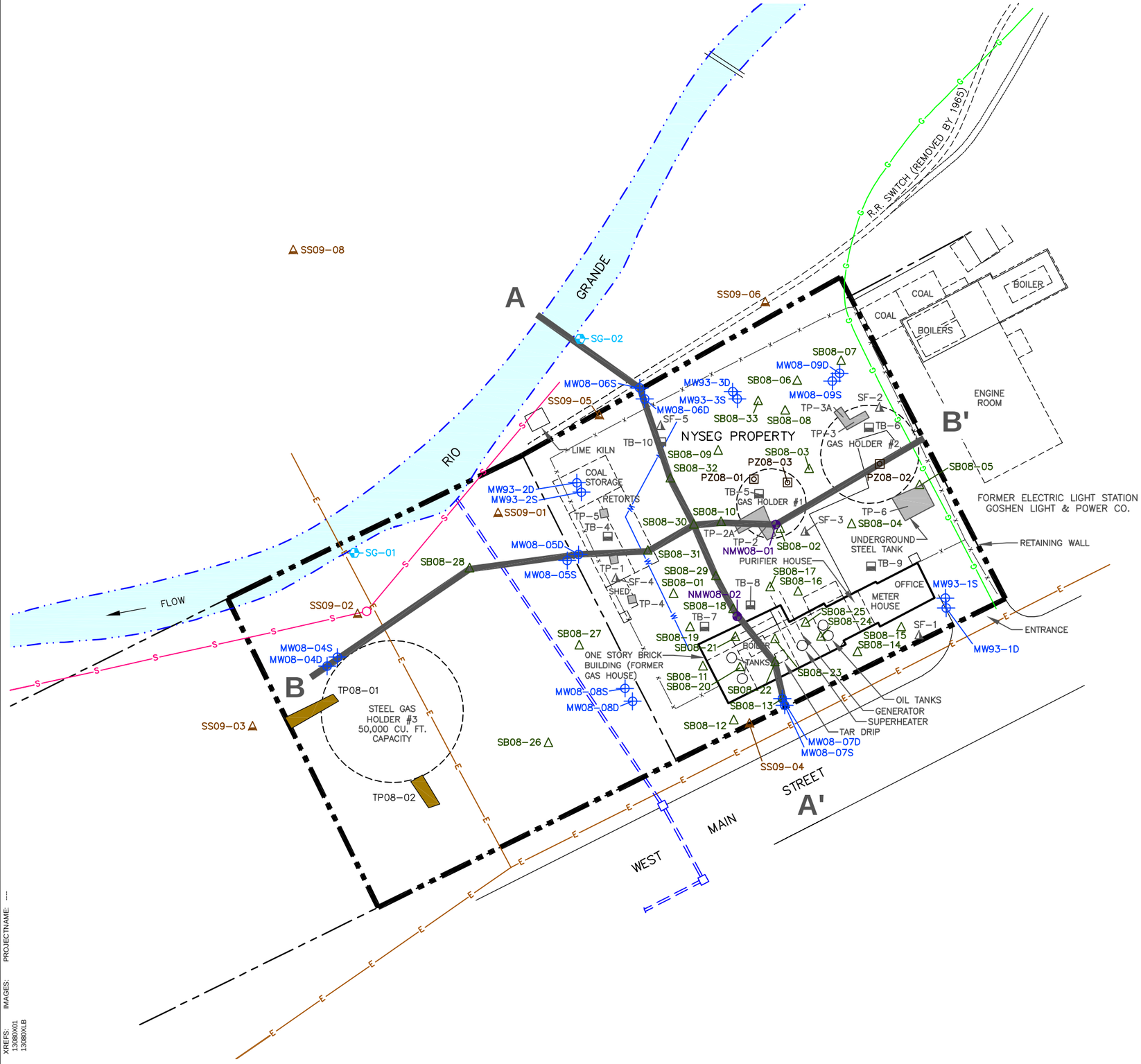
COUNTY OF ORANGE STATE OF NEW YORK

PAUL JAMES OLSZEWSKI, P.L.S., PLLC
51 FENNELL STREET
SKANEATELES NEW YORK, 13152
315-488-5552 pjosurvey.com

DATE: DECEMBER 14, 2018 SCALE: 1" = 40 FEET PROJECT No. GOSHEN111-10-16.2

APPENDIX B

Remedial Investigation Figures



LEGEND:

- MW08-05D — MONITORING WELL LOCATION
- NMW08-01 — NAPL MONITORING WELL LOCATION
- SB08-04 — SOIL BORING LOCATION
- PZ08-02 — PIEZOMETER LOCATION
- SG-01 — STAFF GAUGE LOCATION
- SS09-06 — SURFACE SOIL SAMPLING LOCATION
- TP08-01 — TEST PIT
- TB-9 — PREVIOUS TEST BORING LOCATION
- TP-6 — PREVIOUS TEST PIT LOCATION
- SF-3 — PREVIOUS SURFACE SOIL SAMPLE LOCATION
- FORMER STRUCTURE (1889–1945)
- NYSEG PROPERTY LINE (SITE)
- G — GAS LINE
- W — WATER LINE
- S — SEWER LINE
- E — ELECTRIC LINE
- STORM LINE
- PROPERTY LINE
- FENCE LINE
- A — A' LINE OF CROSS SECTION

NOTES:

1. ALL LOCATIONS ARE APPROXIMATE.
2. LOCATIONS OF FORMER STRUCTURES ARE BASED ON SANBORN FIRE INSURANCE MAPS FROM 1889 THROUGH 1939.

0 40' 80'

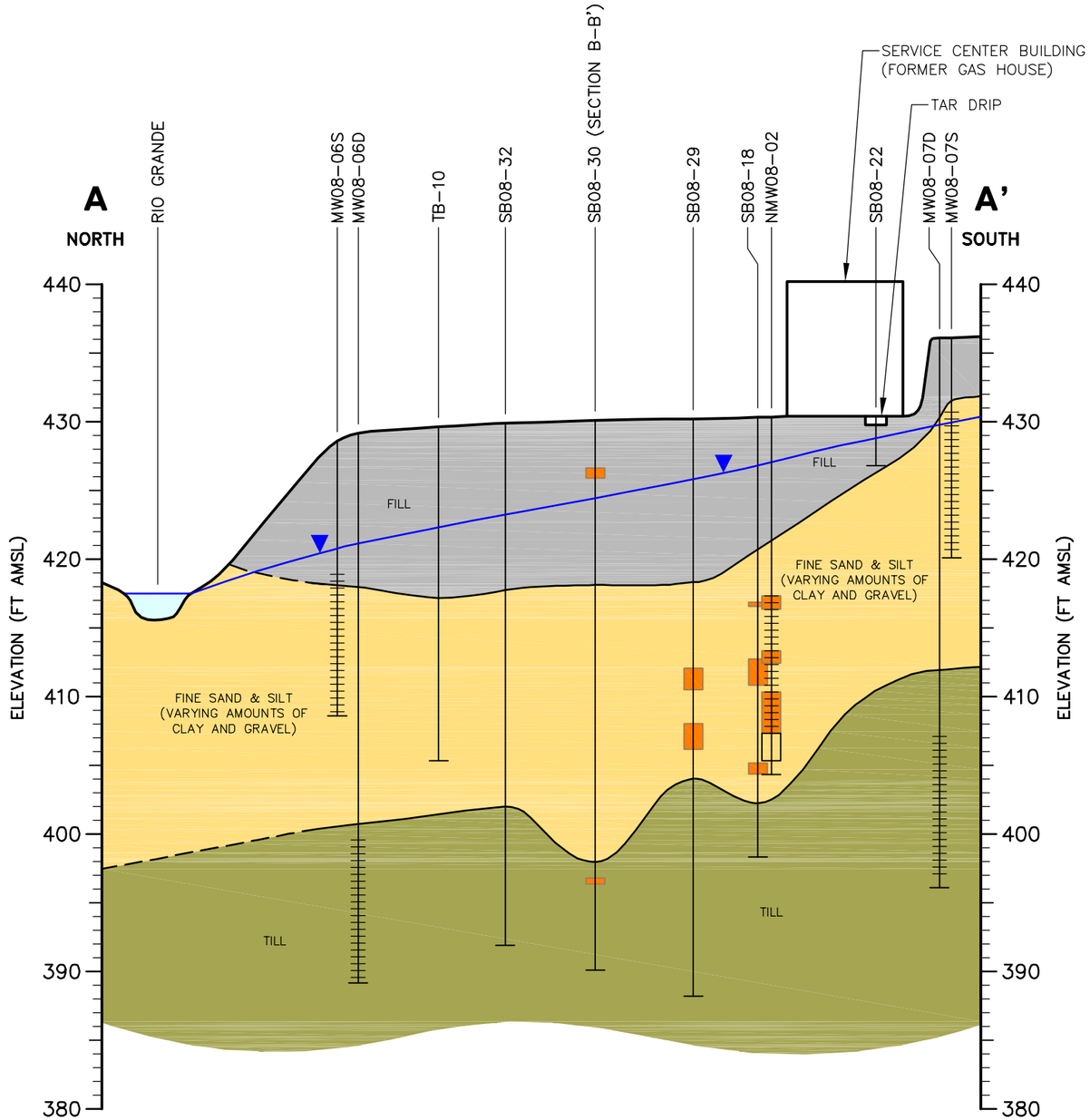
GRAPHIC SCALE

NEW YORK STATE ELECTRIC AND GAS CORPORATION
ORANGE COUNTY, NEW YORK
GOSHEN FORMER MGP SITE
REMEDIAL INVESTIGATION

SITE MAP WITH CROSS SECTION LOCATIONS

ARCADIS

FIGURE 2



MW08-04D

LEGEND:

- WELL OR BORING ID
- GROUND SURFACE
- WATER TABLE (APPROXIMATED)
- LITHOLOGIC CONTACT (DASHED WHERE INFERRED)
- SCREEN
- SUMP
- BOTTOM OF BORING
- FILL
- FINE SAND AND SILT
- TILL
- NAPL (TRACE TO HEAVILY IMPACTED)

NOTE:

ELEVATIONS REFERENCED TO NAVD 1988.

0 10' 20'
VERTICAL SCALE

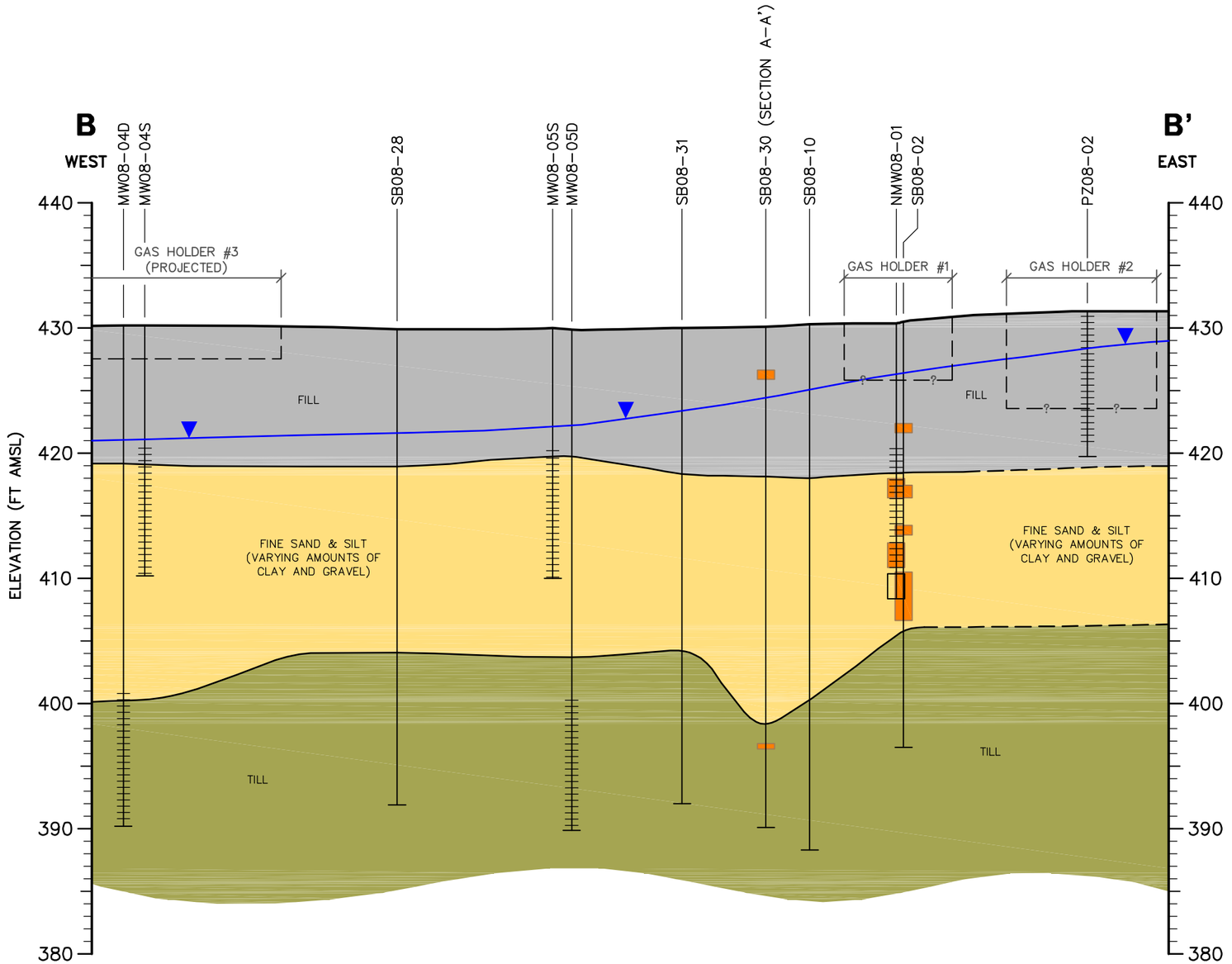
0 30' 60'
HORIZONTAL SCALE

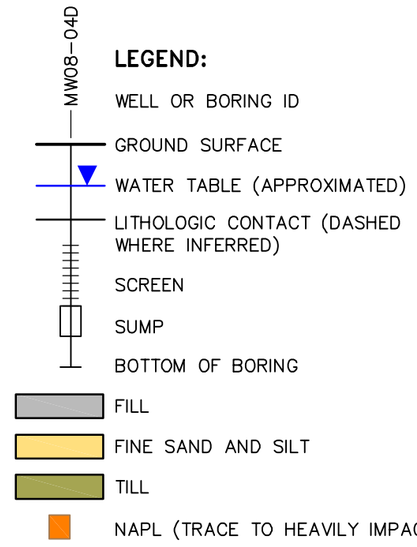
NEW YORK STATE ELECTRIC AND GAS CORPORATION
ORANGE COUNTY, NEW YORK
GOSHEN FORMER MGP SITE
REMEDIAL INVESTIGATION

CROSS SECTION A-A'

ARCADIS

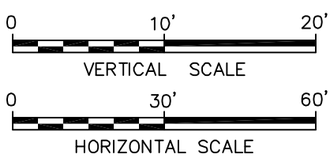
FIGURE
5





NOTE:

ELEVATIONS REFERENCED TO NAVD 1988.

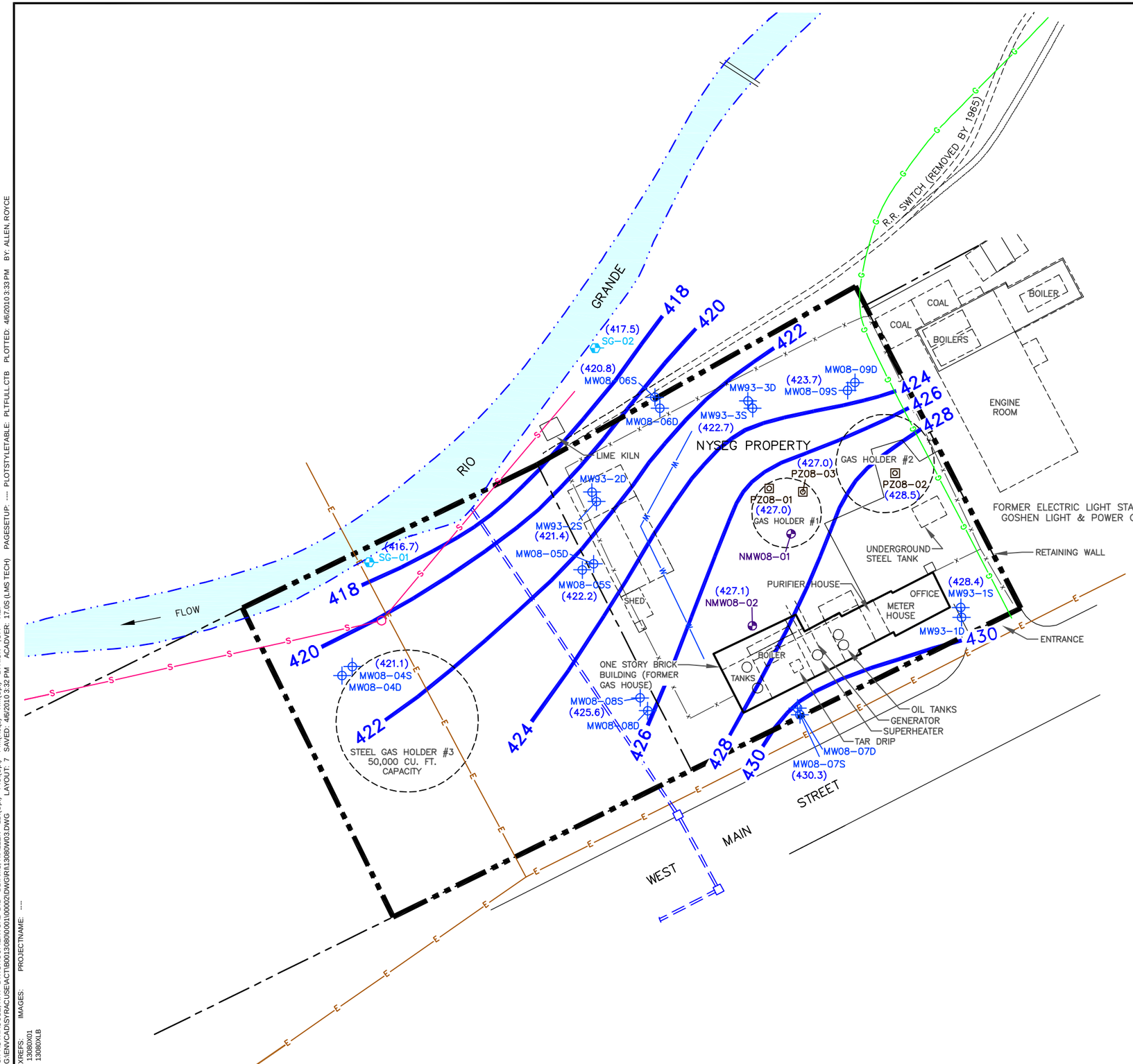


NEW YORK STATE ELECTRIC AND GAS CORPORATION
ORANGE COUNTY, NEW YORK
GOSHEN FORMER MGP SITE
REMEDIAL INVESTIGATION

CROSS SECTION B-B'

ARCADIS

FIGURE
6



LEGEND:

- MW08-05D — MONITORING WELL LOCATION
- NMW08-01 — NAPL MONITORING WELL LOCATION
- PZ08-02 — PIEZOMETER LOCATION
- SG-01 — STAFF GAUGE LOCATION
- (421.4) — WATER TABLE ELEVATION
- 422 — WATER TABLE ELEVATION CONTOUR
- FORMER STRUCTURE (1889–1945)
- NYSEG PROPERTY LINE (SITE)
- G — GAS LINE
- W — WATER LINE
- S — SEWER LINE
- E — ELECTRIC LINE
- STORM LINE
- PROPERTY LINE
- FENCE LINE

NOTES:

1. ALL LOCATIONS ARE APPROXIMATE.
2. LOCATIONS OF FORMER STRUCTURES ARE BASED ON SANBORN FIRE INSURANCE MAPS FROM 1889 THROUGH 1939.

0 40' 80'

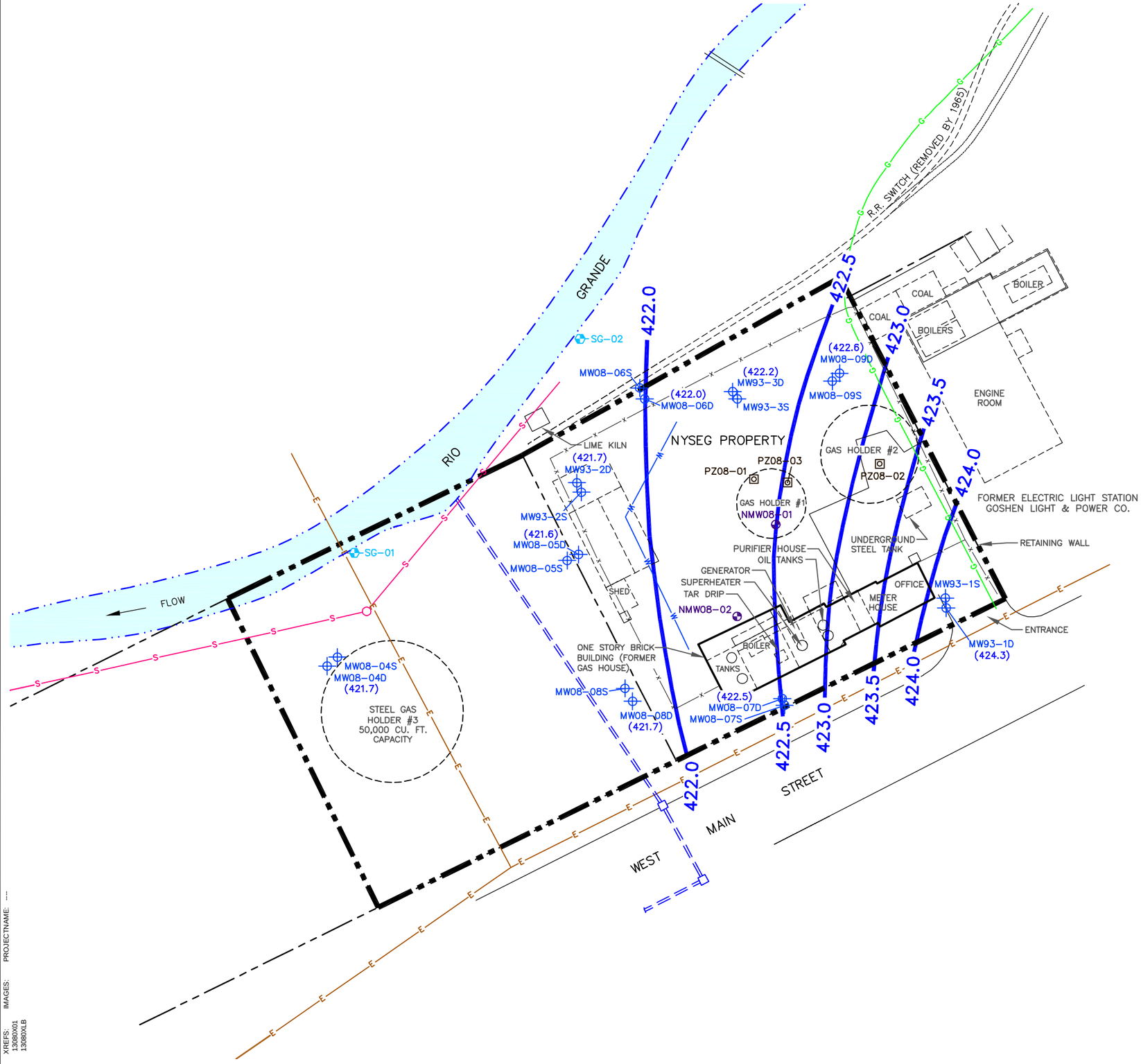
GRAPHIC SCALE

NEW YORK STATE ELECTRIC AND GAS CORPORATION
ORANGE COUNTY, NEW YORK
GOSHEN FORMER MGP SITE
REMEDIAL INVESTIGATION

WATER TABLE MARCH 30, 2009

ARCADIS

FIGURE 7



LEGEND:

MW08-05D	MONITORING WELL LOCATION
NMW08-01	NAPL MONITORING WELL LOCATION
PZ08-02	PIEZOMETER LOCATION
SG-01	STAFF GAUGE LOCATION
(422.5)	POTENTIOMETRIC SURFACE ELEVATION
422.5	POTENTIOMETRIC SURFACE CONTOURS
	FORMER STRUCTURE (1889-1945)
	NYSEG PROPERTY LINE (SITE)
G	GAS LINE
W	WATER LINE
S	SEWER LINE
E	ELECTRIC LINE
	STORM LINE
	PROPERTY LINE
x	FENCE LINE

NOTES:

1. ALL LOCATIONS ARE APPROXIMATE.
2. LOCATIONS OF FORMER STRUCTURES ARE BASED ON SANBORN FIRE INSURANCE MAPS FROM 1889 THROUGH 1939.

0 40' 80'

GRAPHIC SCALE

NEW YORK STATE ELECTRIC AND GAS CORPORATION
ORANGE COUNTY, NEW YORK
GOSHEN FORMER MGP SITE
REMEDIAL INVESTIGATION

DEEP OVERBURDEN POTENTIOMETRIC SURFACE MARCH 30, 2009

ARCADIS

FIGURE **8**

APPENDIX C

Excavation Work Plan

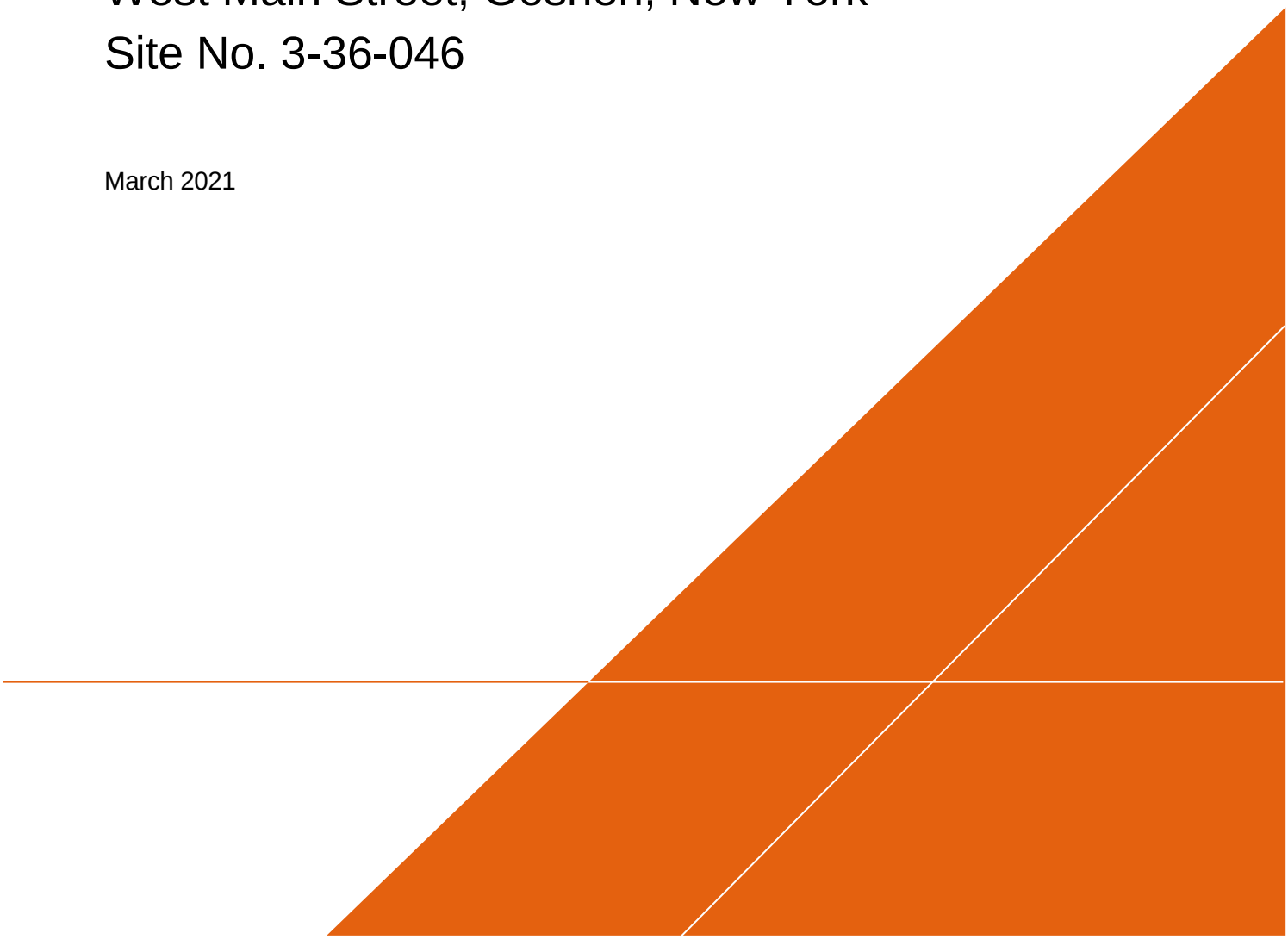
ARCADIS Design & Consultancy for natural and built assets

NYSEG

EXCAVATION WORK PLAN

Goshen Former Manufactured Gas Plant Site
West Main Street, Goshen, New York
Site No. 3-36-046

March 2021



EXCAVATION WORK PLAN

Goshen Former Manufactured Gas Plant Site

Prepared for:

NYSEG

Prepared by:

Arcadis of New York, Inc.

One Lincoln Center

110 West Fayette Street

Suite 300

Syracuse

New York 13202

Tel 315 446 9120

Fax 315 449 0017

Our Ref.:

B0013080.0013 #11

Date:

March 2021

CONTENTS

This Excavation Work Plan (EWP) has been prepared as appendix to the March 2021 Site Management Plan (SMP) to support potential future invasive (i.e., subsurface) activities at the NYSEG Goshen Former Manufactured Gas Plant (MGP) Site located in Goshen, New York (the Site).

1 NOTIFICATION

At least 15 days prior to the start of any activity that is anticipated to encounter remaining impacts, the property owner or their representative will notify the NYSDEC Project Manager (contact information is provided below). The contact information provided below will be updated as necessary to provide accurate contact information. A full listing of site-related contact information is provided in Section 1.3 of the SMP.

Scott Deyette
New York State Department of Environmental Conservation (NYSDEC)
Division of Environmental Remediation
11th Floor 625 Broadway
Albany, New York 12233-7014
518.402.9662
888.459.8667 (toll free)
scott.deyette@dec.ny.gov
* 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 impacted and/or solidified 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, including the nature and concentration levels of constituents of concern, potential presence of grossly impacted and/or solidified media, and plans for any pre-construction sampling.
- 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 health and safety plan (HASP), in electronic format, if it differs from the HASP provided in Appendix D of the SMP.

- Identification of disposal facilities for potential waste streams.
- Identification of sources of any anticipated backfill, along with all required chemical testing results.

2 SOIL SCREENING METHODS

Visual, olfactory and instrument-based (e.g. photoionization detector) soil screening will be performed by a qualified environmental professional during all excavations into known or potentially impacted and/or solidified material (remaining impacts). 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 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. Further discussion of off-site disposal of materials and on-site reuse is provided in Section 7 of this EWP.

3 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.

4 MATERIALS EXCAVATION AND LOAD-OUT

A qualified environmental professional or person under their supervision will oversee all invasive work and the excavation and load-out of all excavated material. The owner of the property and remedial party (if applicable) and its contractors are responsible for safe execution of all invasive and other work performed under this EWP.

The presence of utilities and easements at the Site will be investigated by the qualified environmental professional, the owner of the property, the remedial party (if applicable), and contractors. It will be determined whether a risk or impediment to the planned work under the SMP is posed by utilities or easements on 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). A truck wash will be operated on-site, as appropriate. The qualified environmental professional will be

responsible for inspecting that all outbound trucks will be washed 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.

Locations where vehicles enter or exit the Site shall be inspected daily for evidence of off-site soil tracking. The qualified environmental professional will be responsible for inspecting 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. Cleaning of the adjacent streets will be performed by the contractor as needed to maintain a clean condition with respect to site-derived materials.

5 MATERIALS TRANSPORTED OFF-SITE

All transportation 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.

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 are as follows:

- Proceed west on West Street.
- Turn left on Clowes Avenue.
- Turn right onto Greenwich Avenue
- Proceed north or south on NY-17, as desired.

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. 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 in order to minimize off-site disturbance. Off-site queuing will be prohibited. Trucks will be prohibited from stopping and idling in the neighborhood outside the project site.

6 MATERIALS DISPOSED OF OFF-SITE

All material excavated and removed from the Site will be treated as impacted and regulated material and will be transported and disposed in accordance with all local, State (including 6NYCRR Part 360) and Federal regulations. If disposal of material from the 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. Unregulated off-site management of materials from the 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 (i.e. hazardous waste disposal facility, solid waste landfill, petroleum treatment facility, construction and demolition [C&D] recycling facility, etc.). Actual disposal quantities and associated documentation will be reported to the NYSDEC in the Periodic Review Report. This documentation will include: waste profiles; test results; facility acceptance letters; manifests; bills of lading and facility receipts.

Non-hazardous historic fill and impacted and/or solidified soils taken off-site will be handled, at minimum, as a Municipal Solid Waste per 6NYCRR Part 360-1.2. Material that does not meet unrestricted soil cleanup objectives (SCOs) is prohibited from being taken to a New York State recycling facility (6NYCRR Part 360-16 Registration Facility).

7 MATERIALS REUSED ON-SITE

The qualified environmental professional will observe that procedures defined for materials reuse in this SMP are followed and that unacceptable material does not remain on-site. On-site material containing site-related impacts, including historic fill and impacted and/or solidified soil, that is acceptable for reuse on-site will be placed below the demarcation layer or impervious surface, and will not be reused within a cover soil layer, within landscaping berms, or as backfill for subsurface utility lines.

Any demolition material proposed for reuse on-site will be sampled for asbestos and the results will be reported to the NYSDEC for acceptance. 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 will not be reused on-site.

8 FLUIDS MANAGEMENT

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 in accordance with applicable local, State, and Federal regulations. 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 (i.e. a local pond, stream or river) will be performed under a State Pollutant Discharge Elimination System (SPDES) permit.

9 COVER SYSTEM RESTORATION

After the completion of soil removal and any other invasive activities the cover system will be restored in a manner that complies with the Record of Decision. The existing cover system is comprised of a minimum of 12 inches of clean soil, asphalt pavement, concrete covered sidewalks and concrete building, etc. The demarcation layer, consisting of (e.g., orange snow fencing material, geotextile, or equivalent material, etc.) will be replaced to provide a visual reference to the top of the remaining potentially impacted material (including solidified material) that requires adherence to special conditions for disturbance as defined in the 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 impacted and/or solidified material. A figure showing the modified surface will be included in the subsequent Periodic Review Report and in an updated SMP.

10 BACKFILL FROM OFF-SITE SOURCES

All materials proposed for import to the Site will be approved by the qualified environmental professional and will be in compliance with provisions in the 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, or other environmental remediation sites or potentially impacted sites will not be imported to the Site.

All imported soils will meet the backfill and cover soil quality standards established in 6NYCRR 375-6.7(d). Based on an evaluation of the land use, protection of groundwater and protection of ecological resources criteria, the resulting soil quality standards for commercial/industrial use are listed in Appendix 5 of Division of Environmental Remediation (DER) *DER-10 Technical Guidance for Site Investigation and Remediation* (DER-10). Soils that meet 'exempt' fill requirements under 6 NYCRR Part 360, but do not meet backfill or cover soil objectives for the Site, will not be imported to the Site without prior approval by NYSDEC. Solid waste will not be imported to 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.

11 STORM WATER POLLUTION PREVENTION

Barriers and hay bale checks will be installed by the contractor and inspected by the qualified environmental professional once a 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 and corrective actions should be taken as follows:

- All necessary repairs shall be made immediately.
- Accumulated sediments will be removed as required to keep the barrier and hay bale check functional.
- All 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.

12 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.

Sampling will be performed on product, sediment 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 (i.e., target analyte list [TAL] metals; target compound list [TCL] volatiles and semi-volatiles, TCL pesticides and polychlorinated biphenyls [PCBs]), unless the site history and previous sampling results provide a sufficient justification to limit the list of analytes. In this case, a reduced list of analytes will be proposed to the NYSDEC for approval prior to sampling.

Identification of unknown or unexpected impacted media identified by screening during invasive site work will be promptly communicated by phone to 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 Periodic Review Report.

13 COMMUNITY AIR MONITORING PLAN

Air monitoring station locations shall be determined based on wind directions at the beginning of each shift. These locations will be adjusted on a daily or more frequent basis based on actual wind directions to provide an upwind and at least two downwind monitoring stations. Exceedances of action levels listed in the Community Air Monitoring Plan (CAMP), included as Appendix E to the SMP, will be reported to NYSDEC and New York State Department of Health (NYSDOH) Project Managers.

14 ODOR CONTROL PLAN

This odor control plan is capable of controlling emissions of nuisance odors off-site. 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 the remedial party's Remediation Engineer, and any measures that are implemented will be discussed in the Periodic Review Report.

All necessary means will be employed to prevent on- and off-site nuisances. At a minimum, these measures will include: (a) limiting the area of open excavations and size of soil stockpiles; (b) shrouding open excavations with tarps and other covers; and (c) using foams to cover exposed odorous soils. If odors develop and cannot be otherwise controlled, additional means to eliminate odor nuisances will include: (d) direct load-out of soils to trucks for off-site disposal; (e) use of chemical odorants in spray or misting systems; and, (f) 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.

15 DUST CONTROL PLAN

A dust suppression plan that addresses dust management during invasive on-site work will include, at a minimum, the items listed below:

- Dust suppression will be achieved through the use of 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.
- Clearing and grubbing of larger areas will be done in stages to limit the area of exposed, non-vegetated soils vulnerable to dust production.
- Gravel will be used on roadways to provide a clean and dust-free road surface.
- On-site roads will be limited in total area to minimize the area required for water truck sprinkling.

16 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.

APPENDIX D

Health and Safety Plan

Site Specific Health and Safety Plan

Revision

Project Name:	Goshen Former MGP Site West Main Street, Goshen, New York Site No. 3-36-046
Project Number:	B0013080.0016
Client Name:	NYSEG
Date:	11/26/2018
HASP Expires	11/26/2019
Revision:	0

Approvals:

HASP Developer: Tyler Howe

Project Manager: Jason Golubski

HASP Reviewer:

Emergency Information

Site Address: 250 W Main Street
Goshen, New York 10924

Emergency Phone Numbers:

Emergency (fire, police, ambulance)		911
Emergency (facility specific, if applicable):		
NYS Spill Hotline		1-800-457-7362
National Spill Response Center (NRC)		1-800-424-8802
Emergency Other (specify)	Poison Control	1-800-222-1222
Client Contact	Tracy Blazicek	607-762-8839
WorkCare (non-lifethreatening injury/illness)		1-800-455-6155
Project H&S	Daniel Zuck	315-671-9152
Task Manager	TBD	
Project Manager	Jason Golubski	315-671-9437
Corporate H&S Specialist	Julie Santaniello	978-322-4515
Corporate H&S Director	Denis Balcer	614-985-9114

Hospital Name and Address: Orange County Medical Center
707 East Main Street
Middletown, NY 10940

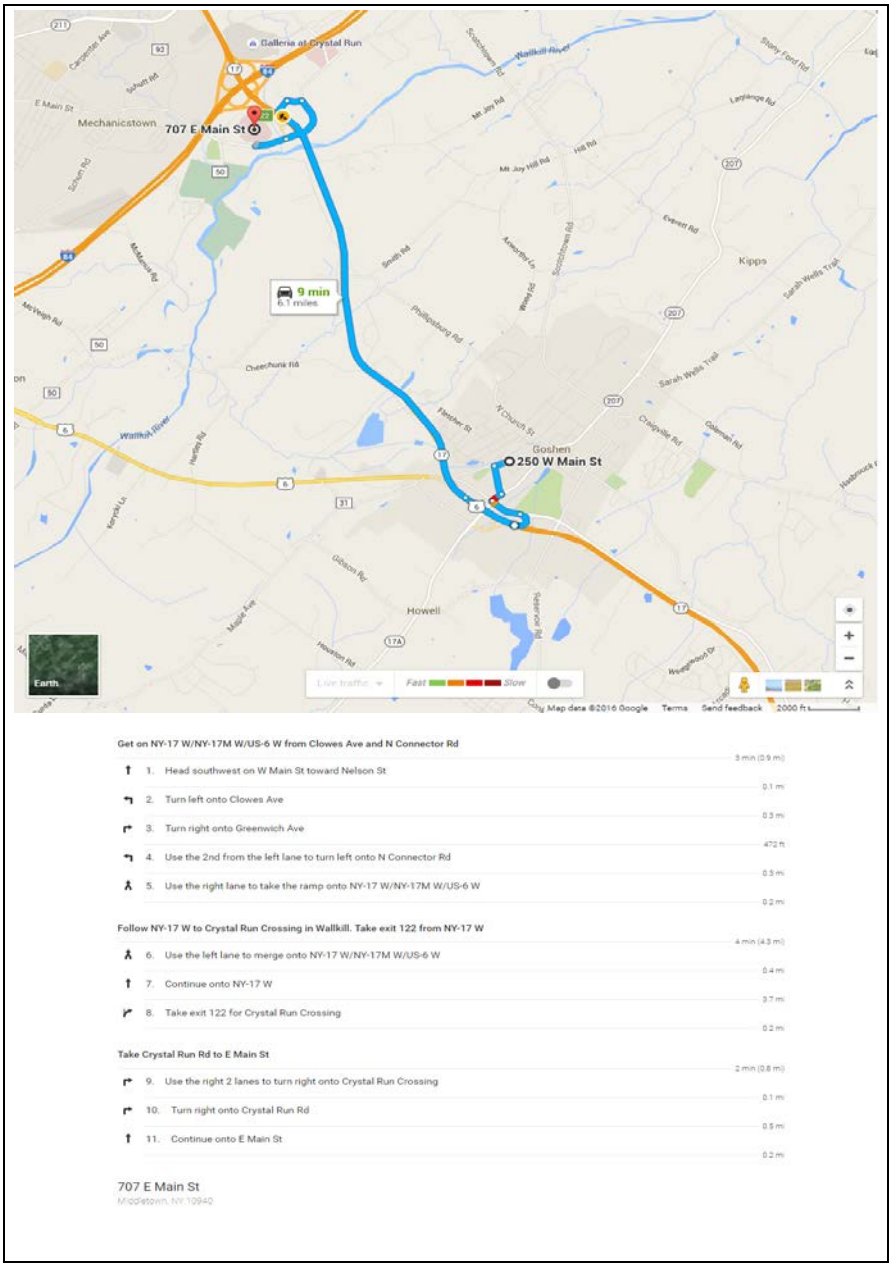
Hospital Phone Number: 845-333-1000

Incident Notification Process

1	Dial 911/Facility Emergency Number/WorkCare as applicable	
2	Contact PM/Supervisor	Jason Golubski
3	Contact Corporate H&S	Julie Santaniello
4	Contact Client	Tracy Blazicek

Complete below, as applicable, or clear cell contents:

Route to the Hospital



Get on NY-17 W/NY-17M W/US-6 W from Clowes Ave and N Connector Rd — 3 min (0.9 mi)

1. Head southwest on W Main St toward Nelson St — 0.1 mi
2. Turn left onto Clowes Ave — 0.3 mi
3. Turn right onto Greenwich Ave — 472 ft
4. Use the 2nd from the left lane to turn left onto N Connector Rd — 0.5 mi
5. Use the right lane to take the ramp onto NY-17 W/NY-17M W/US-6 W — 0.2 mi

Follow NY-17 W to Crystal Run Crossing in Wallkill. Take exit 122 from NY-17 W — 4 min (4.3 mi)

6. Use the left lane to merge onto NY-17 W/NY-17M W/US-6 W — 0.4 mi
7. Continue onto NY-17 W — 3.7 mi
8. Take exit 122 for Crystal Run Crossing — 0.2 mi

Take Crystal Run Rd to E Main St — 2 min (0.8 mi)

9. Use the right 2 lanes to turn right onto Crystal Run Crossing — 0.1 mi
10. Turn right onto Crystal Run Rd — 0.5 mi
11. Continue onto E Main St — 0.2 mi

707 E Main St
Middletown, NY 10940

Site Map Showing Assembly Areas
(LOCATION(S)TO BE DISCUSSED DAILY)

General Information

Site Type (select all applicable where work will be conducted):

- ☑ Active
- ☐ Bridge
- ☐ Buildings
- ☑ Commercial
- ☐ Construction
- ☐ Military Installation
- ☐ Inactive Industrial
- ☐ Active Industrial
- ☐ Landfill
- ☐ Marine
- ☐ Mining
- ☑ Parking Lot/Private Roadway
- ☐ Railroad
- ☐ Remote Area
- ☐ Residential
- ☐ Retail
- ☐ Roadway (public, including right-of-way)
- ☐ Water Treatment Plant
- ☐ Unknown
- ☐ Security Risk Site/Location
- ☑ Utility
- ☐ Other (specify): _____

Surrounding Area and Topography (select one):

- ☐ Surrounding area and topography are presented in the project work plan
- ☑ Surrounding area and topography (*briefly describe*):
  The site is generally comprized primarely of gravel or paved areas.

Simultaneous Operations (SimOps)

- ☑ Not applicable
- ☐ SimOps will exist on this project

Site Background (select one):

- ☐ Site background is presented in the project work plan
- ☑ Site background (*briefly describe)* :
  The site previously contained a MGP plant for approximately 38 years (1885-1927). This site is currently used as a natural gas service center.

Project Tasks

The following tasks are identified for this project:

Examples: "Drilling/soil sampling", "Surveying", "General Inspections", "Construction Management/Inspections"

1 Site Walk
2 Groundwater Sampling
3 NAPL Gauging/ Free Product Collection
4 Packaging and Shipping Samples
5 Well Installation
6 Well Development

☐ Subcontractor H&S information is attached

☑ Utility clearance required.

☐ Journey Management Plan attached

☑ State specific H&S required: ARCADIS H&S Field Handbook Section II, Section III subsections A, C, M, N, R, and KK.

Comments:

☑ The following H&S Standards are attached:

Motor Vehicle HS Standard

Roles and Responsibilities

	Name	*Role*	*Additional Responsibilities (Describe)*
1	Jason Golubski	PM	Overall management of work
2	Jason Golubski	TM	Coordinate all field work
3	TBD	Field Lead	Oversee Sampling and Well Installations
4	TBD	SSO	Oversee Site Safety and compliance with the HASP, JSAs and OSHA requirments
5			
6			

Training

All Arcadis employees are required to have the following training to be on site:	*Selected Arcadis employees are required to have the following additional training:*	Names or Numbers from above
Hazwoper 40 Hour	First Aid/CPR	3 & 4
PPE	DOT HazMat #1	3 & 4
Defensive Driving - Smith On-Line	Hazwoper 8-Hour Supervisor	3
H&S Program Orientation	None	
Hazwoper 8-Hour Annual Refresher	None	
Client specific:	None	
	None	
Other:	Other:	

Hazard Analysis

Risk Assessment Matrix		Likelihood Ratings** (likelihood that incident would occur)			
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	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

Business Line

Environment

Business Unit

All Categories

Task 1: Site Walk

Hazardous Activity #1

Field-Ambient environment - exposure heat, cold, sun, weather, etc

Hazard Types (unmitigated ranking H-High, M-Medium, L-Low):				**Suggested FHSHB Ref. Section/Part:**			**III I, III M**
Biological	-	Chemical	-	Driving	M	Electrical	L
Environmental	L	Gravity	H	Mechanical	-	Motion	L
Personal Safety	M	Pressure	-	Radiation	-	Sound	-

Overall Unmitigated Risk: Medium Mitigated Risk: Medium if utilizing:

Controls that should be Considered: Primary: TRACK Field H&S Handbook (see ref. above) Secondary: H&S Standards Engineering Controls (specify below) Admin. Controls (specify below) Specialized Equipment (specify below) PPE (see HASP "PPE" section)

Enter Required Controls: **Engineering Controls - Use a tent or vehicle to protect workers from the elements during breaks**
Admin Control - Shorter work hours if necessary based on hot or cold conditions

Hazardous Activity #2

Field-Biological - insects, spiders, snakes, etc

Hazard Types (unmitigated ranking H-High, M-Medium, L-Low):				**Suggested FHSHB Ref. Section/Part:**			**III N**
Biological	M	Chemical	-	Driving	-	Electrical	-
Environmental	-	Gravity	-	Mechanical	-	Motion	-
Personal Safety	-	Pressure	-	Radiation	-	Sound	-

Overall Unmitigated Risk: Medium Mitigated Risk: Medium if utilizing:

Controls that should be Considered: Primary: TRACK Engineering Controls (specify below) Secondary: JSAs HASP Job Briefing/Site Awareness PPE (see HASP "PPE" section) Housekeeping

Enter Required Controls: **Engineering Controls- Use DEET and permetherin to mittigate exposure, tape boots to pants. Perform daily tick inspections**

Hazardous Activity #3

Field-Biological - vegetation, physically damaging, poisonous, heavily vegetated areas

Hazard Types (unmitigated ranking H-High, M-Medium, L-Low):				**Suggested FHSHB Ref. Section/Part:**			**III AE**
Biological	M	Chemical	-	Driving	-	Electrical	-
Environmental	-	Gravity	L	Mechanical	-	Motion	-
Personal Safety	-	Pressure	-	Radiation	-	Sound	-

Overall Unmitigated Risk: Medium Mitigated Risk: Low if utilizing:

Controls that should be Considered: Primary: TRACK JSAs Engineering Controls (specify below) Secondary: Field H&S Handbook (see ref. above) Job Briefing/Site Awareness PPE (see HASP "PPE" section)

Enter Required Controls: **Engineering Control - Use proper PPE and walk carefully in overgrown plants, if hazard plants are identifed have area brush cleared and we over boots or coveralls before accessing areas**

Hazardous Activity #4

Field-Walking - uneven or slippery terrain

Hazard Types (unmitigated ranking H-High, M-Medium, L-Low):				**Suggested FHSHB Ref. Section/Part:**			**III E, III F**
Biological	-	Chemical	-	Driving	-	Electrical	-
Environmental	-	Gravity	M	Mechanical	-	Motion	-
Personal Safety	-	Pressure	-	Radiation	-	Sound	-

Overall Unmitigated Risk: Medium Mitigated Risk: Medium if utilizing:

Controls that should be Considered: Primary: TRACK Secondary: Housekeeping PPE (see HASP "PPE" section)

Enter Required Controls:	**Admin Control - Familiarize workers with the site layout and tripping hazards or locations of slippery terrain during daily safety meetings**

Risk Assessment Matrix		Likelihood Ratings** (likelihood that incident would occur)			
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	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

Task 2: Groundwater Sampling

Hazardous Activity #1

Field-Ambient environment - exposure heat, cold, sun, weather, etc

Hazard Types (unmitigated ranking H-High, M-Medium, L-Low): **Suggested FHSHB Ref. Section/Part: III I, III M**

Biological	-	Chemical	-	Driving	M	Electrical	L
Environmental	L	Gravity	H	Mechanical	-	Motion	L
Personal Safety	M	Pressure	-	Radiation	-	Sound	-

Overall Unmitigated Risk: Medium Mitigated Risk: Medium if utilizing:

Controls that should be Considered: Primary: TRACK Field H&S Handbook (see ref. above) Secondary: H&S Standards Engineering Controls (specify below) Admin. Controls (specify below) Specialized Equipment (specify below) PPE (see HASP "PPE" section)

Enter Required Controls:

Engineering Controls - Use a tent or vehicle to protect workers from the elements during breaks
Admin Control - Shorter work hours if necessary based on hot or cold conditions

Hazardous Activity #2

General-Lifting and movement of equipment of varying weights at varying frequencies by manual methods

Hazard Types (unmitigated ranking H-High, M-Medium, L-Low): **Suggested FHSHB Ref. Section/Part: III AF**

Biological	-	Chemical	-	Driving	-	Electrical	-
Environmental	-	Gravity	-	Mechanical	-	Motion	-
Personal Safety	M	Pressure	-	Radiation	-	Sound	-

Overall Unmitigated Risk: High Mitigated Risk: Medium if utilizing:

Controls that should be Considered: Primary: TRACK Engineering Controls (specify below) Job Rotation Secondary: JSAs Job Briefing/Site Awareness Specialized Equipment (specify below) Admin. Controls (specify below) Engineering Controls (specify below)

Enter Required Controls:

Engineering Control - Use field vehicle to facilitate moving equipment when possible. Set up site to reduce the risk of bending and reaching for equipment
Admin Control - Ensure workers are trained in proper lifting techniques (lifting with the legs and not the back, use 2 people to carry heavy equipment)

Hazardous Activity #3

Field-Contaminated media (contact with impacted soil, water, air, sediment, etc)

Hazard Types (unmitigated ranking H-High, M-Medium, L-Low): **Suggested FHSHB Ref. Section/Part: III E, III F, III AH**

Biological	-	Chemical	H	Driving	-	Electrical	-
Environmental	M	Gravity	-	Mechanical	-	Motion	-
Personal Safety	-	Pressure	-	Radiation	M	Sound	-

Overall Unmitigated Risk: High Mitigated Risk: Low if utilizing:

Controls that should be Considered: Primary: TRACK JSAs Engineering Controls (specify below) Secondary: H&S Standards HASP Admin. Controls (specify below) HAZWOPER Training PPE (see HASP "PPE" section)

Enter Required Controls:

Engineering Control - Ensure proper PPE is worn in to avoid contact with field contaminated media, Review JSA to identify methods of additional controls and PPE requirements

Hazardous Activity #4

Field-Sampling - monitoring well sampling with electric, pneumatic or other non-manual pump

Hazard Types (unmitigated ranking H-High, M-Medium, L-Low): **Suggested FHSHB Ref. Section/Part: III F, III AB, III AF**

Biological	-	Chemical	L	Driving	-	Electrical	L
Environmental	-	Gravity	L	Mechanical	-	Motion	M
Personal Safety	-	Pressure	-	Radiation	-	Sound	-

Overall Unmitigated Risk: Low Mitigated Risk: Low if utilizing:

Controls that should be Considered:	Primary: TRACK JSAs Engineering Controls (specify below) Inspections Secondary: Job Briefing/Site Awareness PPE (see HASP "PPE" section)
Enter Required Controls:	**Engineering Control - Ensure equipment is de-enrgized before conducting maintenace, cover battery terminals and use GFCI if a generator is used for 120v applications.**

Risk Assessment Matrix		Likelihood Ratings** (likelihood that incident would occur)			
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	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

Task 3: NAPL Gauging/ Free Product Collection

Hazardous Activity #1

Field-Ambient environment - exposure heat, cold, sun, weather, etc

Hazard Types (unmitigated ranking H-High, M-Medium, L-Low):				Suggested FHSHB Ref. Section/Part:			III I, III M
Biological	-	Chemical	-	Driving	M	Electrical	L
Environmental	L	Gravity	H	Mechanical	-	Motion	L
Personal Safety	M	Pressure	-	Radiation	-	Sound	-

Overall Unmitigated Risk: Medium Mitigated Risk: Medium if utilizing:

Controls that should be Considered: Primary: TRACK Field H&S Handbook (see ref. above) Secondary: H&S Standards Engineering Controls (specify below) Admin. Controls (specify below) Specialized Equipment (specify below) PPE (see HASP "PPE" section)

Enter Required Controls:

Engineering Controls - Use a tent or vehicle to protect workers from the elements during breaks
Admin Control - Shorter work hours if necessary based on hot or cold conditions

Hazardous Activity #2

General-Lifting and movement of equipment of varying weights at varying frequencies by manual methods

Hazard Types (unmitigated ranking H-High, M-Medium, L-Low):				Suggested FHSHB Ref. Section/Part:			III AF
Biological	-	Chemical	-	Driving	-	Electrical	-
Environmental	-	Gravity	-	Mechanical	-	Motion	-
Personal Safety	M	Pressure	-	Radiation	-	Sound	-

Overall Unmitigated Risk: High Mitigated Risk: Medium if utilizing:

Controls that should be Considered: Primary: TRACK Engineering Controls (specify below) Job Rotation Secondary: JSAs Job Briefing/Site Awareness Specialized Equipment (specify below) Admin. Controls (specify below) Engineering Controls (specify below)

Enter Required Controls:

Engineering Control - Use field vehicle to facilitate moving equipment when possible. Set up site to reduce the risk of bending and reaching for equipment
Admin Control - Ensure workers are trained in proper lifting techniques (lifting with the legs and not the back, use 2 people to carry heavy equipment)

Hazardous Activity #3

Field-Contaminated media (contact with impacted soil, water, air, sediment, etc)

Hazard Types (unmitigated ranking H-High, M-Medium, L-Low):				Suggested FHSHB Ref. Section/Part:			III E, III F, III AH
Biological	-	Chemical	H	Driving	-	Electrical	-
Environmental	M	Gravity	-	Mechanical	-	Motion	-
Personal Safety	-	Pressure	-	Radiation	M	Sound	-

Overall Unmitigated Risk: High Mitigated Risk: Low if utilizing:

Controls that should be Considered: Primary: TRACK JSAs Engineering Controls (specify below) Secondary: H&S Standards HASP Admin. Controls (specify below) HAZWOPER Training PPE (see HASP "PPE" section)

Enter Required Controls:

Engineering Control - Ensure proper PPE is worn in to avoid contact with field contaminated media. Review JSAs to determine what additional controls and PPE are necessary to conduct the work safely.

Hazardous Activity #4

Field-HazMat and wastes - handling and storage at site locations (investigation derived wastes, process wastes, etc)

Hazard Types (unmitigated ranking H-High, M-Medium, L-Low):				Suggested FHSHB Ref. Section/Part:			III AG, III AH
Biological	-	Chemical	M	Driving	-	Electrical	-
Environmental	M	Gravity	-	Mechanical	-	Motion	-
Personal Safety	-	Pressure	-	Radiation	-	Sound	-

Overall Unmitigated Risk: Medium Mitigated Risk: Medium if utilizing:

Controls that should be Considered:	Primary: TRACK JSAs Work Plan Engineering Controls (specify below) Secondary: Hazcom Training HAZWOPER Training Cont./Emerg. Planning Admin. Controls (specify below) Specialized Equipment (specify below) Housekeeping Inspections PPE (see HASP "PPE" section)
Enter Required Controls:	**Engineering Control - Ensure proper PPE is worn in to avoid contact with field contaminated media** **Admin Control - Ensure field crew is has been told where waste can be stored on site.**

Risk Assessment Matrix		Likelihood Ratings** (likelihood that incident would occur)			
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	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

Task 4: Packaging and Shipping Samples

Hazardous Activity #1

Field-Sampling - sample cooler preparation

Hazard Types (unmitigated ranking H-High, M-Medium, L-Low): **Suggested FHSHB Ref. Section/Part: III AD, III AF**

Biological	-	Chemical	M	Driving	-	Electrical	-
Environmental	-	Gravity	M	Mechanical	L	Motion	L
Personal Safety	M	Pressure	-	Radiation	-	Sound	-

Overall Unmitigated Risk: Medium Mitigated Risk: Low if utilizing:

Controls that should be Considered: Primary: TRACK JSAs Engineering Controls (specify below) See HASP "Monitoring" section Secondary: Job Briefing/Site Awareness Admin. Controls (specify below) Work Plan PPE (see HASP "PPE" section)

Enter Required Controls:

Engineering Controls - Use a tent or vehicle to protect workers from the elements during breaks
Admin Control - Shorter work hours if necessary based on hot or cold conditions

Hazardous Activity #2

General-Lifting and movement of equipment of varying weights at varying frequencies by manual methods

Hazard Types (unmitigated ranking H-High, M-Medium, L-Low): **Suggested FHSHB Ref. Section/Part: III AF**

Biological	-	Chemical	-	Driving	-	Electrical	-
Environmental	-	Gravity	-	Mechanical	-	Motion	-
Personal Safety	M	Pressure	-	Radiation	-	Sound	-

Overall Unmitigated Risk: High Mitigated Risk: Medium if utilizing:

Controls that should be Considered: Primary: TRACK Engineering Controls (specify below) Job Rotation Secondary: JSAs Job Briefing/Site Awareness Specialized Equipment (specify below) Admin. Controls (specify below) Engineering Controls (specify below)

Enter Required Controls:

Engineering Control - Use field vehicle to facilitate moving equipment when possible. Set up site to reduce the risk of bending and reaching for equipment
Admin Control - Ensure workers are trained in proper lifting techniques (lifting with the legs and not the back, use 2 people to carry heavy equipment)

Hazardous Activity #3

Field-Transportation of HazMat (subject to transportation regulations)

Hazard Types (unmitigated ranking H-High, M-Medium, L-Low): **Suggested FHSHB Ref. Section/Part: III B**

Biological	-	Chemical	M	Driving	L	Electrical	-
Environmental	L	Gravity	-	Mechanical	-	Motion	-
Personal Safety	-	Pressure	-	Radiation	-	Sound	-

Overall Unmitigated Risk: Medium Mitigated Risk: Low if utilizing:

Controls that should be Considered: Primary: TRACK Shipping Determination HazMat #1 or #4 Training (as applicable) Secondary: Admin. Controls (specify below) H&S Standards

Enter Required Controls:

Engineering Control - Ensure proper PPE is worn in to avoid contact with field contaminated media. Review Shipping determination and JSA before transporting or filling bottles or containers.

Hazardous Activity #4

Chemical-Corrosives - working with or exposure to corrosives in laboratory work, sample bottle preservatives, decon chemicals, etc

Hazard Types (unmitigated ranking H-High, M-Medium, L-Low): **Suggested FHSHB Ref. Section/Part: III AG**

Biological	-	Chemical	H	Driving	-	Electrical	-
Environmental	L	Gravity	-	Mechanical	-	Motion	-
Personal Safety	-	Pressure	-	Radiation	-	Sound	-

Overall Unmitigated Risk: Medium Mitigated Risk: Low if utilizing:

Controls that should be Considered:	Primary: TRACK JSAs Engineering Controls (specify below) Secondary: H&S Standards Job Briefing/Site Awareness Hazcom Training MSDS/SDS (see also HASP Hazcom/GHS section) Admin. Controls (specify below) Specialized Equipment (specify below) Housekeeping PPE (see HASP "PPE" section)
Enter Required Controls:	**Engineering Control - Ensure proper PPE is worn in to avoid contact with field contaminated media** **Admin Control - Ensure field crew is has been told where waste can be stored on site.**

Hazard Analysis

Risk Assessment Matrix		Likelihood Ratings** (likelihood that incident would occur)			
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	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

All Categories

All Categories

Task 5: Well Installation

Hazardous Activity #1

Field-Equipment - operation of heavy equipment (cranes, forklifts, bobcats, backhoe, grader, etc)

Hazard Types (unmitigated ranking H-High, M-Medium, L-Low): Suggested FHSHB Ref: IV E

Biological	-	Chemical	-	Driving	M	Electrical	-
Environmental	-	Gravity	H	Mechanical	H	Motion	H
Personal Safety	-	Pressure	-	Radiation	-	Sound	M

Overall Unmitigated Risk: High Mitigated Risk: Medium. if utilizing:

Controls that should be Considered: Primary: TRACK JSAs Operator Competency per Standard Inspections Secondary: HASP H&S Standards (specify below) Field H&S Handbook (see ref. above) Job Briefing/Site Awareness Engineering Controls (specify below) Admin. Controls (specify below) Specialized Equipment (specify below)

Enter Required Controls: **Engineering Control - Use barricades/cones/flagging to markout and delineate work area. Wear proper PPE, including high-visibility vest.**

Hazardous Activity #2

Field-Equipment - working on ground in the vicinity of heavy equipment

Hazard Types (unmitigated ranking H-High, M-Medium, L-Low): Suggested FHSHB Ref: IV E

Biological	-	Chemical	-	Driving	-	Electrical	-
Environmental	-	Gravity	H	Mechanical	H	Motion	H
Personal Safety	-	Pressure	-	Radiation	-	Sound	M

Overall Unmitigated Risk: High Mitigated Risk: Medium. if utilizing:

Controls that should be Considered: Primary: TRACK JSAs Job Briefing/Site Awareness Site Awareness Secondary: HASP H&S Standards (specify below) Field H&S Handbook (see ref. above) Engineering Controls (specify below) Admin. Controls (specify below) Specialized Equipment (specify below) Inspections

Enter Required Controls: **Engineering Control - Use barricades/cones/flagging to markout and delineate work area. Wear proper PPE, including high-visibility vest.**

Hazardous Activity #3

Chemical-Hazardous materials - handling, non waste/IDW, non transportation

Hazard Types (unmitigated ranking H-High, M-Medium, L-Low): Suggested FHSHB Ref: III K, III AG

Biological	-	Chemical	M	Driving	-	Electrical	-
Environmental	M	Gravity	-	Mechanical	-	Motion	-
Personal Safety	-	Pressure	-	Radiation	-	Sound	-

Overall Unmitigated Risk: Medium Mitigated Risk: Low if utilizing:

Controls that should be Considered: Primary: TRACK Work Plan JSAs Engineering Controls (specify below) Secondary: Job Briefing/Site Awareness Hazcom Training Admin. Controls (specify below) Specialized Equipment (specify below) Housekeeping PPE (see HASP "PPE" section)

Enter Required Controls: **Engineering Control - Ensure proper PPE is worn in to avoid contact with field contaminated media. Review Shipping determination and JSA before transporting or filling bottles or containers.**

Hazardous Activity #4

Chemical -Carcinogens - exposure to these materials

Hazard Types (unmitigated ranking H-High, M-Medium, L-Low): Suggested FHSHB Ref: III AG

Biological	-	Chemical	L	Driving	-	Electrical	-
Environmental	-	Gravity	-	Mechanical	-	Motion	-

Personal Safety	-	Pressure	-	Radiation	-	Sound	-

Overall Unmitigated Risk:	Low	Mitigated Risk:	Low	if utilizing:

Controls that should be Considered:	Primary: TRACK HASP Engineering Controls (specify below) Secondary: Job Briefing/Site Awareness Hazcom Training MSDS/SDS (see also HASP Hazcom/GHS section) Client Training/Briefing Specialized Equipment (specify below) PPE (see HASP "PPE" section)
Enter Required Controls:	**Engineering Control - Ensure proper PPE is worn in to avoid contact with field contaminated media. Review JSA for PPE and additional Controls.**

Hazard Analysis

Risk Assessment Matrix		Likelihood Ratings** (likelihood that incident would occur)			
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	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

All Categories

All Categories

Task 6: Well Development

Hazardous Activity #1

Field-Ambient environment - exposure heat, cold, sun, weather, etc

Hazard Types (unmitigated ranking H-High, M-Medium, L-Low): Suggested FHSHB Ref: III I, III M

Biological	-	Chemical	-	Driving	M	Electrical	L
Environmental	L	Gravity	H	Mechanical	-	Motion	L
Personal Safety	M	Pressure	-	Radiation	-	Sound	-

Overall Unmitigated Risk: Medium Mitigated Risk: Medium if utilizing:

Controls that should be Considered: Primary: TRACK Field H&S Handbook (see ref. above) Secondary: H&S Standards (specify below) Engineering Controls (specify below) Admin. Controls (specify below) Specialized Equipment (specify below) PPE (see HASP "PPE" section)

Enter Required Controls: **Engineering Controls - Use a tent or vehicle to protect workers from the elements during breaks**
Admin Control - Shorter work hours if necessary based on hot or cold conditions

Hazardous Activity #2

General-Lifting and movement of equipment of varying weights at varying frequencies by manual methods

Hazard Types (unmitigated ranking H-High, M-Medium, L-Low): Suggested FHSHB Ref: III AF

Biological	-	Chemical	-	Driving	-	Electrical	-
Environmental	-	Gravity	-	Mechanical	-	Motion	-
Personal Safety	M	Pressure	-	Radiation	-	Sound	-

Overall Unmitigated Risk: High Mitigated Risk: Medium if utilizing:

Controls that should be Considered: Primary: TRACK Engineering Controls (specify below) Job Rotation Secondary: JSAs Job Briefing/Site Awareness Specialized Equipment (specify below) Admin. Controls (specify below) Engineering Controls (specify below)

Enter Required Controls: **Engineering Control - Ensure proper PPE and breaks are used to avoid strain. Review JSAs to determine what additional controls and PPE are necessary to conduct the work safely.**

Hazardous Activity #3

Field-Contaminated media (contact with impacted soil, water, air, sediment, etc)

Hazard Types (unmitigated ranking H-High, M-Medium, L-Low): Suggested FHSHB Ref: III E, III F, III AH

Biological	-	Chemical	H	Driving	-	Electrical	-
Environmental	M	Gravity	-	Mechanical	-	Motion	-
Personal Safety	-	Pressure	-	Radiation	M	Sound	-

Overall Unmitigated Risk: High Mitigated Risk: Low if utilizing:

Controls that should be Considered: Primary: TRACK JSAs Engineering Controls (specify below) Secondary: H&S Standards (specify below) HASP Admin. Controls (specify below) HAZWOPER Training PPE (see HASP "PPE" section)

Enter Required Controls: **Engineering Control - Ensure proper PPE is worn in to avoid contact with field contaminated media. Review JSAs to determine what additional controls and PPE are necessary to conduct the work safely.**

Hazardous Activity #4

Field-Sampling - monitoring well sampling with electric, pneumatic or other non-manual pump

Hazard Types (unmitigated ranking H-High, M-Medium, L-Low): Suggested FHSHB Ref: III F, III AB, III AF

Biological	-	Chemical	L	Driving	-	Electrical	L
Environmental	-	Gravity	L	Mechanical	-	Motion	M

Personal Safety	-	Pressure	-	Radiation	-	Sound	-

Overall Unmitigated Risk: Low Mitigated Risk: Low if utilizing:

Controls that should be Considered: Primary: TRACK JSAs Engineering Controls (specify below) Inspections Secondary: Job Briefing/Site Awareness PPE (see HASP "PPE" section)

Enter Required Controls: **Engineering Control - Ensure equipment is de-enrgized before conducting maintenace, cover battery terminals and use GFCI if a generator is used for 120v applications.**

Hazardous Activity #5

Field-HazMat and wastes - handling and storage at site locations (investigation derived wastes, process wastes, etc)

Hazard Types (unmitigated ranking H-High, M-Medium, L-Low): Suggested FHSHB Ref: III AG, III AH

Biological	-	Chemical	M	Driving	-	Electrical	-
Environmental	M	Gravity	-	Mechanical	-	Motion	-
Personal Safety	-	Pressure	-	Radiation	-	Sound	-

Overall Unmitigated Risk: Medium Mitigated Risk: Medium if utilizing:

Controls that should be Considered: Primary: TRACK JSAs Work Plan Engineering Controls (specify below) Secondary: Hazcom Training HAZWOPER Training Cont/Emerg. Planning Admin. Controls (specify below) Specialized Equipment (specify below) Housekeeping Inspections PPE (see HASP "PPE" section)

Enter Required Controls: **Engineering Control - Ensure proper PPE is worn in to avoid contact with field contaminated media**
Admin Control - Ensure field crew is has been told where waste can be stored on site.

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
	_____	
	_____	
	_____	

	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

		Qty.
☐	MOT eligible soils	
☐	MOT eligible water	
☐	MOT eligible solids	
☐	MOT eligible liquids	
☐	_____	
☐	_____	

Material safety data sheets (MSDSs)/Safety Data Sheets (SDSs) must be available to field staff.
Indicate below how MSDS information will be provided:

☐ Not applicable
☐ Printed copy in company vehicle
☐ Printed copy in the project trailer/office
☑ Printed copy attached
☐ Electronic copy on field computer

☐ Contractor MSDSs/SDSs are not applicable
☐ Contractor MSDSs/SDSs are attached
☐ Contractor MSDSs/SDSs will be on site and located:
_____

☐ Bulk quantities of the following materials will be stored: _____

Contact the project H&S contact for information in determining code and regulatory requirements associated with bulk storage of materials.

NFPA OSHA® QUICK CARD

Comparison of NFPA 704 and HazCom 2012 Labels

	 NFPA 704	 HazCom 2012
Purpose	Provides basic information for emergency personnel responding to a fire or spill and those planning for emergency response.	Informs workers about the hazards of chemicals in workplace under normal conditions of use and foreseeable emergencies.
Number System: NFPA Rating and OSHA's Classification System	0-4 0-least hazardous 4-most hazardous	1-4 1-most severe hazard 4-least severe hazard • The Hazard category numbers are NOT required to be on labels but are required on SDSs in Section 2. • Numbers are used to CLASSIFY hazards to determine what label information is required.
Information Provided on Label	• Health-Blue • Flammability-Red • Instability-Yellow • Special Hazards*-White *OX Oxidizers W Water Reactives SA Simple Asphyxiants	• Product Identifier • Signal Word • Hazard Statement(s) • Pictogram(s) • Precautionary statement(s); and • Name address and phone number of responsible party.
Health Hazards on Label	Acute (short term) health hazards ONLY. Acute hazards are more typical for emergency response applications. Chronic health effects are not covered by NFPA 704.	Acute (short term) and chronic (long term) health hazards. Both acute and chronic health effects are relevant for employees working with chemicals day after day. Health hazards include acute hazards such as eye irritants, simple asphyxiants and skin corrosives as well as chronic hazards such as carcinogens.
Flammability/ Physical Hazards on Label	NFPA divides flammability and instability hazards into two separate numbers on the label. Flammability in red section Instability in yellow section	A broad range of physical hazard classes are listed on the label including explosives, flammables, oxidizers, reactives, pyrophorics, combustible dusts and corrosives.
Where to get information to place on label	Rating system found in NFPA Fire Protection Guide to Hazardous Materials OR NFPA 704 Standard System for Identification of the Hazards of Materials for Emergency Response 2012 Edition. Tables 5.2, 6.2, 7.2 and Chapter 8 of NFPA 704	OSHA Hazard Communication Standard 29 CFR 1910.1200 (2012). 1) Classify using Appendix A (Health Hazards) and Appendix B (Physical Hazards) 2) Label using Appendix C
Other	The hazard category numbers found in section 2 of the HC2012 compliant SDSs are NOT to be used to fill in the NFPA 704 diamond.	Supplemental information may also appear on the label such as any hazards not otherwise classified, and directions for use.
website	www.nfpa.org/704	www.osha.gov OR www.osha.gov/dsg/hazcom/index.html

For more information:

NFPA National Fire Protection Association
www.nfpa.org | 800.344.3555

OSHA® Occupational Safety and Health Administration
U.S. Department of Labor
www.osha.gov | 800.321.OSHA (6742)

Monitoring

☐ Chemical air monitoring is not required for this project or is the responsibility of contractor.

For projects requiring air monitoring, list the relevant constituents representing a hazard to site workers.

Constituent	Max. Conc.	Units	TWA	Units	STEL	Units	IDLH	Units	LEL/UEL (%)	VD Air=1	VP (mm Hg)	IP (eV)
Naphthalene	30	ppm	10	p,s	NA	-	250	p,N	0.9/5.9	NA	0.08	8.12
	10	ppm	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Toluene	10	ppm	20	p	150	p,N	500	p,N	1.1/7.1	NA	21	8.82
Ethylbenzene	10	ppm	20	p	125	p	800	p,N	0.8/6.7	NA	7	8.76
Xylenes	10	ppm	100	p	150	p	900	p,N	1.1/7.0	NA	9	8.44
Coal tar pitch volatiles	10	ppm	0.2	m	NA	-	80	m,N	NA/NA	NA	NA	NA

Notes: TWAs are ACGIH 8 hr.-TLVs unless noted.
p-ppm m-mg/m3 c2- ceiling (2 hr.) se-sensitizer A - Arcadis specific TWA*
s- skin c-ceiling "9999" - NA O-OSHA PEL "#N/A"-Manually enter
r- respirable i-inhalable N-NIOSH 10 hr. REL

#N/A

Monitoring Equipment and General Protocols

Air monitoring is required for any task or activity where employees have potential exposure to vapors or particulates above the TWA. Action levels below are appropriate for most situations. Contact the project H&S contact for all stop work situations. Select monitoring frequency and instruments to be used.

Monitoring Frequency:	15 Minute intervals
Indicator Tube/Chip Frequency:	Indicator tube/chip monitoring not required

	Instrument	Action Levels			Actions
☑	Photoionization Detector		<	#N/A	Continue work
		#N/A	-	#N/A	Sustained >5 min. continuous monitor, review eng. controls and PPE, proceed with caution
	Lamp (eV): 10.6 **#N/A**		>	#N/A	Sustained >5 min. stop work, contact SSO
☐	Flame Ionization Detector (FID)		<	0.0	Continue work
		0.0	-	0.0	Sustained >5 min. continuous monitor, review eng. controls and PPE, use caution
			>	0.0	Sustained >5 min. stop work, contact SSO
☐	LEL/O2 Meter	0-5% LEL			Continue work
		>5-10% LEL			Continuous monitor, review eng. 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, cont. SSO
		>23.5% O2			O2 enriched, stop work, evacuate, contact SSO
☐	Indicator: ☐ tube ☐ chip	≤PEL/TLV			Continue work
		>PEL/TLV			Stop work, review eng. controls and PPE, contact SSO
	Compound(s):				
☑	Particulate Monitor (mists, aerosols, dusts in mg/m^3)		<	2.5	Continue work
		2.5	-	5.000	Use engineering controls, monitor continuously
			>	5.000	Stop work, review controls, contact SSO
☐	Other:	Specify:			Specify:

* Arcadis administrative TWAs ensure mixture component TWAs are not exceeded that would require additional monitoring or medical surveillance.

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	☐	Snake chaps/guards	☐	Coveralls:
☑	Safety glasses	☐	Briar chaps	☐	Apron:
☐	Safety goggles	☐	Chainsaw chaps	☑	Chem. resistant gloves:
☐	Face shield	☐	Sturdy boot	☑	Gloves other:
☐	Hearing protection	☑	Steel or comp. toe boot	☐	Chemical boot:
☐	Rain suit	☐	Metatarsal boot	☐	Boot other:
☐	Other:			☑	Traffic vest, shirt or coat:
				☐	Life vest:

Specify Type:

Coveralls:	
Apron:	
Chem. resistant gloves:	Nitrile
Gloves other:	Level 2 Cut Resistant
Chemical boot:	
Boot other:	
Traffic vest, shirt or coat:	Class II
Life vest:	

Task specific PPE:

Comments:

See JSAs for job spesific PPE Requirments.

Medical Surveillance (*check all that apply*)

- ☐ Medical Surveillance is not required for this project.
- ☑ HAZWOPER medical surveillance applies to all Arcadis site workers on the project.
- ☐ HAZWOPER medical surveillance applies to all subcontractors on the project.
- ☐ HAZWOPER medical surveillance applies to all site workers on the project except:

- ☐ Other medical surveillance required (describe type and who is required to participate):

- ☐ Client drug and/or alcohol testing required.

Hazardous Materials Shipping and Transportation (*check all that apply*)

- ☐ Not applicable, no materials requiring a Shipping Determination (SD) will be transported or shipped
- ☐ A SD has been reviewed and provided to field staff
- ☑ A SD is attached
- ☐ All HazMat will be transported under Materials of Trade by Arcadis (see generic MOT SD Form)
- ☐ Other (specify):

Roadway Work Zone Safety (*check all that apply*)

- ☑ Not applicable for this project
- ☐ All or portions of the work conducted under a TCP
- ☐ All or portions of the work conducted under a STAR Plan
- ☐ TCP or STAR Plan provided to field staff
- ☑ TCP or STAR Plan attached
- ☐ Other (specify):

Arcadis Commercial Motor Vehicles (CMVs)

This section is applicable to Arcadis operated vehicles only

- ☑ This project will **not** utilize CMV drivers
- ☐ This project will utilize CMV drivers

AUS Personal Protective Equipment List by Business Line

This matrix outlines **basic** PPE requirements for each Business Line. **Specific client, task, or regulatory requirements may dictate the type of PPE beyond what is listed in this matrix.** Additionally, task specific PPE requirements may also be included in the HASP or JSA. Hazard/task specific PPE or emergency supply recommendations are outlined by hazard/task in the Field H&S Handbook. PPE and equipment should be charged to the project. For any supplies that the PM determines cannot be billed, the equipment should be charged to the employee's overhead charge number. PPE associated with specialized training such as NFPA 70E Arc Flash is not included in this matrix. Refer to the specific training program for a description of the necessary PPE for tasks involving such requirements.

Listed "General PPE" is required for field staff, the last column specifies PPE for Arcadis staff visiting project sites.	Environment [1]	Infrastructure [1]	Buildings [1]	Water [1]	Staff Visiting Project Sites
Minimum PPE Required to Be Worn					
Hard Hat	R	R	R	R	R
Reflective Traffic Vest (Minimum Class 2)	R	R	R	R	R
Safety Glasses - Clear and Tinted	R	R	R	R	R
ANSI Compliant Safety -Toe Boots	R	R	R	R	R
Minimum PPE Required to Have On Hand					
Hearing Protection - Ear plugs (Need for ear muffs TBD)	R	R	R	R	R
Leather gloves and glove clip		R	R	R	R
First Aid Supplies [2]					
Small first aid kit	R	R	R	R	O
16 oz. Bottle of Eye Wash	R	R	R	R	O
Tick Remover (fine tip tweezers) (See THA for high risk locations)	O	O	O	O	O
PPE Supplies Required As Appropriate					
PPE duffel bag with logo, or equivalent	O	O	O	O	O
Half Face or Full-Face Respirator [3] (See THA)	O [3]	O [3]	O [3]	O [3]	O [3]
Insect Repellent (See THA.) (Recommended 20-30% DEET)	O	O	O	O	O
Sunscreen	O	O	O	O	O
Hand sanitizer	O	O	O	O	O
Cut Resistant or Chemical Resistant Gloves [4]	O	O	O	O	O
Poison Ivy pre-exposure wipes or post exposure cleanser (i.e.Tecnu or Zanfel) (See THA for high risk locations)	O	O	O	O	O
Other specialized protective equipment (See THA for Work Tasks)	O	O	O	O	O
Outdoor wilderness survival kit [5]	O	O	O	O	O

Notes:
R - Required
O - Optional. Based on HASP Task Hazard Analysis (THA) or geographic location of work.
THA - Task Hazard Analysis. Review the HASP Task Hazard Analysis (THA) in making this determination. Certain specific factors can influence the determination for requiring this PPE for the site or task. For example, certain geographic regions may have a higher incidence of the hazard or associated risk, the proximity of the site relative to emergency services may require such, previous observations of the hazard at the site, or where unknown hazard conditions apply. Modifications to the minimum required PPE are required to be communicated via the HASP and/or JSA.
1 The Business Line Director, Operations Manager, Project Manager or Employee Supervisor is responsible for making the decision to provide Arcadis branded shirts to employees. Billing of such shirts is related to the authority level of the decision maker.
2 For project sites with an office/trailer, First Aid/emergency response supplies can be kept in a central location, and may not be required to be carried by each Arcadis employee.
3 Staff must comply with the Arcadis Respiratory Protection H&S Standard before a respirator can be worn. The H&S Standard is available on the H&S Team webpage via the H&S Standards Library link. Link to ANA H&S Standard Library
[4] Determination for use of cut resistant, chemical resistant gloves or other specialized hand protection are to be based on THA in the project HASP.
[5] Outdoor survival kits are generally required when working in remote wilderness locations. See the HASP THA and the Field H&S Handbook for requirements and supply list.

Site Control (*check all that apply*)

- ☐ Not applicable for this project.
- ☑ Site control protocols are addressed in JSA or other supporting document (attach)
- ☐ Maintain an exclusion zone of _____ ft. around the active work area
- ☐ Site control is integrated into the STAR Plan or TCP for the project
- ☐ Level C site control - refer to Level C Supplement attached
- ☐ Other (specify):

Decontamination (*check all that apply*)

- ☐ Not applicable for this project.
- ☐ Decontamination protocols are addressed in JSA or other governing document (attach)
- ☑ Wash hands and face prior to consuming food, drink or tobacco.
- ☑ Remove gloves and coveralls and contain, wash hands and face prior to consuming food, drink or tobacco. Ensure footwear is clean of site contaminants
- ☐ Respiratory protection- refer to the Level C supplement attached.
- ☐ Other (specify):

Sanitation *(check all that apply)*

- ☐ Mobile operation with access to off-site restrooms and potable water
- ☑ Restroom facilities on site provided by client or other contractor
- ☐ Project to provide portable toilets (1 per 20 workers)
- ☐ Potable water available on site
- ☐ Project to provide potable water (assume 1 gal./person/day)
- ☐ Project requires running water (hot and cold, or tepid) with soap and paper towels

Safety Briefings (*check all that apply*)

- ☑ Safety briefing required daily
- ☐ Safety briefing required twice a day
- ☐ Safety briefings required at the following frequency: _____
- ☐ Subcontractors to participate in Arcadis safety briefings
- ☐ Arcadis to participate in client/contractor safety briefings
- ☐ 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 (Check all that apply):*

- ☑ First aid kit
- ☐ Bloodborne pathogens kit
- ☑ Fire extinguisher
- ☐ Eyewash (ANSI compliant)
- ☑ Eyewash (bottle)
- ☑ Drinking water
- ☑ Other: Cell Phone _____

- ☑ Insect repellent
- ☑ Sunscreen
- ☐ Air horn
- ☑ Traffic cones
- ☐ 2-way radios
- ☐ Heat stress monitor

International Travel

☑ This project does not involve international travel
☐ This project involves international travel to: *Type in a city name or select country from menu*

Contact WorkCare for travel to this country (M=Mandatory, R=Recommended):	NA
iJet Security Rating (1=minimum threat, 5=very high threat):	NA
U.S. State Department Travel Alert (A) or Warning (W) Issued:	NA
Arcadis Grey (G) or Black (B) listed:	NA

Behavior Based Safety Program (*check all that apply*)

☑ TIP required at the following frequency on this project:
Select One: _____ mhrs 1 time(s) _____ Define: 1 per work week

☐ H&S Field Assessment required at the following frequency on this project:
Select One: _____ mhrs _____ time(s) _____ Define: _____

☐ Other (specify):

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

Job Safety Analysis

General

JSA ID		**Status**	(2) Review
Job Name	Environmental-Drilling, soil sampling, well installation	**Created Date**	11/20/2018
Task Description	Drilling/Well Installation	**Completed Date**	
Template	False	**Auto Closed**	False

Client / Project

Client	IBERDOLA USA
Project Number	B00130800016
Project Name	Goshen Former MGP Site
PIC	White, Keith
Project Manager	Golubski, Jason

User Roles

Role	Employee	Due Date	Completed Date	Supervisor	Active
Developer	Howe, Tyler			Brien, Jason	☑
HASP Reviewer	Zuck, Daniel			McCune, William	☑
Reviewer	Golubski, Jason			Brien, Jason	☑

Job Steps

Job Step No.	Job Step Description		Potential Hazard	Critical Action	H&S Reference
1	Set up necessary traffic and public access controls	1	Struck by vehicle due to improper traffic controls	Use a buddy system for placing site control cones and/or signage. Position vehicle so that you are protected from moving traffic. Wear Class II traffic vest	
2	Utility Clearance	1	Potential to encounter underground or above ground utilities while drilling.	Complete utility clearance in accordance with the ARCADIS Utility Clearance H&S Standard.	ARCADIS H&S Standard ARCHSFS019
3	General drill rig operation	1	Excessive noise is generated by rig operation.	When the engine is used at high RPMs or soil samples are being collected, use hearing protection.	
		2	During drill rig operation, surfaces will become hot and cause burns if touched, and COCs in the soils more readily vaporize generating airborne contaminates.	Due to friction and lack of a drilling fluid, heat will be produced during this method. Mainly drill augers. Be careful handling split spoons. Wear proper work gloves. When soils and parts become heated, the COC could volatilize. Air monitoring should always be performed in accordance with the HASP.	
		3	Moving parts of the drilling rig can pull you in causing injury. Pinch points on the rig and auger connections can cause pinching or crushing of body parts.	Stay at least 5 feet away from moving parts of the drill rig. Know where the kill switch is, and have the drillers test it to verify that it is working. Do not wear loose clothing, and tie long hair back. Avoid wearing jewelry while drilling. Cone off the work area to keep general public away from the drilling rig.	
		4	Dust and debris can cause eye injury and soil cuttings and/or water could contain COCs.	Wear safety glasses and stay as far away from actual drilling operation as practicable. Wear appropriate gloves to protect from COCs.	
		5	Drilling equipment laying on the ground (i.e. augers, split spoons, decon equipment, coolers, etc), create a tripping hazard. Water from decon buckets generate mud and cause a slipping hazard.	Keep equipment and trash picked up, and store away from the primary work area.	
		6	The raised derrick can strike overhead utilities, tree limbs or other elevated items	Never move the rig with the derrick up. Ensure there is proper clearance to raise the derrick, and that you are far enough away from overhead power lines. See the Utility Clearance H&S Standard for guidance.	
4	Rotosonic drilling	1	Fire hydrants are often used for water source. Hydrants deliver water at high pressure. Pressurized water can cause flying parts/debris and excessive slipping hazards.	Water usage from fire hydrants should be cleared with local muncipalities prior to use. Only persons that know how to use the hydrant should be performing this task. Ensure all connections are tight, and hose line is not run over to cut by traffic. Any leaks from the hydrant should be reported immediately.	

		2	This method requires a lot of clearance. The drill head can turn 90 degrees to attach to the next drill flight or casing. This usually requires a large support truck to park directly behind the rig. As the drill head raises the new casing flight is angled down at the same time until it can be turned completely vertical.	Ensure sufficient overhead clearance.	
		3	Heavy lifting of cores can cause muscle strain.	Always use 2 people to move core containers. Use caution moving core samples to layout area. Plan layout area to ensure adequate aisle space between core runs for logging. Keep back straight and use job rotation.	
		4	The rotosonic drill head can move very quickly up and down while working on a borehole. Moving parts can strike someone or catch body parts.	The operator and helper must communicate and stay clear of the path of the drill head. The drill utilizes two large hydraulic clamps to continuously hold casings while load/unloading previous casings. Do not wear loose clothing.	
5	Rock coring	1	Flying debris can hit workers or cause debris to get in eyes.	Rock chips or overburden may become airborne from drilling method. Wear safety glasses and hard hat and remain at a safe distance from back of drill rig.	
		2	Heavy lifting of cores can cause muscle strain.	Always use 2 people to move core containers. Use caution moving core samples to layout area. Plan layout area to ensure adequate aisle space between core runs for logging. Keep back straight and use job rotation.	
6	Monitoring well installation	1	Same hazards as in Step 3 with general drill rig operation	See step 3	
		2	Monitoring well construction materials can clutter the work area causing tripping hazards.	Well construction materials should be picked up during the well installation process.	
		3	Heavy lifting can cause muscle strains, and cutting open bags can cause lacerations.	Well construction materials are usually 50 lbs or greater. Team lift or use drill rig to hoist bags. Always use work gloves while cutting open bags.	
		4	Well pack material (i.e. sand, grout, bentonite) can become airborne and get in your eyes.	Wear safety glasses for protection from airborne sand and dust.	
		5	Cutting the top of the well to size can cause jagged/sharp edges on the top of the well casing.	Wear gloves when working with the top of the well casing, and file any sharp jagged edges that resulted from cutting to size.	
7	Soil cutting and purge water management	1	Moving full drums can cause back injury, or pinching/crushing injury.	Preferably have the drilling contractor move full drums with their equipment. If this is not practicable, use lift assist devices such as drum dollies, lift gates, etc. Employ proper lifting techniques, and perfrom TRACK to identify pinch/crush points. Wear leather work gloves, and clear all walking and work areas of debris prior to moving a drum.	

PPE Personal Protective Equipment

Type	Personal Protective Equipment	Description	Required
Dermal Protection	chemical protective suit (specify type)	Tyvek suit and booties	Recommended
Eye Protection	safety glasses		Required
Foot Protection	outer boot covers	Booties if Tyvek suit is required	Recommended
	steel-toe boots		Required
Hand Protection	chemical resistant gloves (specify type)	Nitrile	Required
	work gloves (specify type)	leather	Required
Head Protection	hard hat		Required
Hearing Protection	ear plugs		Required
Miscellaneous PPE	traffic vest--Class II or III		Required
Respiratory Protection	dust mask	If rock coring is required	Recommended

Supplies

Type	Supply	Description	Required

Communication Devices	mobile phone		Required
Decontamination	Decon supplies (specify type)	Driller to provide and manage	Recommended
Miscellaneous	fire extinguisher		Required
	first aid kit		Required
Personal	eye wash (specify type)	bottle	Required
	water/fluid replacement		Recommended
Traffic Control	traffic cones		Required

Review Comments

Reviewer		Comments
Employee: **Role** **Review Type** **Completed Date**		

Job Safety Analysis

General

JSA ID	14640	**Status**	(2) Review
Job Name	Environment-Groundwater Sampling and free product recovery	**Created Date**	1/13/2017
Task Description	NAPL Gauging and Free Product Collection	**Completed Date**	
Template	FALSE	**Auto Closed**	FALSE

Client / Project

Client	IBERDROLA USA
Project Number	B00130800013
Project Name	Goshen - Construction Oversight 2016
PIC	WHITE, KEITH
Project Manager	GOLUBSKI, JASON

User Roles

Role	Employee	Due Date	Completed Date	Supervisor	Active
Developer	Campbell, Ian M	2/8/2017	1/25/2017	Brien, Jason D	☑
HASP Reviewer	Zuck, Daniel A.	2/8/2017	1/30/2017	McCune, William T	☑
Reviewer	Rodriguez Alcocer, David J	2/8/2017		Brien, Jason D	☑

Job Steps

Job Step No.	Job Step Description		Potential Hazard	Critical Action	H&S Reference
1	Stage at pre-determined sampling location and set up work zone and sampling equipment	1	Personnel could be hit by vehicular traffic	Set up cones and establish work area. Position vehicle so that field crew is protected from site traffic. Unload as close to work area as safely possible.	ARCADIS H&S Field book section III subsection H and subsection KK.
		2	Sampling equipment, tools and monitoring well covers can cause tripping hazard	Keep equipment picked up and use TRACK to assess changes.	
2	Open wells to equilibrate and gauge wells	1	When squatting, personnel can be difficult to see by vehicular traffic.	Wear class II traffic vest if wells are located proximal to vehicular traffic. Use tall cones and the buddy system if practicable.	ARCADIS H&S Field book section III subsection E
		2	Pinchpoints on well vault can pinch or lacerate fingers	Use correct tools to open well vault/cap. Wear leather gloves when removing well vault lids, and chemical protective gloves while gauging. Wear proper PPE including safety boots, knee pads and safety glasses.	
		3	Lifting sampling equipment can cause muscle strain	Unload as close to work area as safely possible; use proper lifting and reaching techniques and body positioning; don't carry more than you can handle, and get help moving heavy or awkward objects.	
		4	Pressure can build up inside well causing cap to release under pressure	Keep head away from well cap when removing. If pressure relief valves are on well use prior to opening well	
3	Begin Purging Well and Collecting Parameter Measurements	1	Electrical shock can occur when connecting/disconnecting pump from the battery.	Make sure equipment is turned off when connecting/disconnecting. Wear leather gloves. Use GFCIs when using powered tools and pumps. Do not use in the rain or run electrical cords through wet areas.	ARCADIS H&S Field book section III subsection E
		2	Purge water can spill or leak from equipment	Stop purging activities immediately, stop leakage and block any drainage grate with absorbent pads. Call PM to notify them of any reportable spill.	
		3	Water spilling on the ground can cause muddy/slippery conditions	Be careful walking in work area when using plastic around well to protect from spillage	
		4	Lacerations can occur when cutting materials such as plastic tubing	When cutting tubing, use tubing cutter. No open fixed blades should ever be used. When possible wear work gloves, leather type.	
		5	Purge water can splash into eyes	Pour water slowly into buckets/drums to minimize splashing. Wear safety glasses.	
4	Collect GW or Free Product Sample	1	Working with bailer rope can cause rope burns on hands.	Slowly raise and lower the rope or string for the bailer. Wear appropriate gloves for the task.	ARCADIS H&S Field book section III subsection C and subsection E
		2	Sample containers could break or leak preservative	Discard any broken sampleware or glass properly. Do not overtighten sample containers. Wear chemical protective gloves.	

5	Recovery of Free Product from well	1	Exposure to free product	Additional chemical protection may be necessary based on the type of product. Additionally, safety goggles, a faceshield, or respiratory protection may be required. Verify in the HASP.	ARCADIS H&S Field book section III subsection C and subsection E
6	Staging of Well Purge water and/or Free Product	1	Muscle strains can occur when moving purge water or drums	If using buckets, do not fill buckets up to the top. Always keep lid on buckets when traveling or moving them to another location. Only half fill buckets so when dumping the buckets weigh less. See drum handling JSA for movement of drums.	Drum handling JSA

PPE — Personal Protective Equipment

Type	Personal Protective Equipment	Description	Required
Dermal Protection	chemical protective suit (specify type)		Recommended
	long sleeve shirt/pants		Required
Eye Protection	safety glasses		Required
Foot Protection	steel-toe boots		Required
Hand Protection	chemical resistant gloves (specify type)	Nitrile	Required
	work gloves (specify type)	ANSI 105-2000 Level II cut resistant	Required
Head Protection	hard hat		Required
Hearing Protection	ear plugs		Recommended
Miscellaneous PPE	other	Knee pads	Recommended
	traffic vest--Class II or III	Type II vests	Required
Respiratory Protection	dust mask		Recommended

Supplies

Type	Supply	Description	Required
Communication Devices	mobile phone		Required
Decontamination	Decon supplies (specify type)	alconox, DI water, spray bottle	Required
Miscellaneous	fire extinguisher		Required
	first aid kit		Required
	flashlight		Required
Personal	eye wash (specify type)	bottle	Required
	insect repellant		Recommended
	sunscreen		Recommended
Traffic Control	barricades		Recommended
	traffic cones		Required

Review Comments

Reviewer		Comments
Employee: **Role** **Review Type** **Completed Date**	Zuck, Daniel A. HASP Reviewer Approve 1/30/2017	
Employee: **Role** **Review Type** **Completed Date**	Rodriguez Alcocer, David J Reviewer Revise 1/23/2017	Need to add H&S references in "H&S Reference" column for each job step. Be specific about what type of resistant gloves in "PPE Description" section. Use "ASNI 105-2000 Level 2 cut resistant gloves". Missing "Class II vest " in "PPE description section". Missing barricades (recommended) and traffic cones (required) from "Supplies" section.

Job Safety Analysis

General

JSA ID	14722	**Status**	(2) Review
Job Name	Environment-Sample cooler handling	**Created Date**	1/31/2017
Task Description	Handling sample coolers packed with	**Completed Date**	
Template	FALSE	**Auto Closed**	FALSE

Client / Project

Client	IBERDROLA USA
Project Number	B00130800013
Project Name	Goshen - Construction Oversight 2016
PIC	WHITE, KEITH
Project Manager	GOLUBSKI, JASON

User Roles

Role	Employee	Due Date	Completed Date	Supervisor	Active
Developer	Rodriguez Alcocer, David J	2/21/2017	1/31/2017	Brien, Jason D	☑
HASP Reviewer	Zuck, Daniel A.	2/14/2017		McCune, William T	☑
Reviewer	Golubski, Jason R	2/14/2017		Brien, Jason D	☑

Job Steps

Job Step No.	Job Step Description		Potential Hazard	Critical Action	H&S Reference
1	Transfer field samples to sample packing area	1	Lifting heavy coolers may result in muscle strain especially to lower back.	Use proper lifting techniques and keep back straight. Use buddy system for large coolers. Use mechanical aids like hand trucks if readily available to move coolers. Do not over fill coolers with full sample containers for temporary movement to the sample prep area. Ensure an adequate supply of sample coolers are in field.	Employee H&S Fieldbook, Section lll subpart EE. Shipping Guide US-001 Standard:PPE No ARC HSGE015
		2	Hazards to hands from broken glass caused by over tightening lids or improper placement in cooler	Inspect all bottles and bottle caps for cracks/leaks before and after filling container. Do not over tighten sample lids. Clean up any broken bottles immediately and avoid contact with sample preservatives. Wear leather gloves when handling broken glass.	
		3	Exposure to chemicals (acid preservatives or site contaminants) on the exterior of sample bottles after filling.	Wear protective gloves for acid preservatives and safety glasses with side shields during all sample container handling activities (before and after filling). Once filled, follow project specific HASP PPE requirements for skin and eye protection.	
		4	Samples containing hazardous materials may violate DOT/IATA HazMat shipping regulations	All persons filling a sample bottle or preparing a cooler for shipment must have complete Arcadis DOT HazMat shipping training. Compare the samples collected to the materials described in the Shipping Determination for the Project and ensure consistent. Re-perform all Shipping determinations if free product is collected and not anticipated during planning.	
2	Sample cooler selection	1	Sample coolers with defective handles, lid hinges, lid hasps cracked or otherwise damaged may result in injury (e.g., cuts to hands, crushing of feet if handle breaks, etc.)	Only use coolers that are new or in like new condition. No rope handled coolers unless part of the manufacturer's handle design.	ARCADIS Shipping Guide US-001. ARCADIS H&S Field book section lll.
		2	Selection of excessively large coolers introduces lifting hazards once the cooler is filled.	Select coolers and instruct lab to only provide coolers of a size appropriate for the material being shipped. For ordinary sample shipping sample coolers should be 48 quart capacity or smaller to reduce lifting hazards.	
3	Pack Samples	1	Pinch points and abrasions to hands from cooler lid closing unexpectedly	Beware that lid could slam shut (e.g., in strong winds); block/brace if needed; . New coolers may be more prone to self closing; tilt cooler back slightly to facilitate keeping lid open.	ARCADIS Shipping Guide US-001. ARCADIS H&S Field book section lll.
		2	Awkward body positions and contact stress to legs and knees when preparing coolers on irregular or hard ground surfaces	Plan cooler prep activities. Situate cooler where neutral body positions can be maintained if practical (e.g., truck tailgate.) Avoid cooler prep on rough gravel surfaces unless knees and legs protected during kneeling.	

		3	Frostbite or potential for oxygen deficiency when packing with dry ice. Contact cold stress to fingers handling blue ice or wet ice	Dry ice temperature is -109.30F. Wear thermal protective gloves. DO NOT TOUCH with bare skin! Dry ice sublimates at room temp and could create oxygen deficiency in closed environment. Maintain adequate ventilation! Do not keep dry ice in cab of truck. Wear gloves when handling blue ice or gaging wet ice. Dry Ice is DOT regulated for air shipping; follow procedures in Shipping Determination.	
4	Sealing, labeling and marking cooler	1	Cuts to hands and forearms from strapping tape placement or removing old tape and labels	Do not use a fixed, open-blade knife to remove old tags/labels. USE SCISSORS or other safety style cutting device. Only use devices designed for cutting. Do not hurry through task.	ARCADIS Shipping Guide US-001. ARCADIS H&S Field book section lll.
		2	Lifting and awkward body position hazards from taping heavy coolers, dropping coolers on feet during taping.	Do not hurry through the taping tasks. Ensure samples in cooler are evenly distributed in cooler to reduce potential for overhanging cooler falling off edge of tailgate/table when taping.	
		3	Improper labeling and marking may result in violation of DOT/IATA HazMat shipping regulations delaying shipment or resulting in regulatory	Do not deviate from Arcadis Shipping Guide or Shipping Determination marking or labeling requirements.	
5	Offering sample cooler to a carrier or lab courier for shipment	1	Lifting heavy coolers may result in muscle strain especially to lower back.	See lifting hazard controls above.	ARCADIS Shipping Guide US-001. ARCADIS H&S Field book section lll.
		2	Carrier refusal to accept cooler may cause shipping delay and/or result in violation of DOT HazMat shipping regulations	Promptly report all rejected and refused shipments to the Arcadis DOT Program Manager. Do Not re-offer shipment if carrier requires additional labels markings or paperwork inconsistent with your training or Shipping Determination without contacting the Arcadis DOT Compliance Manager.	

PPE **Personal Protective Equipment**

Type	Personal Protective Equipment	Description	Required
Dermal Protection	long sleeve shirt/pants		Required
Eye Protection	safety glasses		Required
Foot Protection	steel-toe boots		Required
Hand Protection	chemical resistant gloves (specify type)	nitrile	Required
	work gloves (specify type)	ANSI 105-2000 Level 2 cut resistant	Required

Supplies

Type	Supply	Description	Required
Traffic Control	Other	Scissors	Required

Job Safety Analysis

General

JSA ID	14641	**Status**	(2) Review
Job Name	General Industry-Site inspection/walkover - undeveloped	**Created Date**	1/13/2017
Task Description	Site Walk and Inspection	**Completed Date**	
Template	FALSE	**Auto Closed**	FALSE

Client / Project

Client	IBERDROLA USA
Project Number	B00130800013
Project Name	Goshen - Construction Oversight 2016
PIC	WHITE, KEITH
Project Manager	GOLUBSKI, JASON

User Roles

Role	Employee	Due Date	Completed Date	Supervisor	Active
Developer	Campbell, Ian M	2/8/2017	1/25/2017	Brien, Jason D	☑
HASP Reviewer	Zuck, Daniel A.	2/8/2017	1/30/2017	McCune, William T	☑
Reviewer	Rodriguez Alcocer, David J	2/8/2017		Brien, Jason D	☑

Job Steps

Job Step No.	Job Step Description		Potential Hazard	Critical Action	H&S Reference
1	Undeveloped Site Walk (Winter Conditions)	1	Slippery/icy conditions	Use caution and proper footwear with traction	ARCADIS H&S Field book section III subsection M
		2	Eye/face injury	Use caution when walking through trees and brush. Wear proper eye protection to avoid eye injury	
		3	Hypothermia/frostbite	Assess weather conditions and wear proper clothing to avoid hypothermia/frostbite and freezing	
		4	Falling ice/snow	Assess the site for falling ice/snow from trees/powerlines. Use caution when walking around trees and powerlines. Wear hard hat	
		5	Stray animals	Make lots of noise while walking through the site. Carry repellent in the event of encountering stray animals. If a dangerous or aggravated animal is spotted, leave the area, return to your vehicle and contact animal control.	
		6	Vehicular traffic	Asses the site and the surrounding area for vehicle traffic. Use caution when walking near busy roadways. Wear type II or III traffic vest.	
2	Undeveloped Site Walk (Summer Conditions)	1	Muddy conditions	Use caution and proper footwear with traction to avoiding slipping/falling	ARCADIS H&S Field book section II subsection M and subsection N
		2	Eye/face injury	Use caution when walking through trees and brush. Wear proper eye protection to avoid eye injury.	
		3	Heat stroke/dehydration/sunburn	Assess weather conditions and wear proper clothing to avoid sunburn, overheating, dehydration and heat stroke. Make sure to care a full water bottle with/near you onsite.	
		4	Stray animals	Make lots of noise while walking through the site. Carry repellent in the event of encountering stray animals. If a dangerous or aggravated animal is spotted, leave the area, and return to	
		5	Vehicular traffic	Assess the site and the surrounding area for vehicular traffic. Use caution when walking near busy roadways. Wear Type II or Type III traffic vest.	
3	Protection against vehicular traffic	1	Onsite traffic	Look both ways before crossing the street. Only cross the street within an active crosswalk if traffic is heavy. Have construction signs located at the extents of the site identifying the limits of construction to the casual driver. Make sure to always be wearing Type II vest when conducting field work onsite.	ARC HSGE024 Motor Vehicle Safety Standard (MVSP)

		2	Offsite traffic	Traffic of off-road vehicles (excavators, backhoes, loaders, ATVs, etc.) may extend into undeveloped areas adjacent to the site. Be vigilant of all oncoming traffic in these areas; stop, look and listen for oncoming traffic.	

PPE **Personal Protective Equipment**

Type	Personal Protective Equipment	Description	Required
Dermal Protection	long sleeve shirt/pants		Recommended
Eye Protection	safety glasses	Z87 Eye Protection	Required
Foot Protection	steel-toe boots		Required
Hand Protection	chemical resistant gloves (specify type)	Nitrile	Required
	work gloves (specify type)	ANSI 105-2000 Level II cut resistant	Required
Head Protection	hard hat		Required
Hearing Protection	ear plugs		Recommended
Miscellaneous PPE	other	Knee pads	Recommended
	traffic vest--Class II or III	Type II vests	Required
Respiratory Protection	dust mask		Recommended

Supplies

Type	Supply	Description	Required
Communication Devices	mobile phone		Required
Decontamination	Decon supplies (specify type)	alconox, DI water, spray bottle	Required
Miscellaneous	fire extinguisher		Required
	first aid kit		Required
	flashlight		Required
Personal	eye wash (specify type)		Required
	insect repellant		Recommended
	sunscreen		Recommended

Review Comments

Reviewer		Comments
Employee: **Role** **Review Type** **Completed Date**	Zuck, Daniel A. HASP Reviewer Approve 1/30/2017	
Employee: **Role** **Review Type** **Completed Date**	Rodriguez Alcocer, David J Reviewer Revise 1/23/2017	Add H&S references for each Job Step. Missing general PPE requirements: Class 2 reflective vest, Z87 Eye protection. Need to add a Job Step for Summer Conditions. The site is an active service center comprised of paved and undeveloped areas. Thus, need to consider Job Steps to address potential vehicle traffic while conducting the site walk.

Job Safety Analysis

General

JSA ID		**Status**	(2) Review
Job Name	Environment-Other	**Created Date**	11/20/2018
Task Description	Monitoring Well Development	**Completed Date**	11/20/2018
Template	FALSE	**Auto Closed**	FALSE

Client / Project

Client	IBERDOLA USA
Project Number	B00130800016
Project Name	Goshen Former MGP Site
PIC	White, Keith
Project Manager	Golubski, Jason

User Roles

Role	Employee	Due Date	Completed Date	Supervisor	Active
Developer	Howe, Tyler			Brien, Jason	☑
HASP Reviewer	Zuck, Daniel			McCune, William	☑
Reviewer	Golubski, Jason			Brien, Jason	☐

Job Steps

Job Step No.	Job Step Description		Potential Hazard	Critical Action	H&S Reference
1	Don Apporpriate PPE	1	Not following proper procedure may result in the worker becoming injured.	Make certain to always were proper PPE(hard hat, long sleeve shirt, high visibility vest, steel-toe boots, and safety glasses with side shields. Use chemical resistant gloves when installing pump, attaching tubing/equipment, and when pumping. Use leather gloves over chemical resistant gloves when handing/moving drums.	
2	Opening Wells	1	Pinch Points	Don appropriate PPE, including leather gloves when unlocking/loosening fasteners and opening stick up/manhole covers.	
		2	Stinging insects/spiders in stick up casing or flush mount manhole.	After opening stick up cover or manhole cover, conduct a visual inspection of covers and interiors of stick up casing/manhole casing for spiders, stinging insects and nest. If insects are present use appropriate spray to kill/clear any insects present.	
		3	Pressure build up in wells.	Do not stand directly over the well. Depresserized the well by loosening the well plug gasket (i.e. turning the well plug wing nut). Once pressure had been relieved remove well plug.	
		4	Air Quality (volatile build up in well headspace)	When opening the well stand up wind of well. Check well headspace and breathing zone with photo-ionization detector (PID). If PID readings are above 50 ppm move up wind of well and wait 5 minutes for volatiles to dissipate.	
3	Well Development Using Submersible Pump	1	Losing Pump Down The Well	Ensure that tubing is securely attached (wrap electrical tape around connection between tubing and pump). Attach a fail safe tether (i.e. string) and tie it off before lowering pump down the well.	
		2	Back strain while lowering pump in and and out well and surging the well.	Implement proper lifting techniques (i.e. bending knees, keeping back straight and lifting with legs) and avoid awkward movements.	
		3	Incorrect or poor connection to pump power source.	Ensure that positive and negative connections are clearly labeled on both the pump and battery. Clear any tarnish or chemical build from battery terminals.	
		4	Contact with and splashing of contaminated water.	Don appropriate PPE (leather gloves over nitriles). Eye protection and long sleeve shirts. Use caution when removing tubing from well ensuring not to splash water.	

4	Collecting Water Quality Measurements/Readings	1	Contact with and Splashing of Contaminated Water	Don appropriate PPE (leather gloves over nitriles). Eye protection and long sleeve shirts. Use YSI flow through cell to reduce need to hand water. To reduce splashing, do not collect turbidity sample directly at mouth of tubing. Have paper towel available to remove water from sample jar.	
5	Containerizing Purge Water	1	Pinch points and back strain.	Don appropriate PPE (leather gloves over nitriles). Use proper lifting techniques and tools (i.e. drum dollie) when moving or positioning drums. Use appropriate tools (i.e. drum wrench and hammer) when opening and closing drum.	
		2	Splashing or spilling of contaminated water.	Ensure that the end of the tubing is completely in the drum. To prevent tubing from coming out of the drum, secure tubing to the edge of the drum with a clip.	
		3	Unknown drum contents.	Ensure that drums are labeled with proper information and that labels are secure. If there is a potential for labels to become loose, wrap label with clear packing.	

PPE — Personal Protective Equipment

Type	Personal Protective Equipment	Description	Required
Dermal Protection	long sleeve shirt/pants		Required
Eye Protection	safety glasses		Required
	safety goggles	If in the Tank Farm	Required
Foot Protection	steel-toe boots		Required
Hand Protection	chemical resistant gloves (specify type)	Nitrile	Required
	work gloves (specify type)	Leather	Required
Head Protection	hard hat		Required
Hearing Protection	ear plugs	In required areas	Required
Miscellaneous PPE	traffic vest--Class II or III		Required

Supplies

Type	Supply	Description	Required
Communication Devices	mobile phone		Required
Decontamination	Decon supplies (specify type)	Alconox, DI Water, Brush, Decon	Required
Miscellaneous	first aid kit		Required
Traffic Control	barricades		Required
	traffic cones		Required

Review Comments

Reviewer		Comments

Attachment B
Safety Data Sheets

SAFETY DATA SHEET

Version 5.8
Revision Date 12/28/2015
Print Date 02/25/2016

1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifiers

Product name : Alconox® detergent

Product Number : 242985
Brand : Aldrich

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Synthesis of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich
3050 Spruce Street
SAINT LOUIS MO 63103
USA

Telephone : +1 800-325-5832
Fax : +1 800-325-5052

1.4 Emergency telephone number

Emergency Phone # : (314) 776-6555

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)
Acute toxicity, Oral (Category 4), H302
Skin irritation (Category 2), H315
Serious eye damage (Category 1), H318
Specific target organ toxicity - single exposure (Category 3), Respiratory system, H335
Acute aquatic toxicity (Category 2), H401
Chronic aquatic toxicity (Category 2), H411

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram

Signal word Danger

Hazard statement(s)
H302 Harmful if swallowed.
H315 Causes skin irritation.
H318 Causes serious eye damage.
H335 May cause respiratory irritation.
H411 Toxic to aquatic life with long lasting effects.

Precautionary statement(s)
P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.

P271	Use only outdoors or in a well-ventilated area.
P273	Avoid release to the environment.
P280	Wear eye protection/ face protection.
P280	Wear protective gloves.
P301 + P312 + P330	IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell. Rinse mouth.
P302 + P352	IF ON SKIN: Wash with plenty of soap and water.
P304 + P340 + P312	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/ physician if you feel unwell.
P305 + P351 + P338 + P310	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/ physician.
P332 + P313	If skin irritation occurs: Get medical advice/ attention.
P362	Take off contaminated clothing and wash before reuse.
P391	Collect spillage.
P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
P405	Store locked up.
P501	Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.2 Mixtures

Hazardous components

Component		Classification	Concentration
Sodium dodecylbenzenesulfonate			
CAS-No. EC-No.	25155-30-0 246-680-4	Acute Tox. 4; Skin Irrit. 2; Eye Dam. 1; STOT SE 3; Aquatic Acute 2; H302, H315, H318, H335, H401	>= 30 - < 50 %
Tetrasodium pyrophosphate			
CAS-No. EC-No.	7722-88-5 231-767-1	Skin Irrit. 2; Eye Irrit. 2A; STOT SE 3; H315, H319, H335	>= 30 - < 50 %
Sodium carbonate			
CAS-No. EC-No. Index-No.	497-19-8 207-838-8 011-005-00-2	Eye Irrit. 2A; H319	>= 10 - < 20 %

For the full text of the H-Statements mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.Move out of dangerous area.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Consult a physician.

In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
No data available

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture
Carbon oxides, Sulphur oxides, Oxides of phosphorus, Sodium oxides

5.3 Advice for firefighters
Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information
No data available

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Use personal protective equipment. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.
For personal protection see section 8.

6.2 Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

6.3 Methods and materials for containment and cleaning up
Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

6.4 Reference to other sections
For disposal see section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Avoid contact with skin and eyes. Avoid formation of dust and aerosols.Further processing of solid materials may result in the formation of combustible dusts. The potential for combustible dust formation should be taken into consideration before additional processing occurs.
Provide appropriate exhaust ventilation at places where dust is formed.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities
Keep container tightly closed in a dry and well-ventilated place.

Keep in a dry place.
Storage class (TRGS 510): Non Combustible Solids

7.3 Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Components with workplace control parameters

Component	CAS-No.	Value	Control parameters	Basis
Tetrasodium pyrophosphate	7722-88-5	TWA	5.000000 mg/m3	USA. ACGIH Threshold Limit Values (TLV)
		TWA	5.000000 mg/m3	USA. NIOSH Recommended Exposure Limits

8.2 Exposure controls

Appropriate engineering controls
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Personal protective equipment

Eye/face protection
Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Full contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:Dermatril® (KCL 740 / Aldrich Z677272, Size M)

Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:Dermatril® (KCL 740 / Aldrich Z677272, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374
If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection
Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: granular, powder Colour: white
b)	Odour	odourless
c)	Odour Threshold	No data available

d)	pH	9.5 at 10 g/l
e)	Melting point/freezing point	No data available
f)	Initial boiling point and boiling range	No data available
g)	Flash point	No data available
h)	Evaporation rate	No data available
i)	Flammability (solid, gas)	No data available
j)	Upper/lower flammability or explosive limits	No data available
k)	Vapour pressure	No data available
l)	Vapour density	No data available
m)	Relative density	No data available
n)	Water solubility	soluble
o)	Partition coefficient: n-octanol/water	No data available
p)	Auto-ignition temperature	No data available
q)	Decomposition temperature	No data available
r)	Viscosity	No data available
s)	Explosive properties	No data available
t)	Oxidizing properties	No data available

9.2 Other safety information
No data available

10. STABILITY AND REACTIVITY

10.1 Reactivity
No data available

10.2 Chemical stability
Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions
No data available

10.4 Conditions to avoid
No data available

10.5 Incompatible materials
No data available

10.6 Hazardous decomposition products
Other decomposition products - No data available
In the event of fire: see section 5

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity
No data available

Inhalation: No data available

Dermal: No data available

No data available

Skin corrosion/irritation
No data available

Serious eye damage/eye irritation
No data available

Respiratory or skin sensitisation
No data available

Germ cell mutagenicity
No data available

Carcinogenicity

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity
No data available
No data available

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

Additional Information
RTECS: Not available

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

12. ECOLOGICAL INFORMATION

12.1 Toxicity
No data available

12.2 Persistence and degradability
No data available

12.3 Bioaccumulative potential
No data available

12.4 Mobility in soil
No data available

12.5 Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects
An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Toxic to aquatic life.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product
Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)
Not dangerous goods

IMDG
Not dangerous goods

IATA
Not dangerous goods

15. REGULATORY INFORMATION

SARA 302 Components
No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components
This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards
Acute Health Hazard

Massachusetts Right To Know Components

	CAS-No.	Revision Date
Sodium dodecylbenzenesulfonate	25155-30-0	1993-04-24
Tetrasodium pyrophosphate	7722-88-5	2007-03-01
Pentasodium triphosphate	7758-29-4	1993-04-24

Pennsylvania Right To Know Components

	CAS-No.	Revision Date
Sodium dodecylbenzenesulfonate	25155-30-0	1993-04-24
Tetrasodium pyrophosphate	7722-88-5	2007-03-01
Pentasodium triphosphate	7758-29-4	1993-04-24
Sodium carbonate	497-19-8	

New Jersey Right To Know Components

	CAS-No.	Revision Date
Sodium dodecylbenzenesulfonate	25155-30-0	1993-04-24
Tetrasodium pyrophosphate	7722-88-5	2007-03-01
Pentasodium triphosphate	7758-29-4	1993-04-24
Sodium carbonate	497-19-8	

California Prop. 65 Components
This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION

Full text of H-Statements referred to under sections 2 and 3.

Acute Tox.	Acute toxicity
Aquatic Acute	Acute aquatic toxicity
Eye Dam.	Serious eye damage
Eye Irrit.	Eye irritation
H302	Harmful if swallowed.
H315	Causes skin irritation.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
H401	Toxic to aquatic life.
H411	Toxic to aquatic life with long lasting effects.
Skin Irrit.	Skin irritation
STOT SE	Specific target organ toxicity - single exposure

HMIS Rating

Health hazard:	2
Chronic Health Hazard:	
Flammability:	0
Physical Hazard	0

NFPA Rating

Health hazard:	2
Fire Hazard:	0
Reactivity Hazard:	0

Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

Preparation Information

Sigma-Aldrich Corporation
Product Safety – Americas Region
1-800-521-8956

Version: 5.8 Revision Date: 12/28/2015 Print Date: 02/25/2016

SAFETY DATA SHEET

Version 5.7
Revision Date 07/24/2015
Print Date 02/25/2016

1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifiers

Product name : Benzene

Product Number : 401765
Brand : Sigma-Aldrich
Index-No. : 601-020-00-8

CAS-No. : 71-43-2

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Manufacture of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich
3050 Spruce Street
SAINT LOUIS MO 63103
USA

Telephone : +1 800-325-5832
Fax : +1 800-325-5052

1.4 Emergency telephone number

Emergency Phone # : (314) 776-6555

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)
Flammable liquids (Category 2), H225
Skin irritation (Category 2), H315
Eye irritation (Category 2A), H319
Germ cell mutagenicity (Category 1B), H340
Carcinogenicity (Category 1A), H350
Specific target organ toxicity - repeated exposure (Category 1), H372
Aspiration hazard (Category 1), H304
Acute aquatic toxicity (Category 3), H402
Chronic aquatic toxicity (Category 3), H412

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram

Signal word Danger

Hazard statement(s)
H225 Highly flammable liquid and vapour.
H304 May be fatal if swallowed and enters airways.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H340 May cause genetic defects.
H350 May cause cancer.

H372	Causes damage to organs through prolonged or repeated exposure.
H412	Harmful to aquatic life with long lasting effects.

Precautionary statement(s)

P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P210	Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P233	Keep container tightly closed.
P240	Ground/bond container and receiving equipment.
P241	Use explosion-proof electrical/ ventilating/ lighting/ equipment.
P242	Use only non-sparking tools.
P243	Take precautionary measures against static discharge.
P260	Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P264	Wash skin thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P273	Avoid release to the environment.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P301 + P310	IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P313	IF exposed or concerned: Get medical advice/ attention.
P331	Do NOT induce vomiting.
P332 + P313	If skin irritation occurs: Get medical advice/ attention.
P337 + P313	If eye irritation persists: Get medical advice/ attention.
P362	Take off contaminated clothing and wash before reuse.
P370 + P378	In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
P403 + P235	Store in a well-ventilated place. Keep cool.
P405	Store locked up.
P501	Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Formula	:	C_6H_6
Molecular weight	:	78.11 g/mol
CAS-No.	:	71-43-2
EC-No.	:	200-753-7
Index-No.	:	601-020-00-8
Registration number	:	01-2119447106-44-XXXX

Hazardous components

Component	Classification	Concentration
Benzene		
	Flam. Liq. 2; Skin Irrit. 2; Eye Irrit. 2A; Muta. 1B; Carc. 1A; STOT RE 1; Asp. Tox. 1; Aquatic Acute 3; Aquatic Chronic 3; H225, H304, H315, H319, H340, H350, H372, H412	<= 100 %

For the full text of the H-Statements mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.Move out of dangerous area.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
No data available

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture
Carbon oxides
Flash back possible over considerable distance., Container explosion may occur under fire conditions.

5.3 Advice for firefighters
Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information
Use water spray to cool unopened containers.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Use personal protective equipment. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.
For personal protection see section 8.

6.2 Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

6.3 Methods and materials for containment and cleaning up
Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13).

6.4 Reference to other sections
For disposal see section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
Use explosion-proof equipment.Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.

For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Storage class (TRGS 510): Flammable liquids

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Components with workplace control parameters

Component	CAS-No.	Value	Control parameters	Basis
Benzene	71-43-2	TWA	0.5 ppm	USA. ACGIH Threshold Limit Values (TLV)
	Remarks	Leukemia Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Confirmed human carcinogen Danger of cutaneous absorption		
		STEL	2.5 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Leukemia Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Confirmed human carcinogen Danger of cutaneous absorption		
		TWA	10 ppm	USA. Occupational Exposure Limits (OSHA) - Table Z-2
		Z37.40-1969		
		CEIL	25 ppm	USA. Occupational Exposure Limits (OSHA) - Table Z-2
		Z37.40-1969		
		Peak	50 ppm	USA. Occupational Exposure Limits (OSHA) - Table Z-2
		Z37.40-1969		
		See 1910.1028. See Table Z-2 for the limits applicable in the operations or sectors excluded in 1910.1028 The final benzene standard in 1910.1028 applies to all occupational exposures to benzene except some subsegments of industry where exposures are consistently under the action level (i.e., distribution and sale of fuels, sealed containers and pipelines, coke production, oil and gas drilling and production, natural gas processing, and the percentage exclusion for liquid mixtures); for the excepted subsegments, the benzene limits in Table Z-2 apply.		
		TWA	0.1 ppm	USA. NIOSH Recommended Exposure Limits
		Potential Occupational Carcinogen See Appendix A		
		ST	1 ppm	USA. NIOSH Recommended Exposure Limits
		Potential Occupational Carcinogen See Appendix A		

Biological occupational exposure limits

Component	CAS-No.	Parameters	Value	Biological specimen	Basis
Benzene	71-43-2	S-Phenylmercapturic acid	0.0300 mg/g	In urine	ACGIH - Biological Exposure Indices (BEI)
	Remarks	End of shift (As soon as possible after exposure ceases)			
		t,t-Muconic acid	0.5000 mg/g	In urine	ACGIH - Biological Exposure Indices (BEI)
		End of shift (As soon as possible after exposure ceases)			

8.2 Exposure controls

Appropriate engineering controls
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Personal protective equipment

Eye/face protection
Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Full contact
Material: Fluorinated rubber
Minimum layer thickness: 0.7 mm
Break through time: 480 min
Material tested:Vitoject® (KCL 890 / Aldrich Z677698, Size M)

Splash contact
Material: Fluorinated rubber
Minimum layer thickness: 0.7 mm
Break through time: 480 min
Material tested:Vitoject® (KCL 890 / Aldrich Z677698, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374
If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection
Complete suit protecting against chemicals, Flame retardant antistatic protective clothing., The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: liquid Colour: clear, colourless
b)	Odour	No data available
c)	Odour Threshold	No data available
d)	pH	No data available
e)	Melting point/freezing point	Melting point/range: 5.5 °C (41.9 °F) - lit.
f)	Initial boiling point and boiling range	80 °C (176 °F) - lit.
g)	Flash point	-10.99 °C (12.22 °F) - closed cup
h)	Evaporation rate	No data available
i)	Flammability (solid, gas)	No data available
j)	Upper/lower flammability or explosive limits	Upper explosion limit: 8 %(V) Lower explosion limit: 1.3 %(V)
k)	Vapour pressure	221.3 hPa (166.0 mmHg) at 37.7 °C (99.9 °F) 99.5 hPa (74.6 mmHg) at 20.0 °C (68.0 °F)
l)	Vapour density	No data available
m)	Relative density	0.874 g/cm3 at 25 °C (77 °F)
n)	Water solubility	ca.1.88 g/l at 23.5 °C (74.3 °F) - soluble
o)	Partition coefficient: n-octanol/water	log Pow: 2.13 at 25 °C (77 °F)
p)	Auto-ignition temperature	562.0 °C (1,043.6 °F)
q)	Decomposition temperature	No data available
r)	Viscosity	No data available
s)	Explosive properties	No data available
t)	Oxidizing properties	No data available

9.2 Other safety information

No data available

10. STABILITY AND REACTIVITY

10.1 Reactivity

No data available

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

Vapours may form explosive mixture with air.

10.4 Conditions to avoid

Heat, flames and sparks.

10.5 Incompatible materials

acids, Bases, Halogens, Strong oxidizing agents, Metallic salts

10.6 Hazardous decomposition products

Other decomposition products - No data available
In the event of fire: see section 5

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral - Rat - male - > 5,960 mg/kg
(OECD Test Guideline 401)

LC50 Inhalation - Rat - female - 4 h - 43.7 mg/l
(OECD Test Guideline 403)

LD50 Dermal - Rabbit - 8,263 mg/kg

No data available

Skin corrosion/irritation
Skin - Rabbit
Result: Skin irritation - 4 h
(OECD Test Guideline 404)

Serious eye damage/eye irritation
Eyes - Rabbit
Result: Eye irritation

Respiratory or skin sensitisation
Maximisation Test (GPMT) - Guinea pig
Result: Does not cause skin sensitisation.

Germ cell mutagenicity
Laboratory experiments have shown mutagenic effects.
In vivo tests showed mutagenic effects

Chinese hamster lung cells
Result: positive

OECD Test Guideline 475
Mouse - male
Result: positive

Carcinogenicity

Carcinogenicity - Human - male - Inhalation
Tumorigenic:Carcinogenic by RTECS criteria. Leukaemia Blood:Thrombocytopenia.

Carcinogenicity - Rat - Oral
Tumorigenic:Carcinogenic by RTECS criteria. Endocrine:Tumors. Leukaemia

This is or contains a component that has been reported to be carcinogenic based on its IARC, OSHA, ACGIH, NTP, or EPA classification.

Human carcinogen.

IARC:	1 - Group 1: Carcinogenic to humans (Benzene)
NTP:	Known to be human carcinogen (Benzene)
OSHA:	OSHA specifically regulated carcinogen (Benzene)

Reproductive toxicity

Reproductive toxicity - Mouse - Intraperitoneal
Effects on Fertility: Pre-implantation mortality (e.g., reduction in number of implants per female; total number of implants per corpora lutea). Effects on Embryo or Fetus: Fetal death.

Developmental Toxicity - Rat - Inhalation
Effects on Embryo or Fetus: Extra embryonic structures (e.g., placenta, umbilical cord). Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).

Developmental Toxicity - Mouse - Inhalation
Effects on Embryo or Fetus: Cytological changes (including somatic cell genetic material). Specific Developmental Abnormalities: Blood and lymphatic system (including spleen and marrow).

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
May be fatal if swallowed and enters airways.

Additional Information

Repeated dose toxicity	Rat - male and female - Oral - NOAEL : 100 mg/kg - OECD Test Guideline 408

RTECS: CY1400000

Nausea, Dizziness, Headache, narcosis, Inhalation of high concentrations of benzene may have an initial stimulatory effect on the central nervous system characterized by exhilaration, nervous excitation and/or giddiness, depression, drowsiness, or fatigue. The victim may experience tightness in the chest, breathlessness, and loss of consciousness. Tremors, convulsions, and death due to respiratory paralysis or circulatory collapse can occur in a few minutes to several hours following severe exposures. Aspiration of small amounts of liquid immediately causes pulmonary edema and hemorrhage of pulmonary tissue. Direct skin contact may cause erythema. Repeated or prolonged skin contact may result in drying, scaling dermatitis, or development of secondary skin infections. The chief target organ is the hematopoietic system. Bleeding from the nose, gums, or mucous membranes and the development of purpuric spots, pancytopenia, leukopenia, thrombocytopenia, aplastic anemia, and leukemia may occur as the condition progresses. The bone marrow may appear normal, aplastic or hyperplastic, and may not correlate with peripheral blood-forming tissues. The onset of effects of prolonged benzene exposure may be delayed for many months or years after the actual exposure has ceased., Blood disorders

Stomach - Irregularities - Based on Human Evidence
Stomach - Irregularities - Based on Human Evidence

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Toxicity to fish	LC50 - Pimephales promelas (fathead minnow) - 15.00 - 32.00 mg/l - 96 h
Toxicity to daphnia and other aquatic invertebrates	EC50 - Ceriodaphnia dubia (water flea) - 17.2 mg/l - 48 h
Toxicity to algae	Growth inhibition EC50 - Pseudokirchneriella subcapitata (green algae) - 100 mg/l - 72 h (OECD Test Guideline 201)

12.2 Persistence and degradability

Biodegradability	aerobic - Exposure time 28 d Result: 96 % - Readily biodegradable (OECD Test Guideline 301F)

12.3 Bioaccumulative potential

Bioaccumulation	Leuciscus idus (Golden orfe) - 3 d - 0.05 mg/l Bioconcentration factor (BCF): 10

12.4 Mobility in soil
No data available

12.5 Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects
An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Harmful to aquatic life with long lasting effects.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product
Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)
UN number: 1114 Class: 3 Packing group: II
Proper shipping name: Benzene
Reportable Quantity (RQ): 10 lbs

Poison Inhalation Hazard: No

IMDG
UN number: 1114 Class: 3 Packing group: II EMS-No: F-E, S-D
Proper shipping name: BENZENE

IATA
UN number: 1114 Class: 3 Packing group: II
Proper shipping name: Benzene

15. REGULATORY INFORMATION

SARA 302 Components
No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components
The following components are subject to reporting levels established by SARA Title III, Section 313:

	CAS-No.	Revision Date
Benzene	71-43-2	2007-07-01

SARA 311/312 Hazards
Fire Hazard, Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components

	CAS-No.	Revision Date
Benzene	71-43-2	2007-07-01

Pennsylvania Right To Know Components

	CAS-No.	Revision Date
Benzene	71-43-2	2007-07-01

New Jersey Right To Know Components

	CAS-No.	Revision Date
Benzene	71-43-2	2007-07-01

California Prop. 65 Components

	CAS-No.	Revision Date
WARNING! This product contains a chemical known to the State of California to cause cancer. Benzene	71-43-2	2009-02-01
WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm. Benzene	71-43-2	2009-02-01

16. OTHER INFORMATION

Full text of H-Statements referred to under sections 2 and 3.

Aquatic Acute	Acute aquatic toxicity
Aquatic Chronic	Chronic aquatic toxicity
Asp. Tox.	Aspiration hazard
Carc.	Carcinogenicity
Eye Irrit.	Eye irritation
Flam. Liq.	Flammable liquids
H225	Highly flammable liquid and vapour.
H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H340	May cause genetic defects.
H350	May cause cancer.
H372	Causes damage to organs through prolonged or repeated exposure.

HMIS Rating

Health hazard:	2
Chronic Health Hazard:	*
Flammability:	3
Physical Hazard	0

NFPA Rating

Health hazard:	2
Fire Hazard:	3
Reactivity Hazard:	0

Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

Preparation Information

Sigma-Aldrich Corporation
Product Safety – Americas Region
1-800-521-8956

Version: 5.7 Revision Date: 07/24/2015 Print Date: 02/25/2016

SAFETY DATA SHEET

Version 5.8
Revision Date 01/14/2016
Print Date 02/25/2016

1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifiers

Product name : Ethylbenzene

Product Number : 296848
Brand : Sigma-Aldrich
Index-No. : 601-023-00-4

CAS-No. : 100-41-4

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Synthesis of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich
3050 Spruce Street
SAINT LOUIS MO 63103
USA

Telephone : +1 800-325-5832
Fax : +1 800-325-5052

1.4 Emergency telephone number

Emergency Phone # : (314) 776-6555

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)
Flammable liquids (Category 2), H225
Acute toxicity, Inhalation (Category 4), H332
Carcinogenicity (Category 2), H351
Specific target organ toxicity - repeated exposure (Category 2), H373
Aspiration hazard (Category 1), H304
Acute aquatic toxicity (Category 2), H401
Chronic aquatic toxicity (Category 3), H412

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram

Signal word Danger

Hazard statement(s)

H225	Highly flammable liquid and vapour.
H304	May be fatal if swallowed and enters airways.
H332	Harmful if inhaled.
H351	Suspected of causing cancer.
H373	May cause damage to organs through prolonged or repeated exposure.
H401	Toxic to aquatic life.
H412	Harmful to aquatic life with long lasting effects.

Precautionary statement(s)

P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P210	Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P233	Keep container tightly closed.
P240	Ground/bond container and receiving equipment.
P241	Use explosion-proof electrical/ ventilating/ lighting/ equipment.
P242	Use only non-sparking tools.
P243	Take precautionary measures against static discharge.
P260	Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P271	Use only outdoors or in a well-ventilated area.
P273	Avoid release to the environment.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P301 + P310	IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304 + P340 + P312	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor/ physician if you feel unwell.
P308 + P313	IF exposed or concerned: Get medical advice/ attention.
P331	Do NOT induce vomiting.
P370 + P378	In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
P403 + P235	Store in a well-ventilated place. Keep cool.
P405	Store locked up.
P501	Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Formula	:	C_8H_{10}
Molecular weight	:	106.17 g/mol
CAS-No.	:	100-41-4
EC-No.	:	202-849-4
Index-No.	:	601-023-00-4

Hazardous components

Component	Classification	Concentration
Ethylbenzene		
	Flam. Liq. 2; Acute Tox. 4; Carc. 2; STOT RE 2; Asp. Tox. 1; Aquatic Acute 2; Aquatic Chronic 3; H225, H304, H332, H351, H373, H401, H412	<= 100 %

For the full text of the H-Statements mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.Move out of dangerous area.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Consult a physician.

In case of eye contact
Flush eyes with water as a precaution.

If swallowed
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
No data available

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture
Carbon oxides

5.3 Advice for firefighters
Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information
Use water spray to cool unopened containers.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Use personal protective equipment. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.
For personal protection see section 8.

6.2 Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

6.3 Methods and materials for containment and cleaning up
Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13).

6.4 Reference to other sections
For disposal see section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
Use explosion-proof equipment.Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities
Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

hygroscopic
Storage class (TRGS 510): Flammable liquids

7.3 Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Components with workplace control parameters

Component	CAS-No.	Value	Control parameters	Basis
Ethylbenzene	100-41-4	TWA	20.000000 ppm	USA. ACGIH Threshold Limit Values (TLV)
	Remarks	Cochlear impair Kidney damage (nephropathy) Upper Respiratory Tract irritation Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Confirmed animal carcinogen with unknown relevance to humans		
		STEL	125.000000 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Central Nervous System impairment Upper Respiratory Tract irritation Eye irritation Adopted values or notations enclosed are those for which changes are proposed in the NIC See Notice of Intended Changes (NIC) Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Confirmed animal carcinogen with unknown relevance to humans		
		TWA	100.000000 ppm 435.000000 mg/m3	USA. NIOSH Recommended Exposure Limits
		ST	125.000000 ppm 545.000000 mg/m3	USA. NIOSH Recommended Exposure Limits
		TWA	100.000000 ppm 435.000000 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		The value in mg/m3 is approximate.		
		TWA	20 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Cochlear impair Kidney damage (nephropathy) Upper Respiratory Tract irritation Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Confirmed animal carcinogen with unknown relevance to humans		
		TWA	100 ppm 435 mg/m3	USA. NIOSH Recommended Exposure Limits
		ST	125 ppm 545 mg/m3	USA. NIOSH Recommended Exposure Limits
		TWA	100 ppm 435 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		The value in mg/m3 is approximate.		

		TWA	100 ppm 435 mg/m3	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
		STEL	125 ppm 545 mg/m3	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000

Biological occupational exposure limits

Component	CAS-No.	Parameters	Value	Biological specimen	Basis
Ethylbenzene	100-41-4	Sum of mandelic acid and phenyl glyoxylic acid	0.7g/g creatinine	Urine	ACGIH - Biological Exposure Indices (BEI)
	Remarks	End of shift at end of workweek			
		Ethylbenzene		In end-exhaled air	ACGIH - Biological Exposure Indices (BEI)
		Not critical			
		Sum of mandelic acid and phenyl glyoxylic acid	0.15g/g creatinine	Urine	ACGIH - Biological Exposure Indices (BEI)
		End of shift (As soon as possible after exposure ceases)			

8.2 Exposure controls

Appropriate engineering controls
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Personal protective equipment

Eye/face protection
Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Full contact
Material: Fluorinated rubber
Minimum layer thickness: 0.7 mm
Break through time: 480 min
Material tested:Vitoject® (KCL 890 / Aldrich Z677698, Size M)

Splash contact
Material: Fluorinated rubber
Minimum layer thickness: 0.7 mm
Break through time: 480 min
Material tested:Vitoject® (KCL 890 / Aldrich Z677698, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374
If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection
Complete suit protecting against chemicals, Flame retardant antistatic protective clothing., The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: liquid Colour: colourless
b)	Odour	No data available
c)	Odour Threshold	No data available
d)	pH	No data available
e)	Melting point/freezing point	Melting point/range: -95 °C (-139 °F) - lit.
f)	Initial boiling point and boiling range	136 °C (277 °F) - lit.
g)	Flash point	15.0 °C (59.0 °F) - closed cup
h)	Evaporation rate	No data available
i)	Flammability (solid, gas)	No data available
j)	Upper/lower flammability or explosive limits	Upper explosion limit: 6.7 %(V) Lower explosion limit: 1 %(V)
k)	Vapour pressure	13.3 hPa (10.0 mmHg) at 20.0 °C (68.0 °F)
l)	Vapour density	No data available
m)	Relative density	0.867 g/cm3 at 25 °C (77 °F)
n)	Water solubility	0.2 g/l at 25 °C (77 °F) - slightly soluble
o)	Partition coefficient: n-octanol/water	log Pow: 3.6 at 20 °C (68 °F)
p)	Auto-ignition temperature	432.0 °C (809.6 °F)
q)	Decomposition temperature	No data available
r)	Viscosity	0.773 mm2/s at 20 °C (68 °F) -
s)	Explosive properties	No data available
t)	Oxidizing properties	No data available

9.2 Other safety information

Surface tension	71.2 mN/m at 23 °C (73 °F)

10. STABILITY AND REACTIVITY

10.1 Reactivity
No data available

10.2 Chemical stability
Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions
Vapours may form explosive mixture with air.

10.4 Conditions to avoid
Heat, flames and sparks.

10.5 Incompatible materials
Strong oxidizing agents

10.6 Hazardous decomposition products
Other decomposition products - No data available
In the event of fire: see section 5

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral - Rat - male and female - 3,500 mg/kg

Inhalation: No data available

LD50 Dermal - Rabbit - 15,433 mg/kg

No data available

Skin corrosion/irritation
Skin - Rabbit
Result: Moderate skin irritation - 24 h

Serious eye damage/eye irritation
Eyes - Rabbit
Result: Mild eye irritation

Respiratory or skin sensitisation
No data available

Germ cell mutagenicity
Hamster
ovary
Result: negative

Mouse - male and female
Result: negative

Carcinogenicity

IARC:	2B - Group 2B: Possibly carcinogenic to humans (Ethylbenzene)
NTP:	No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
OSHA:	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity

No data available

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
May be fatal if swallowed and enters airways.

Additional Information

Repeated dose	Rat - male and female - NOAEL : 75 mg/kg - OECD Test Guideline 407

toxicity
RTECS: DA0700000

Central nervous system depression, Nausea, Headache, Vomiting, Ataxia., Tremors

Stomach - Irregularities - Based on Human Evidence
Stomach - Irregularities - Based on Human Evidence

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Toxicity to fish	flow-through test LC50 - Menidia menidia (Atlantic silverside) - 5.1 mg/l - 96 h
Toxicity to daphnia and other aquatic invertebrates	static test EC50 - Daphnia magna (Water flea) - 1.8 - 2.4 mg/l - 48 h
	Reproduction Test NOEC - Ceriodaphnia dubia (water flea) - 0.96 mg/l - 7 d
Toxicity to algae	static test EC50 - Skeletonema costatum (marine diatom) - 4.9 mg/l - 72 h

12.2 Persistence and degradability

Biodegradability: aerobic - Exposure time 28 d
Result: 70 - 80 % - Readily biodegradable

12.3 Bioaccumulative potential

Due to the distribution coefficient n-octanol/water, accumulation in organisms is not expected.

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Harmful to aquatic life with long lasting effects.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product

Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

Contaminated packaging

Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)

UN number: 1175 Class: 3 Packing group: II
Proper shipping name: Ethylbenzene
Reportable Quantity (RQ): 1000 lbs

Poison Inhalation Hazard: No

IMDG

UN number: 1175 Class: 3 Packing group: II EMS-No: F-E, S-D
Proper shipping name: ETHYLBENZENE

IATA

UN number: 1175 Class: 3 Packing group: II
Proper shipping name: Ethylbenzene

15. REGULATORY INFORMATION

SARA 302 Components
No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components
The following components are subject to reporting levels established by SARA Title III, Section 313:

	CAS-No.	Revision Date
Ethylbenzene	100-41-4	2007-07-01

SARA 311/312 Hazards
Fire Hazard, Chronic Health Hazard

Massachusetts Right To Know Components

	CAS-No.	Revision Date
Ethylbenzene	100-41-4	2007-07-01

Pennsylvania Right To Know Components

	CAS-No.	Revision Date
Ethylbenzene	100-41-4	2007-07-01

New Jersey Right To Know Components

	CAS-No.	Revision Date
Ethylbenzene	100-41-4	2007-07-01

California Prop. 65 Components

WARNING! This product contains a chemical known to the State of California to cause cancer.	CAS-No.	Revision Date
Ethylbenzene	100-41-4	2007-09-28

16. OTHER INFORMATION

Full text of H-Statements referred to under sections 2 and 3.

Acute Tox.	Acute toxicity
Aquatic Acute	Acute aquatic toxicity
Aquatic Chronic	Chronic aquatic toxicity
Asp. Tox.	Aspiration hazard
Carc.	Carcinogenicity
Flam. Liq.	Flammable liquids
H225	Highly flammable liquid and vapour.
H304	May be fatal if swallowed and enters airways.
H332	Harmful if inhaled.
H351	Suspected of causing cancer.
H373	May cause damage to organs through prolonged or repeated exposure.
H401	Toxic to aquatic life.

HMIS Rating

Health hazard:	1
Chronic Health Hazard:	*
Flammability:	3
Physical Hazard	0

NFPA Rating

Health hazard:	2
Fire Hazard:	3
Reactivity Hazard:	0

Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the

product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

Preparation Information

Sigma-Aldrich Corporation
Product Safety – Americas Region
1-800-521-8956

Version: 5.8 Revision Date: 01/14/2016 Print Date: 02/25/2016

SAFETY DATA SHEET

Version 5.4
Revision Date 03/07/2014
Print Date 02/25/2016

1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifiers

Product name : Hydrochloric acid

Product Number : 433160
Brand : Aldrich
Index-No. : 017-002-01-X
REACH No. : 01-2119484862-27-XXXX
CAS-No. : 7647-01-0

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Manufacture of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich
3050 Spruce Street
SAINT LOUIS MO 63103
USA

Telephone : +1 800-325-5832
Fax : +1 800-325-5052

1.4 Emergency telephone number

Emergency Phone # : (314) 776-6555

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)
Corrosive to metals (Category 1), H290
Skin corrosion (Category 1B), H314
Serious eye damage (Category 1), H318
Specific target organ toxicity - single exposure (Category 3), Respiratory system, H335

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram

Signal word Danger

Hazard statement(s)
H290 May be corrosive to metals.
H314 Causes severe skin burns and eye damage.
H335 May cause respiratory irritation.

Precautionary statement(s)
P234 Keep only in original container.
P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P264 Wash skin thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

P301 + P330 + P331	IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353	IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P304 + P340	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310	Immediately call a POISON CENTER or doctor/ physician.
P321	Specific treatment (see supplemental first aid instructions on this label).
P363	Wash contaminated clothing before reuse.
P390	Absorb spillage to prevent material damage.
P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
P405	Store locked up.
P406	Store in corrosive resistant stainless steel container with a resistant inner liner.
P501	Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.2 Mixtures

Formula : HCl
Molecular Weight : 36.46 g/mol

Hazardous components

Component		Classification	Concentration
Hydrochloric acid			
CAS-No.	7647-01-0	Met. Corr. 1; Skin Corr. 1B; Eye Dam. 1; STOT SE 3; H290, H314, H335	30 - 50 %
EC-No.	231-595-7		
Index-No.	017-002-01-X		
Registration number	01-2119484862-27-XXXX		

For the full text of the H-Statements mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.Move out of dangerous area.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Consult a physician.

In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.Continue rinsing eyes during transport to hospital.

If swallowed
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
no data available

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture

Hydrogen chloride gas
Hydrogen chloride gas

5.3 Advice for firefighters

Wear self contained breathing apparatus for fire fighting if necessary.

5.4 Further information

no data available

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear respiratory protection. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas.
For personal protection see section 8.

6.2 Environmental precautions

Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up

Soak up with inert absorbent material and dispose of as hazardous waste. Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

For disposal see section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Components with workplace control parameters

Component	CAS-No.	Value	Control parameters	Basis
Hydrochloric acid	7647-01-0	C	2 ppm	USA. ACGIH Threshold Limit Values (TLV)
	Remarks	Upper Respiratory Tract irritation Not classifiable as a human carcinogen		
		C	5 ppm 7 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		The value in mg/m3 is approximate. Ceiling limit is to be determined from breathing-zone air samples.		

		C	5 ppm 7 mg/m3	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
		C	5 ppm 7 mg/m3	USA. NIOSH Recommended Exposure Limits
		Often used in an aqueous solution.		

8.2 Exposure controls

Appropriate engineering controls
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Personal protective equipment

Eye/face protection
Tightly fitting safety goggles. Faceshield (8-inch minimum). Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Full contact
Material: Nitrile rubber
Minimum layer thickness: 0.4 mm
Break through time: 480 min
Material tested:Camatril® (KCL 730 / Aldrich Z677442, Size M)

Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 120 min
Material tested:Dermatril® (KCL 740 / Aldrich Z677272, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374
If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection
Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure
Do not let product enter drains.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: liquid Colour: light yellow
b)	Odour	pungent
c)	Odour Threshold	no data available
d)	pH	no data available
e)	Melting point/freezing	-30 °C (-22 °F)

	point	
f)	Initial boiling point and boiling range	> 100 °C (> 212 °F) - lit.
g)	Flash point	not applicable
h)	Evapouration rate	no data available
i)	Flammability (solid, gas)	no data available
j)	Upper/lower flammability or explosive limits	no data available
k)	Vapour pressure	227 hPa (170 mmHg) at 21.1 °C (70.0 °F) 547 hPa (410 mmHg) at 37.7 °C (99.9 °F)
l)	Vapour density	no data available
m)	Relative density	1.2 g/cm3 at 25 °C (77 °F)
n)	Water solubility	soluble
o)	Partition coefficient: n-octanol/water	no data available
p)	Auto-ignition temperature	no data available
q)	Decomposition temperature	no data available
r)	Viscosity	no data available
s)	Explosive properties	no data available
t)	Oxidizing properties	no data available

9.2 Other safety information
no data available

10. STABILITY AND REACTIVITY

10.1 Reactivity
no data available

10.2 Chemical stability
Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions
no data available

10.4 Conditions to avoid
no data available

10.5 Incompatible materials
Bases, Amines, Alkali metals, Metals, permanganates, e.g. potassium permanganate, Fluorine, metal acetylides, hexalithium disilicide

10.6 Hazardous decomposition products
Other decomposition products - no data available
In the event of fire: see section 5

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity
no data available (Hydrochloric acid)

Inhalation: no data available (Hydrochloric acid)

Dermal: no data available (Hydrochloric acid)

no data available (Hydrochloric acid)

Skin corrosion/irritation
Skin - rabbit
Result: Causes burns.

Serious eye damage/eye irritation
Eyes - rabbit (Hydrochloric acid)
Result: Corrosive to eyes

Respiratory or skin sensitisation
no data available (Hydrochloric acid)

Germ cell mutagenicity
no data available (Hydrochloric acid)

Carcinogenicity

This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification. (Hydrochloric acid)

(Hydrochloric acid)

(Hydrochloric acid)

IARC: 3 - Group 3: Not classifiable as to its carcinogenicity to humans (Hydrochloric acid)

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity
no data available (Hydrochloric acid)

no data available (Hydrochloric acid)

Specific target organ toxicity - single exposure
The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with respiratory tract irritation. (Hydrochloric acid)

Specific target organ toxicity - repeated exposure
no data available

Aspiration hazard
no data available (Hydrochloric acid)

Additional Information
RTECS: MW4025000

burning sensation, Cough, wheezing, laryngitis, Shortness of breath, spasm, inflammation and edema of the larynx, spasm, inflammation and edema of the bronchi, pneumonitis, pulmonary edema, Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin. (Hydrochloric acid)

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Toxicity to fish LC50 - Gambusia affinis (Mosquito fish) - 282 mg/l - 96 h (Hydrochloric acid)

12.2 Persistence and degradability
no data available

12.3 Bioaccumulative potential
no data available

12.4 Mobility in soil
no data available (Hydrochloric acid)

12.5 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects

no data available

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product

Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging

Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)

UN number: 1789 Class: 8 Packing group: II
Proper shipping name: Hydrochloric acid
Reportable Quantity (RQ): 13514 lbs
Marine pollutant: No
Poison Inhalation Hazard: No

IMDG

UN number: 1789 Class: 8 Packing group: II EMS-No: F-A, S-B
Proper shipping name: HYDROCHLORIC ACID
Marine pollutant: No

IATA

UN number: 1789 Class: 8 Packing group: II
Proper shipping name: Hydrochloric acid

15. REGULATORY INFORMATION

REACH No. : 01-2119484862-27-XXXX

SARA 302 Components

SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components

The following components are subject to reporting levels established by SARA Title III, Section 313:

	CAS-No.	Revision Date
Hydrochloric acid	7647-01-0	1993-04-24

SARA 311/312 Hazards

Acute Health Hazard

Massachusetts Right To Know Components

	CAS-No.	Revision Date
Hydrochloric acid	7647-01-0	1993-04-24

Pennsylvania Right To Know Components

	CAS-No.	Revision Date
Water	7732-18-5	
Hydrochloric acid	7647-01-0	1993-04-24

New Jersey Right To Know Components

	CAS-No.	Revision Date
Water	7732-18-5	
Hydrochloric acid	7647-01-0	1993-04-24

California Prop. 65 Components

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION

Full text of H-Statements referred to under sections 2 and 3.

Eye Dam.	Serious eye damage
H290	May be corrosive to metals.
H314	Causes severe skin burns and eye damage.
H318	Causes serious eye damage.
H335	May cause respiratory irritation.
Met. Corr.	Corrosive to metals
Skin Corr.	Skin corrosion
STOT SE	Specific target organ toxicity - single exposure

HMIS Rating

Health hazard:	3
Chronic Health Hazard:	
Flammability:	0
Physical Hazard	0

NFPA Rating

Health hazard:	3
Fire Hazard:	0
Reactivity Hazard:	0

Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

Preparation Information

Sigma-Aldrich Corporation
Product Safety – Americas Region
1-800-521-8956

Version: 5.4 Revision Date: 03/07/2014 Print Date: 02/25/2016

SAFETY DATA SHEET

Version 5.6
Revision Date 11/04/2015
Print Date 02/25/2016

1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifiers

Product name : Naphthalene

Product Number : 147141
Brand : Aldrich
Index-No. : 601-052-00-2

CAS-No. : 91-20-3

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Synthesis of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich
3050 Spruce Street
SAINT LOUIS MO 63103
USA

Telephone : +1 800-325-5832
Fax : +1 800-325-5052

1.4 Emergency telephone number

Emergency Phone # : (314) 776-6555

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)
Flammable solids (Category 1), H228
Acute toxicity, Oral (Category 4), H302
Carcinogenicity (Category 2), H351
Acute aquatic toxicity (Category 1), H400
Chronic aquatic toxicity (Category 1), H410

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram

Signal word Danger

Hazard statement(s)
H228 Flammable solid.
H302 Harmful if swallowed.
H351 Suspected of causing cancer.
H410 Very toxic to aquatic life with long lasting effects.

Precautionary statement(s)
P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.

P210	Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P240	Ground/bond container and receiving equipment.
P241	Use explosion-proof electrical/ ventilating/ lighting/ equipment.
P264	Wash skin thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P273	Avoid release to the environment.
P280	Wear protective gloves/ eye protection/ face protection.
P281	Use personal protective equipment as required.
P301 + P312 + P330	IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell. Rinse mouth.
P308 + P313	IF exposed or concerned: Get medical advice/ attention.
P370 + P378	In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.
P391	Collect spillage.
P405	Store locked up.
P501	Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Formula	:	$C_{10}H_8$
Molecular weight	:	128.17 g/mol
CAS-No.	:	91-20-3
EC-No.	:	202-049-5
Index-No.	:	601-052-00-2

Hazardous components

Component	Classification	Concentration
Naphthalene		
	Flam. Sol. 1; Acute Tox. 4; Carc. 2; Aquatic Acute 1; Aquatic Chronic 1; H228, H302, H351, H410	<= 100 %

For the full text of the H-Statements mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.Move out of dangerous area.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Consult a physician.

In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
No data available

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture
Carbon oxides

5.3 Advice for firefighters
Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information
Use water spray to cool unopened containers.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Use personal protective equipment. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Avoid breathing dust.
For personal protection see section 8.

6.2 Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

6.3 Methods and materials for containment and cleaning up
Sweep up and shovel. Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13). Keep in suitable, closed containers for disposal. Contain spillage, pick up with an electrically protected vacuum cleaner or by wet-brushing and transfer to a container for disposal according to local regulations (see section 13).

6.4 Reference to other sections
For disposal see section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Avoid contact with skin and eyes. Avoid formation of dust and aerosols.Further processing of solid materials may result in the formation of combustible dusts. The potential for combustible dust formation should be taken into consideration before additional processing occurs.
Provide appropriate exhaust ventilation at places where dust is formed.Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities
Keep container tightly closed in a dry and well-ventilated place.
Storage class (TRGS 510): Flammable solid hazardous materials

7.3 Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Components with workplace control parameters

Component	CAS-No.	Value	Control parameters	Basis
Naphthalene	91-20-3	TWA	10.000000 ppm	USA. ACGIH Threshold Limit Values (TLV)
	Remarks	Hematologic effects Upper Respiratory Tract irritation Eye irritation Eye damage		

		Adopted values or notations enclosed are those for which changes are proposed in the NIC See Notice of Intended Changes (NIC) Not classifiable as a human carcinogen Danger of cutaneous absorption		
		TWA	10 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Hemolytic anemia Upper Respiratory Tract irritation Cataract 2015 Adoption Confirmed animal carcinogen with unknown relevance to humans Danger of cutaneous absorption		
		STEL	15.000000 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Hematologic effects Upper Respiratory Tract irritation Eye irritation Eye damage Adopted values or notations enclosed are those for which changes are proposed in the NIC See Notice of Intended Changes (NIC) Not classifiable as a human carcinogen Danger of cutaneous absorption		
		TWA	10.000000 ppm 50.000000 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		The value in mg/m3 is approximate.		
		TWA	10.000000 ppm 50.000000 mg/m3	USA. NIOSH Recommended Exposure Limits
		ST	15.000000 ppm 75.000000 mg/m3	USA. NIOSH Recommended Exposure Limits

Biological occupational exposure limits

Component	CAS-No.	Parameters	Value	Biological specimen	Basis
Naphthalene	91-20-3	1-Naphthol + 2-Naphthol			ACGIH - Biological Exposure Indices (BEI)
	Remarks	End of shift (As soon as possible after exposure ceases)			

8.2 Exposure controls

Appropriate engineering controls
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Personal protective equipment

Eye/face protection
Safety glasses with side-shields conforming to EN166 Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Full contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm

Break through time: 480 min
Material tested:Dermatril® (KCL 740 / Aldrich Z677272, Size M)

Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:Dermatril® (KCL 740 / Aldrich Z677272, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374
If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection
Complete suit protecting against chemicals, Flame retardant antistatic protective clothing., The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: solid
b)	Odour	No data available
c)	Odour Threshold	No data available
d)	pH	No data available
e)	Melting point/freezing point	Melting point/range: 80 - 82 °C (176 - 180 °F) - lit.
f)	Initial boiling point and boiling range	218 °C (424 °F) - lit.
g)	Flash point	80.0 °C (176.0 °F) - closed cup
h)	Evaporation rate	No data available
i)	Flammability (solid, gas)	The substance or mixture is a flammable solid with the category 1.
j)	Upper/lower flammability or explosive limits	Upper explosion limit: 5.9 %(V) Lower explosion limit: 0.9 %(V)
k)	Vapour pressure	1.3 hPa (1.0 mmHg) at 53.0 °C (127.4 °F) 0.04 hPa (0.03 mmHg) at 25.0 °C (77.0 °F)
l)	Vapour density	No data available
m)	Relative density	No data available
n)	Water solubility	No data available
o)	Partition coefficient: n-octanol/water	log Pow: 3.30
p)	Auto-ignition	526.0 °C (978.8 °F)

	temperature	
q)	Decomposition temperature	No data available
r)	Viscosity	No data available
s)	Explosive properties	No data available
t)	Oxidizing properties	No data available

9.2 Other safety information

Surface tension	31.8 mN/m at 100.0 °C (212.0 °F)

10. STABILITY AND REACTIVITY

10.1 Reactivity
No data available

10.2 Chemical stability
Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions
No data available

10.4 Conditions to avoid
Heat, flames and sparks.

10.5 Incompatible materials
Strong oxidizing agents

10.6 Hazardous decomposition products
Other decomposition products - No data available
In the event of fire: see section 5

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral - Rat - 490.0 mg/kg

LC50 Inhalation - Rat - 1 h - > 340 mg/m3
Remarks: Sense Organs and Special Senses (Nose, Eye, Ear, and Taste):Eye:Lacrimation. Behavioral:Somnolence (general depressed activity).

LD50 Dermal - Rabbit - 20,000 mg/kg

No data available

Skin corrosion/irritation
No data available

Serious eye damage/eye irritation
Eyes - Rabbit
Result: Mild eye irritation

Respiratory or skin sensitisation
No data available

Germ cell mutagenicity
No data available

Carcinogenicity

This product is or contains a component that has been reported to be possibly carcinogenic based on its IARC, ACGIH, NTP, or EPA classification.

Limited evidence of carcinogenicity in animal studies

IARC: 2B - Group 2B: Possibly carcinogenic to humans (Naphthalene)

NTP: Reasonably anticipated to be a human carcinogen (Naphthalene)

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity
No data available

No data available

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

Additional Information
RTECS: QJ0525000

Absorption into the body leads to the formation of methemoglobin which in sufficient concentration causes cyanosis. Onset may be delayed 2 to 4 hours or longer., Naphthalene is retinotoxic and systemic absorption of its vapors above 15ppm, may result in:, cataracts, optic neuritis, corneal injury, Eye irritation, Ingestion may provoke the following symptoms:, hemolytic anemia, hemoglobinuria, Nausea, Headache, Vomiting, Gastrointestinal disturbance, Convulsions, anemia, Kidney injury may occur., Seizures., Coma.

Heart -

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Toxicity to fish	LC50 - Oncorhynchus mykiss (rainbow trout) - 0.9 - 9.8 mg/l - 96.0 h
	LC50 - Pimephales promelas (fathead minnow) - 1 - 6.5 mg/l - 96.0 h
	NOEC - other fish - 1.8 mg/l - 3.0 d
	LOEC - other fish - 3.2 mg/l - 3.0 d
Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia magna (Water flea) - 1.00 - 3.40 mg/l - 48 h
Toxicity to algae	EC50 - No information available. - 33.00 mg/l - 24 h

12.2 Persistence and degradability

Biodegradability: Result: - According to the results of tests of biodegradability this product is not readily biodegradable.

No data available

12.3 Bioaccumulative potential

Bioaccumulation: Fish

Bioconcentration factor (BCF): 427 - 1,158

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Very toxic to aquatic life with long lasting effects.

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Very toxic to aquatic life with long lasting effects.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product
Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)
UN number: 1334 Class: 4.1 Packing group: III
Proper shipping name: Naphthalene, crude
Reportable Quantity (RQ): 100 lbs
Marine pollutant:yes
Poison Inhalation Hazard: No

IMDG
UN number: 1334 Class: 4.1 Packing group: III EMS-No: F-A, S-G
Proper shipping name: NAPHTHALENE, CRUDE
Marine pollutant:yes

IATA
UN number: 1334 Class: 4.1 Packing group: III
Proper shipping name: Naphthalene, crude

15. REGULATORY INFORMATION

SARA 302 Components
No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components
The following components are subject to reporting levels established by SARA Title III, Section 313:

	CAS-No.	Revision Date
Naphthalene	91-20-3	2007-07-01

SARA 311/312 Hazards
Fire Hazard, Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components

	CAS-No.	Revision Date
Naphthalene	91-20-3	2007-07-01

Pennsylvania Right To Know Components

	CAS-No.	Revision Date
Naphthalene	91-20-3	2007-07-01

New Jersey Right To Know Components

	CAS-No.	Revision Date
Naphthalene	91-20-3	2007-07-01

California Prop. 65 Components

WARNING! This product contains a chemical known to the State of California to cause cancer.	CAS-No.	Revision Date
Naphthalene	91-20-3	1990-01-01

16. OTHER INFORMATION

Full text of H-Statements referred to under sections 2 and 3.

Acute Tox.	Acute toxicity
Aquatic Acute	Acute aquatic toxicity
Aquatic Chronic	Chronic aquatic toxicity
Carc.	Carcinogenicity
Flam. Sol.	Flammable solids
H228	Flammable solid.
H302	Harmful if swallowed.
H351	Suspected of causing cancer.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.

HMIS Rating

Health hazard:	2
Chronic Health Hazard:	*
Flammability:	2
Physical Hazard	2

NFPA Rating

Health hazard:	2
Fire Hazard:	2
Reactivity Hazard:	2

Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

Preparation Information

Sigma-Aldrich Corporation
Product Safety – Americas Region
1-800-521-8956

Version: 5.6 Revision Date: 11/04/2015 Print Date: 02/25/2016

SAFETY DATA SHEET

Toluene

Section 1. Identification

GHS product identifier : Toluene

Chemical name : toluene

Other means of identification : Benzene, methyl-; Methylbenzene; Toluol; toluene, pure

Product use : Synthetic/Analytical chemistry.

Synonym : Benzene, methyl-; Methylbenzene; Toluol; toluene, pure

SDS # : 001063

Supplier's details : Airgas USA, LLC and its affiliates
259 North Radnor-Chester Road
Suite 100
Radnor, PA 19087-5283
1-610-687-5253

Emergency telephone number (with hours of operation) : 1-866-734-3438

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : FLAMMABLE LIQUIDS - Category 2
SKIN CORROSION/IRRITATION - Category 2
TOXIC TO REPRODUCTION (Fertility) - Category 2
TOXIC TO REPRODUCTION (Unborn child) - Category 2
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : Highly flammable liquid and vapor.
May form explosive mixtures with air.
Causes skin irritation.
Suspected of damaging fertility or the unborn child.
May cause drowsiness and dizziness.
May cause damage to organs through prolonged or repeated exposure.

Precautionary statements

General : Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand.

Section 2. Hazards identification

Prevention : Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protective equipment as required. Wear protective gloves. Wear eye or face protection. Keep away from heat, sparks, open flames and hot surfaces. - No smoking. Use explosion-proof electrical, ventilating, lighting and all material-handling equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep container tightly closed. Do not breathe vapor. Wash hands thoroughly after handling.

Response : Get medical attention if you feel unwell. IF exposed or concerned: Get medical attention. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing. If skin irritation occurs: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.

Storage : Store locked up. Store in a well-ventilated place. Keep cool.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Substance

Chemical name : toluene

Other means of identification : Benzene, methyl-; Methylbenzene; Toluol; toluene, pure

CAS number/other identifiers

CAS number : 108-88-3

Product code : 001063

Ingredient name	%	CAS number
toluene	100	108-88-3

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Section 4. First aid measures

Ingestion : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : No known significant effects or critical hazards.

Skin contact : Causes skin irritation.

Frostbite : Try to warm up the frozen tissues and seek medical attention.

Ingestion : Irritating to mouth, throat and stomach.

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following:
pain or irritation
watering
redness

Inhalation : Adverse symptoms may include the following:
reduced fetal weight
increase in fetal deaths
skeletal malformations

Skin contact : Adverse symptoms may include the following:
irritation
redness
reduced fetal weight
increase in fetal deaths
skeletal malformations

Ingestion : Adverse symptoms may include the following:
reduced fetal weight
increase in fetal deaths
skeletal malformations

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use dry chemical, CO_2, water spray (fog) or foam.

Unsuitable extinguishing media : Do not use water jet.

Specific hazards arising from the chemical : Highly flammable liquid and vapor. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Avoid exposure during pregnancy. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
toluene	**ACGIH TLV (United States, 3/2012).** TWA: 20 ppm 8 hours. **NIOSH REL (United States, 1/2013).** STEL: 560 mg/m³ 15 minutes. STEL: 150 ppm 15 minutes. TWA: 375 mg/m³ 10 hours. TWA: 100 ppm 10 hours. **OSHA PEL 1989 (United States, 3/1989).** STEL: 560 mg/m³ 15 minutes. STEL: 150 ppm 15 minutes. TWA: 375 mg/m³ 8 hours. TWA: 100 ppm 8 hours. **OSHA PEL Z2 (United States, 11/2006).** AMP: 500 ppm 10 minutes. CEIL: 300 ppm TWA: 200 ppm 8 hours.

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Section 8. Exposure controls/personal protection

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid. [Watery liquid.]

Color : Colorless.

Molecular weight : 92.14 g/mole

Molecular formula : C7-H8

Boiling/condensation point : 110.6°C (231.1°F)

Melting/freezing point : -95°C (-139°F)

Critical temperature : 318.65°C (605.6°F)

Odor : Characteristic.

Odor threshold : Not available.

pH : Not available.

Flash point : Closed cup: 4.4°C (39.9°F)

Burning time : Not applicable.

Burning rate : Not applicable.

Section 9. Physical and chemical properties

Evaporation rate : 2 (butyl acetate = 1)

Flammability (solid, gas) : Not available.

Lower and upper explosive (flammable) limits : Lower: 1.1%
Upper: 7.1%

Vapor pressure : 3.1 kPa (23.168353815 mm Hg) [room temperature]

Vapor density : 3.1 (Air = 1)

Specific Volume (ft ^{3}/lb) : 1.1494

Gas Density (lb/ft ^{3}) : 0.87 (20°C / 68 to °F)

Relative density : 0.87

Solubility : Not available.

Solubility in water : 0.573 g/l

Partition coefficient: n-octanol/water : 2.73

Auto-ignition temperature : 480°C (896°F)

Decomposition temperature : Not available.

SADT : Not available.

Viscosity : Dynamic (room temperature): 0.56 mPa·s (0.56 cP)

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.

Incompatibility with various substances : Extremely reactive or incompatible with the following materials: oxidizing materials.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Hazardous polymerization : Under normal conditions of storage and use, hazardous polymerization will not occur.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
toluene	LC50 Inhalation Vapor LC50 Inhalation Vapor	Rat Rat	28830 ppm 49 g/m³	1 hours 4 hours

Irritation/Corrosion

Section 11. Toxicological information

Product/ingredient name	Result	Species	Score	Exposure	Observation
toluene	Eyes - Mild irritant	Rabbit	-	0.5 minutes 100 milligrams	-
	Eyes - Mild irritant	Rabbit	-	870 Micrograms	-
	Eyes - Severe irritant	Rabbit	-	24 hours 2 milligrams	-
	Skin - Mild irritant	Pig	-	24 hours 250 microliters	-
	Skin - Mild irritant	Rabbit	-	435 milligrams	-
	Skin - Moderate irritant	Rabbit	-	24 hours 20 milligrams	-
	Skin - Moderate irritant	Rabbit	-	500 milligrams	-

Sensitization

Not available.

Mutagenicity

Not available.

Carcinogenicity

Not available.

Classification

Product/ingredient name	OSHA	IARC	NTP
toluene	-	3	-

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
toluene	Category 2	Not determined	Not determined

Aspiration hazard

Not available.

Information on the likely routes of exposure : Not available.

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : No known significant effects or critical hazards.

Skin contact : Causes skin irritation.

Ingestion : Irritating to mouth, throat and stomach.

Section 11. Toxicological information

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:
pain or irritation
watering
redness

Inhalation : Adverse symptoms may include the following:
reduced fetal weight
increase in fetal deaths
skeletal malformations

Skin contact : Adverse symptoms may include the following:
irritation
redness
reduced fetal weight
increase in fetal deaths
skeletal malformations

Ingestion : Adverse symptoms may include the following:
reduced fetal weight
increase in fetal deaths
skeletal malformations

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Not available.

General : May cause damage to organs through prolonged or repeated exposure.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : Suspected of damaging the unborn child.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Section 12. Ecological information

Toxicity

Not available.

Persistence and degradability

Not available.

Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
toluene	2.73	90	low

Mobility in soil

Soil/water partition coefficient (K_{OC}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

United States - RCRA Toxic hazardous waste "U" List

Ingredient	CAS #	Status	Reference number
Toluene; Benzene, methyl-	108-88-3	Listed	U220

Section 14. Transport information

	DOT	TDG	Mexico	IMDG	IATA
UN number	UN1294	UN1294	UN1294	UN1294	UN1294
UN proper shipping name	TOLUENE	TOLUENE	TOLUENE	TOLUENE	TOLUENE
Transport hazard class(es)	3 	3 	3 	3 	3 
Packing group	II	II	II	II	II

Section 14. Transport information

Environment	No.	No.	No.	No.	No.
Additional information	**Reportable quantity** 1000 lbs / 454 kg [137.86 gal / 521.84 L] Package sizes shipped in quantities less than the product reportable quantity are not subject to the RQ (reportable quantity) transportation requirements. **Limited quantity** Yes. **Packaging instruction** **Passenger aircraft** Quantity limitation: 5 L **Cargo aircraft** Quantity limitation: 60 L **Special provisions** IB2, T4, TP1	**Explosive Limit and Limited Quantity Index** 1 **Passenger Carrying Road or Rail Index** 5	-	-	**Passenger and Cargo Aircraft**Quantity limitation: 5 L **Cargo Aircraft Only** Quantity limitation: 60 L **Limited Quantities - Passenger Aircraft** Quantity limitation: 1 L

"Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product."

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 8(a) CDR Exempt/Partial exemption**: Not determined

United States inventory (TSCA 8b): This material is listed or exempted.

Clean Water Act (CWA) 307: toluene

Clean Water Act (CWA) 311: toluene

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Listed

SARA 302/304

Composition/information on ingredients

Section 15. Regulatory information

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Fire hazard
Immediate (acute) health hazard
Delayed (chronic) health hazard

Composition/information on ingredients

Name	%	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
toluene	100	Yes.	No.	No.	Yes.	Yes.

SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	toluene	108-88-3	100
Supplier notification	toluene	108-88-3	100

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

State regulations

Massachusetts : This material is listed.

New York : This material is listed.

New Jersey : This material is listed.

Pennsylvania : This material is listed.

California Prop. 65

WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

Ingredient name	Cancer	Reproductive	No significant risk level	Maximum acceptable dosage level
toluene	No.	Yes.	No.	7000 µg/day (ingestion)

Canada inventory : This material is listed or exempted.

International regulations

International lists : **Australia inventory (AICS)**: This material is listed or exempted.
China inventory (IECSC): This material is listed or exempted.
Japan inventory: This material is listed or exempted.
Korea inventory: This material is listed or exempted.
Malaysia Inventory (EHS Register): Not determined.
New Zealand Inventory of Chemicals (NZIoC): This material is listed or exempted.
Philippines inventory (PICCS): This material is listed or exempted.
Taiwan inventory (CSNN): Not determined.

Chemical Weapons Convention List Schedule I Chemicals : Not listed

Section 15. Regulatory information

Chemical Weapons Convention List Schedule II Chemicals : Not listed

Chemical Weapons Convention List Schedule III Chemicals : Not listed

Canada

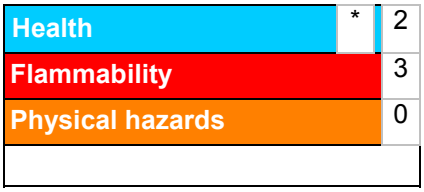
WHMIS (Canada) : Class B-2: Flammable liquid
Class D-2A: Material causing other toxic effects (Very toxic).
Class D-2B: Material causing other toxic effects (Toxic).

CEPA Toxic substances: This material is not listed.
Canadian ARET: This material is not listed.
Canadian NPRI: This material is listed.
Alberta Designated Substances: This material is not listed.
Ontario Designated Substances: This material is not listed.
Quebec Designated Substances: This material is not listed.

Section 16. Other information

Canada Label requirements : Class B-2: Flammable liquid
Class D-2A: Material causing other toxic effects (Very toxic).
Class D-2B: Material causing other toxic effects (Toxic).

Hazardous Material Information System (U.S.A.)



Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks Although HMIS® ratings are not required on SDSs under 29 CFR 1910. 1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

The customer is responsible for determining the PPE code for this material.

National Fire Protection Association (U.S.A.)

Reprinted with permission from NFPA 704-2001, Identification of the Hazards of Materials for Emergency Response Copyright ©1997, National Fire Protection Association, Quincy, MA 02269. This reprinted material is not the complete and official position of the National Fire Protection Association, on the referenced subject which is represented only by the standard in its entirety.

Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

History

Date of printing : 5/20/2015.

Section 16. Other information

Date of issue/Date of revision : 5/20/2015.

Date of previous issue : 10/16/2014.

Version : 0.04

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL 73/78 = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United NationsACGIH – American Conference of Governmental Industrial Hygienists
AIHA – American Industrial Hygiene Association
CAS – Chemical Abstract Services
CEPA – Canadian Environmental Protection Act
CERCLA – Comprehensive Environmental Response, Compensation, and Liability Act (EPA)
CFR – United States Code of Federal Regulations
CPR – Controlled Products Regulations
DSL – Domestic Substances List
GWP – Global Warming Potential
IARC – International Agency for Research on Cancer
ICAO – International Civil Aviation Organisation
Inh – Inhalation
LC – Lethal concentration
LD – Lethal dosage
NDSL – Non-Domestic Substances List
NIOSH – National Institute for Occupational Safety and Health
TDG – Canadian Transportation of Dangerous Goods Act and Regulations
TLV – Threshold Limit Value
TSCA – Toxic Substances Control Act
WEEL – Workplace Environmental Exposure Level
WHMIS – Canadian Workplace Hazardous Material Information System

References : Not available.

Indicates information that has changed from previously issued version.

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

SAFETY DATA SHEET

Version 4.13
Revision Date 12/01/2015
Print Date 02/25/2016

1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifiers

Product name : Xylenes

Product Number : 247642
Brand : Sigma-Aldrich

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Synthesis of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich
3050 Spruce Street
SAINT LOUIS MO 63103
USA

Telephone : +1 800-325-5832
Fax : +1 800-325-5052

1.4 Emergency telephone number

Emergency Phone # : (314) 776-6555

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)
Flammable liquids (Category 3), H226
Acute toxicity, Inhalation (Category 4), H332
Skin irritation (Category 2), H315
Eye irritation (Category 2A), H319
Carcinogenicity (Category 2), H351
Specific target organ toxicity - single exposure (Category 3), Respiratory system, H335
Specific target organ toxicity - repeated exposure (Category 2), H373
Specific target organ toxicity - repeated exposure, Inhalation (Category 2), Central nervous system, Liver, Kidney, H373
Aspiration hazard (Category 1), H304
Acute aquatic toxicity (Category 2), H401
Chronic aquatic toxicity (Category 3), H412

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram

Signal word Danger

Hazard statement(s)
H226 Flammable liquid and vapour.
H304 May be fatal if swallowed and enters airways.
H315 Causes skin irritation.
H319 Causes serious eye irritation.

H332	Harmful if inhaled.
H335	May cause respiratory irritation.
H351	Suspected of causing cancer.
H373	May cause damage to organs through prolonged or repeated exposure.
H373	May cause damage to organs (Central nervous system, Liver, Kidney) through prolonged or repeated exposure if inhaled.
H401	Toxic to aquatic life.
H412	Harmful to aquatic life with long lasting effects.

Precautionary statement(s)

P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P210	Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P233	Keep container tightly closed.
P240	Ground/bond container and receiving equipment.
P241	Use explosion-proof electrical/ ventilating/ lighting/ equipment.
P242	Use only non-sparking tools.
P243	Take precautionary measures against static discharge.
P260	Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P264	Wash skin thoroughly after handling.
P271	Use only outdoors or in a well-ventilated area.
P273	Avoid release to the environment.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P301 + P310	IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304 + P340 + P312	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor/ physician if you feel unwell.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P313	IF exposed or concerned: Get medical advice/ attention.
P331	Do NOT induce vomiting.
P332 + P313	If skin irritation occurs: Get medical advice/ attention.
P337 + P313	If eye irritation persists: Get medical advice/ attention.
P362	Take off contaminated clothing and wash before reuse.
P370 + P378	In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
P403 + P235	Store in a well-ventilated place. Keep cool.
P405	Store locked up.
P501	Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.2 Mixtures

Synonyms : Xylene mixture of isomers

Formula : C_8H_{10}

Molecular weight : 106.17 g/mol

Hazardous components

Component		Classification	Concentration
Xylene			
CAS-No. EC-No.	1330-20-7 215-535-7	Flam. Liq. 3; Acute Tox. 4; Skin Irrit. 2; Eye Irrit. 2A;	>= 90 - <= 100 %

Index-No.	601-022-00-9	STOT SE 3; STOT RE 2; Asp. Tox. 1; Aquatic Acute 2; H226, H304, H315, H319, H332, H335, H373, H401	
Ethylbenzene			
CAS-No. EC-No. Index-No.	100-41-4 202-849-4 601-023-00-4	Flam. Liq. 2; Acute Tox. 4; Carc. 2; STOT RE 2; Asp. Tox. 1; Aquatic Acute 2; Aquatic Chronic 3; H225, H304, H332, H351, H373, H401, H412	>= 20 - < 30 %

For the full text of the H-Statements mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.Move out of dangerous area.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Consult a physician.

In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
No data available

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture
Carbon oxides

5.3 Advice for firefighters
Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information
Use water spray to cool unopened containers.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Use personal protective equipment. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.
For personal protection see section 8.

6.2 Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

6.3 Methods and materials for containment and cleaning up

Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13).

6.4 Reference to other sections

For disposal see section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Storage class (TRGS 510): Flammable liquids

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Components with workplace control parameters

Component	CAS-No.	Value	Control parameters	Basis
Xylene	1330-20-7	TWA	100.000000 ppm	USA. ACGIH Threshold Limit Values (TLV)
	Remarks	Eye & Upper Respiratory Tract irritation Central Nervous System impairment Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Not classifiable as a human carcinogen		
		STEL	150.000000 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Eye & Upper Respiratory Tract irritation Central Nervous System impairment Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Not classifiable as a human carcinogen		
		TWA	100.000000 ppm 435.000000 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		The value in mg/m3 is approximate.		
		TWA	100.000000 ppm 435.000000 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		The value in mg/m3 is approximate.		
		TWA	100.000000 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Central Nervous System impairment Upper Respiratory Tract irritation Eye irritation Substances for which there is a Biological Exposure Index or Indices (see BEI® section)		

		Not classifiable as a human carcinogen		
		STEL	150.000000 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Central Nervous System impairment Upper Respiratory Tract irritation Eye irritation Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Not classifiable as a human carcinogen		
		TWA	100 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Central Nervous System impairment Upper Respiratory Tract irritation Eye irritation Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Not classifiable as a human carcinogen		
		STEL	150 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Central Nervous System impairment Upper Respiratory Tract irritation Eye irritation Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Not classifiable as a human carcinogen		
		TWA	100 ppm 435 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		The value in mg/m3 is approximate.		
Ethylbenzene	100-41-4	TWA	20.000000 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Cochlear impair Kidney damage (nephropathy) Upper Respiratory Tract irritation Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Confirmed animal carcinogen with unknown relevance to humans		
		STEL	125.000000 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Central Nervous System impairment Upper Respiratory Tract irritation Eye irritation Adopted values or notations enclosed are those for which changes are proposed in the NIC See Notice of Intended Changes (NIC) Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Confirmed animal carcinogen with unknown relevance to humans		

		TWA	100.000000 ppm 435.000000 mg/m3	USA. NIOSH Recommended Exposure Limits
		ST	125.000000 ppm 545.000000 mg/m3	USA. NIOSH Recommended Exposure Limits
		TWA	100.000000 ppm 435.000000 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		The value in mg/m3 is approximate.		
		TWA	20 ppm	USA. ACGIH Threshold Limit Values (TLV)
		Cochlear impair Kidney damage (nephropathy) Upper Respiratory Tract irritation Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Confirmed animal carcinogen with unknown relevance to humans		
		TWA	100 ppm 435 mg/m3	USA. NIOSH Recommended Exposure Limits
		ST	125 ppm 545 mg/m3	USA. NIOSH Recommended Exposure Limits
		TWA	100 ppm 435 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		The value in mg/m3 is approximate.		
		TWA	100 ppm 435 mg/m3	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
		STEL	125 ppm 545 mg/m3	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000

Biological occupational exposure limits

Component	CAS-No.	Parameters	Value	Biological specimen	Basis
Xylene	1330-20-7	Methylhippuric acids	1,500.0000 mg/g	Urine	ACGIH - Biological Exposure Indices (BEI)
	Remarks	End of shift (As soon as possible after exposure ceases)			
		Methylhippuric acids	1,500.0000 mg/g	Urine	ACGIH - Biological Exposure Indices (BEI)
		End of shift (As soon as possible after exposure ceases)			
Ethylbenzene	100-41-4	Sum of mandelic acid and phenyl glyoxylic acid	0.7g/g creatinine	Urine	ACGIH - Biological Exposure Indices (BEI)
		End of shift at end of workweek			
		Ethylbenzene		In end-exhaled air	ACGIH - Biological Exposure Indices (BEI)
		Not critical			
		Sum of mandelic acid and phenyl glyoxylic acid	0.15g/g creatinine	Urine	ACGIH - Biological Exposure Indices (BEI)
		End of shift (As soon as possible after exposure ceases)			

8.2 Exposure controls

Appropriate engineering controls
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Personal protective equipment

Eye/face protection
Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Full contact
Material: Fluorinated rubber
Minimum layer thickness: 0.7 mm
Break through time: 480 min
Material tested:Vitoject® (KCL 890 / Aldrich Z677698, Size M)

Splash contact
Material: Fluorinated rubber
Minimum layer thickness: 0.7 mm
Break through time: 480 min
Material tested:Vitoject® (KCL 890 / Aldrich Z677698, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374
If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection
Complete suit protecting against chemicals, Flame retardant antistatic protective clothing., The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: clear, liquid Colour: colourless
b)	Odour	No data available
c)	Odour Threshold	No data available
d)	pH	No data available
e)	Melting point/freezing point	< 0 °C (< 32 °F)
f)	Initial boiling point and boiling range	137 - 140 °C (279 - 284 °F) - lit.

g)	Flash point	25 °C (77 °F) - closed cup
h)	Evaporation rate	No data available
i)	Flammability (solid, gas)	No data available
j)	Upper/lower flammability or explosive limits	Upper explosion limit: 7 %(V) Lower explosion limit: 1.1 %(V)
k)	Vapour pressure	24 hPa (18 mmHg) at 37.70 °C (99.86 °F)
l)	Vapour density	3.67 - (Air = 1.0)
m)	Relative density	0.86 g/mL at 25 °C (77 °F)
n)	Water solubility	No data available
o)	Partition coefficient: n-octanol/water	No data available
p)	Auto-ignition temperature	No data available
q)	Decomposition temperature	No data available
r)	Viscosity	No data available
s)	Explosive properties	No data available
t)	Oxidizing properties	No data available

9.2 Other safety information

Relative vapour density	3.67 - (Air = 1.0)

10. STABILITY AND REACTIVITY

10.1 Reactivity
No data available

10.2 Chemical stability
Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions
Vapours may form explosive mixture with air.

10.4 Conditions to avoid
Heat, flames and sparks.

10.5 Incompatible materials
Strong oxidizing agents

10.6 Hazardous decomposition products
Other decomposition products - No data available
In the event of fire: see section 5

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity
No data available

Inhalation: No data available

Dermal: No data available

No data available

Skin corrosion/irritation
No data available

Serious eye damage/eye irritation
No data available

Respiratory or skin sensitisation
No data available

Germ cell mutagenicity
No data available

Carcinogenicity

IARC:	2B - Group 2B: Possibly carcinogenic to humans (Ethylbenzene)
IARC:	3 - Group 3: Not classifiable as to its carcinogenicity to humans (Xylene)
NTP:	No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
OSHA:	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity
No data available
No data available

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

Additional Information
RTECS: Not available

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Stomach - Irregularities - Based on Human Evidence
Stomach - Irregularities - Based on Human Evidence
Stomach - Irregularities - Based on Human Evidence (Ethylbenzene)

12. ECOLOGICAL INFORMATION

12.1 Toxicity
No data available

12.2 Persistence and degradability
No data available

12.3 Bioaccumulative potential
No data available

12.4 Mobility in soil
No data available

12.5 Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects
An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Toxic to aquatic life.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product
Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)
UN number: 1307 Class: 3 Packing group: III
Proper shipping name: Xylenes
Reportable Quantity (RQ): 100 lbs

Poison Inhalation Hazard: No

IMDG
UN number: 1307 Class: 3 Packing group: III EMS-No: F-E, S-D
Proper shipping name: XYLENES

IATA
UN number: 1307 Class: 3 Packing group: III
Proper shipping name: Xylenes

15. REGULATORY INFORMATION

SARA 302 Components
No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components
The following components are subject to reporting levels established by SARA Title III, Section 313:

	CAS-No.	Revision Date
Ethylbenzene	100-41-4	2007-07-01
Xylene	1330-20-7	1993-04-24

SARA 311/312 Hazards
Fire Hazard, Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components

	CAS-No.	Revision Date
Xylene	1330-20-7	1993-04-24
Ethylbenzene	100-41-4	2007-07-01

Pennsylvania Right To Know Components

	CAS-No.	Revision Date
Xylene	1330-20-7	1993-04-24
Ethylbenzene	100-41-4	2007-07-01

New Jersey Right To Know Components

	CAS-No.	Revision Date
Xylene	1330-20-7	1993-04-24
Ethylbenzene	100-41-4	2007-07-01

California Prop. 65 Components

WARNING! This product contains a chemical known to the State of California to cause cancer.	CAS-No.	Revision Date
Ethylbenzene	100-41-4	2007-09-28

16. OTHER INFORMATION

Full text of H-Statements referred to under sections 2 and 3.

Acute Tox.	Acute toxicity
Aquatic Acute	Acute aquatic toxicity
Aquatic Chronic	Chronic aquatic toxicity
Asp. Tox.	Aspiration hazard
Carc.	Carcinogenicity
Eye Irrit.	Eye irritation
Flam. Liq.	Flammable liquids
H225	Highly flammable liquid and vapour.
H226	Flammable liquid and vapour.
H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.
H351	Suspected of causing cancer.
H373	May cause damage to organs through prolonged or repeated exposure if inhaled.
H401	Toxic to aquatic life.
H412	Harmful to aquatic life with long lasting effects.
Skin Irrit.	Skin irritation
STOT RE	Specific target organ toxicity - repeated exposure
STOT SE	Specific target organ toxicity - single exposure

HMIS Rating

Health hazard:	2
Chronic Health Hazard:	*
Flammability:	3
Physical Hazard	0

NFPA Rating

Health hazard:	2
Fire Hazard:	3
Reactivity Hazard:	0

Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

Preparation Information

Sigma-Aldrich Corporation
Product Safety – Americas Region
1-800-521-8956

Version: 4.13 Revision Date: 12/01/2015 Print Date: 02/25/2016

Attachment C
Shipping Determination Form

QUICK VIEW SHIPPING DETERMINATION FORM Revision 8

For Use by Field Staff

Date:	7/11/2016
Project Name:	Goshen Former MGP Site
Project Number:	B00013080.0012

#VALUE!

The material you will be shipping includes the following:
Water samples and soil/sludge samples with ppb or low ppm concentrations of volatile, semivolatile and/or inorganic constituents with no sheens or odors: Volatile and semi-volatile organic compounds, PCBs, and metals.

If this is not what you are shipping or if you need help, contact Josh Sinay at 315-671-9171 for assistance and guidance.

The material in your shipment has been classified as a: Not Restricted/Not Regulated

This material has been identified as:
PROPER SHIPPING NAME (including applicable modifiers and technical names):
An ID Number, Proper Shipping Name, Hazard Class, and Packing Group are not required for this shipment.
ID NUMBER: **NA** Hazard Class NA (NA) Packing Group NA

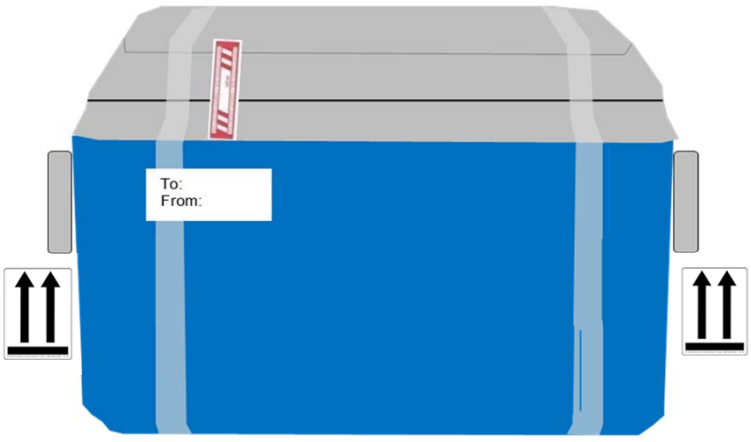
[ ] The above information in RED is required on the outer package of your shipment as illustrated in the picture
[X] Follow Shipping Guide US-001 to prepare this shipment [ ] Follow Shipping Guide US-015 for dry ice
[ ] Refer to the referenced HSSP to right for more information: NA

Package preparation configuration per package shipped (not to exceed):
Inner container sizes and quantity:

# of containers	Size	Type	Net Qty Each
--	1 L	Glass	0 None
--	40 ml	Glass	0 None
--	4 oz	Plastic	0 None
--	8 oz	Plastic	0 None
0	None	None	0 None
0	None	None	0 None

Intermediate packaging: Plastic bag/liner
Outer packaging: Non-specification box- plastic (sample cooler)

Place marks and labels on same side of package, except orientation arrows should be placed on each end of package.



If you do not have all of the marks or labels shown above. DO NOT GIVE THE PACKAGE TO FEDEX or UPS. Orientation arrows may be red colored. If required, contact the individual listed above for assistance.

[ ] Your supervisor (PM, TM, or Field supervisor) must register this shipment with ChemTel (the Arcadis 24 hour emergency phone number provider).

You must offer this shipment to: FedEx Ground

Attachment D
Field Forms

Control Number: TSM- B0013080.0016

TSM + project number plus date as follows: xxxxxxxx.xxxx.xxxxx - dd/mm/year

TAILGATE HEALTH & SAFETY MEETING FORM

Project Name:	**Goshen Former MGP Site**		**Signature/Title: Goshen, NY**
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 to communicate H&S information in this briefing (check all that apply):

- ☐ HASP (*including THA*)
- ☐ JSAs (*specify JSA #s*): _____
- ☐ Permits (*specify type or #*): _____
- ☐ TCP or STAR 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.

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 1.800.455.6155** and then notify the field supervisor.

Utility strike, motor vehicle accident or 3rd party protperty damage - field supervisor will immediately notify the Project or Task Manager

What You Need to Know

Emergency Phone: 911 *WorkCare Phone:* 1-800-455-6155

Your nearest hospital: Orange County Medical Center 707 East Main Street Middletown, NY 10940 0 0 845-

H&S Specialist for this project: Julie Santaniello *Cell Phone:* 978-322-4515

Project Site Safety Officer: TBD

Nearest assembly area(s): 0

Nearest storm shelter(s): 0

Simultaneous operations (SimOps): You must review address SimOps activities in your tailgate safety briefing. Review of THA may be required.

Site Security: A Site Security Plan does not apply to this project.

Utility Clearance: Review of utility clearance checklist and daily site walkover for utility identification is required.

State Specific Requirements: You must follow Heat Injury and Illness Prevention Plan developed for this project.
You are required to have current training in the following:
Hazwoper 40 Hour, PPE, Defensive Driving - Smith On-Line, H&S Program Orientation , Hazwoper 8-Hour Annual Refresher ,

SDSs for this project are located: Printed copy attached
Primary chemical constituents of concern for this project:
Naphthalene, 0, Toluene, Ethylbenzene, Xylenes, Coal tar pitch volatiles,

PID action levels for this project:

<	#N/A			Continue work
	#N/A	-	#N/A	Sustained >5 min. continuous monitor, review eng. controls and PPE, proceed with caution
>	#N/A			Sustained >5 min. stop work, contact SSO

* Arcadis administrative TWAs ensure mixture component TWAs are not exceeded that would require additional monitoring or medical surveillance.

For work not conducted under a JSA or permit, you must wear the following PPE:
Hard hat, Safety glasses, Steel or comp. toe boot, Traffic vest, shirt or coat: Class II, Gloves other:Level 2 Cut Resistant, Chemical boot:0
See JSAs for job spesific PPE Requirments.

You are required to be current on your medical surveillance.

You are not authorized to work until you have reviewed and agree with shipping determinations that are applicable to your project.
TCP/STAR Plans are not required for your work.

The following safety equipment and supplies are required to be on site for this project:
First aid kit, Fire extinguisher, Eyewash (bottle), Drinking water, Insect repellent, Sunscreen, Traffic cones, Other: , 0, 0, 0

Site Control: Site control is integrated into the STAR Plan or TCP for the project
Decontamination: Wash hands and face prior to consuming food, drink or tobacco.
Sanitation: Restroom facilities on site provided by client or other contractor

Safety Briefings: Safety briefing required daily
This project has the following TIP goals: 1 time(s)

Control Number: TSM- B0013080.0016

TSM + project number plus date as follows: xxxxxxxx.xxxx.xxxxx - dd/mm/year

TAILGATE HEALTH & SAFETY MEETING FORM

Project Name: Goshen Former MGP Site			**Project Location: Goshen, NY**
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, scaffold, trips) (L M H) h: c:	☐ Motion (i.e., traffic, moving water) (L M H) h: c:	☐ Mechanical (i.e., augers, motors) (L M H) h: c:
☐ Electrical (i.e., utilities, lightning) (L M H) h: c:	☐ Pressure (i.e., gas cyl., wells) (L M H) h: c:	☐ Environment (i.e., heat, cold, ice) (L M H) h: c:
☐ Chemical (i.e., fuel, acid, paint) (L M H) h: c:	☐ Biological (i.e., ticks, poison ivy) (L M H) h: c:	☐ Radiation (i.e., alpha, sun, laser) (L M H) h: c:
☐ Sound (i.e., machinery) (L M H) h: c:	☐ Personal (i.e. alone, night) (L M H) h: c:	☐ Driving (i.e. car, ATV, boat, dozer) (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.

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 1.800.455.6155** 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

What You Need

Emergency Phone: 911 *WorkCare Phone:* 1-800-455-6155
Your nearest hospital: Orange County Medical Center 707 East Main Street Middletown, NY 10940 0 0 845-3

H&S Specialist for this project: Julie Santaniello *Cell Phone:* 978-322-4515
Project Site Safety Officer: TBD
Nearest assembly area(s): 0
Nearest storm shelter(s): 0
Simultaneous operations (SimOps): You must review address SimOps activities in your tailgate safety briefing. Review of THA may be required.
Site Security: A Site Security Plan does not apply to this project.
Utility Clearance: Review of utility clearance checklist and daily site walkover for utility identification is required.
State Specific Requirements: You must follow Heat Injury and Illness Prevention Plan developed for this project.
You are required to have current training in the following:
Hazwoper 40 Hour, PPE, Defensive Driving - Smith On-Line, H&S Program Orientation , Hazwoper 8-Hour Annual Refresher ,

SDSs for this project are located: Printed copy attached
Primary chemical constituents of concern for this project:
Naphthalene, 0, Toluene, Ethylbenzene, Xylenes, Coal tar pitch volatiles,

PID action levels for this project:

#N/A	<	#N/A	Continue work
#N/A	-	#N/A	Sustained >5 min. continuous monitor, review eng. controls and PPE, proceed with caution
	>	#N/A	Sustained >5 min. stop work, contact SSO

* Arcadis administrative TWAs ensure mixture component TWAs are not exceeded that would require additional monitoring or medical surveillance.

For work not conducted under a JSA or permit, you must wear the following PPE:
Hard hat, Safety glasses, Steel or comp. toe boot, Traffic vest, shirt or coat: Class II, Gloves other:Level 2 Cut Resistant, Chemical boot:0,
See JSAs for job spesific PPE Requirments.

You are required to be current on your medical surveillance.

You are not authorized to work until you have reviewed and agree with shipping determinations that are applicable to your project.
TCP/STAR Plans are not required for your work.

The following safety equipment and supplies are required to be on site for this project:
First aid kit, Fire extinguisher, Eyewash (bottle), Drinking water, Insect repellent, Sunscreen, Traffic cones, Other: , 0, 0, 0

Site Control: Site control is integrated into the STAR Plan or TCP for the project
Decontamination: Wash hands and face prior to consuming food, drink or tobacco.
Sanitation: Restroom facilities on site provided by client or other contractor

Safety Briefings: Safety briefing required daily
This project has the following TIP goals: 1 time(s)

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: B0013080.0016

Goshen 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.

Job Safety Analysis

General

JSA ID	HASP 1	**Status**	Complete
Job Name	General Industry-Driving - passenger vehicles	**Created Date**	11/26/2018
Task Description	Driving a car, van, or truck on public roadways.	**Completed Date**	11/26/2018

Client / Project

Client	NYSEG
Project Number	B0013080.0016
Project Name	Goshen Former MGP Site
Project Manager	Jason Golubski

User Roles

Role	Employee	Due Date	Completed Date
Developer	Tyler Howe	11/26/2018	11/26/2018
HASP Reviewer	Zuck, Daniel	11/26/2018	11/26/2018
Quality Reviewer			

Job Steps

Job Step No.	Job Step Description		Potential Hazard	Critical Action	H&S Reference
1	Pre-Trip Inspection	1	Failing to perform pre-trip inspections may cause mechanical failure, accident or injury	Perform walk around of vehicle with particular attention to tire inflation and condition. Check lights, wipers, seatbelts for proper operating condition. Properly adjust seat and mirrors prior to vehicle operation. Use or review vehicle inspection checklist as required under the MVSP.	ARC HSGE024 Motor Vehicle Safety Standard (MVSP)
		2	Scrapes, cuts, burns to hand if inspecting engine fluids and/or tires. Eye splash hazard if inspecting engine fluids. Pinch or crush hazards when opening or closing hood, trunk or tailgate.	Wear protective gloves and safety glasses as described below when checking under hood or tires. Use TRACK and keep hands clear when opening/closing hood, trunk, or tailgate to avoid crush or pinch hazard.	
		3	Struck by other vehicles while walking around vehicle performing inspections	Wear high visibility vest, shirt, or coat while performing inspections in parking lots or other areas with a traffic hazard. Remain vigilant of moving vehicles or equipment in area, face oncoming vehicles to extent practical.	
		4	Improperly secured cargo may dislodge creating injury, property damage or road hazard.	Ensure all cargo is properly secured to prevent movement while the vehicle is in opertation. This includes cargo in the cab of the vehicle.	

2	Driving a motor vehicle on public streets	1	Failing to observe traffic flow ahead increases risk of hard braking resulting in potential impact of vehicle ahead, being struck by another vehicle from behind and decreases decision making time.	Use Smith System Key #1, "Aim High in Steering". **Look ahead (15 seconds if possible) to observe traffic flow and traffic signals.** Adjust speed accordingly to keep vehicle moving and avoid frequent braking. Select lane of least traffic and adjust speed based on observed signal timing when possible. Avoid following directly behind large vehicles that obscure view ahead.	Smith System "5-Keys" is a registered trademark of Smith System Driver Improvement Institute, Inc.
		2	Failing to observe vehicles, pedestrians, bicyclists and other relevant objects in vicinity of your vehicle increases risk of side swipes, rear ending, and third party injury.	Use Smith System Key #2, "Get the Big Picture". **Maintain 360 degrees of awareness around vehicle.** Check a mirror every 6-8 seconds, maintain space around the vehicle, choose a lane that avoids being boxed in. Look for pedestrian activity ahead in crosswalks or sidewalks. Watch for construction zone approach signs and act early by executing lane changes and reducing speed.	
		3	Failing to keep your eyes moving increases risk of not seeing relevant vehicles, pedestrians and objects in your vicinity that may impair your ability to make timely and appropriate driving decisions and also increases risk of accident.	Use Smith System Key #3, "Keep Your Eyes Moving". **Move your eyes every 2 seconds and avoid staring while evaluating relevant objects.** Scan major and minor intersections prior to entering them. Check mirrors.	
		4	Failing to maintain space around and in front of your vehicle increases risk of striking another vehicle or being struck by another vehicle. Insufficient space shortens time for effective driving decision making resulting in increased accident risk.	Use Smith System #4, "Leave Yourself an Out". **Use 4 second rule when following a vehicle.** Avoid driving in vehicle clusters by adjusting speed and using lanes that permit maximum space and visibility. When stopped, keep one car length space in front of vehicle ahead or white line.	
		5	Failing to communicate with other drivers and pedestrians increases risk of striking vehicles, pedestrians, or being struck by other vehicles, especially from the rear.	Use Smith System Key #5, "Make Sure They See You". **Brake early and gradually when stopping to reduce potential of being rear ended.** Keep foot on brake while stopped. Use turn signals and horn effectively. Establish eye contact with other drivers and pedestrians to extent practical. Use vehicle positioning that promotes being seen.	
		6	Distractions within the vehicle takes focus off driving, increases risk of accident decreases time for making effective driving decisions.	**Cell phone use (any type or configuration) is prohibited while the vehicle is in motion.** Familiarize yourself with vehicle layout and controls (radio, temperature controls, etc.) prior to operating unfamiliar vehicles. Set controls prior to operating vehicle. Use GPS in unfamiliar areas to avoid use of paper maps/directions while driving. Set GPS prior to vehicle operation. Pull over and stop to modify GPS functions. Avoid consuming food or drink while driving.	
3	Parking	1	Parking vehicle in areas of clustered parked vehicles or near facility entrance may impair visibility to oncoming traffic in lot and increase exposure to pedestrian traffic.	**Use pull through parking or back into parking space when permitted or practical.** When practical and safe to do so, park away from other vehicles and avoid parking near the facility entrance or loading docks. If available, use a spotter to aid in backing activity. Back no further than necessary and back slowly. Get out and look (GOAL) if uncertain of immediate surroundings. Tap horn prior to backing.	

PPE **Personal Protective Equipment**

Type	Personal Protective Equipment	Description	Required
Eye Protection	safety glasses	While checking engine or tires	Required
Hand Protection	work gloves (specify type)	Leather or equivalent checking engine or	Required

Supplies

Type	Supply	Description	Required

Communication Devices	mobile phone		Required
	other	Vehicle kit (applies to company trucks)	Required
Miscellaneous	fire extinguisher	Applies to company trucks	Required
	first aid kit	Applies to company trucks	Required

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

HAZARDOUS MATERIALS SHIPPING/TRANSPORTATION DETERMINATION FORM

Materials of Trade Template for use with the Standard HASP 6/17/2015

Date:	11/26/2018
Project Name:	Goshen Former MGP Site
Project Number:	B0013080.0016
Supplemental Information:	SDS

Checked materials in the HAZCOM/GHS worksheet, Monitoring worksheet, Safety Supplies and Equipment section and Level C Supplement (if applicable) of the standard HASP for this project and samples will be transported under the Materials of Trade Exception (49 CFR 143.6) in Arcadis owned, leased or rented vehicles and/or lab courier (employee of the lab), and/or requipment rental vendor (employee of the vendor).

Special Instructions:

1) All containers will be maintained in an upright condition with lids or other openings secure. Containers will be protected against movement during transport and have adequate cushioning for protection
2) Cylinders will have regulators removed and protective caps in place during transport.
3) Batteries regardless of type or size, will have terminal protected and each battery will be protected from crushing, pressure or other condition that may affect the integrity of the battery.
4) ChemTel 24 hr. phone number and registration is not required.
5) Fire extinguishers will be mounted and secure in company owned or leased vehicles.
6) Fuels will be transported in DOT or OSHA approved metal or plastic containers (ie. safety cans).

Limitations

1) No more than 440 pounds (combined gross weight) of materials subject to this shipping determination are permitted on a transport vehicle and individual container limits are specified in the chart below.
2) Materials that are radioactive or explosive are not eligible for MOT Exception and separate shipping determinations will be required for those materials.
3) Flammable gases not transported in a specification cylinder are not eligible for the MOT Exception and separate shipping detemrination will be required.
4) Gasoline transported in glass containers (samples) are not eliglible for MOT Exception. Follow HSSP-019 for transport of gasoline in glass containers.

Material Hazard	Packing Group	Limit per Package
High hazard	I	0.5 kg (1 pound) for solids 0.5 L (1 pint) for liquids
Medium/Low hazard (excluding Div 4.3) or ORM-D	II or III	30 kg (66 pounds) for solids 30 L (8 gallons) for liquids
Div. 4.3	II and III only	30 ml
Div 2.1 or 2.2 cylinder	N/A	100 kg (220 pounds) gross weight
Dilute Class 9 (<2% concentration)	N/A	Tank capacity <1500L (<400 gallons)

References and Rationale for the Determination:

49 CFR 173.6 DOT Facts-108a
These materials are used in support of Arcadis work.

Determination performed by: Tyler Howe

Determination QA/QC performed by: _____

HAZARDOUS MATERIALS SHIPPING/TRANSPORTATION DETERMINATION FORM

Field Equipment GROUND/AIR Template 3/24/2015

Project/Office Name:	Goshen Former MGP Site
Project Number:	B0013080.0016
Supplemental Information:	SDS

Description of the Material to be Transported or Shipped:

Rental equipment to be return shipped by the ground or air mode of transportation subject to this determination include: air monitoring/sampling equipment, water quality instruments, survey and measurement equipment, GPS devices, computer tablets, cameras, communication devices, weather monitoring equipment, heat/cold stress monitors and noise monitoring equipment subject to the following conditions:

1) Dry cell batteries (including alkaline, NiMH, and NiCad batteries) and/or nonspillable batteries shipped alone, contained in or packed with equipment.

2) Equipment containing lithium-ion batteries will be ≤100 watt hour (Wh)/battery and ≤20 Wh/cell with ≤4 cells/2 batteries in package with no spare Li-ion batteries packed with equipment.

3) Equipment may be packed with DOT 39 calibration gas cylinders (Division 2.2) and will not require a Cargo Aircraft Only Label on return shipment.

4) Equipment may contain small flammable gas cylinders to power equipment or perform analyses which will be empty upon return shipment.

5) Equipment may be packed with/contain cleaning or calibration solutions meeting the criteria of Hazard Classes 3, 4.1, 4.2 , 5.1, 5.2 , 6.1, 8 or 9 in PG II or III, and solutions are in plastic, glass or metal containers ≤30 ml per container and ≤500 ml (PGII) and ≤1L (PG III) per completed package (air shipment) or ≤30 ml per container ≤ 29 kg (64 pounds) (ground shipment).

6) Equipment may be shipped with calibration solutions or powders which are limited to pH buffer, conductivity, and turbidity standards or standards made specifically for water quality meters calibration. Standards referenced will not meet the criteria of a DOT or ICAO/IATA hazard class.

7) Equipment does not contain components that are magnetic, radioactive, or contain materials under pressure (>15.22 psi absolute) which are not in DOT 39 cylinders.

8) Equipment is clean and free of site contaminants.

9) The shipment will not contain chemical kits (Hach kits, DTECH kits or similar kits), colorimetric indicator tubes (Drager tubes, etc.), first aid kits or fire extinguishers and equipment containing mercury.

Special Instructions:

1) This determination is void if the above conditions are not met or the shipment contains devices or substances not list above. This determination is void if lithium metal batteries are contained in the shipment (excludes button cells attached to circuit boards of equipment).

2) All batteries should remain installed in equipment and spare batteries, regardless of type and charge, will have terminals protection; and each battery will be protected from metal objects, crushing, or puncturing by other components in the package.

3) Air and ground shipment of equipment with nonspillable batteries will be marked on the outer package "Nonspillable Battery". Also, for air shipments, the air waybill (if used) will be marked "Not Restricted, A67".

4) Air shipment of equipment with dry cell batteries will have "Not Restricted, A123" written on the air waybill or shipping label (refer to Shipping Guide US-050 for battery mark and notation information).

5) Shipments containing pressurized DOT 39 cylinders (look for mark or stamp indicating cylinder type) will be shipped in accordance with HSSP-020 (designed for air shipment but same rules apply for ground shipment). For air shipments, the Shipper's Declaration will be prepared using approved software. For ground shipments, FedEx Ground pre-registration required and cylinder offered under FedEX Ground HazMt shipping papers (form OP-900 and OP-950).

6) Shipments with small quantities of HazMat liquids (see above) will be shipped in accordance with HSSP-016 (air shipment) or HSSP-028 (ground shipment) requirements. Container closures will be secured by secondary securement method (taping, etc.).

7) FIDs will be return shipped with hydrogen tanks empty and valves open.

8) Equipment will be packed in a manner which provides protection to the device and its ancillary components, with the device in the off position and protected against accidental activation.

9) Non-hazardous liquids and powders that may be packed with the rental equipment will be packed with lids or other closure method secure and protected with secondary securement method (taping, wiring, clipping, etc.).

10) If shipping in packaging provided by the vendor, check exterior of the package and remove obsolete marks or labels. Also check package to ensure it is not damaged or has other condition that might impair package integrity.

Emergency Phone Number:
Arcadis requires 24 emergency phone number on package (if requiring a mark or label) and/or on any shipment requiring a shipping paper.

"1-800-255-3924 CHEMTEL #MIS0007883"

Register this shipment at: http://arcadis.chemtel.net/

Certification:

I certify field equipment and supply shipments that will be prepared for air transport for this project or office, will be prepared and checked to ensure the package conforms to the requirements and limitations of this shipping determination. I will utilize referenced Arcadis guidance, when applicable, in preparing these shipment(s). I will not rely solely on vendor instructions for return shipment package preparation. I am current on HazMat #1 training or approved equivalent.

Offeror(s) Signature/Date:

_____ / _____	_____ / _____
_____ / _____	_____ / _____
_____ / _____	_____ / _____
_____ / _____	_____ / _____
_____ / _____	_____ / _____
_____ / _____	_____ / _____
_____ / _____	_____ / _____
_____ / _____	_____ / _____
_____ / _____	_____ / _____
_____ / _____	_____ / _____

Arcadis Weekly Vehicle Inspection Form

Vehicle # / License Plate # | **Lease Plan # / Last 6 of Vin #**

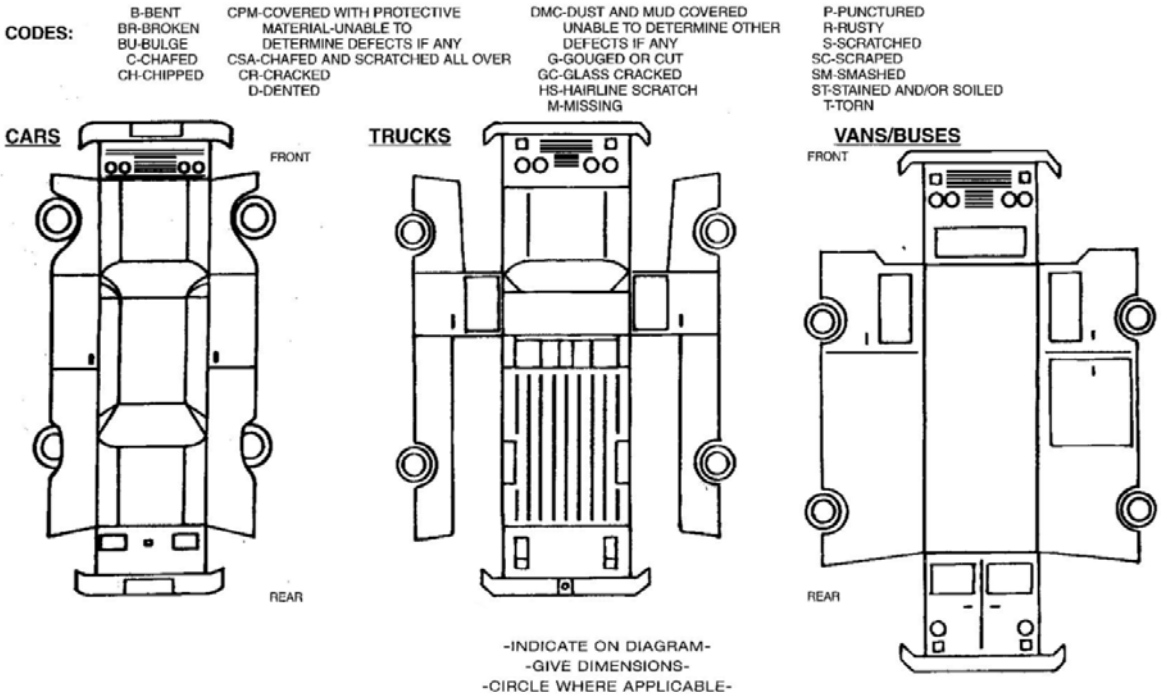
Inspection Date												
Odometer reading												
Driver / Inspector Name												
	Check the appropriate box and enter repair date for identified repairs:	OK	Needs Repair	Repair Date	OK	Needs Repair	Repair Date	OK	Needs Repair	Repair Date	OK	Needs Repair	Repair Date
Interior	Horn operational												
	Door Locks operational												
	Seat Belts in good repair												
	Seats and Seating Controls												
	Steering Wheel - No Excessive Play												
	Interior Lights and Light Controls												
	Instrument Panel/Gauges												
	Wiper Controls operational												
	Heat/Defrost/Air Conditioning working												
	Rear View Mirror present												
	Backup Camera/Sensors working												
	Jack and Lug Wrench present												
Exterior[1]	Lights and Signals operational												
	Tires properly inflated/good tread depth												
	Spare Tire properly inflated												
	Doors operational												
	Windows Not Cracked/Damaged												
	Side View Mirrors												
	Body Panels and Bumpers												
Engine & Brakes	Engine Start & Running Smoothly												
	Fluid Levels, No Noticeable Leaks												
	Belts tight, no cracks												
	Brakes operational, no squeaking												
Emergency Equipment[2]	First Aid Kit, inspected weekly												
	Fire Extinguisher properly secured												
	Fire Extinguisher inspected weekly												
	Orange/Yellow emergency warning light												
	Roadside Assistance Information												
	Recommend spotter cones available												
Cargo	Cargo Secure and Properly Distributed												
	Securing Devices in Good Condition												
Registration	License Plate /Tags												
	Registration and Insurance												
	City/State Inspection Decal												
	Lease Plan information/Fuel Card												

[1] Note all damages to the vehicle on the back of this page

[2] Emergency Equipment required per Motor Vehicle Standard ARC HSGE024

Note All Vehicle Damage Below

All Vehicle Damage must be reported to Sue Berndt (Corporate Legal), Andrew McDonald (Corporate H&S), and Roger Elliot (Corporate Fleet Manger)



Notes:

Tread guide: If a tread gauge is not available coins may be used to determine remaining tread. 2/32” is the minimum by law in most states (top of Lincoln’s head on penny), 4/32” is minimum recommended for wet surfaces (top of Washington’s head on quarter), 6/32” is minimum recommended for snowy surfaces (top of Lincoln Memorial on penny).Vehicle tires should be replaced if the tread depth is less than 6/32”.

2/32” remaining 4/32” remaining 6/32” remaining

Reference JSA 10907 For Weekly Vehicle Inspection

THIS FORM MUST BE COMPLETED IN ENTIRETY PRIOR TO BEGINNING ANY INTRUSIVE WORK

Project: Goshen Former MGP Site
Project Number: B0013080.0016
Form Completion Date: _____ Form Expiration Date: _____
(15 business days post form completion date)

Pre-Field Work

Required: One Call or "811" notified 48-72 hours in advance of work? #: _____
Ticket Expiration Date _____ (Review State Requirements)
Utility companies notified during the One Call process ☐ See attached ticket

_____ _____ _____ _____
_____ _____ _____ _____

List any other utilities requiring notification: ☐ None

_____ _____ _____ _____

Private Locator Contacted ☐ Yes ☐ No

Plan private utility clearance subcontractor assignments, areas, required clearance equipment, depth of clearance needed, types of utilities. When possible re-clear 811 markings to confirm utility locations.

Client provided utility maps or "as built" drawings showing utilities? ☐ Yes ☐ No

Field Work - This must be completed on site, by staff who have a minimum of one year of field experience in identifying utilities. Review Check list with PM or designee prior to beginning intrusive work.

List Soil Boring / Well IDs or Excavation Locations applicable to this clearance checklist:

3 Reliable Lines of Evidence Required Prior to Starting any Subsurface Intrusive Work

☐ One Call/"811" (Reliable as a line of evidence when working in public right of way or easement)
Utility Markings Present: ☐ Paint ☐ Pin flags/stakes ☐ Other ☐ None

☐ Client Provided Maps/Drawings **OR** ☐ Maps/Drawings requested but not provided
☐ Client Clearance Name(s)/Affiliation(s) _____
☐ Interview(s): Name(s)/Affiliation(s) _____
_____

Did person(s) interviewed indicate depths of any utilities in the subsurface?
☐ Yes, depths provided: ☐ Did not know or refused to answer
Additional Comments:

☐ Site Inspection (**Complete Page 2 & Photo Document Marked Utilities & Utility Structures**)
☐ Public Records / Maps / Asbuilits
☐ Private Locator: (Name and Company) _____
☐ Ground Penetrating Radar (GPR)
☐ Radiofrequency (RFLoc)
☐ Electromagnetic (EM)
☐ Metal Detector

Soft Dig Methods
☐ Termination Depth _____ft. bgs
☐ Potholing / Vacuum Extraction
☐ Air-Knife ☐ Hydro-Knife
☐ Probing
☐ Hand Auguring

Tips for Successful Utility Location:
1. Don't forget to look up
2. Be on site with Private Utility Locators
3. Ask Private Locators to "confirm" other's markings
4. Select alternate/backup locations during clearance process
5. Mark out all known utilities. Leave nothing to question
6. No hammering - no pickaxes - no digging bars - no shortcutting
7. No excessive turning or downward force of hand augers/shovels
8. Utilities may run in or directly under asphalt/concrete

☐ Other: _____
☐ Marine Locator: (Name and Company) _____

During the site inspection look for the following: **("YES" requires additional investigation and the utility must be marked properly prior to beginning subsurface intrusive work)**:

Site Inspection	Utility Color Codes	Present	
a) Natural gas line present (evidence of a gas meter)?	Yellow	☐ Yes	☐ No
i) Feeder Lines to buildings or homes?		☐ Yes	☐ No
b) Evidence of electric lines:	Red		
i) Conduits to ground from electric meter or along wall?		☐ Yes	☐ No
iii) Conduits from power poles running into ground?		☐ Yes	☐ No
ii) Light poles, electric devices with no overhead lines?		☐ Yes	☐ No
iii) Overhead electric lines present? (See Section l)		☐ Yes	☐ No
c) Evidence of sewer drains:	Green		
i) Restrooms or kitchen on site?		☐ Yes	☐ No
ii) Sewer cleanouts present?		☐ Yes	☐ No
iii) Combined sewer /storm lines or multiple sewer lines?		☐ Yes	☐ No
d) Evidence of water lines:	Blue		
i) Water meter on site or multiple water lines?		☐ Yes	☐ No
ii) Fire hydrants in vicinity of work?		☐ Yes	☐ No
iii) Irrigation systems? (Sprinkler heads, valve boxes, controls in building)		☐ Yes	☐ No
e) Evidence of storm drains:	Green		
i) Open curbside or slotted grate storm drains		☐ Yes	☐ No
ii) Gutter down spouts going into ground		☐ Yes	☐ No
f) Evidence of telecommunication lines:	Orange		
i) Fiber optic warning signs in areas?		☐ Yes	☐ No
iv) Aboveground cable boxes or housings or wires in work area?		☐ Yes	☐ No
g) Underground storage tanks:			
i) Tank pit present, tank vent present?		☐ Yes	☐ No
ii) Product lines running to dispensers/buildings?		☐ Yes	☐ No
h) Do utilities enter or exit existing structures/buildings?			
If Yes, confirm the utility markings outside of structure/building match up.		☐ Yes	☐ No
i) Proposed excavation marked in white?	White	☐ Yes	☐ No
j) Unclassed utilities / anomalies marked in pink?	Pink	☐ Yes	☐ No
k) **Overhead** Utilities/Communication Lines - **Look Up**:			
i) Overhead electrical conduit, pipe chases, cable trays, product lines?		☐ Yes	☐ No
ii) Overhead fire sprinkler system?		☐ Yes	☐ No
l) **Overhead** Power lines in or near the work area:			
i) < 50 kV within 10 ft. of work area?		☐ Yes	☐ No
ii) >50 - 200 kV within 15 ft. of work area?		☐ Yes	☐ No
iii) >200-350 kV within 20 ft. of work area?		☐ Yes	☐ No
iv) >350-500 kV within 25 ft. of work area?		☐ Yes	☐ No
v) >500-750 kV within 35 ft. or work area?		☐ Yes	☐ No
vi) >750-1000 kV within 45 ft. of work area?		☐ Yes	☐ No
m) Other:			
i) Evidence of linear asphalt or concrete repair?		☐ Yes	☐ No
ii) Evidence of linear ground subsidence or change in vegetation?		☐ Yes	☐ No
iii) Unmarked manholes or valve covers in work area?		☐ Yes	☐ No
iv) Warning signs ("Call Before you Dig", etc.) on or adjacent to site?		☐ Yes	☐ No
v) Utility color markings not illustrated in this checklist?	i.e. Purple	☐ Yes	☐ No
n) Has the Utilities & Structures Checklist been reviewed by the PM or Designee		☐ Yes	☐ No

PM or Designee Name: _____

Name and Signature of person completing the checklist: _____

Date: _____ _____

Do not perform **mechanized** intrusive work within 30 inches of a utility marking without receiving pre-approval by Corporate H&S .

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

APPENDIX E

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 F

Field Sampling Plan

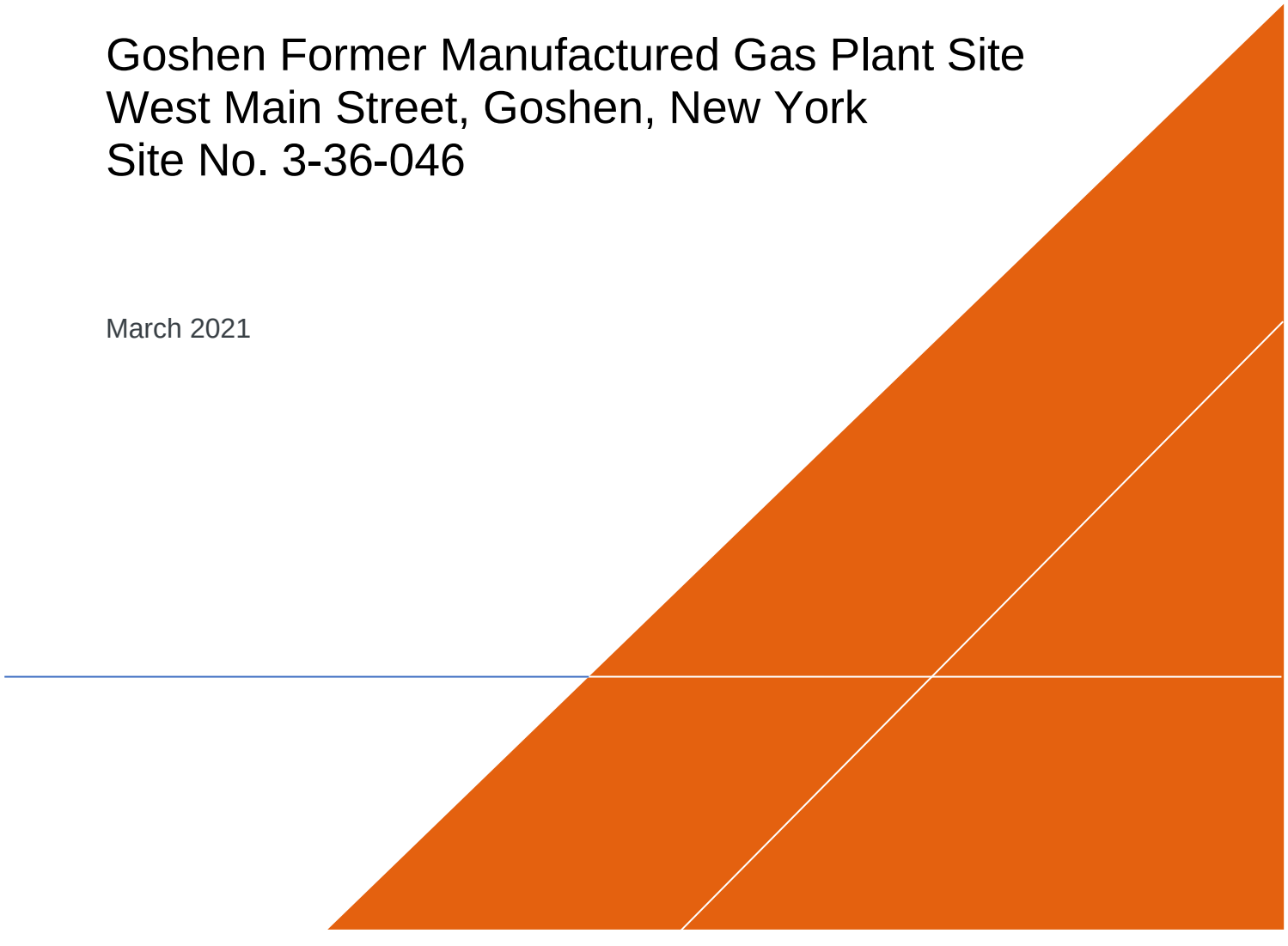
ARCADIS Design & Consultancy for natural and built assets

NYSEG

FIELD SAMPLING PLAN

Goshen Former Manufactured Gas Plant Site
West Main Street, Goshen, New York
Site No. 3-36-046

March 2021



FIELD SAMPLING PLAN

Goshen Former Manufactured Gas Plant Site

Prepared for:

NYSEG

250 W Main Street

Goshen, NY 10924

Prepared by:

Arcadis of New York, Inc.

One Lincoln Center

110 West Fayette Street

Suite 300

Syracuse

New York 13202

Tel 315 446 9120

Fax 315 449 0017

Our Ref.:

B0013080

Date:

March 2021

CONTENTS

ATTACHMENTS

1 INTRODUCTION

1.1 General

This Field Sampling Plan (FSP) was prepared on behalf of NYSEG to support the Site Management Plan (SMP) for the Goshen Former Manufactured Gas Plant (MGP) Site located in Goshen, New York ("the Site").

This FSP contains field procedures and sample collection methods to be used to characterize environmental media as needed for future site redevelopment and utility installation and maintenance. The FSP includes procedures to: (1) monitor groundwater and (2) collect non-aqueous phase liquid (NAPL).

Site background information, including a summary of the remedial investigation results and the remedial actions, are included in the SMP. The FSP should be used in conjunction with the Excavation Work Plan (EWP), the Quality Assurance Project Plan (QAPP), the Health and Safety Plan (HASP), and the Community Air Monitoring Plan (CAMP) included as Appendices to the SMP.

The EWP outlines actions to be performed for any intrusive work. The QAPP outlines the procedures that will be used to ensure that data collected and subsequent reports are of high enough quality to meet project objectives, as well as a description of general field and laboratory procedures. The HASP presents the procedures and practices to be followed during ground-intrusive activities to promote the safety of workers, and is designed to prevent occupational injuries and worker exposures to chemical, physical and biological hazards. The CAMP provides a measure of protection for the downwind communities from potential airborne release of residual impacts during intrusive work activities.

1.2 Overview of Anticipated Characterization Field Activities

The following field characterization activities will potentially be performed in connection with future site maintenance:

- Groundwater monitoring
- NAPL collection
- Sub-slab soil gas (vapor) sampling (if necessary)
- Indoor air and ambient air sampling (if necessary)

2 FIELD ACTIVITIES

This section describes in detail the field procedures and methodology potentially used for site monitoring.

2.1 General Field Guidelines

Field log books will be maintained by the Field Manager/Site Supervisor and other team members to provide a daily record of significant events, observations, and measurements during the field investigation.

Information pertinent to the field investigation and/or sampling activities will also be recorded in the log books. The books will be bound with consecutively numbered pages. Entries in the log book 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
- Sample media (soil, groundwater, etc.)
- 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 pH, temperature, conductivity, water-level, etc.

All original data recorded in field log books and Chain-of-Custody (COC) records will be written with indelible ink. If an error is made in these documents, the individual entering the data 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 or made illegible. Any subsequent error discovered on an accountable document will be corrected by the person who made the entry. All subsequent corrections will be initialed and dated.

2.2 Sampling 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 COC will be initiated. A sample COC form is included as Attachment A.

Appropriate sample containers, preservation methods, and laboratory holding times for each sample type will be applied as identified in the QAPP.

If samples are to be shipped by commercial carrier (e.g., UPS), sample bottles/jars will be packed in coolers containing the following:

- 1-2 inches of vermiculite or bubble wrap on the bottom of the cooler
- Water/ice packaged in re-sealable plastic bags
- Sufficient vermiculite or bubble wrap to fill in the remaining area
- The completed COC in a re-sealable plastic bag, taped in place on the inside cover of the cooler

The cooler will then be sealed with tape. If the cooler contains a drain plug, it must be sealed with duct 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 COC form; however, the shipping receipt should be retained by the sampler, and forwarded to the project files.

All samples, whether solids, liquids or gases, being shipped by air or ground transport will be evaluated using a Shipping Determination process to determine if the material or equipment being shipped is hazardous for transport. All materials identified as HazMat will be shipped according to applicable United States Department of Transportation (USDOT) and International Air Transport Association (IATA) regulations and requirements. All employees collecting samples, preparing HazMat packages, or offering HazMat to a third-party carrier such as FedEx will have current HazMat training.

2.3 Equipment Decontamination

Equipment decontamination is performed to ensure that sampling equipment that contacts a sample, or monitoring equipment that is brought into contact with environmental media to be sampled, is free from constituents that would interfere with laboratory analysis for analytes of interest. Equipment must be cleaned prior to use onsite for sampling or contact with environmental media, and prior to shipment or storage.

Non-disposable equipment will be cleaned before collecting each sample, between sampling events, and prior to leaving the Site. Dedicated and/or disposable (not to be re-used) sampling equipment will not require decontamination.

2.3.1 Sampling Equipment Decontamination

The following equipment will be required for use during sampling equipment cleaning procedures:

- Appropriate personal protective equipment (PPE), as required in the site HASP
- Distilled water
- Non-phosphate detergent such as Alconox (or equivalent)
- Tap water
- Rinsate collection plastic containers
- DOT-approved waste shipping container(s),
- Brushes
- Large heavy-duty garbage bags
- Spray bottles
- (Optional) – “pesticide grade” Methanol
- (Optional) – “ultra-pure grade” Nitric Acid
- (Optional) – Hexane
- Ziploc-type bags
- Plastic sheeting

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, buckets, etc. 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% “ultra-pure grade” nitric acid followed by a distilled water rinse. In addition, when sampling for polychlorinated biphenyl in an aqueous phase, an additional rinse step using 10% hexane (followed by a distilled water rinse will be completed prior to the methanol 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.

Equipment decontamination rinsate will be managed in conjunction with all other waste produced during the field sampling effort. Waste management procedures are outlined in the EWP.

2.4 Monitoring Well Redevelopment

A minimum of 7 days before collecting groundwater samples, the monitoring wells may be redeveloped (as needed) 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 Manager/Site Supervisor. The development water will be contained in a tank on site or in drums. The wells may be redeveloped 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 redevelopment. Monitoring well redevelopment 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.

2.5 Monitoring Well Integrity Survey

Monitoring well inventories will be conducted to assess the integrity of existing monitoring wells and to identify the need for repairs, replacement of parts, or replacement of wells that are determined to no longer be usable. A well inventory involves an inspection of the overall condition of the well, comparison of measurable quantities (e.g., riser stickup relative to grade and total depth), measurement of depth to water in the well, and measurement of sediment accumulations in the well.

The typical procedure for assessing the integrity of a monitoring well is outlined below.

1. Prior to mobilizing in the field, obtain a list of wells/piezometers to be inventoried and available information concerning their location and physical characteristics.

2. Identify site and well identification number on the Well Integrity Assessment Form (Attachment B). Record all observations on this form, supplemented by notes in the field notebook if necessary.

3. Examine the well for the presence of an identification label. If absent, label the well with the appropriate well number after measuring the total depth of the well to verify that the depth matches the well number.

4. Examine the surface condition of the well. Record the type of well (i.e., flush mount or above-grade stickup), condition of the well cover and surface seal. Confirm the protective casing is not bent, the PVC casing is not broken or chipped, and there is no evidence of frost heaving.

5. Unlock and open the well. Record the type (e.g., PVC or stainless steel), dimensions (i.e., casing diameter and stickup relative to grade), condition of the well casing, and type of well cap. If the well cap is missing, replace with available parts or record the type of cap required.

6. Measure the above-grade portion of the well riser stickup and compare to the known length of the stickup measured during well installation (surveyed top of inner casing elevation minus ground surface elevation).

7. Locate the marked measuring point along the top of the well casing. If no mark is visible, add a mark at the highest point of the casing using an indelible pen.

8. Measure the depth to water and total depth of the well. For total depth measurements, account for any difference in calibration of the measuring tape on the probe (i.e., distance from part of probe that measures depth to water and the physical bottom of the probe which will measure total depth of the well). Record any obstructions encountered and a description of the feel of the well bottom (i.e., soft due to sediment or hard).

9. Compare all observations concerning the measured dimensions of the well with the constructed values presented on the well construction log. Perform any recommended maintenance activities that can be accomplished with available equipment.

10. Demobilize from the well.

Depending on the results of the well inventory, several additional activities may be warranted prior to future usage of the well. Typical follow-up activities include replacement of missing parts, removal of sediment from the base of the well, resurveying of the well, or complete replacement if the well is determined to be unusable. If sediment accumulation is greater than 10 percent of the wetted screen interval activities will be taken to remove the sediment by pumping or bailing the well. The removed sediment should be inspected for the presence of filter pack materials which may indicate that the well screen has been damaged. If initial efforts are unsuccessful in clearing the sediment accumulations, the well may need to be re-developed or replaced.

Replacement or decommissioning of a well may be warranted if the well is broken, obstructed, or otherwise compromised. If the well cannot be adequately repaired and is required for future monitoring purposes, a replacement well should be installed if no suitable alternate wells are located in the vicinity.

2.6 Water Level Measurements

Water levels may be measured using an electronic water-level probe, oil-water level indicator, or a pressure transducer from established reference points (e.g. top of casing). Reference points will be surveyed to evaluate fluid elevations relative to mean sea level (msl).

The following procedure will be used to measure water-level depths at monitoring wells and surface water gauges:

- Decontaminate the water level probe or oil/water interface probe (for wells expected to contain NAPLs).

- Measure the static water-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 Purging and Sampling

Groundwater samples will be collected from monitoring wells to evaluate groundwater quality. This protocol describes the procedures to be used to collect groundwater samples. 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 (USEPA SOP No. GW0001; July 30, 1996). No wells will be sampled until well development has been performed. During heavy precipitation events, groundwater sampling will be discontinued until precipitation ceases. Groundwater samples will not be collected within 1 week following well development. 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 equipment and materials will be available, as required, during groundwater sampling:

- Appropriate PPE, as required in the site HASP
- Site map, well construction records, prior groundwater sampling records (if available).
- Sample 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); and/or
  - Bladder pump (e.g., Marschalk System 1, QED Well Wizard, Geotech, etc.).
- Teflon® tubing or Teflon®-lined polyethylene tubing of an appropriate size for the pump being used.
- Power source (i.e., generator, battery)
- Photoionization detector (PID)
- Water-level probe
- Water-quality (temperature/pH/specific conductivity/ORP/turbidity/dissolved oxygen) meter and flow-through measurement cell. Several brands may be used, including:
  - YSI 6-Series Multi-Parameter Instrument;
  - Hydrolab Series 3 or Series 4a Multiprobe and Display; and/or
  - Horiba U-10 or U-22 Water Quality Monitoring System.
- Supplemental turbidity meter (e.g., Horiba U-10, Hach 2100P, LaMotte 2020).
- 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
- COC forms
- Indelible ink pens
- Decontamination equipment
- Plastic sheeting (for each sampling location)
- Dedicated or disposable bailers
- New disposable polypropylene rope
- Buckets to measure purge water
- Keys to wells

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, samples are collected in order of upgradient, then furthest downgradient to source area locations.

The following steps detail the monitoring well sampling procedures:

1. Review materials checklist to ensure that the appropriate equipment has been acquired.

2. Identify site and well sampled on sampling log sheets, along with date, arrival time, and weather conditions. Identify the personnel and equipment used and other pertinent data requested on the logs (Attachment C).

3. Label all sample containers using an appropriate label.

4. Use safety equipment, as required in the HASP.

5. Calibrate field instruments according to manufacturer procedures for calibration.

6. Place plastic sheeting adjacent to the well to use as a clean work area.

7. Establish the background reading with the PID and record the reading on the field log.

8. Remove lock from the well and if rusted or broken replace with a new brass keyed-alike lock.

9. 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.

10. Set out on plastic sheeting the dedicated or disposable sampling device and meters.

11. Prior to sampling, groundwater elevations will be measured at each monitoring well and the presence of light non-aqueous phase liquid (LNAPL) or dense non-aqueous phase liquid (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].

12. After groundwater elevations are measured and NAPLs are determined not to be present, groundwater will be purged from the wells. If NAPLs are determined 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.

13. Prepare and install pump in well:

    a. For submersible and non-dedicated bladder pumps, decontaminate pump according to site decontamination procedures. 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. Care should be taken not to reverse the air and discharge tubing lines during bladder pump set-up as this could result in bladder failure or rupture. Attach and secure a safety cable to the eyebolt on the top of bladder pump (if present, depending on pump model used). Slowly lower 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. Take care to avoid twisting and tangling of safety cable, tubing, and electrical lines while lowering pump into 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 well contamination.

    b. If using a bladder pump, connect the air line to the pump controller output port. The pump controller should then be connected to a supply line from an air compressor or compressed gas cylinder using an appropriate regulator and air hose. Take care to 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 if an on/off switch is present and verify that all batteries are charged and fully operating before beginning to pump.

    c. If using a peristaltic pump, 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 2 feet above the bottom of the well to prevent mobilization of any sediment present in the bottom of the well.

14. Connect the pump discharge water line to the bottom inlet port on the flowthrough cell connected to the water quality meter.

15. Measure the water level again with the pump in the well before starting the pump if well diameter is 2-inches in diameter or larger. Water levels will not be measures in small diameter wells (<2-inches) once the pump is employed. Start pumping the well at 200 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) and water level should be stabilized. The water level should be monitored every three to five 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 ensure 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.

16. During well purging, monitor the field indicator parameters (turbidity, temperature, specific conductance, pH, dissolved oxygen [DO], and oxidation-reduction potential [ORP]) every three to five 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. If the field indicator parameters do not stabilize within 1 hour of the start of purging, but the groundwater turbidity is below the goal of 50 NTU and the values for all other parameters are within 10%, the well can be sampled. 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 a minimum rate of 100 mL/min to reduce turbidity levels as low as possible.

17. Fill in the sample label and cover the label with clear packing tape to secure the label onto the container.

18. After the indicator parameters have stabilized, collect groundwater samples by diverting flow out of the unfiltered discharge tubing into the appropriate labeled sample container. If a flow-through analytical cell is being used to measure field parameters, the flow-through cell should be disconnected after stabilization of the field indicator parameters and prior to groundwater sample collection. Under no circumstances should analytical samples be collected from the discharge of the flow-through cell. When the container is full, tightly screw on the cap.

19. Secure with packing material and store at 4 degrees Celsius on wet ice in an insulated transport container provided by the laboratory.

20. Record the time sampling procedures were completed on the field logs.

21. 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 21 until all wells are sampled.

22. Complete the procedures for packaging, shipping, and handling with associated COC forms.

2.8 NAPL Collection and Recovery

NAPL will be measured and collected from the NAPL monitoring wells, if observed. LNAPL thickness will be measured using an oil-water interface probe and confirmed using a clear bailer. DNAPL presence and thickness will be measured using a weighted tape. Any NAPL that accumulates in a well will be periodically removed to prevent NAPL from overtopping out of the well sump. The recovered volumes of NAPL will be recorded. This section outlines standard procedures for measuring and collecting NAPL.

Personnel overseeing, directing, or supervising NAPL collection shall have previous related experience (minimum of 2 years) collecting fluid samples from wells and shall be trained in shipping of hazardous materials.

The following equipment and materials will be available, as required, during NAPL collection:

- Appropriate PPE, as required in the site HASP
- Site map, well construction records, prior NAPL collection records (if available)
- Dual-phase interface probe
- Bailer, robe, and bailer retrieval device
- Cleaning equipment/supplies, including deionized (DI) water and Alconox or equivalent
- Indelible ink pens
- Weighted tape
- Plastic sheeting
- Buckets
- Keys to wells

The following steps detail the NAPL collection procedures:

1. Measuring the static water level: Proper PPE must be worn (i.e. gloves, safety glasses, steel-toed boots, etc.). Remove cap from well and deploy the dual NAPL and water interface probe into the well. Measure the static LNAPL and water levels in each well before collection. Decontaminate the dual interface probe using Alconox (or equivalent) and DI water between well measurements. Read fluid level measurements to the nearest 0.01 foot on the north side, top of casing. Use the same electronic NAPL and water interface probe for all wells. Make sure to record all depths to product (DTP) and depths to water (DTW) in the field book. Depending on the probe, it will make different sounds for water and NAPL.

2. Monitoring and measuring DNAPL: Lower a weighted tape to the bottom of each well. Make sure the tape stays taut and do not let the tape bunch at the well bottom. Once the bottom is encountered, carefully pull-up the tape measure. When pulling up the tape measure observe it for evidence of DNAPL, and decontaminate it as it's pulled from the well. Record the DTP and the thickness of produce in the field book.

3. Collecting DNAPL: Dedicated bailer and rope must be used for each well. Make sure to sample in the same order that water and NAPL levels were collected to avoid any cross contamination. Collect the LNAPL by slowly lowering the bailer into the LNAPL, but not into the water. Pull the bailer out of the well. Collect the DNAPL by lowering the bailer to the bottom of the well or using an appropriate pump with dedicated tubing. During bailing of DNAPL, sediment will also be removed from the bottom of the sump to maintain sump capacity.

4. Label waste disposal drums with the project number, site name, date and time collected, media type, hazardous label (if needed), and other DOT required labels.

5. Once NAPL collection is completed, put the cap back on the well, close, and secure it, as necessary. PPE (such as gloves and disposable clothing) and other disposable equipment resulting from cleaning procedures and NAPL and water handling activities (such as paper towels, rope, and bailers) will be placed in plastic garbage bags. Disposable PPE and equipment should not be re-used.

2.9 Indoor Air and Ambient Air Sampling

Indoor air and ambient air samples may be collected and analyzed for VOCs using United States Environmental Protection Agency (USEPA) Method TO-15 (TO-15). The TO-15 method uses SUMMA® passivated stainless steel canisters (typically 1- to 6-liter in size). For purposes of this FSP, procedures for collecting indoor air and ambient air sampling will describe collecting a sample using a 6-liter SUMMA® canister.

The equipment required for indoor air/ambient air sample collection is presented below:

- Stainless steel SUMMA® canister (order at least one extra, as vacuum seals may leak in transport or during sample collection).
- Flow controllers with in-line particulate filters and vacuum gauges (flow controllers are pre-calibrated by the laboratory to a specified sample duration [e.g., 8-hour]). Confirm with lab that flow controller is equipped with an in-line particulate filter and pressure gauge (order an extra set for each extra SUMMA® canister, if feasible).
- Appropriate-sized open-end wrenches (typically 9/16-inch).
- PID (for use identifying potential background sources during building survey).
- Portable weather meter, if appropriate.
- Box, chair, tripod, or similar to hold canister at breathing zone elevation.
- Teflon® sampling tubing may be used to sample abnormal situations (e.g., sumps, where canisters must be hidden). In these situations, ¼-inch Swagelock fittings or other methods may be appropriate to affix tubing to canister. Staff should check this before heading out into the field.
- Building survey and product inventory form (Attachment D), indoor air/ambient air sample collection log (Attachment E), site plans, field notebook, COC, and camera (if photography is permitted at sampling locations).

Care must be taken to minimize the potential for introducing interferences during the sampling event. As such, keep ambient air canisters away from heavy pedestrian traffic areas (e.g., main entranceways, walkways) if possible. If the canisters are not to be overseen for the entire sample duration, precautions

should be taken to maintain the security of the sample (e.g., do not place in areas regularly accessed by the public, fasten the sampling device to a secure object using lock and chain, label the canister to indicate it is part of a scientific project, notify local authorities, place the canister in secure housing that does not disrupt the integrity/validity of the sampling event). Sampling personnel should not handle hazardous substances (such as gasoline), permanent marking pens (sharpies), wear/apply fragrances, or smoke cigarettes before and/or during the sampling event.

Ensure that the flow controller is pre-calibrated to the proper sample collection duration (confirm with laboratory). Sample integrity can be compromised if sample collection is extended to the point that the canister reaches atmospheric pressure. Sample integrity is maintained if sample collection is terminated prior to the target duration and a measurable vacuum (e.g., 7-inches Hg) remains in the canister when sample collection is terminated.

The following procedures will be followed during initial building survey for indoor air samples (if applicable):

1. Complete the appropriate building survey form and product inventory form (Attachment D).

2. Survey the area for the apparent presence of items or materials that may potentially produce or emit constituents of concern and interfere with analytical laboratory analysis of the collected sample. Record relevant information on survey form and document with photographs.

3. Record date, time, location, and other relevant notes on the sampling form.

4. Items or materials that contain constituents of concern and/or exhibit elevated PID readings shall be considered probable sources of VOCs. Request approval of the owner or occupant to have these items removed to a structure not attached to the target structure at least 48 hours prior to sampling, if possible.

5. Set a date and time with the owner or occupant to return for placement of SUMMA® canisters.

The following procedures will be followed to prepare SUMMA® canister and collect sample:

1. Record the ambient temperature, barometric pressure, wind speed, and relative humidity. Weather data should be obtained from a hand-held weather meter, the local airport's listing, or other suitable weather source (e.g., weatherunderground.com).

2. Choose the sample location in accordance with the sampling plan. If a breathing zone sample is required, place the canister on a ladder, tripod, box, or other similar stand to locate the canister orifice 3 to 5 feet above ground or floor surface. If the canister will not be overseen for the entire sampling period, secure the canisters as appropriate (e.g., lock and chain). Canister may be affixed to wall/ceiling support with nylon rope or placed on a stable surface. In general, areas near windows, doors, air supply vents, and/or other potential sources of "drafts" shall be avoided.

3. Record SUMMA® canister serial number and flow controller number on the sampling log and COC form. Assign sample identification on canister ID tag, and record on the sample collection log (Attachment E), and COC form.

4. Remove the dust cap from the SUMMA® canister. Attach the flow controller with in-line particulate filter and vacuum gauge to the SUMMA® canister with the appropriate-sized wrench. Tighten with fingers first, then gently with the wrench. Use caution not to over tighten fittings.

5. Open the SUMMA® canister valve to initiate sample collection. Record the date and local time (24-hour basis) of valve opening on the sample collection log, and COC form. Collection of duplicate samples will include collecting two samples side by side at the same time.

6. Record the initial vacuum pressure in the SUMMA® canister on the sample log and COC form. If the initial vacuum pressure registers less than -25 inches of Hg, then the SUMMA® canister is not appropriate for use and another canister should be used.

7. Take a photograph of the SUMMA® canister and surrounding area, if possible.

8. Check the SUMMA® canister approximately half way through the sample duration and note progress on sample logs.

The following procedures will be followed to terminate sample collection:

1. Arrive at the SUMMA® canister location at least 1-2 hours prior to the end of the sampling interval (e.g., 8-hour, 24-hour).

2. Stop collecting the sample when the canister vacuum reaches approximately 7 inches of Hg (leaving some vacuum in the canister provides a way to verify if the canister leaks before it reaches the laboratory) or when the desired sample time has elapsed.

3. Record the final vacuum pressure. Stop collecting the sample by closing the SUMMA® canister valve. Record the date, local time (24-hour basis) of valve closing on the sample collection log, and COC form.

4. Remove the particulate filter and flow controller from the SUMMA® canister, reinstall brass cap on canister fitting, and tighten with wrench.

5. Package the canister and flow controller in the shipping container supplied by the laboratory for return shipment to the laboratory. The SUMMA® canister does not require preservation with ice or refrigeration during shipment.

6. Complete the appropriate forms and sample labels as directed by the laboratory (e.g., affix card with string). Complete COC form and place requisite copies in shipping container. Close shipping container and affix custody seal to container closure. Ship to laboratory via overnight carrier (e.g., Federal Express) for analysis.

2.10 Sub-Slab Soil-Gas Sampling

Sub-slab soil-gas samples will be collected and analyzed for VOCs using USEPA Method TO-15. The TO-15 method uses SUMMA® passivated stainless steel canisters (typically 1- to 6-liter in size). Depending on circumstances, sub-slab soil-gas samples will be collected via either a temporary or permanent sampling probe. If the probe will be used for sampling more than once, a permanent sampling probe is recommended.

Sub-slab probe installation should be completed 24 hours in advance or after any indoor air sampling to avoid cross-contamination of indoor air samples.

The following subsection details sub-slab soil-gas probe installation (for both permanent and temporary probes). The procedures for the actual sub-slab soil-gas collection are contained in subsection 2.12.2.

2.10.1 Soil-Gas Probe Installation

The equipment required for the installation of the soil-gas probe is presented below:

- Appropriate PPE (e.g., work gloves, nitrile gloves, knee pads, and PPE required by site specific HASP and the job safety analysis [JSA])
- Heavy duty electronic hammer drill (e.g., Bosch or Hilti), ground fault circuit interrupter, and an extension cords rated for amperage for hammer drill)
- ½ inch-diameter and 1½-inch diameter (if installing permanent probe) concrete drill bits for impact drill (drill bit length contingent on slab thickness)
- Hand tools including open-end wrench (typically 9/16-inch), pliers, channel lock pliers, tubing cutter, etc.
- ¼-inch outside diameter (OD) tubing (Teflon®, nylon, or Teflon®-lined)
- Hydrated bentonite, VOC-free modeling clay that complies with ASTM D4236 (McMaster Carr 6102T11 recommended) or wax to seal drill hole (if installing temporary probe)
- Decontaminated stainless steel vapor probe (typically ¼-inch OD stainless steel tubing, ¼-inch Swagelok by ¼-inch Swagelok female coupling [or equivalent], ¼-inch Swagelok cap: if installing permanent probe)
- Extra ¼-inch Swagelok front and back compression sleeves (if installing permanent probe)
- Stainless steel washers (if installing permanent probe)
- Quick-setting non-shrink grout powder, and disposable cups and spoons for mixing grout (if installing permanent probe)
- Spray bottle with potable waste and paper towels
- Teflon® tape
- Whisk broom, dust pan, bottle brush, and shop vacuum with clean fine-particle filter
- Plastic sheeting

Temporary sub-slab soil-gas probes are installed using equipment and procedures that allow the point to be installed quickly and abandoned after an initial sample is collected. If the probe is to be sampled more than once, a permanent sub-slab soil-gas probe is recommended. A permanent sub-slab probe is similar to a temporary probe, but it includes inserting a vapor probe into a concrete slab hole (permanent sub-slab probes may be formed when pouring concrete to construct the building slab or following building construction). The vapor probe is grouted with a quick-setting non-shrink grout powder and equipped with

a plug. The cap is removed and a compression fitting nut and ferrules are used to allow collection of a soil gas sample through Teflon® tubing. Procedures for installing a sub-slab soil-gas probe following building construction are detailed below:

1. Select a probe location that is free of utilities and safe to drill. The probe location should be installed at a minimum of 5 feet from an exterior wall with a 10-foot preference, if possible.

2. Remove any covering on top of the slab, as needed, and lay down plastic sheeting to keep work area clean. Check to make sure shop vacuum is working properly and fine concrete dust particles will not pass through filter.

3. Drill a ½-inch-diameter hole into the concrete slab using the electric drill. Do not fully penetrate the slab at this time. Stop drilling approximately 1 inch short of penetrating the slab.

   If a permanent probe is being installed, the ½-inch diameter hole should be drilled within a 1½-inch diameter hole that extends approximately 1½ inches into the slab. This 1½-inch hole is drilled deep enough to permit the top of a permanent coupling (described in Step 10b below) to be set flush with the slab when the ¼-inch tubing is inserted into the ½-inch hole drilled.

4. Use the shop vacuum, bottle brush and dust broom to clean up the work area and material that may have fallen into and around the drill hole.

5. Advance the ½-inch drill bit the remaining thickness of the slab and approximately 3 inches into the sub-slab material to create an open cavity. Record any observations from the drill cuttings, if possible, regarding approximate soil types and presence or absence of a plastic sub-slab sheet.

6. Use the bottle brush, whisk broom, and dust pan to quickly clean material around and within the hole. The hole should not be left open for any extended length of time to ensure that VOCs below the slab do not migrate into indoor air. Do not use the shop vacuum to clean up the drill hole after the full thickness of the slab has been penetrated.

7. Re-drill the ½-inch hole to ensure it remains clear. This can also be accomplished using a piece of steel rod, sample tubing, or even a piece of heavy wire (coat hanger).

8. Install a temporary sub-slab probe as detailed in Steps 9a-9d below or install a permanent sub-slab probe as detailed in Steps 10a-10g below.

9. Install a temporary sub-slab probe using the procedures below:

   a. Wrap the tubing with Teflon® tape or modeling clay, to the extent necessary, for a snug fit of tubing and hole.

   b. Insert the tubing approximately 2 to 3 inches into the slab; tubing should not contact material beneath the slab. Tubing should be capped with clay or other fitting so it does not provide a pathway for vapor movement.

c. Prepare a hydrated bentonite mixture and apply bentonite at slab surface around the tubing. Instead of hydrated bentonite, either VOC free modeling clay (McMaster-Carr #6102T11) or wax may be used for the temporary seal around the tubing where it enters the slab.

d. Proceed to soil-gas sample collection after waiting a minimum of 1 hour for equilibrium following probe installation.

10. Install a permanent sub-slab probe using the procedures below:

a. Assemble the sample probe assembly (stainless steel tubing, stainless steel Swagelok coupling, Swagelok nut). Teflon® tape should never be used with Swagelok connections.

b. Using an assembled sample probe assembly, test fit the components so that the proper length of ¼-inch tubing and depth of the 1½-inch hole provides enough space for the stainless-steel coupling. Adjust so that the coupling will lie flush with the slab surface and does not create a tripping hazard.

c. Wrap the sample probe assembly with Teflon tape, to the extent necessary, for a snug fit of the assembly and hole. Teflon tape or stainless steel washers can also be used to achieve the proper depth of the sample probe assembly. Ensure that Teflon tape or stainless steel washers do not interfere with the cement that will be used to permanently fix and seal the sample probe.

d. Prepare a mixture of nonshrink cement and water according to the manufacturer's directions in a disposable cup using a plastic spoon for mixing.

e. Cement in the sample probe using the plastic spoon to apply the cement into the annular space between the coupling and the 1½-inch drill hole. Before cementing in the sample probe, moisten the bore hole with the spray bottle to provide better adhesion.

f. Replace the surface covering (e.g., carpet) if warranted. Sample collection location should be returned to pre-sampling conditions to the extent feasible given the presence of a permanent probe.

g. All permanent sub-slab sample probes should be allowed to sit and equilibrate for a minimum of 24 hours before proceeding to sample collection.

2.10.2 Sub-Slab Soil-Gas Sampling

The equipment required for sub-slab soil-gas sample collection is presented below:

- Appropriate PPE (e.g., work gloves, nitrile gloves, knee pads, and PPE required by site specific HASP and the JSA)
- 1, 3, or 6-liter stainless steel SUMMA® canisters (order at least one extra, if feasible) (batch certified canisters or individual certified canisters as required by the project)
- Flow controllers with in-line particulate filters and vacuum gauges; flow controllers are pre-calibrated to specified sample duration (e.g., 30 minutes, 8 hours, 24 hours) or flow rate (e.g., 200 milliliters per minute [mL/min]); confirm with the laboratory that the flow controller comes with an in-line particulate filter and pressure gauge (order at least one extra, if feasible)

- ¼-inch inner diameter (ID) tubing (Teflon®, or similar) and two 3-inch lengths of ¼-inch OD Teflon tubing
- ¼-inch Swagelok by 1/8-inch national pipe thread (NTP) male stainless steel coupling
- Extra ¼-inch Swagelok front and back compression sleeves and Swaglok fittings.
- Decontaminated stainless steel Swagelok or comparable "T" fitting and needle valve for isolation of purge pump
- Stainless steel duplicate "T" fitting provided by the laboratory (if collecting duplicate samples)
- Portable vacuum pump capable of producing very low flow rates (e.g., 100 to 200 mL/min) with vacuum gauge
- Rotameter or an electric flow sensor if vacuum pump does not have an accurate flow gauge (Bios DryCal or equivalent)
- Tracer gas testing supplies
- Appropriate-sized open-end wrench (typically 9/16-inch and ½-inch)
- Tedlar® bag to collect purge air or length of tubing sufficient to vent it outside the structure
- Portable weather meter, if appropriate
- PID
- Quick setting grout or Sika Flex joint sealer to seal abandoned holes (if using a temporary sub-slab probe)
- Sub-slab soil-gas sample collection log (Attachment F), site plans, field notebook, COC, and camera (if photography is permitted at sampling locations)

Once a sub-slab sample probe is installed, the following procedures should be used to collect the sample in a SUMMA® canister.

1. Record the ambient temperature, barometric pressure, wind speed, and relative humidity. Weather data should be obtained from a hand-held weather meter, the local airport's listing, or other suitable weather source (e.g., weatherunderground.com).

2. Assemble the sample train by removing the cap from the SUMMA® canister and connecting the Swagelok T-fitting to the can using a short length of 1/4-inch OD stainless steel tubing. The flow controller with in-line particulate filter and vacuum gauge is then attached to the T-fitting. The Swagelok two-way valve is connected to the free end of the T-fitting using a short length of ¼-inch OD Teflon tubing.

3. When collecting duplicate or other quality assurance/quality control samples as required by applicable regulations and guidance, couple two SUMMA® canisters using stainless steel Swagelok duplicate sample T-fitting supplied by the laboratory. Attach flow controller with in-line particulate filter and vacuum gauge to duplicate sample T-fitting provided by the laboratory.

4. Perform a leak-down-test by replacing the nut which secures sample tubing with the cap from the canister. This will create a closed system. Open the canister valve and quickly close it; the vacuum should increase approaching 30 inches Hg. If there are no leaks in the system this vacuum should be held. If vacuum holds proceed with sample collection; if not attempt to rectify the situation by tightening fittings.

5. Connect the flow controller to the sub-slab sampling probe as follows:

    a. If connecting to temporary sub-slab sampling probe, attach Teflon sample tubing from the temporary probe to the flow controller using Swagelok fittings.

    b. If connecting to permanent sub-slab sampling probe, install the male threaded fitting into the sub-slab port and connect the male threaded coupling fitting and the flow controllers using a length of Teflon sample tubing.

6. Connect the two-way valve and the portable purge pump using a length of Teflon® sample tubing.

7. Record on the sample log and COC form the flow controller number with the appropriate SUMMA® canister number.

8. If appropriate, the seal around the soil-gas sampling port and the numerous connections comprising the sampling train will be evaluated for leaks using helium as a tracer gas. The helium tracer gas will be administered according to the methods established in the appropriate guidance documents and Attachment G.

9. Open the two-way valve and purge the soil-gas sampling port and tubing with the portable sampling pump. Purge approximately three volumes of air from the soil-gas sampling port and sampling line using a flow rate of 200 mL/min or less. Purge air will be collected into a Tedlar bag to provide that VOCs are not released into interior spaces. Measure organic vapor levels and tracer gas within the Tedlar bag, as appropriate. Purge volume is calculated by the following equation:

$$V_{purge} = 3\pi \times R^2_{inner\ tubing} \times L_{tubing}$$

10. Close the two-way valve to isolate the purge pump.

11. Open the SUMMA® canister valve to initiate sample collection. Record on the sample log (attached) the time sampling began and the canister pressure. If the initial vacuum pressure registers less than -25 inches of Hg, then the SUMMA® canister is not appropriate for use and another canister should be used. Sampling flow rate should be 200 mL/min or less.

12. Take a photograph of the SUMMA® canister and surrounding area, if possible.

13. Check the SUMMA® canister approximately half way through the sample duration and note progress on sample logs.

The following procedures will be followed to terminate sample collection:

1. Arrive at the SUMMA® canister location at least 1-2 hours prior to the end of the sampling interval (e.g., 8-hour, 24-hour).

2. Stop collecting the sample when the canister vacuum reaches approximately 7 inches of Hg (leaving some vacuum in the canister provides a way to verify if the canister leaks before it reaches the laboratory) or when the desired sample time has elapsed.

3. Record the final vacuum pressure. Stop collecting the sample by closing the SUMMA® canister valve. Record the date, local time (24-hour basis) of valve closing on the sample collection log, and COC form.

4. Disconnect sample tubing from sub-slab probe as follows:

    a. If connected to temporary sub-slab sampling probe, remove tubing and grout the hole in the slab with quick-setting hydraulic cement powder, Sika-Flex, or other material similar to the slab. This step must be done carefully to ensure that the abandoned sampling point does not become a preferential flow pathway.

    b. If connected to permanent sub-slab sampling probe, disconnect sample tubing from the sample probe and replace flush-mount cap or Swagelok nut.

5. Remove the particulate filter and flow controller from the SUMMA® canister, reinstall brass cap on canister fitting, and tighten with wrench.

6. Package the canister and flow controller in the shipping container supplied by the laboratory for return shipment to the laboratory. The SUMMA® canister does not require preservation with ice or refrigeration during shipment.

7. Complete the appropriate forms and sample labels as directed by the laboratory (e.g., affix card with string). Complete COC form and place requisite copies in shipping container. Close shipping container and affix custody seal to container closure. Ship to laboratory via overnight carrier (e.g., Federal Express) for analysis.

8. Replace the surface covering (e.g., carpet) to the extent practicable. Sample collection location should be returned to pre-sampling conditions.

2.11 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 purging, 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
- 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 QAPP. For purposes of this Site, IDW will be analyzed by methods appropriate for the known constituents that have been historically detected in the monitoring wells. In the unexpected event that the IDW is

In the unexpected 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. Waste material classified as RCRA non-hazardous may be handled and disposed of as an industrial waste.

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
- ¾-inch socket wrench
- Hammer
- Leather gloves
- Drum dolly
- Appropriate drum labels (outdoor waterproof self-adhesive)
- Polyethylene storage tank
- Appropriate labeling, packing, chain-of-custody forms, and shipping materials
- Indelible ink and/or permanent marking pens
- Plastic sheeting
- Digital camera
- Field Logbook

2.11.1 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. 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*.

2.11.2 Drum Container Labelling

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 Arcadis 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 beginning to place 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.

2.11.3 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.

2.11.4 Preparing Waste Shipment Documentation (Hazardous and Non-Hazardous)

Waste profiles will be prepared by Arcadis and forwarded, along with laboratory analytical data to the NYSEG for approval/signature. NYSEG will then return the profile to Arcadis who will then forward to the waste removal contractor for preparation of a manifest. The manifest will be reviewed by Arcadis prior to forwarding to NYSEG for approval. Upon approval of the manifest, NYSEG will return the original signed manifest directly to the waste contractor.

Different profile numbers will be generated for different matrices or materials in the drums. 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 drums. A copy of the Arcadis drum inventory will be provided to the waste transporter during drum pickup and to the facility receiving the waste.

2.11.5 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 Arcadis has knowledge of a spill that has reached surface water, NYSEG or Arcadis 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.

2.11.6 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 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.

3 FIELD INSTRUMENTS

At a minimum, all field screening equipment will be calibrated immediately prior to each day's use. Additional calibration may be required if measurements appear erroneous. 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 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.

3.2 Water Quality Meter

The water-quality (temperature/pH/specific conductivity/ORP/turbidity/dissolved oxygen) meter and flow-through measurement cell will be one of the following or equivalent:

- YSI 6-Series Multi-Parameter Instrument;
- Hydrolab Series 3 or Series 4a Multiprobe and Display; and/or
- Horiba U-10 or U-22 Water Quality Monitoring System.

Water quality meters will be calibrated daily prior to use, and after very high or low readings. Calibration and maintenance will be conducted in accordance with the manufacturer’s specifications. Calibration and maintenance information will be recorded in the field notebook.

3.3 Turbidity Meter

The turbidity meter will be a LaMotte 2020 (or equivalent) and 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.

3.4 Flow Controller and SUMMA® Canister

The flow controller and the SUMMA® canister will be provided by the laboratory and are frequently susceptible to failure. It is recommended that extra canisters and flow controllers are requested from the laboratory to ensure that there is sufficient onsite equipment in case of an equipment failure. If possible, the equipment should be shipped two to three days before the scheduled start of the sampling event so that all materials can be checked and replacements can be ordered as needed.

Ensure that the flow controllers are pre-calibrated to the proper sample collection duration (confirm with laboratory). Sample integrity can be compromised if sample collection is extended to the point that the

canister reaches atmospheric pressure. Sample integrity is maintained if sample collection is terminated prior to the target duration and a measurable vacuum (e.g., 3 -7 – inches Hg) remains in the canister when sample collection is terminated. Ensure that there is still measurable vacuum in the SUMMA® after sampling. Sometimes the gauges sent from labs have offset errors, or they stick. It is a good practice to lightly tap the pressure gauge with your finger before reading it to make sure it is not stuck.

Many times, the pressure gauges sent from labs have large offset errors, or the gauge needle does not move freely in response to changes in vacuum. For the most precise pressure readings, consider using a separate, more sensitive, device to check pressure at the beginning of the sampling period in a clean atmosphere. This should be done without moving a significant flow into the canister – for example using a pressure gauge on a dead-end leg. If used, this device must be tested beforehand to confirm that it does not introduce contaminants to the SUMMA® canister during pressure checks.

ATTACHMENT A

Sample Chain-of-Custody Form

ARCADIS
Infrastructure, environment, facilities

ID#: 11999

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page ___ of ___

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:

Sample ID	Collection Date	Collection Time	Type (✓) Comp	Type (✓) Grab	Matrix	Preservative	Filtered (✓)	# of Containers	Container Information	PARAMETER ANALYSIS & METHOD	REMARKS

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: _____

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:

Distribution: **WHITE – Laboratory returns with results** **YELLOW – Lab copy** **PINK – Retained by BBL**

ATTACHMENT B

Well Integrity Assessment Form

WELL INTEGRITY ASSESSMENT FORM

Site Name:_____

Well I.D.:_____

Date:_____

(For each item, circle the appropriate response or fill in the blank)

Well I.D. Clearly Marked: YES NO

Well Completion: FLUSH MOUNT ABOVE-GRADE STANDPIPE

Lockable Cover: YES NO DAMAGED *(Describe below)*

Lock Present: YES NO ADDED Key Brand/Number:_____

Measuring Point Marked: YES NO ADDED

Well Riser Diameter (inches): _____

Well Riser Type: PVC Stainless Steel Other *(Describe)* _____

Surface Condition

Cement Intact: YES NO *(Describe below)*

Curb Box/Well Cover Present: YES NO DAMAGED *(Describe below)*

All Bolts Present: YES NO *(Describe below)* NOT APPLICABLE

Ground Surface Slopes

Away from Well YES NO *(Describe below)*

Well Condition

Well Cap: PVC Slip Cap Pressure-fit Cap None

Well Vent: Slot Cut in Riser Vent Hole in Cap None Not Applicable *(Flush Mount Well)*

Reported Well Riser Stickup (feet): _____ *(use negative number if below grade)*

Measured Well Riser Stickup (feet): _____ *(use negative number if below grade)*

Depth to Water (feet from Top of Well Riser): _____ *-or-* DRY

Reported Total Depth of Well (feet below grade): _____

Measured Total Depth of Well (feet below grade): _____

Well Obstructed: YES NO If yes, list depth in feet from Top of Well Riser: _____

Well Bottom: SOFT *(contains sediment)* FIRM *(no sediment)*

Recommendations

Repair Concrete/Surface Completion: YES NO If yes, list date performed:_____

Re-Survey Well: YES NO If yes, list date performed:_____

Remove Sediment and Re-Measure Depth: YES NO If yes, list date performed:_____

Replace Well Cap: YES NO If yes, list date performed:_____

Replace Bolts: YES NO If yes, list date performed:_____

Replace Lock: YES NO If yes, list date performed:_____

Other/Miscellaneous Observations:

_____

_____

Inspector(s):_____

ATTACHMENT C

Groundwater Sampling Log

HMI Herkimer, NY

Site *Event*

GROUNDWATER SAMPLING LOG

Sampling Personnel:	**Well ID:**
Client / Job Number:	**Date:**
Weather:	**Time In:** **Time Out:**

Well Information

Depth to Water:	(from MP)
Total Depth:	(from MP)
Length of Water Column:	
Volume of Water in Well:	
Three Well Volumes:	

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 (VOCs)	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 =3875 ml = 0.1337 cubic feet

Unit Stability

pH	DO	Cond.	ORP
± 0.1	± 10%	± 3.0%	± 10 mV

Time: / Parameter:	1	2	3	4	5	6	7	8	9
Volume Purged (mL)									
Rate (mL/min)									
Depth to Water (ft.)									
pH									
Temp. (C)									
Conductivity (mS/cm)									
Dissolved Oxygen									
ORP (mV)									
Turbidity (NTU)									
Notes:									

Sampling Information

Analyses	#	Laboratory
TCL PCBs	2	STL Buffalo, NY
TCL VOCs	3	STL Canton, OH
1,1,1-TCA, TCE	3	STL Canton, OH
Ethylbenzene, Isopropylbenzene, Xylene	3	STL Canton, OH

Sample ID:		Sample Time:
MS/MSD:	Yes	No
Duplicate:	Yes	No
Duplicate ID		Dup. Time:

Problems / Observations

PID =

ATTACHMENT D

Building Survey and Building Inventory Form

NEW YORK STATE DEPARTMENT OF HEALTH
INDOOR AIR QUALITY QUESTIONNAIRE AND BUILDING INVENTORY
CENTER FOR ENVIRONMENTAL HEALTH

This form must be completed for each residence involved in indoor air testing.

Preparer's Name _____ Date/Time Prepared _____

Preparer's Affiliation _____ Phone No._____

Purpose of Investigation_____

1. OCCUPANT:

Interviewed: Y / N

Last Name: _____ First Name: _____

Address: _____

County: _____

Home Phone: _____ Office Phone: _____

Number of Occupants/persons at this location _____ Age of Occupants _____

2. OWNER OR LANDLORD: (Check if same as occupant ___)

Interviewed: Y / N

Last Name: _____ First Name: _____

Address: _____

County: _____

Home Phone: _____ Office Phone: _____

3. BUILDING CHARACTERISTICS

Type of Building: (Circle appropriate response)

Residential	School	Commercial/Multi-use
Industrial	Church	Other: _____

If the property is residential, type? (Circle appropriate response)

Ranch	2-Family	3-Family
Raised Ranch	Split Level	Colonial
Cape Cod	Contemporary	Mobile Home
Duplex	Apartment House	Townhouses/Condos
Modular	Log Home	Other:_____

If multiple units, how many? _____

If the property is commercial, type?

Business Type(s) _____

Does it include residences (i.e., multi-use)? Y / N If yes, how many? _____

Other characteristics:

Number of floors_____ Building age_____

Is the building insulated? Y / N How air tight? Tight / Average / Not Tight

4. AIRFLOW

Use air current tubes or tracer smoke to evaluate airflow patterns and qualitatively describe:

Airflow between floors

_____

_____

_____

Airflow near source

_____

_____

_____

Outdoor air infiltration

_____

_____

_____

Infiltration into air ducts

_____

_____

_____

5. BASEMENT AND CONSTRUCTION CHARACTERISTICS (Circle all that apply)

a. Above grade construction:	wood frame	concrete	stone	brick
b. Basement type:	full	crawlspace	slab	other _____
c. Basement floor:	concrete	dirt	stone	other _____
d. Basement floor:	uncovered	covered	covered with _____	
e. Concrete floor:	unsealed	sealed	sealed with _____	
f. Foundation walls:	poured	block	stone	other _____
g. Foundation walls:	unsealed	sealed	sealed with _____	
h. The basement is:	wet	damp	dry	moldy
i. The basement is:	finished	unfinished	partially finished	
j. Sump present?	Y / N			
k. Water in sump?	Y / N / not applicable			

Basement/Lowest level depth below grade: _____(feet)

Identify potential soil vapor entry points and approximate size (e.g., cracks, utility ports, drains)

_____

_____

6. HEATING, VENTING and AIR CONDITIONING (Circle all that apply)

Type of heating system(s) used in this building: (circle all that apply – note primary)

Hot air circulation	Heat pump	Hot water baseboard	
Space Heaters	Stream radiation	Radiant floor	
Electric baseboard	Wood stove	Outdoor wood boiler	Other _____

The primary type of fuel used is:

Natural Gas	Fuel Oil	Kerosene
Electric	Propane	Solar
Wood	Coal	

Domestic hot water tank fueled by: _____

Boiler/furnace located in:	Basement	Outdoors	Main Floor	Other_____
Air conditioning:	Central Air	Window units	Open Windows	None

Are there air distribution ducts present? Y / N

Describe the supply and cold air return ductwork, and its condition where visible, including whether there is a cold air return and the tightness of duct joints. Indicate the locations on the floor plan diagram.

_____

_____

_____

_____

7. OCCUPANCY

Is basement/lowest level occupied? Full-time Occasionally Seldom Almost Never

Level	**General Use of Each Floor (e.g., familyroom, bedroom, laundry, workshop, storage)**
Basement	_____
1st Floor	_____
2nd Floor	_____
3rd Floor	_____
4th Floor	_____

8. FACTORS THAT MAY INFLUENCE INDOOR AIR QUALITY

a. Is there an attached garage? Y / N

b. Does the garage have a separate heating unit? Y / N / NA

c. Are petroleum-powered machines or vehicles stored in the garage (e.g., lawnmower, atv, car) Y / N / NA Please specify_____

d. Has the building ever had a fire? Y / N When?_____

e. Is a kerosene or unvented gas space heater present? Y / N Where? _____

f. Is there a workshop or hobby/craft area? Y / N Where & Type? _____

g. Is there smoking in the building? Y / N How frequently? _____

h. Have cleaning products been used recently? Y / N When & Type? _____

i. Have cosmetic products been used recently? Y / N When & Type? _____

j. Has painting/staining been done in the last 6 months? Y / N Where & When? _____

k. Is there new carpet, drapes or other textiles? Y / N Where & When? _____

l. Have air fresheners been used recently? Y / N When & Type? _____

m. Is there a kitchen exhaust fan? Y / N If yes, where vented?_____

n. Is there a bathroom exhaust fan? Y / N If yes, where vented?_____

o. Is there a clothes dryer? Y / N If yes, is it vented outside? Y / N

p. Has there been a pesticide application? Y / N When & Type?_____

Are there odors in the building? Y / N
If yes, please describe: _____

Do any of the building occupants use solvents at work? Y / N
(e.g., chemical manufacturing or laboratory, auto mechanic or auto body shop, painting, fuel oil delivery, boiler mechanic, pesticide application, cosmetologist

If yes, what types of solvents are used? _____

If yes, are their clothes washed at work? Y / N

Do any of the building occupants regularly use or work at a dry-cleaning service? (Circle appropriate response)

Yes, use dry-cleaning regularly (weekly) No
Yes, use dry-cleaning infrequently (monthly or less) Unknown
Yes, work at a dry-cleaning service

Is there a radon mitigation system for the building/structure? Y / N Date of Installation: _____
Is the system active or passive? Active/Passive

9. WATER AND SEWAGE

Water Supply:	Public Water	Drilled Well	Driven Well	Dug Well	Other: _____
Sewage Disposal:	Public Sewer	Septic Tank	Leach Field	Dry Well	Other: _____

10. RELOCATION INFORMATION (for oil spill residential emergency)

a. Provide reasons why relocation is recommended: _____

b. Residents choose to: remain in home relocate to friends/family relocate to hotel/motel

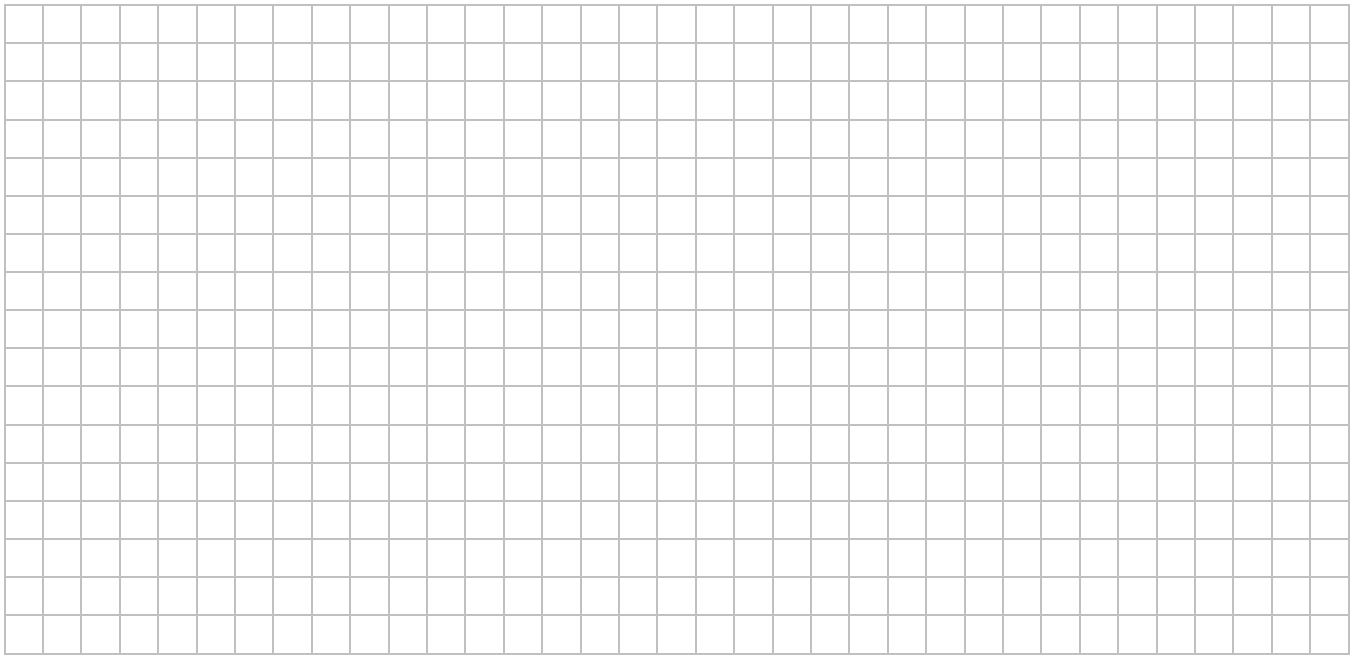
c. Responsibility for costs associated with reimbursement explained? Y / N

d. Relocation package provided and explained to residents? Y / N

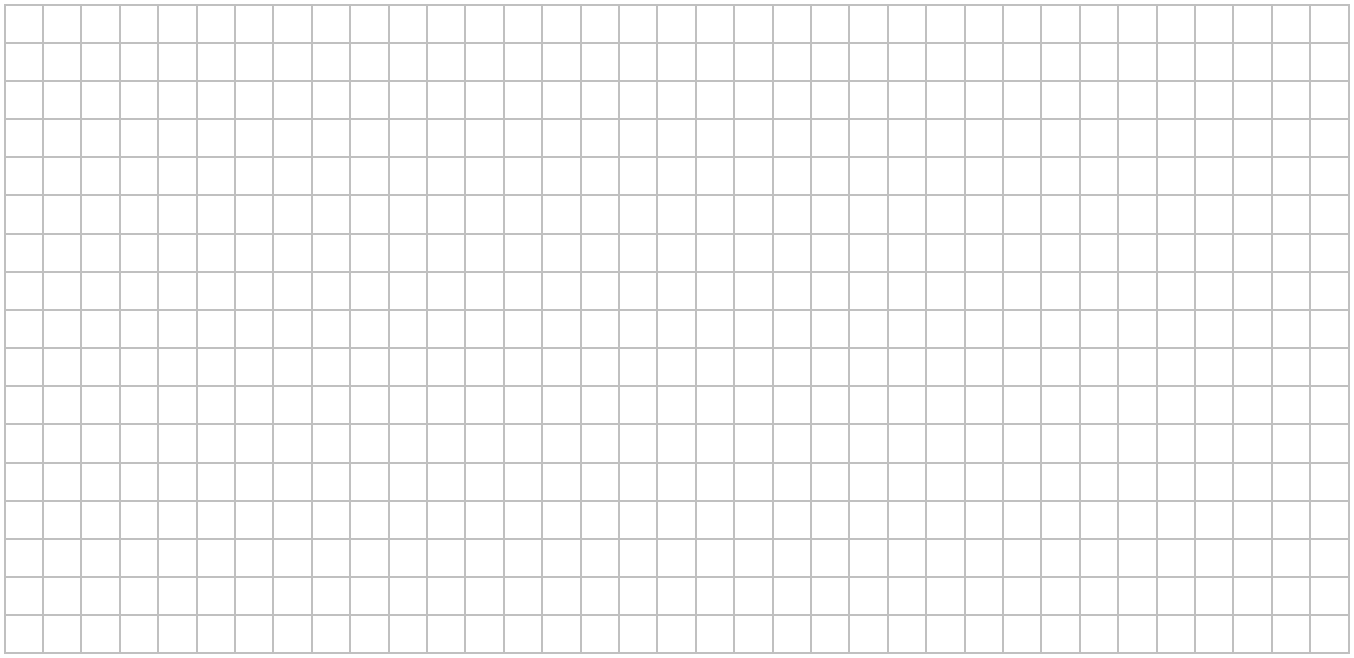
11. FLOOR PLANS

Draw a plan view sketch of the basement and first floor of the building. Indicate air sampling locations, possible indoor air pollution sources and PID meter readings. If the building does not have a basement, please note.

Basement:



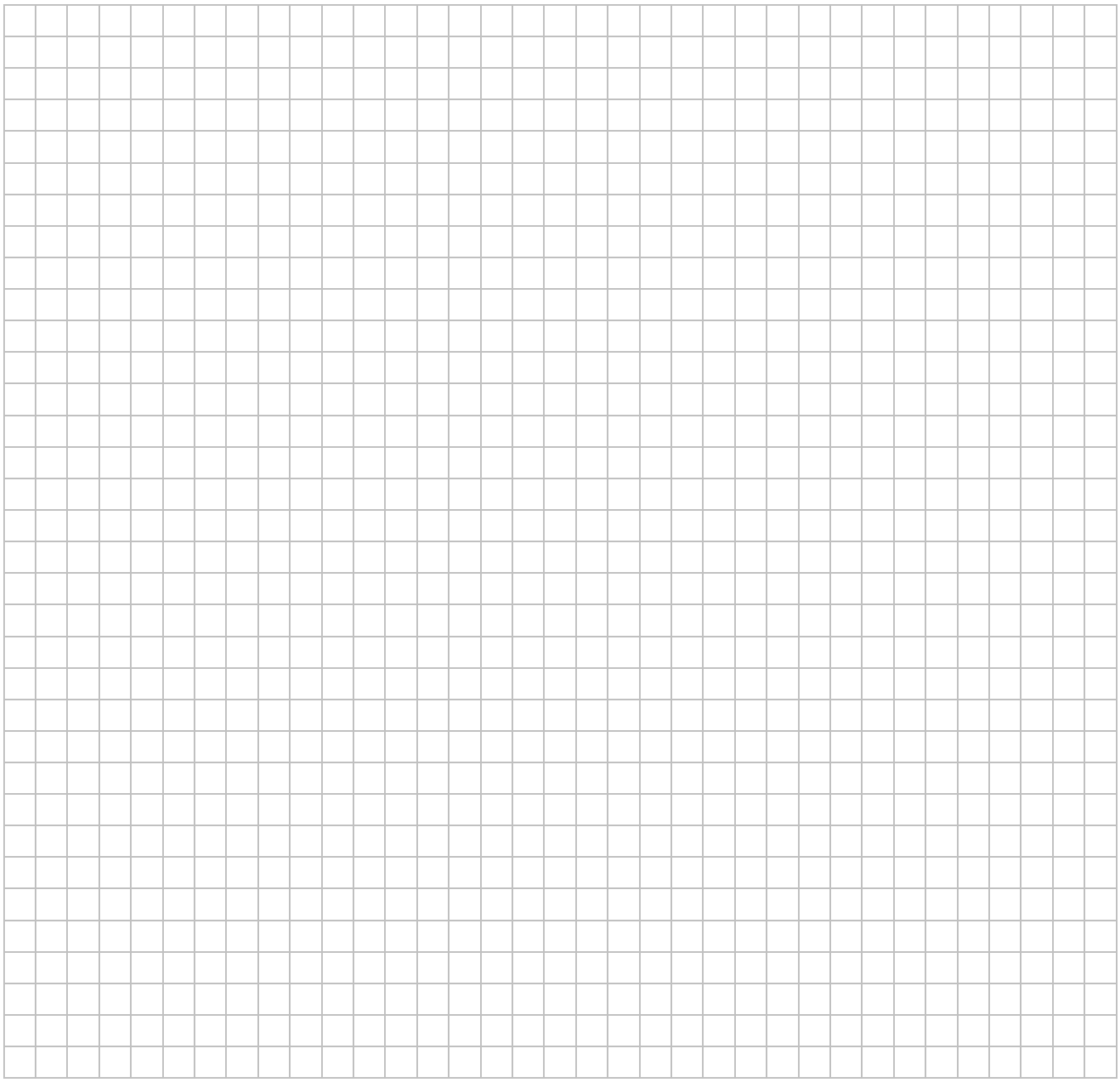
First Floor:



12. OUTDOOR PLOT

Draw a sketch of the area surrounding the building being sampled. If applicable, provide information on spill locations, potential air contamination sources (industries, gas stations, repair shops, landfills, etc.), outdoor air sampling location(s) and PID meter readings.

Also indicate compass direction, wind direction and speed during sampling, the locations of the well and septic system, if applicable, and a qualifying statement to help locate the site on a topographic map.



13. PRODUCT INVENTORY FORM

Make & Model of field instrument used: _____

List specific products found in the residence that have the potential to affect indoor air quality.

Location	Product Description	Size (units)	Condition*	Chemical Ingredients	Field Instrument Reading (units)	Photo ** Y / N

* Describe the condition of the product containers as **Unopened (UO), Used (U),** or **Deteriorated (D)**
** Photographs of the **front and back** of product containers can replace the handwritten list of chemical ingredients. However, the photographs must be of good quality and ingredient labels must be legible.

ATTACHMENT E

Indoor Air/Ambient Air Sample Collection Log

ARCADIS
Infrastructure, environment, facilities

Indoor/Ambient Air Sample Collection Log

Sample ID:

Client:		**Date/Day:**	
Project:		**Sample Intake Height:**	
Location:		**Subcontractor:**	
Project #:		**Miscellaneous Equipment:**	
Samplers:			
Coordinates:		**Time On/Off:**	
Outdoor/Indoor:		**Subcontractor:**	

Instrument Readings:

Time	Canister Pressure (inches Hg)	Temperature (°F)	Relative Humidity (%)	Air Speed (ft/min)	Barometric Pressure	PID (ppb) / (ppm)

SUMMA Canister Information

Size (circle one): **1 L** **6 L**

Canister ID: _____

Flow Controller ID: _____

General Observations/Notes:

Photos:
Initial Digital reading pre-sample:
Final Digital reading following sample collection:

ATTACHMENT F

Sub-Slab Soil-Gas Sample Collection Log

Sub-Slab Soil-Gas Sample Collection Log

Sample ID:

Client:		**Date/Day:**	
Project:		**Weather:**	
Location:		**Temperature:**	
Project #:		**Wind Speed/Direction:**	(ft/min) / (mph)
Samplers:		**Subcontractor:**	
Logged By:		**Equipment:**	
Background PID Ambient Air Reading:		**Moisture Content of Sampling Zone (circle one):**	NA Dry / Moist
Sampling Depth:			
Probe (circle one):	Permanent / Temporary	**Approximate Volume of Sampling Train::**	
Time of Collection:	Start: Finish:	**Approximate Purge Volume:**	

Nearby Groundwater Monitoring Wells/Water Levels:

Well ID	Depth to Groundwater (feet)

SUMMA Canister Information

Size (circle one): **1 L** **6 L**

Canister ID: _____

Flow Controller ID: _____

Tracer Gas Information (if applicable)

Tracer Gas: Helium / NA

Canister Pressure (inches Hg):		
Reported By Laboratory	**Measured Prior to Sample Collection**	**Measured Following Sample Collection**
	Digital: / Analog:	Digital: / Analog:

Tracer Gas Concentration (if applicable):				
Measured from Soil Vapor Tubing		**Measured in 'Concentrated' Area**		
Post Purge	**Post Sample**	**Prior to Purging**	**Post Purging**	**Post Sampling**

General Observations/Notes:

Photo ID:
Final Reading:
Differential Pressure:

Approximating One-Well Volume (for purging temporary points):
Each foot of ¼-inch tubing will have a volume of approximately 10 mL.

ATTACHMENT G

Tracer Gas Procedures

ARCADIS
Infrastructure, environment, facilities

Imagine the result

Administering Helium Tracer Gas for Leak Checks of Soil Gas or Sub-slab Sampling Points

SOP #416199

Rev. #: 3

Rev Date: July 7, 2010

Approval Signatures

Prepared by: _____ Date: 07/07/2010
Mitch Wacksman and Andrew Gutherz

Approved by: _____ Date: 07/07/2010
Christopher Lutes and Nadine Weinberg

I. Scope and Application

When collecting subsurface vapor samples as part of a vapor intrusion evaluation, a tracer gas serves as a quality assurance/quality control method to verify the integrity of the vapor port seal and the numerous connections comprising the sample train. Without the use of a tracer, verification that a soil vapor sample has not been diluted by ambient or indoor air is difficult.

This standard operating procedure (SOP) focuses on using helium as a tracer gas. However, depending on the nature of the contaminants of concern, other compounds can be used as a tracer including sulfur hexafluoride (SF6), butane and propane (or other gases). In all cases, the protocol for using a tracer gas is consistent and includes the following basic steps: (1) enrich the atmosphere in the immediate vicinity of the sample port where ambient air could enter the sampling train during sampling with the tracer gas; and (2) measure a vapor sample from the sample tubing for the presence of elevated concentrations (> 10%) of the tracer. A plastic pail, bucket, garbage can or even a plastic bag can serve to keep the tracer gas in contact with the port during the testing.

There are two basic approaches to testing for the tracer gas:

1. Include the tracer gas in the list of target analytes reported by the laboratory; and/or

2. Use a portable monitoring device to analyze a sample of soil vapor for the tracer prior to sampling for the compounds of concern. (Note that tracer gas samples can be collected via syringe, Tedlar bag, etc. They need not be collected in SUMMA® canisters or minicans.)

This SOP focuses on monitoring helium using a portable sampling device, although helium can also be analyzed by the laboratory along with other volatile organic compounds (VOCs). Real-time tracer sampling is generally preferred as the results can be used to confirm the integrity of the port seals prior to formal sample collection.

During the initial stages of a subsurface vapor sampling program, tracer gas samples should be collected at each of the sampling points. If the results of the initial samples indicate that the port seals are adequate, the Project Manager can consider reducing the number of locations at which tracer gas samples are used in future monitoring rounds. At a minimum, at least 5% of the subsequent samples should be supported with tracer gas analyses. When using permanent soil vapor points as part of a long-term monitoring program, the port should be tested prior to the first sampling event. Tracer gas testing of subsequent sampling events may often be reduced or eliminated unless conditions have changed at the site. Soil gas port integrity should certainly be

rechecked with Tracer gas if land clearing/grading activities, freeze thaw cycles, or soil dessication may have occurred. Points should also be rechecked if more than 2 years have elapsed since the last check of that port.

II. Personnel Qualifications

ARCADIS field sampling personnel will have current health and safety training, including 40-hour HAZWOPER training, site supervisor training, site-specific training, first-aid, and cardiopulmonary resuscitation (CPR), as needed. ARCADIS field sampling personnel will be well versed in the relevant SOPs and possess the required skills and experience necessary to successfully complete the desired field work. ARCADIS personnel responsible for leading the tracer gas testing must have previous experience conducting similar tests.

III. Health and Safety Considerations

Field sampling equipment must be carefully handled to minimize the potential for injury and the spread of hazardous substances. All sampling personnel should review the appropriate health and safety plan (HASP) and job safety analysis (JSA) prior to beginning work to be aware of all potential hazards associated with the job site and the specific task. Field staff should review the attachment on safely handling compressed gas cylinders prior to commencing field work.

IV. Equipment List

The equipment required to conduct a helium tracer gas test is presented below:

- Appropriate PPE for site (as required by the Health and Safety Plan)
- Helium (laboratory grade)
- Regulator for helium tank
- Shroud (plastic bucket, garbage can, etc)
    - The size of the shroud should be sufficient to fit over the sample port. It is worth noting that using the smallest shroud possible will miminze the volume of helium needed; this may be important when projects require a large number of helium tracer tests.
    - The shroud will need to have three small holes in it. These holes will include one on the top (to accommodate the sample tubing), and two

on the side (one for the helium detector probe, and one for the helium line).

- The shroud should ideally enclose the sample port and as much as possible of the sampling train.

- Helium detector capable of measuring from 1 - 100% (Dielectric MGD-2002, Mark Model 9522, or equivalent)
- Tedlar bags
- Seal material for shroud (rubber gasket, modeling clay, bentonite, etc) to keep helium levels in shroud high in windy conditions. Although the sealing material is not in direct contact with the sample if leakage does not occur, sealing materials with high levels of VOC emissions should be avoided, since they could contaminate a sample if a leak occurs.
- Sample logs
- Field notebook

V. Cautions

Helium is an asphyxiant! Be cautious with its use indoors! Never release large volumes of helium within a closed room!

Compressed gas cylinders should be handled with caution; see attachment on the use and storage of compressed gasses before beginning field work.

Care should be taken not to pressurize the shroud while introducing helium. If the shroud is completely air tight and the helium is introduced quickly, the shroud can be over-pressurized and helium can be pushed into the ground. Provide a relief valve or small gap where the helium can escape.

Because minor leakage around the port seal should not materially affect the usability of the soil vapor sampling results, the mere presence of the tracer gas in the sample should not be a cause for alarm. Consequently, portable field monitoring devices with detection limits in the low ppm range are more than adequate for screening samples for the tracer. If high concentrations (> 10%) of tracer gas are observed in a sample, the port seal should be enhanced and fittings within the sampling train should be should be checked and/or tightened to reduce the infiltration of ambient air and the tracer test readministered. If the problem cannot be rectified, a new sample point should be installed or an alternate sampling train used.

VI. Procedure

The procedure used to conduct the helium tracer test should be specific to the shroud being used and the methods of vapor point installation. The helium tracer test can be conducted when using temporary or permanent sampling points and inside or outside a facility. When using the tracer gas within indoor areas you must provide adequate ventilation as helium is an asphyxiant.

1. Attach Teflon or nylon (Nylaflow) sample tubing to the sample point. This can be accomplished utilizing a number of different methods depending on the sample install (i.e., most typically Swage-Lok brand compression fittings, but some quick release fittings could also be used etc.).

2. Place the shroud over the sample point and tubing.

3. Pull the tubing through hole in top of shroud. Seal opening at top of shroud with modeling clay.

4. Place weight on top of shroud to help maintain a good seal with the ground.

5. Insert helium tubing and helium detector probe into side of shroud. Seal both with modeling clay to prevent leaks.

6. Fill shroud with helium. Fill shroud slowly, allowing atmospheric air to escape either by leaving a gap where the shroud meets the ground surface or by providing a release value on the side of the shroud.

7. Use the helium detector to monitor helium concentration within the shroud from the lowest hole drilled in the shroud (bottom of the shroud nearest where the sample tubing intersects the ground). Helium should be added until the environment inside the shroud has > 60% helium.

8. Purge the sample point through the sample tubing into a Tedlar bag using a hand held sampling pump. The purge rate should at least match the sample collection rate but not exceed 100 ml/min. Test the air in the Tedlar bag for helium using portable helium detector. If the point is free of leaks there should be very low helium in the purge air from the soil. The natural concentration of helium in the atmosphere is 0.00052% by volume and there are few if any natural sources of helium to soil gas.

9. If > 10% helium is noted in purge air, add more clay or other material to the seal the sample port and repeat the testing procedure. If the seal cannot be fixed, re-install sample point.

10. Monitor and record helium level in shroud before, during and after tracer test.

11. Monitor and record helium level in purge exhaust.

12. At successful completion of tracer test and sample point purging, the soil vapor sample can be collected (if the helium shroud must be removed prior to sample collection be mindful not disturb the sample tubing and any established seals).

VII. Data Recording and Management

Measurements will be recorded on the sample logs at the time of measurement with notations of the project name, sample date, sample start and finish time, sample location, and the helium concentrations in both the shroud and the purge air before, during, and after tracer testing. Any problems encountered should also be recorded in the field notes.

ATTACHMENT: Compressed Gases—Use and Storage

In general, a compressed gas is any material contained under pressure that is dissolved or liquefied by compression or refrigeration. Compressed gas cylinders should be handled as high-energy sources and therefore as potential explosives and projectiles. Prudent safety practices should be followed when handling compressed gases since they expose workers to both chemical and physical hazards.

Handling

- Safety glasses with side shields (or safety goggles) and other appropriate personal protective equipment should be worn when working with compressed gases.
- Cylinders should be marked with a label that clearly identifies the contents.
- All cylinders should be checked for damage prior to use. Do not repair damaged cylinders or valves. Damaged or defective cylinders, valves, etc., should be taken out of use immediately and returned to the manufacturer/distributor for repair.
- All gas cylinders (full or empty) should be rigidly secured to a substantial structure at 2/3 height. Only two cylinders per restraint are allowed in the laboratory and only soldered link chains or belts with buckles are acceptable. Cylinder stands are also acceptable but not preferred.
- Handcarts shall be used when moving gas cylinders. Cylinders must be chained to the carts.
- All cylinders must be fitted with safety valve covers before they are moved.
- Only three-wheeled or four-wheeled carts should be used to move cylinders.
- A pressure-regulating device shall be used at all times to control the flow of gas from the cylinder.
- The main cylinder valve shall be the only means by which gas flow is to be shut off. The correct position for the main valve is all the way on or all the way off.
- Cylinder valves should never be lubricated, modified, forced, or tampered with.
- After connecting a cylinder, check for leaks at connections. Periodically check for leaks while the cylinder is in use.
- Regulators and valves should be tightened firmly with the proper size wrench. Do not use adjustable wrenches or pliers because they may damage the nuts.
- Cylinders should not be placed near heat or where they can become part of an electrical circuit.
- Cylinders should not be exposed to temperatures above 50 °C (122 °F). Some rupture devices on cylinders will release at about 65 °C (149 °F). Some small cylinders, such as lecture bottles, are not fitted with rupture devices and may explode if exposed to high temperatures.

- Rapid release of a compressed gas should be avoided because it will cause an unsecured gas hose to whip dangerously and also may build up enough static charge to ignite a flammable gas.
- Appropriate regulators should be used on each gas cylinder. Threads and the configuration of valve outlets are different for each family of gases to avoid improper use. Adaptors and homemade modifications are prohibited.
- Cylinders should never be bled completely empty. Leave a slight pressure to keep contaminants out.

Storage

- When not in use, cylinders should be stored with their main valve closed and the valve safety cap in place.
- Cylinders must be stored upright and not on their side. All cylinders should be secured.
- Cylinders awaiting use should be stored according to their hazard classes.
- Cylinders should not be located where objects may strike or fall on them.
- Cylinders should not be stored in damp areas or near salt, corrosive chemicals, chemical vapors, heat, or direct sunlight. Cylinders stored outside should be protected from the weather.

Special Precautions

Flammable Gases

- No more than two cylinders should be manifolded together; however several instruments or outlets are permitted for a single cylinder.
- Valves on flammable gas cylinders should be shut off when the laboratory is unattended and no experimental process is in progress.
- Flames involving a highly flammable gas should not be extinguished until the source of the gas has been safely shut off; otherwise it can reignite causing an explosion.

Acetylene Gas Cylinders

- Acetylene cylinders must always be stored upright. They contain acetone, which can discharge instead of or along with acetylene. Do not use an acetylene cylinder that has been stored or handled in a nonupright position until it has remained in an upright position for at least 30 minutes.
- A flame arrestor must protect the outlet line of an acetylene cylinder.
- Compatible tubing should be used to transport gaseous acetylene. Some tubing like copper forms explosive acetylides.

Lecture Bottles

- All lecture bottles should be marked with a label that clearly identifies the contents.
- Lecture bottles should be stored according to their hazard classes.
- Lecture bottles that contain toxic gases should be stored in a ventilated cabinet.
- Lecture bottles should be stored in a secure place to eliminate them from rolling or falling.
- Lecture bottles should not be stored near corrosives, heat, direct sunlight, or in damp areas.
- To avoid costly disposal fees, lecture bottles should only be purchased from suppliers that will accept returned bottles (full or empty). Contact the supplier before purchasing lecture bottles to ensure that they have a return policy.
- Lecture bottles should be dated upon initial use. It is advised that bottles be sent back to the supplier after one year to avoid accumulation of old bottles.

APPENDIX G

Quality Assurance Project Plan

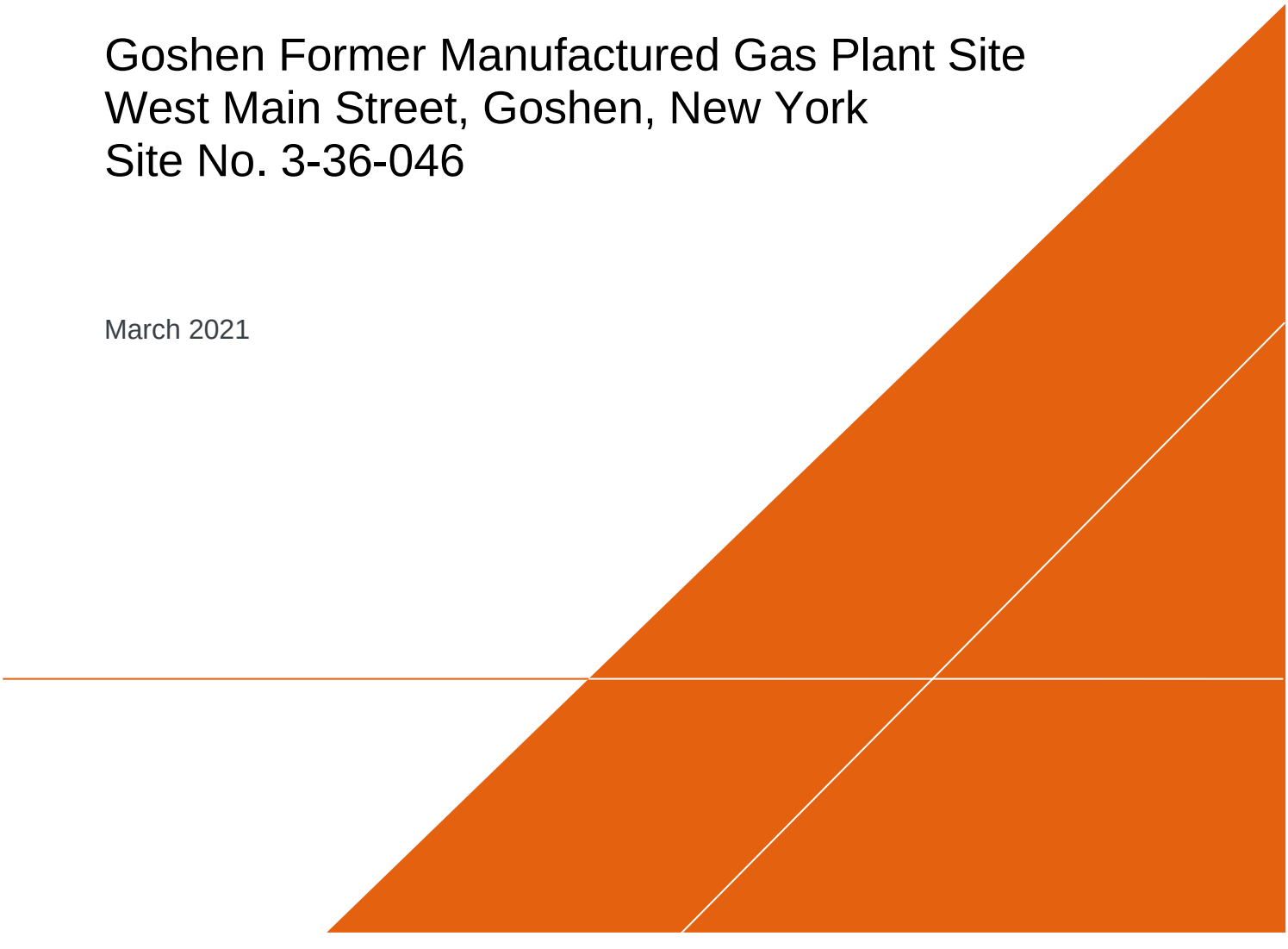
ARCADIS Design & Consultancy for natural and built assets

NYSEG

QUALITY ASSURANCE PROJECT PLAN

Goshen Former Manufactured Gas Plant Site
West Main Street, Goshen, New York
Site No. 3-36-046

March 2021



QUALITY ASSURANCE PROJECT PLAN

Goshen Former Manufactured Gas Plant Site

Prepared for:

NYSEG

Prepared by:

Arcadis of New York, Inc.

110 West Fayette Street

Suite 33

Syracuse

New York 13202

Tel 315 446 9120

Fax 315 449 0017

Our Ref.:

B0013080

Date:

March 2021

CONTENTS

TABLES

ATTACHMENT

ACRONYMS AND ABBREVIATIONS

CFR	Code of Federal Regulations
CLP	Contract Laboratory Program
COC	chain of custody
DQO	data quality objective
EDD	electronic data deliverable
EWP	Excavation Work Plan
FSP	Field Sampling Plan
GC/MS	gas chromatography/mass spectrometry
GIS	geographic information system
GPS	global positioning system
IDW	investigation-derived waste
LCS	laboratory control sample
MB	method blank
MDL	method detection limit
MGP	manufactured gas plant
MS	matrix spike
MSD	matrix spike duplicate
NEIC	National Enforcement Investigations Center
NYSDEC	New York State Department of Environmental Conservation
OSHA	Occupational Safety and Health Administration
OSWER	Office of Solid Waste and Emergency Response
PPE	personal protective equipment
QA	quality assurance
QAC	quality assurance coordinator
QAM	quality assurance manager
QA/QC	quality assurance/quality control
QAPP	Quality Assurance Project Plan
QC	quality control
RL	reporting limit

RPD	relative percent difference
SDG	sample delivery group
SMP	Site Management Plan
SOP	standard operating procedure
SVOC	semi-volatile organic compound
USEPA	United States Environmental Protection Agency
VOC	volatile organic compound

1 INTRODUCTION

This Quality Assurance Project Plan (QAPP) was prepared to support the Site Management Plan (SMP) and provides guidance for data collection associated with the Goshen Former Manufactured Gas Plant (MGP) Site located in Goshen, New York ("the Site"). Site background information, including a summary of the remedial investigation results and the completed remedial actions, are included in the SMP.

1.1 Purpose

This QAPP, along with the Field Sampling Plan (FSP) are intended to guide all sampling, measurement, and other field and laboratory measurement activities conducted as part of the SMP and the Excavation Work Plan (EWP). This QAPP 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), semi-volatile organic compounds (SVOCs), and cyanide.

This QAPP 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 QAPP, those activities will be incorporated by reference to the scope of the QAPP herein.

This QAPP was prepared in a manner consistent with the following documents, where applicable:

- United States Environmental Protection Agency (USEPA) guidance document entitled *EPA Requirements for Quality Assurance Project Plans*, EPA-QA/R-5 (USEPA, 2001) http://epa.gov/quality/qs-docs/r5-final.pdf.
- USEPA *Guidance for Quality Assurance Project Plans,* EPA-QA/G-5 (USEPA, 2002b) http://epa.gov/quality/qs-docs/g5-final.pdf.
- The National Enforcement Investigations Center (NEIC) *Policies and Procedures Manual* (USEPA 1991).

1.2 Report Organization

Information contained in this QAPP has been organized as presented in the following table.

Table 1.1 – QAPP Organization

Section	Content
Project Management	
1	Introduction
2	Project Organization
3	Quality Objectives and Criteria for Measurement Data
4	Special Training Requirements/Certification
5	Documentation and Records

2 PROJECT ORGANIZATION

The activities to be completed under the SMP may require integration of personnel from the organizations identified below, collectively referred to as the "project team." A description of the responsibilities of each member of the project team is presented below.

2.1 Overall Project Management

The QAPP 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 New York State Department of Environmental Conservation (NYSDEC). A list of key project management personnel is provided in Table 1.1 of the SMP.

2.2 Team Member Responsibilities

The responsibilities and duties of the various team members are summarized below by organization.

2.2.1 NYSEG

Project Manager

Responsibilities and duties include:

- Provide overall direction of site actions.
- 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 Environmental Consultant

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 Project Manager.

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 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 reports.

2.2.3 Analytical Laboratories

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 QAPP.

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.

2.2.4 Regulatory Agencies

Project Manager

Responsibilities and duties include:

- Provide review and approval of the QAPP, work plans, supporting documents, and future deliverables.
- Monitor progress of site activities.

3 QUALITY OBJECTIVES AND CRITERIA FOR MEASUREMENT DATA

The DQO process, as described in Guidance for QA Project Plans (USEPA, 2002b), is intended to provide a "logical framework" for planning field investigations. The following section addresses, in turn, each of the seven sequential steps in the USEPA's QAPP DQO process.

Step 1: Problem Statement

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: Goal Identification

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: Identifying Decision 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 QAPP, and consistency among data sets and with historical data, as appropriate.

Step 4: Defining the Study Boundaries

The approximately ¾-acre Site is located on West Main Street in the Village of Goshen, in Orange County, New York. The Site is owned by NYSEG and presently serves as a natural gas service center. The site is bounded by Rio Grande Creek at the northwest corner, Village of Goshen property to the north and northeast, private commercial properties to the east and west, and West Main Street to the south. The boundaries of the NYSEG-owned property are more fully described in the Environmental Easement included as Appendix A of the SMP.

Step 5: Developing a 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 will be noted. The media-specific sampling plans have been devised so that the loss of any single data point will not hinder description of the distribution of constituents or the development of a remediation plan. Given this, a reasonable decision rule would be that 90 percent of the data points not be rejected or deemed unusable.

The usable data will be evaluated versus the applicable NYSDEC standards and guidance values. The required reporting limits are documented in tables outlined in Tables 1 through 3 with the intent that the lowest achievable reporting and method detection limits will be reported by the laboratory and where possible at or below the screening criteria. Applicable actions would be evaluated, if needed, based on the results of the exposure evaluation.

Step 6: Limits on Decision Errors

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 QAPP 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. The representative nature of the sampling design has been facilitated by discussions among professionals familiar with the site and the appropriate government agencies.

Step 7: Design Optimization

The overall quality assurance (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 the site data consistent with SMP requirements. Specific procedures for sampling, COC, laboratory instrument calibration, laboratory analysis, data reporting, internal QC, audits, preventive maintenance of field equipment, and corrective action are described in other sections of this QAPP.

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 FSP included as Appendix F 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 rapid preliminary assessment of site characteristics or conditions. These data collection activities involve rapid, non-rigorous methods of analysis and QA. Screening data quality objectives 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 of 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 will be collected during the assessment. Groundwater samples may be collected for laboratory analysis or for observational review to refine and optimize the sampling and assessment approach. For the purposes of the assessment, three levels of data reporting have been defined. They are as follows:

Level 1 – Minimal Reporting. Minimal or "results only" reporting is used for analyses that, due either to their nature (i.e., field monitoring) or the intended data use (i.e., preliminary screening), do not generate or require extensive supporting documentation.

Level 2 – Modified Reporting. Modified reporting is used for analyses that are performed following standard USEPA-approved methods and QA/QC protocols. Based on the intended data use, modified reporting may require some supporting documentation, but not full Contract Laboratory Program- (CLP-) type reporting.

Level 2 Laboratory data report required elements:

- Chain-of custody
- Case Narrative
- Final parameter concentration for all samples
- Preparation or extraction and analysis dates/times
- Method Blanks (MBs)
- Surrogate recoveries
- Matrix Spike (MS) and Matrix Spike Duplicate (MSD) recoveries and Relative Percentage Difference (RPD).
- Laboratory Duplicate RPD
- Laboratory Control Sample recoveries.

Level 4 – Full Reporting: Full "CLP-type" reporting is used for those analyses that, based on the intended data use, require full documentation. Level 4 Laboratory data report includes the elements for Level 2 listed above and the following:

- Calibrations (Initial & Continuing)
- Instrument blanks
- Gas Chromatograph/Mass Spectrometer Instrument Tuning
- Internal standard areas
- Serial dilution (%D)
- Primary/Secondary Column (%D)
- Raw data output for all field samples and associated QA/QC samples

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™ Lab 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. The Level 2 data packages from the laboratory will be due within 15 working days from date of receipt.

3.2 Field Investigations

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, FSP, and this appendix.

3.2.1 Groundwater Monitoring Wells

Monitoring well samples will be analyzed for the following:

- BTEX using USEPA SW-846 Method 8260
- PAHs using USEPA SW-846 Method 8270 SIM
- Cyanide using USEPA SW-846 Method 9012

Data Uses

The data generated as part of the field sampling will be used as specified in any future work plan. The EWP provides guidance for anticipated data usages for the future of the site.

Data Quantity

The field activities will involve collecting environmental samples and associated quality control samples. The anticipated number of samples to be collected, the number of QC samples, and the constituents to be analyzed are presented in Table 2 of this QAPP.

Sampling and Analytical Methods

The sampling procedures are provided in the FSP. The laboratory analytical methods for the chemical constituents are listed above. Level 4 will be used for data reporting (as defined previously).

Measurement Performance Criteria

Table 3 presents precision and accuracy QC limits for chemical constituents used during data review to assess analytical performance. Data representativeness is addressed by the sample quantities and locations identified in the sampling plans. Data comparability will be achieved by using standard USEPA-approved methods. Data completeness will be assessed at the conclusion of the analytical activities.

4 SPECIAL TRAINING REQUIREMENTS/ CERTIFICATION

In compliance with the Occupational Safety and Health Administration's (OSHA) final rule, "Hazardous Waste: Operations and Emergency Response," 29 Code of Federal Regulations (CFR) 1910.120(e)", all personnel performing sampling activities at the site, except as noted below, will have completed the requirements for OSHA 40-Hour Hazardous Waste Operations and Emergency Response initial training and current 8-hour refresher training. Persons in field supervisory positions will have also completed the additional OSHA 8-Hour Supervisory Training.

5 DOCUMENTATION AND RECORDS

Samples will be collected as described in the FSP. 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 begin with a two- or three-letter prefix indicating the sample type and two digits indicating the sequential sample number collected from the location.

The samples types (if applicable) will be designated using the following codes:

- Groundwater Sample – “GW” or “MW”
- Trip Blank Sample – “TB”
- Field Duplicate Sample – “DUP”
- Equipment Blank Sample – “EB”
- Matrix Spike and Matrix Spike Duplicate – “MS” and MSD”

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 July 30, 2015 will be designated MW-10(150730).

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 July 30, 2015 during groundwater samples collection would be designated GW-FB1-150730. The sampling point associations for field duplicates must 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 consists of 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).
- Sample COC – COC forms will provide the record of responsibility for sample collection, transport, and 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 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.

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 Files

Analytical laboratory documentation requirements are presented in the following subsections.

5.3.1 Laboratory Project Files

The laboratory will establish a file for pertinent data. The file will include correspondence, faxed information, phone logs, and COC forms. The laboratory will retain project files and data packages for a period 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 quality control checks. As such, 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 this QAPP. All entries and calculations will be verified by the laboratory group leader. If all entries on the pages are correct, 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 Computer and Hard Copy 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

Data will be reported both in the field and by the analytical laboratory, as described below.

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 by the appropriate Task Manager for adherence to the work plans 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.

If applicable, field data forms and calculations will be processed and included in appendices to the appropriate reports (when generated). The original field logs, documents, and data reductions will be kept in the project file.

5.4.2 Laboratory Data Reporting

Analytical results will be provided by the laboratory in a digital format. The data packages will be examined to insure that the correct analyses were performed for each sample submitted and that all of the analyses requested on the chain of custody form were performed. If discrepancies are noted, the Quality Assurance Coordinator (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 QAPP. 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 the 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™ 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 laboratory is responsible for preparing Level 4 data packages (as defined previously) for all 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.

5.5 Project File

Project documentation will be placed in project files according to the Environmental Consultant's Arcadis' protocol for document management. Project files typically consist of the following components:

1. Agreements/Proposals (filed chronologically)
2. Change Orders/Purchase Orders (filed chronologically)
3. Invoices (filed chronologically)
4. Project Management (filed by topic)
5. Correspondence (filed chronologically)
6. Notes and Data (filed by topic)

7. Public Relations Information (filed by topic)
8. Regulatory Documents (filed chronologically)
9. Marketing Documents (filed chronologically)
10. Final Reports/Presentations (filed chronologically)
11. Draft Reports/Presentations (filed chronologically)
12. Documents Prepared by Others (filed chronologically)

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 will be evaluated during a future sampling plan. Field investigation activities will be conducted according to the appropriate FSP and applicable NYSDEC regulations.

7 SAMPLING METHOD REQUIREMENTS

Environmental samples will be collected as described in the FSP. The approximate sample quantities and field QC samples are shown in Table 2. The FSP also 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

Sampling handling requirements for various project personnel are presented in the following subsections.

8.1 Sample Containers and Preservation

Appropriate sample containers, preservation methods, and laboratory holding times for the samples are shown in Table 4.

The analytical laboratory will supply appropriate sample containers and preservatives, as necessary. The bottles will be purchased pre-cleaned to USEPA Office of Solid Waste and Emergency Response (OSWER) Directive 9240.05A requirements. The field personnel will be responsible for properly labeling containers and preserving samples (as appropriate). The field personnel will be responsible for properly labeling containers. Sample labeling procedures are discussed in Section 8.2.2.

8.2 Field Custody Procedures

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 the data collecting activities that are 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. 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 into the logbook will contain a variety of information. At the beginning of each entry, the date, start time, weather conditions, names of all sampling team members present, and signature of the person making the entry will be provided. The names of visitors to the site and field sampling or investigation team personnel, as well as the purpose of their visit, will also be recorded in the field logbook.

Measurements made and samples collected will be recorded. 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. Whenever a sample is collected or a measurement is made, a detailed description of the location of the station will be recorded. The number of the photographs taken, if any, will also be noted. All equipment used to make measurements will be identified, along with the date of calibration.

Samples will be collected following the sampling procedures documented in the FSP. The equipment used to collect samples will be noted, along with the time of sampling, sample description, depth at which the sample was collected, volume, and number of containers. Sample identification numbers will be assigned prior to sample collection. Field duplicate samples, which will receive an entirely separate sample identification number, will be noted under sample description

8.2.2 Sample Labelling

The following information is required on each sample label:

- Project name
- Date collected
- Time collected
- Location
- Sampler
- Analysis to be performed
- Preservative
- Sample identification number

8.2.3 Field COC Forms

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 unique sample 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 will be used) for field documentation. 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 a mobile or permanent laboratory, 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.

8.3 Management of Investigation-Derived Materials and Wastes

Investigation-derived wastes (IDW) include sediments, groundwater, sampling supplies, and personal protective equipment (PPE). These wastes are generated during drilling, sampling, and other sampling activities. The intent of managing IDW is to insure 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 (USEPA, 1992). Disposable equipment (including personal protective equipment) will be containerized, appropriately labeled during the sampling events, and disposed of accordingly. All purged groundwater and water generated during equipment decontamination will be containerized, temporarily staged onsite in 55-gallon drums or portable tanks, and disposed of appropriately based on analytical results. Equipment will be decontaminated, as appropriate.

8.4 Packing, Handling, and Shipping Requirements

Sample packaging and shipment procedures are designed so that the samples will arrive at the laboratory, with the COC, intact.

Samples will be packaged for shipment as outlined below:

- 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.
- Wrap the sample container cap with clear packing tape to prevent the label from becoming loose.
- 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.
- 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. 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.
- Place a signed custody seal over the sample cooler lid.

Samples will be packaged by the field personnel and transported as low-concentration environmental samples. The samples will be hand delivered or delivered by an express carrier within 48 hours of the time of collection. 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.

Sample custody seals and packing materials for filled sample containers 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.

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. The laboratory will use COC guidelines described in the USEPA guidance documents. 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

Immediately upon sample receipt, the laboratory sample custodian will verify the integrity of the cooler seal, open the cooler, and compare the contents against the field COC. If a sample container is missing, a sample container is received broken, the sample is in an inappropriate container, or the sample has not been preserved by appropriate means, the Project Manager and/or QAC will be notified. The laboratory sample custodian will be responsible for logging the samples in, assigning a unique laboratory identification number to each sample, labeling the sample bottle with the laboratory identification number, and moving the sample to an appropriate storage location to await analysis. 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. Relevant custody documentation will be placed in the project file.

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 routing sheet will be forwarded to the analyst, and the sample will be moved into an

appropriate storage location to await analysis. The document control officer will file COC forms in the project file.

Samples will be organized into sample delivery groups (SDGs) by the laboratory. An SDG may contain up to 20 field samples (field duplicates and trip 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 seven 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 MB and one matrix spike/matrix spike duplicate (MS/MSD) (or MS/laboratory duplicate) pair; each SDG will, therefore, be self-contained for all of the required quality control 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

Samples will be maintained by the laboratory for at least 1 month after the final report is delivered. The laboratory will be responsible for the eventual and appropriate disposal of the samples. The analytical laboratory will inform the environmental consultant before any samples are disposed. Unused portions of the samples, sample extracts, and associated wastes will be disposed of by the laboratory in accordance with applicable rules and regulations, as specified in the standard operating procedure (SOP) for waste disposal.

9 ANALYTICAL METHOD REQUIREMENTS

Analytical method requirements are presented in the following subsections.

9.1 Field Analytical Procedures

Specific field measurement protocols are provided in the FSP.

9.2 Laboratory Parameters and Methods

Laboratory analytical requirements presented in the subsections below include a general summary of requirements, specifics related to each sample medium that may be analyzed, and details of the methods to be used for this project. SW-846 methods, USEPA Methods for the Chemical Analysis of Water and Wastes and Standard Methods for Water and Wastewater with NYSDEC, ASP, 2005 Revision, QA/QC and reporting deliverables requirements will be used for analytes.

9.2.1 Groundwater

Analyses in this category will relate to groundwater samples. Analyses will be performed following the methods listed in Table 1 and quality control frequencies listed in Table 2. Analysis will be performed following the quality control limits listed in Table 3. Results will be reported in units presented in Table 1.

The primary sources to describe the analytical methods to be used during the investigation are provided in USEPA SW-846 Test Methods for Evaluating Solid Waste, Third Edition, and USEPA Methods for Chemical Analysis of Water and Waste, QA/QC, and reporting deliverables requirements.

10 QUALITY CONTROL REQUIREMENTS

The following subsections present a summary of the project quality control requirements.

10.1 Selection of Measurement Parameters, Laboratory Methods, and Field Testing Methods

Laboratory analyses of the matrices will be performed as described in Subsection 9.2 of this QAPP. The analytical parameters selected for each media are described in the QAPP Tables 1 through 3 and the sampling plans. Table 2 lists the required field quality control sample frequencies. Table 4 presents the preservation and hold time for the analytical methods.

All applicable field parameter measurement procedures are described in the sampling plans.

10.2 Quality Assurance Objectives and Criteria

The overall quality assurance objective for this assessment is to develop and implement procedures for sampling, COC, laboratory analysis, instrument calibration, data reduction and reporting, internal quality control, 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 QAPP.

Quality assurance objectives 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 QAPP as referenced below.

10.2.1 Representativeness

Representativeness is the degree to which sample data accurately and precisely represent site conditions, and is dependent on sampling and analytical variability and the variability (or homogeneity) of the site itself. The site assessment has been designed to assess the presence of the chemical constituents and supplemental parameters at the time of sampling and throughout the study area. The sampling plans and this QAPP present 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.

10.2.2 Comparability

Comparability is the degree of confidence with which one data set can be compared to another. Comparability between phases of the current assessment, and to the extent possible, between new and existing data will be maintained through consistent use of the sampling and analytical methodologies set forth in the QAPP and the sampling plans through stringent application of established QA/QC procedures and through utilization of appropriately trained personnel.

10.2.3 Completeness

Completeness is defined as a measure of the amount of valid data obtained from an event and/or investigation compared to the total amount that was obtained. This will be determined upon final assessment of the analytical results.

10.2.4 Precision

Precision is a measure of the reproducibility of sample results. The goal is to maintain a level of analytical precision consistent with the objectives of the site assessment. To maximize precision, sampling and analytical procedures will be strictly followed; work will adhere to established protocols presented in the QAPP and sampling plans. Checks for analytical precision will include the analysis of matrix spike/matrix spike duplicates pairs, laboratory duplicates, and field duplicates. Field measurement precision will be monitored by obtaining duplicate field measurements.

10.2.5 Accuracy

Accuracy is a measure of how close a measured result is to the true value. Recovery of reference standards, matrix spikes, laboratory control standards, and surrogate standards will be used to assess the accuracy of the analytical data.

10.2.6 Sensitivity

Sensitivity is defined as the ability of the method or instrument to detect the contaminant of concern and other target compounds at the level of interest. Method detection limit (MDL) is defined as the minimum concentration of a substance that can be identified, measured, and reported with a 99 percent 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 CFR Part 136B. The reporting limit (RL) is greater than or equal to the lowest standard used to establish the calibration curve. The RLs for this investigation are generally at least 3 times greater than the MDL. Results greater than the MDL and less than the RL will be qualified estimated (J) by the laboratory.

10.3 Field Quality Control Checks

Field quality control requirements are presented in the following subsections.

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

Certified, clean sample containers in accordance with Exhibit I of the NYSDEC ASP Revision 2005 (Eagle Picher pre-cleaned containers or equivalent) will be supplied by the laboratory.

10.3.3 Field Duplicates

Field duplicates will be collected to verify the reproducibility of the sampling methods. In general, field duplicates will be analyzed at a 5 percent frequency (every 20 samples) for the chemical constituents. For groundwater, one well will have a field duplicate collected per sampling event. Table 2 provides an estimated number of field duplicates to be prepared for each applicable parameter and matrix.

10.3.4 Trip Blanks

Trip blanks will be used to assess whether samples have been exposed to non-site-related VOCs during storage and transport. 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 container filled with analyte-free water (supplied by the laboratory), which remains unopened with field samples throughout the sampling event. Table 2 provides an estimated number of trip blanks collected for each matrix and parameter during the investigation activities.

10.4 Analytical Laboratory Quality Control Checks

Internal laboratory QC checks will be used to monitor data integrity. These checks will include method blanks, laboratory control samples, matrix spike/matrix spike duplicates, laboratory duplicates, internal standards, surrogate samples and calibration standards. Project quality control limits are identified in Table 3. Laboratory control charts will be used to determine long-term instrument trends.

10.4.1 Method Blanks

Sources of contamination in the analytical process, whether specific analyses or interferences, must be identified, isolated, and corrected. The method blank is useful in identifying possible sources of contamination within the analytical process. For this reason, it is necessary that the method blank be initiated at the beginning of the analytical process and encompasses all aspects of the analytical work. As such, the method blank would assist in accounting for any potential contamination attributable to glassware, reagents, instrumentation, or other sources that could affect sample analysis. One method blank will be analyzed with each analytical series associated with no more than 20 samples.

10.4.2 Matrix Spike/Matrix Spike Duplicates

MS/MSDs will be used to measure the accuracy of analyte recovery from the sample matrices and will be site-specific. MS/MSD pairs will be analyzed at a 5 percent frequency (every 20 samples).

When MS recoveries are outside quality control limits, associated control sample 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. Table 2 presents an estimated number of MS and MSD analyses for each applicable parameter.

10.4.3 Laboratory Control Samples

Laboratory Control Samples (LCS) are standards of known concentration and are independent in origin from the calibration standards. The intent of LCS analysis is to provide insight into the analytical proficiency within an analytical series. This includes 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.

10.4.4 Surrogate Spikes

Surrogates are compounds that are unlikely to occur under natural conditions but that have properties similar 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.

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.

10.4.5 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 2 presents an estimated number of laboratory duplicates for each applicable parameter.

10.4.6 Calibration Standards

Calibration check standards analyzed within a particular analytical series provide insight regarding instrument stability. A 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 general, calibration check standards will be analyzed after every 12 hours or more frequently, as specified in the applicable analytical method. If results of the calibration check standard exceed specified tolerances, samples analyzed since the last acceptable calibration check standard will be re-analyzed.

Laboratory instrument calibration standards will be selected utilizing the guidance provided in the analytical methods as summarized in Section 3.2.

10.4.7 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 quality control 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.

10.4.8 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.

10.5 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 matrix spike duplicates, laboratory duplicates and field duplicates, as identified in Table 3.

The precision of data will be measured by calculation of the RPD by the following equation:

$$RPD = \frac{(A-B)}{(A+B)/2} \times 100$$

Where:

A = Analytical result from one of two duplicate measurements
B = Analytical result from the second measurement

Precision objectives for MSD and laboratory duplicate analyses are identified in the NYSDEC's Analytical Services Protocol (NYSDEC, 2005) and in Table 3.

10.6 Data Accuracy Assessment Procedures

The accuracy of field measurements will be controlled by experienced field personnel, properly calibrated field meters and adherence 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 = True value of amount added to sample or true value of 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 NYSDEC's Analytical Services Protocol (NYSDEC, 2005) and in Table 3.

10.7 Data Completeness Assessment Procedures

Completeness of a field or laboratory data set will be calculated by comparing the number of valid sample results generated to the total number of results generated.

$$\text{Completeness} = \frac{\text{Number valid results}}{\text{Total number of results generated}} \times 100$$

As a general guideline, overall project completeness is expected to be at least 90 percent. The assessment of completeness will require professional judgment to determine data usability for the intended purposes.

11 INSTRUMENT/EQUIPMENT TESTING, INSPECTION AND MAINTENANCE REQUIREMENTS

Testing and maintenance schedules have been developed for both field and laboratory instruments. This section summarizes the testing and maintenance activities to be performed.

11.1 Field Instruments and Equipment

Prior to field sampling, each piece of field equipment will be calibrated (if necessary) and inspected to confirm that it is operational. If the equipment is not operational, it will 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, the appropriate Field Activities Task Manager or field personnel will be responsible for following the maintenance schedule and arranging for timely 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 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 that it is in working order. The 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. Consultant-/subcontractor-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.

11.2.1 Equipment Monitoring

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 FREQUENCY

Instrument calibration requirements are presented in the following subsections.

12.1 Field Equipment Calibration Procedures and Frequency

Calibration checks will be performed daily or as often is as required to ensure the accuracy of field equipment.

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 QAPP.

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 1 through 3.

Volatile Organics

Equipment calibration procedures will follow guidelines presented in NYSDEC ASP, Exhibit E, Part III (NYSDEC, 2005).

Semi-Volatile Organics

Equipment calibration procedures will follow guidelines presented in NYSDEC ASP, Exhibit E, Part IV (NYSDEC, 2005).

Cyanide

Equipment calibration procedures will follow guidelines presented in NYSDEC ASP, Exhibit E, Part VII (NYSDEC, 2005).

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 laboratory reagents will be tested for acceptability, prior to use in the analyses of site samples. 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 of 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 f elements:

1. sample designation system
2. field activities
3. sample tracking and management
4. data management system
5. document control and inventory

Each of these elements is discussed in the following subsections.

14.1 Sample Designation System

A concise and easily understandable sample designation system is an important part of the project sampling activities. It provides a unique sample number that will facilitate both sample tracking and easy re-sampling 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, as outlined in Section 5.1.

14.2 Field Activities

Field activities designed to gather the information necessary to make decisions regarding the off-site areas 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 investigation 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 provide for the thorough documentation of the field investigation, several different information records, each with its own specific reporting requirements, will be maintained, including:

- Field logs
- Instrument Calibration Records
- COC forms

A description of each of these types of field documentation is provided below.

Field Logs

The personnel performing the field activities will keep field logs that detail all observations and measurements made during sampling. Data will be recorded directly into site-dedicated, bound notebooks, with each entry dated and signed. To confirm, at any future date, that notebook pages are not missing, each page will be sequentially numbered. Erroneous entries will be corrected by crossing out the original entry, initialing it, and then documenting the proper information. In addition, certain media sampling locations will be surveyed to accurately record their locations. The survey crew will use their own field logs and will supply the sampling location coordinates to a file custodian.

Instrument Calibration Records

As part of data quality assurance procedures, field monitoring and detection equipment will be routinely calibrated. Instrument calibration confirms that equipment used is of the proper type, range, accuracy, and precision to provide data compatible with the specified requirements and desired results. Calibration procedures for the various types of field instrumentation are described in Section 12.1. In order to demonstrate that established calibration procedures have been followed, calibration records will be prepared and maintained to include, as appropriate, the following:

- calibration date and time
- type and identification number of equipment
- calibration frequency and acceptable tolerances
- identification of individual(s) performing calibration
- reference standards used
- calibration data
- information on calibration success or failure

The calibration record will serve as a written account of monitoring or detection equipment QA. All erratic behavior or failures of field equipment will be subsequently recorded in the calibration log.

COC Forms

COC forms are used as a means of documenting and tracking sample possession from time of collection to the time of disposal. A COC form will accompany each field sample collected, and one copy of the form will be filed in the field office. All field personnel will be briefed on the proper use of the COC procedure.

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 stored at the field office or locked in the field vehicle. An electronic copy (e.g., scan to pdf) of all field data and laboratory data are available to all project team members.

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, specific sample tracking and data management procedures will be used throughout the sampling program.

Sample tracking will begin with the completion of COC forms, as summarized in Section 8.2.3. The completed COC forms associated with samples collected will be faxed and/or scan and emailed to the Task Manager. 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 QAC or his designee will review the incoming analytical data packages 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 by the QAC.

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™ 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 work stations 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 or EQuIS™ 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 geographic information system 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 in the observations that are recorded in the field.

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. Items included may be the locations sampled, the sampling methodologies used, blind duplicate and sample identification numbers, equipment decontamination procedures, personnel involved in the activity, and any noteworthy events that occurred.

14.4.5 Analytical Results

Analytical results will be provided by the laboratory in both digital and a hard copy format. The data packages will be examined to confirm 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.

Each data package will be validated in accordance with the procedures presented in Section 18. 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 the 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™ 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™ 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 the 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 processed into a table of rows and columns that can be transferred to word 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 the USEPA.

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.

14.5 Document Control and Inventory

The Environmental Consultant will maintain project files as discussed in Section 5.5.

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

The following field performance and systems audits may be completed during this project.

The appropriate Task Manager will monitor field performance. 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 NYSDEC, and the environmental consultant Project Manager (or designee). The auditor(s) will review field reports and communicate concerns to the environmental consultant's Project Manager and/or Task Managers, and/or NYSDEC Project Manager, as appropriate.

In addition, systems audits comparing scheduled QA/QC activities from this QAPP with actual QA/QC activities completed will be performed. The appropriate Task Manager and QAC will periodically confirm that work is being performed consistent with this QAPP and the Work Plan.

15.2 Laboratory Audits

Internal laboratory audits are conducted by the Laboratory QA Manager. As part of the audit, the overall performance of the laboratory staff is evaluated and compared to the performance criteria outlined in the laboratory QA 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 QA Manager to determine whether the procedures implemented by each laboratory are in compliance with the QA manual and SOPs.

As a participant in state and federal certification programs, the laboratory is audited by representatives of the regulatory agency issuing certification in addition to the laboratory's internal audits. 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 QAPP, the FSP, 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

When conducting field work, if 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 by the Field Manager or a designee will be documented on a Corrective Action Form and reported to the appropriate Task Manager, QAC, and Project Manager. 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 QAPP, SOPs and/or work plans 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 appropriate project manager and QAC.

Corrective action may be initiated, at a minimum, under the following conditions:

- Protocols as defined by this QAPP 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 QAM 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 Project Manager (and QAC).

Any 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.

16 REPORTS TO MANAGEMENT

The QAC will audit the implementation of the QAPP. 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 QAPP
- deviations from QAPP 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 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.

16.2 Laboratory Reports

The laboratory will maintain QA records related to analyses, QC and corrective action. This information will be made available to the Project Manager 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:

- Reduction, or manipulation mathematically or otherwise into meaningful and useful forms
- Data validation
- Review
- Organization, interpretation, and reporting

17.1 Field Data Reduction and Review

Requirements for field data reduction and review and presented in the following subsections.

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, data sheets, and/or on forms. Such data will be reviewed by the appropriate Task Manager for adherence to the Work Plan and this QAPP 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.

17.1.2 Field Data Review

Field data calculations, transfers, and interpretations will be conducted by the field personnel and reviewed for accuracy by the appropriate Task Manager and the QAC. Field documentation and data reduction prepared by field personnel will be reviewed by the appropriate Task Manager and QAM. 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

17.2 Laboratory Data Reduction and Review

Requirements for laboratory data reduction and review and presented in the following subsections.

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 total cyanide 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 QAM will review the final data reports, and the Laboratory Director will review a cross section of the final data reports prior to shipment to the environmental consultant.

If discrepancies or deficiencies are present in the analytical results, corrective action will be taken, as discussed in Section 15. 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 Project Manager and QAC.

18 DATA VERIFICATION AND VALIDATION

Data validation will be conducted as outlined in USEPA *Guidance on Environmental Data Verification and Data Validation* EPA QA/G-8 (USEPA, 2002a).

Data validation is a standardized review process for judging the analytical quality and usefulness of a discrete set of chemical data. 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.

18.1 Data Validation Process

All data generated will be validated using the most recent versions of the USEPA's National Functional Guidelines (USEPA, 1999b; 2004) and NYSDEC Analytical Service Protocol (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, and editing 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 QAPP. Any deviations from the analytical method or any special reporting requirements apart from those specified in this QAPP 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 Project Manager 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

It should be noted that qualified results do 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.

18.2 Data Verification

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 National Functional Guidelines (USEPA, 2004):

Concentration (C) qualifiers

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

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

Quantitation (Q) qualifiers

Inorganics:

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

E The reported value is estimated due to the presence of interference.

N Spiked sample recovery not within control limits.

* Duplicate analysis not within control limits.

Organics:

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

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

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

E The compound was quantitated above the calibration range.

D Concentration is based on a diluted sample analysis.

C Identification confirmed by GC/MS.

Validation qualifiers

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

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

R The sample results are rejected.

Two facts will be noted to all data users. First, the "R" flag 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. The second fact is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

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

The data results will be examined to determine the performance that was achieved for each data usability criterion. The performance will then be compared with the project objectives and DQOs. 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 any or all of 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

NYSDEC, 2005. *Analytical Services Protocol.* July 2005.

USEPA, 1999b. Contract Laboratory Program National Functional Guidelines for Organic Data Review. EPA-540/R-99-008. October 1999.

USEPA, 2001. EPA Requirements for QA Project Plans for Environmental Operations. EPA-QA/R-5. Office of Environmental Information. March 2001.

USEPA, 2002a. Guidance on Environmental Data Verification and Data Validation EPA QA/G-8, Office of Environmental Information. November 2002.

USEPA, 2002b. Guidance for Quality Assurance Project Plans. EPA-QA/G-5. Office of Environmental Information, December 2002.

USEPA, 2004. Contract Laboratory Program National Functional Guidelines for Inorganic Data Review. EPA-540/R-04-004. October 2004.

TABLES

Table 1
Parameters, Methods, and Target Reporting Limits for Groundwater Samples (ug/L)

Quality Assurance Project Plan
NYSEG - Goshen Former MGP Site - Goshen, New York

Analyte	CAS Number	Action Limit	Laboratory MDL	Laboratory RL
Volatile Organic Compounds 8260 [1]				
Benzene	71-43-2	1	0.13	0.5
Ethylbenzene	100-41-4	5	0.25	1
Toluene	108-88-3	5	0.09	1
Xylenes (total)	1330-20-7	5	0.32	1
Polycyclic Aromatic Hydrocarbon (PAH) Compounds 8270 W/SIM [1]				
Acenaphthene	83-32-9	20	0.014	0.1
Acenaphthylene	208-96-8	--	0.013	0.1
Anthracene	120-12-7	50	0.018	0.1
Benzo(a)anthracene	56-55-3	0.002	0.03	0.05
Benzo(a)pyrene	50-32-8	--	0.017	0.1
Benzo(b)fluoranthene	205-99-2	0.002	0.024	0.05
Benzo(g,h,i)perylene	191-24-2	--	0.038	0.1
Benzo(k)fluoranthene	207-08-9	0.002	0.06	0.1
Chrysene	218-01-9	0.002	0.073	0.1
Dibenzo(a,h)anthracene	53-70-3	--	0.042	0.1
Fluoranthene	206-44-0	50	0.033	0.1
Fluorene	86-73-7	50	0.046	0.1
Indeno(1,2,3-cd)pyrene	193-39-5	0.002	0.046	0.1
Naphthalene	91-20-3	10	0.036	0.1
Phenanthrene	85-01-8	50	0.013	0.05
Pyrene	129-00-0	50	0.036	0.1
Inorganics 9012 [1]				
Cyanide	57-12-5	200	0.5	0.5

Notes:

1. USEPA. Office of Solid Waste and Emergency Response. *Test Methods for Evaluating Solid Waste* SW-846 3rd ed. *Washington, D.C. 1996.*
2. The target reporting limits are based on wet weight. The actual reporting limits will vary based on sample weight and moisture content.
3. SIM = Selective Ion Monitoring
4. Action Limits are from the NYSDEC document titled, "Division of Water, Technical and Operational Guidance Series (TOGS 1.1.1) Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations" (NYSDEC, reissued June 1998 and revised in April 2000 and June 2004).
5. -- = No action limit specified in TOGS 1.1.1

Table 2
Sample Quantities and Quality Control Frequencies

Quality Assurance Project Plan
NYSEG - Goshen Former MGP Site - Goshen, New York

Parameter	Estimated Sample Quality	Field QC Analyses				Laboratory QC Sample				Total
		Trip Blank		Field Duplicate		Matrix Spike		Matrix Spike Duplicate		
		Freq.	No.	Freq.	No.	Freq.	No.	Freq.	No.	
Water (Groundwater)										
BTEXs (SW846 8260[1])	10	1/cooler	1	1/20	1	1/20	1	1/20	1	14
PAHs (SW846 8270 SIM[1])	10	NA	--	1/20	1	1/20	1	1/20	1	13
Cyanide (SW846 9012[1])	10	NA	--	1/20	1	1/20	1	1/20	1	13

Notes:

1. United States Environmental Protection Agency (USEPA). Office of Solid Waste and Emergency Response. *Test Methods for Evaluating Solid Waste SW-846.* 3rd ed. Washington, DC. 1996.
2. Sample counts are an approximation.
3. Freq = Frequency.
4. No. = Number.
5. BTEX = Benzene, Toluene, Ethylbenzene, and Xylenes (total).
6. PAHs = Polycyclic Aromatic Hydrocarbons.
7. SIM = Selective Ion Monitoring.
8. VOCs = Volatile Organic Compounds.

Table 3
Laboratory Quality Control Limit

Quality Assurance Project Plan
NYSEG - Goshen Former MGP Site - Goshen, New York

Parameter	Accuracy - % Recovery			Precision - RPD		
	Surrogate	MS/MSD	LCS	MS/MSD	Lab Duplicate	Field Duplicate
Groundwater						
BTEX (SW-846 8260)	70 - 130	70 - 130	70 - 130	30	20	35
PAHs (SW-846 8270 SIM)	30 - 130	40 - 140	40 -140	20	--	35
Cyanide (SW-846 9012)	--	75 - 125	90 - 110	20	20	35

Notes:

1. The listed QC limits are based on United States Environmental Protection Agency (USEPA) guidance and are advisory. The actual limits are determined based on laboratory performance. Frequent failure to meet the QC limits; however, warrant investigation of the laboratory.
2. USEPA. Office of Solid Waste and Emergency Response. *Test Methods for Evaluating Solid Waste SW-846.* 3rd ed. Washington, DC. 1996.
3. BTEX = Benzene, Toluene, Ethylbenzene, and Xylenes (total).
4. PAHs = Polycyclic Aromatic Hydrocarbons.
5. VOCs = Volatile Organic Compounds.

Table 4
Sample Containers, Preservation, and Holding Times

Quality Assurance Project Plan
NYSEG - Goshen Former MGP Site - Goshen, New York

Parameter	Method	Bottle Type	Preservation	Holding Time
Water (Groundwater)				
BTEXs	8260 [1]	Three 40-ml glass vial	HCL to pH<2 Cool to <6°C	14 days to analysis
PAHs	8270 SIM[1]	Two 1-L amber glass bottle with Teflon®-lined lid	Cool to <6°C	7 days to extraction 40 days to analysis
Cyanide	9012 [1]	One 250ml plastic bottle	NaOH to pH>12 Cool to <6°C	14 days to analysis

Notes:

1. United States Environmental Protection Agency (USEPA). Office of Solid Waste and Emergency Response. *Test Methods for Evaluating Solid Waste SW-846*. 3rd ed. Washington, DC. 1996.
2. BTEX = Benzene, Toluene, Ethylbenzene, and Xylenes (total).
3. PAHs = Polycyclic Aromatic Hydrocarbons.
4. VOCs = Volatile Organic Compounds.
6. SIM = Selective Ion Monitoring.
5. °C = Degrees Celsius.
6. HCL = Hydrochloric Acid.
7. NaOH = Sodium Hydroxide

ATTACHMENT A

EQuIS™ Lab SOP FSMP Rev. 9Equis

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.
Principal Scientist
ARCADIS U.S., Inc.
630 Plaza Drive, Suite 100
Highlands Ranch, CO, 80129
Phone: 720.344.3804
Cell: 303.475.5210
Fax: 720.344.3535
Richard.murphy@arcadis-us.com

OR

Dennis K. Capria
Principal Scientist/Associate
ARCADIS
6723 Towpath Road
Syracuse, NY 13214
Phone: 315.446.9120
Direct: 315.671.9299
Fax: 315.449.0025
Cell: 315.751.1672
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	3.17								
94-75-7	1.56								
94-82-6	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.

APPENDIX H

Site Inspection Form

Goshen Former MGP Site
Goshen, Orange County, New York
Site-Wide Inspection Form

Date: | **Weather Conditions:**

Personnel: | **Temperature:**

Time of Arrival: | **Wind Speed:**

Time of Departure: | **Wind Direction (from):**

Inspection Checklist	Yes	No	Comments
Asphalt Cover			
Intrusive Activities Being Performed?			
- Trenching?			
- Excavation?			
- Tunneling?			
- Saw cutting?			
Signs of Previous Intrusive Activities Performed?			
- New drainage feature?			
- Evidence of a new underground utility?			
- New grass/vegetation/asphalt?			
- Other (e.g., cracking, potholes, depressions)			
Monitoring Well Condition			
NAPL monitoring needs to be performed this year?			
Covers secure?			
Casing in need of repair?			
Concrete surface seal intact?			
Settling in area around well?			
Well obstructed?			
Ponded water above well?			
Well screen silted in?			
Well in need of redevelopment?			

General Comments/Suggested Action Items:

APPENDIX I

Well Construction Logs

BLASLAND & BOUCK ENGINEERS, P.C.
ENGINEERS & SCIENTISTS

Boring No. MW931D Well No. MW931D
Project: NYSEG
Location: GOSHEN, NY

Date Start/Finish: 9/22/93 – 9/22/93
Drilling Company: PARRATT-WOLFF
Driller's Name: DOUG RICHMOND
Rig Type: MOBILE B-57
Spoon Size: 2
Hammer Weight: 140
Height of Fall: 30-inches
Drilling Method: HSA
Bit Size: Auger Size : 4-1/4

Northing:
Easting:
Well Casing Elev.: 436.51 ft.
Corehole Depth: N/A ft.
Borehole Depth: 37.4 ft.
Ground Surface Elev.: 436.7 ft.

Location Sketch:

Scale:

Depth (ft.)	Sample/Run Number	Sample/Int/Type	Blows/6 in.	N	Recovery (Ft).	Recovery (%)	RQD (%)	PID Field (ppm)	PID Headspace (ppm)	Drilling Water Level	Geologic Col.	Stratigraphic Description	Misc. Test	Well Column	Well Materials
-0	S1		9 11 8	19	1.8			1.4	0.0			Blacktop.			4-inch diameter outer protective flush mount locking cap installed to 0.25' above ground level.
												Black stained SLAG.			
-2	S2		7 2 4 5	9	1.6			0.0	0.0			Brown fine to coarse SAND and SILT, little fine gravel, trace clay, medium stiff, damp.			
-4	S3		5 4 5 8	13	1.6			0.0	0.0			grades to little clay and trace fine gravel.			Cement surface pad 1.5' – 0.0'
-6	S4		9 15 20 25	45	NR			NR	NR			grades to grey fine to coarse SAND and SILT, little clay, moist to damp.			
-8	S5		37 6 11 18	29	2.0			0.0	0.0			grades to fine SAND and SILT, stiff, damp.			
-10	S6		18 7 12 15	27	1.8			0.0	0.0						
-12	S7		17 17 22 25	47	1.6			0.0	0.0						2-inch diameter stainless steel (SS) well riser 32.5' – 0.19'
-14	S8		25 5 9 14	23	1.6			0.0	0.0			grades to dark grey.			
												Dark gray fine to coarse SAND, some silt, little fine to medium shale gravel, trace clay, medium dense, moist.			
-16	S9		20 33 15 15	30	1.0			0.0	0.0			grades to little silt, moist to wet.			
-18	S10		50/0.3 10 50/0.2		NR			NR	NR						
-20	S11		39 22 22 23	44	1.1			0.0	0.0			Dark gray fine SAND and SILT, some fine to medium shale gravel, stiff, damp.			Cement/bentonite grout 27.0' – 1.5'

Geologist Initials: TRO
Geologist Signature:
Project No.: 130.09

Remarks:

Water Levels

Date	Time	Elevation
21OCT93	10:12	426.47

BLASLAND & BOUCK ENGINEERS, P.C.
ENGINEERS & SCIENTISTS

Boring No. MW831D Well No. MW831D
Project: NYSEG
Location: GOSHEN, NY

Date Start/Finish: 9/22/93 – 9/22/93
Drilling Company: PARRATT-WOLFF
Driller's Name: DOUG RICHMOND
Rig Type: MOBILE B-57
Spoon Size: 2
Hammer Weight: 140
Height of Fall: 30-inches
Drilling Method: HSA
Bit Size: Auger Size : 4-1/4

Northing:
Easting:
Well Casing Elev.: 436.51 ft.
Corehole Depth: N/A ft.
Borehole Depth: 37.4 ft.
Ground Surface Elev.: 436.7 ft.

Location Sketch:

Scale:

Depth (Ft.)	Sample/Run Number	Sample/Int/Type	Blows/6 in.	N	Recovery (Ft.)	%Recovery (%)	RQD (%)	PID Field (ppm)	PID Headspace (ppm)	Drilling Water Level	Geologic Col.	Stratigraphic Description	Misc. Test	Well Column	Well Materials
-22	S12		23 20 21 20	41	1.0			0.0	0.0						
-24	S13		8 9 15 16	24	1.5			0.0	0.0			grades to trace fine to medium gravel.			
-26	S14		14 20 21 23	41	1.8			0.0	0.0			grades to moist to wet. grades to damp to moist.			
-28	S15		18 19 22 20	41	1.2			0.0	0.0			grades with trace fine to medium shale gravel. Grades to little fine to medium shale gravel.			Bentonite seal 30.0' – 27.0'
-30	S16		9 13 14 10	27	NR			NR	NR			wet.			Grade # 00 Silica Sand pack 30.5' – 30.0'
-32	S17		15 12 12 17	24	1.0			0.0	0.0			Dark gray fine to coarse SAND, some fine to coarse shale gravel, medium dense, moist to damp.			
-34	S18		19 26 32 62/0.3	58	1.0			0.0	0.0						Grade # 0 Silica Sand pack 37.4' – 30.5'
-36	S19		50/0.3		0.1			0.0	0.0			grades with little silt, very dense, damp.			0.010-inch slot well screen 37.05 – 32.05 Bottom of well set at 37.4'
-38												Bottom of boring at 37.4 ft.			
-40															
-42															
-44															

Geologist Initials: TRO
Geologist Signature:
Project No.: 130.09

Remarks:

Water Levels

Date	Time	Elevation
21OCT93	10:12	426.47

BLASLAND & BOUCK ENGINEERS, P.C.
ENGINEERS & SCIENTISTS

Boring No. MW831S Well No. MW831S

Project: NYSEG

Location: GOSHEN, NY

Date Start/Finish: 9/22/93 – 9/22/93
Drilling Company: PARRATT-WOLFF
Driller's Name: DOUG RICHMOND
Rig Type: MOBILE B-57
Spoon Size: 2
Hammer Weight: 140
Height of Fall: 30-inches
Drilling Method: HSA
Bit Size: Auger Size : 4-1/4

Northing:
Easting:
Well Casing Elev.: 436.23 ft.
Corehole Depth: N/A ft.
Borehole Depth: 24 ft.
Ground Surface Elev.: 436.3 ft.

Location Sketch:

Scale:

Depth (Ft.)	Sample/Run Number	Sample/Int/Type	Blows/6 in.	N	Recovery (Ft.)	Recovery (%)	RQD (%)	PID Field (ppm)	PID Headspace (ppm)	Drilling Water Level	Geologic Col.	Stratigraphic Description	Misc. Test	Well Column	Well Materials
0												Blacktop.			4-inch diameter outer protective flush mount locking cap installed to 0.25' above ground level.
												Black stained SLAG.			
-2												Brown fine to coarse SAND and SILT, little fine gravel, trace clay, medium stiff, damp.			
												grades to little clay and trace fine gravel.			Cement surface pad 1.5' – 0.0'
-4	S1	4 6 9 11	15		1.0			0.0	0.0						
-6												grades to grey fine to coarse SAND and SILT, little clay, moist to damp.			2-inch diameter stainless steel (SS) well riser 12.65' – 0.07'
-8												grades to fine SAND and SILT, stiff, damp			Cement/bentonite grout 8.0' – 1.5'
-10	S2	6 12 16 18	28		1.8			0.0	0.0						Bentonite seal 11.0' – 8.0'
-12															Grade # 00 Silica Sand pack 11.5' – 11.0'
-14												grades to dark grey.			Grade # 0 Silica Sand pack 24.0' – 11.5'
	S3	10 14 12 16	26		1.8			0.0	0.0			grades to fine to coarse SAND, some silt, little fine to medium shale gravel, trace clay, medium stiff, moist.			
-16												grades to little silt, moist to wet.			
-18															0.010-inch slot well screen 22.65 – 12.65
-20	S4	50/0.4			0.4			0.0	0.0			Dark gray fine SAND and SILT, some fine to medium shale gravel, stiff, damp.			
-22															

Geologist Initials: TRO

Geologist Signature:

Project No.: 130.09

Remarks:

Water Levels

Date	Time	Elevation
210CT93	10:10	429.09

BLASLAND & BOUCK ENGINEERS, P.C.
ENGINEERS & SCIENTISTS

Boring No. MW831S **Well No.** MW831S

Project: NYSEG
Location: GOSHEN, NY

Date Start/Finish: 9/22/93 – 9/22/93
Drilling Company: PARRATT-WOLFF
Driller's Name: DOUG RICHMOND
Rig Type: MOBILE B-57
Spoon Size: 2
Hammer Weight: 140
Height of Fall: 30-inches
Drilling Method: HSA
Bit Size: **Auger Size :** 4-1/4

Northing:
Easting:
Well Casing Elev.: 436.23 ft.
Corehole Depth: N/A ft.
Borehole Depth: 24 ft.
Ground Surface Elev.: 436.3 ft.

Location Sketch:

Scale:

Depth (Ft.)	Sample/Run Number	Sample/Int/Type	Blows/6 in.	N	Recovery (Ft).	Recovery (%)	RQD (%)	PID Field (ppm)	PID Headspace (ppm)	Drilling Water Level	Geologic Col.	Stratigraphic Description	Misc. Test	Well Column	Well Materials
-22	S5		15 15 15 17	30	16			0.0	0.0						
-24												Bottom of boring at 24.0 ft.			Bottom of well set at 23.0'
-26															
-28															
-30															
-32															
-34															
-36															
-38															
-40															
-42															
-44															

Geologist Initials: TRO
Geologist Signature:
Project No.: 130.09

Remarks:

Water Levels

Date	Time	Elevation
21OCT93	10:10	429.09

BLASLAND & BOUCK ENGINEERS, P.C.
ENGINEERS & SCIENTISTS

Boring No. MW932D Well No. MW932D
Project: NYSEG
Location: GOSHEN, NY

Date Start/Finish: 9/23/93 – 9/23/93
Drilling Company: PARRATT-WOLFF
Driller's Name: DOUG RICHMOND
Rig Type: MOBILE B-57
Spoon Size: 2
Hammer Weight: 140
Height of Fall: 30-inches
Drilling Method: HSA
Bit Size: **Auger Size :** 4-1/4

Northing:
Easting:
Well Casing Elev.: 430.29 ft.
Corehole Depth: N/A ft.
Borehole Depth: 36.4 ft.
Ground Surface Elev.: 430.5 ft.

Location Sketch:

Scale:

Depth (Ft.)	Sample/Run Number	Sample/Int/Type	Blows/6 in.	N	Recovery (Ft.)	Recovery (%)	RQD (%)	PID Field (ppm)	PID Headspace (ppm)	Drilling Water Level	Geologic Col.	Stratigraphic Description	Misc. Test	Well Column	Well Materials
0	S1		3 5 5 4	10	1.0			0.0	0.0			Brown, fine to coarse SAND and fine to medium GRAVEL, some coarse coal sand and black staining, little silt, loose, damp.			4-inch diameter outer protective flush mount locking cap installed to 0.25' above ground level.
2	S2		4 3 2 2	4	1.0			0.0	0.0			grades to some silt and trace clay grades with some fine to medium coal gravel and trace red brick.			Cement surface pad 1.5' – 0.0'
4	S3		2 3 4 3	7	1.7			0.0	0.0			Red fine to coarse sand lense 5' to 5.2'			
6	S4		3 7 7 10	17	1.5			0.0	0.0			Black fine to medium coal GRAVEL, little fine to coarse sand lense, loose, damp.			
8	S5		8 4 6 8	14	2.0			0.0	0.0			Brown fine to coarse SAND and fine to medium GRAVEL, some fine to coarse coal sand and black staining, damp, loose.			
10	S6		8 5 6 6	12	1.6			0.0	0.0			grades to dark brown and with little fine coal gravel and trace clay.			
12	S7		6 6 8 8	16	1.5			0.0	0.0	▽		Brown, fine to coarse SAND and SILT, little fine gravel, medium stiff, damp. grades to little fine to medium gravel, damp to moist			2-inch diameter stainless steel (SS) well riser 31' – 0.2'
14	S8		8 15 21 24	45	1.5			0.0	0.0			Gray/green/brown fine to coarse SAND and fine GRAVEL, some silt and clay, soft, moist.			
16	S9		27 19 21 28	49	1.5			0.0	0.0			Dark grey, fine to coarse SAND and SILT, some fine to medium shale gravel, stiff, moist. grades with little clay			
18	S10		28 8 14 20	34	0.8			0.0	0.0			grades to some silt, moist to wet.			
20	S11		15 35 19 14	33	1.0			0.0	0.0			grades to fine SAND and SILT, medium stiff, wet to moist.			Cement/bentonite grout 26.0' – 1.5'
22			15									Dark gray fine to coarse SAND			

Geologist Initials: TRO
Geologist Signature:
Project No.: 130.09

Remarks:

Water Levels

Date	Time	Elevation
21OCT93	10:20	424.62

BLASLAND & BOUCK ENGINEERS, P.C.
ENGINEERS & SCIENTISTS

Boring No. MW932D Well No. MW932D
Project: NYSEG
Location: GOSHEN, NY

Date Start/Finish: 9/23/93 – 9/23/93
Drilling Company: PARRATT-WOLFF
Driller's Name: DOUG RICHMOND
Rig Type: MOBILE B-57
Spoon Size: 2
Hammer Weight: 140
Height of Fall: 30-inches
Drilling Method: HSA
Bit Size: Auger Size : 4-1/4

Northing:
Easting:
Well Casing Elev.: 430.29 ft.
Corehole Depth: N/A ft.
Borehole Depth: 36.4 ft.
Ground Surface Elev.: 430.5 ft.

Location Sketch:

Scale:

Depth (ft.)	Sample/Run Number	Sample/Int/Type	Blows/6 in.	N	Recovery (Ft).	Recovery (%)	RQD (%)	PID Field (ppm)	PID Headspace (ppm)	Drilling Water Level	Geologic Col.	Stratigraphic Description	Misc. Test	Well Column	Well Materials
-22	S12		19 19 27 50/0.3	46	1.0			0.0	0.0			some fine to medium shale gravel, little silt, loose, wet.			
-24	S13		50/0.3	NR											
-26	S14		19 21 27 30	48	0.8			0.0	0.0			grades to medium stiff, damp.			
-28	S15		37 38 41 26	79	0.8			0.0	0.0			grades to fine to coarse SAND and fine to medium shale GRAVEL, medium dense, damp to moist.			Bentonite seal 29.0' – 26.0'
-30	S16		18 16 20 24	36	0.4			0.0	0.0						Grade # 00 Silica Sand pack 29.5' – 29.0'
-32	S17		50/0.4		0.5			0.0	0.0						Grade # 0 Silica Sand pack 36.4' – 29.5'
-34	S18		50/0.5		0.5			0.0	0.0			grades to very dense, damp.			0.010-inch slot well screen 36' – 31'
-36												Bottom of boring at 36.4 ft.			Bottom of well set at 36.4'
-38															
-40															
-42															

Geologist Initials: TRO
Geologist Signature:
Project No.: 130.09

Remarks:

Water Levels

Date	Time	Elevation
21OCT93	10:20	424.62

BLASLAND & BOUCK ENGINEERS, P.C.
ENGINEERS & SCIENTISTS

Boring No. **MW932S** Well No. **MW932S**

Project: NYSEG

Location: GOSHEN, NY

Date Start/Finish: 9/23/93 – 9/23/93
Drilling Company: PARRATT-WOLFF
Driller's Name: DOUG RICHMOND
Rig Type: MOBILE B-57
Spoon Size: 2
Hammer Weight: 140
Height of Fall: 30-inches
Drilling Method: HSA
Bit Size: **Auger Size :** 4-1/4

Northing:
Easting:
Well Casing Elev.: 430.32 ft.
Corehole Depth: N/A ft.
Borehole Depth: 22 ft.
Ground Surface Elev.: 430.5 ft.

Location Sketch:

Scale:

Depth (Ft.)	Sample/Run Number	Sample/Int/Type	Blows/6 in.	N	Recovery (Ft.)	Recovery (%)	RQD (%)	PID Field (ppm)	PID Headspace (ppm)	Drilling Water Level	Geologic Col.	Stratigraphic Description	Misc. Test	Well Column	Well Materials
0												Brown, fine to coarse SAND and fine to medium GRAVEL, some coarse coal sand and black staining, little silt, loose, damp.			4-inch diameter outer protective flush mount locking cap installed to 0.25' above ground level.
2												grades to some silt and trace clay			
4												grades with some fine to medium coal gravel and trace red brick.			Cement surface pad 1.5' – 0.0'
6	S1		6 4 3 2	7	1.1			0.0	0.0			Red fine to coarse sand lense 5' to 5.2'			2-inch diameter stainless steel (SS) well riser 1.6' – 0.18'
8												Black fine to medium coal GRAVEL, little fine to coarse sand lense, loose, damp 5.2' to 6'.			Cement/bentonite grout 6.5' – 1.5'
10	S2		6 8 9 10	17	1.8			0.0	0.0			Brown fine to coarse SAND and fine to medium GRAVEL, some fine to coarse coal sand and black staining, loose, damp.			Bentonite seal 9.5' – 6.5'
12												grades to dark brown and with little fine coal gravel and trace clay.			Grade # 00 Silica Sand pack 10.0' – 9.5'
14												Brown, fine to coarse SAND and SILT, little fine gravel, medium stiff, damp.			Grade # 0 Silica Sand pack 22.0' – 10.0'
16	S3		8 12 15 17	27	1.8			0.0	0.0			grades to little fine to medium gravel, damp to moist			
18												Gray/green/brown fine to coarse SAND and fine GRAVEL, some silt and clay, soft, moist.			
20	S4		22 24 14 17	38	1.5			0.0	0.0			Dark grey, fine to coarse SAND and SILT, some fine to medium shale gravel, stiff, moist.			0.010-inch slot well screen 21.6' – 11.6'
												grades with little clay			
												grades to some silt, moist to wet.			
												grades to fine SAND and SILT, medium stiff, wet to moist.			

Geologist Initials: TRO

Geologist Signature:

Project No.: 130.09

Remarks:

Water Levels

Date	Time	Elevation
210CT93	10:18	422.08

BLASLAND & BOUCK ENGINEERS, P.C.
ENGINEERS & SCIENTISTS

Boring No. MW932S Well No. MW932S
Project: NYSEG
Location: GOSHEN, NY

Date Start/Finish: 9/23/93 – 9/23/93
Drilling Company: PARRATT-WOLFF
Driller's Name: DOUG RICHMOND
Rig Type: MOBILE B-57
Spoon Size: 2
Hammer Weight: 140
Height of Fall: 30-inches
Drilling Method: HSA
Bit Size: **Auger Size :** 4-1/4

Northing:
Easting:
Well Casing Elev.: 430.32 ft.
Corehole Depth: N/A ft.
Borehole Depth: 22 ft.
Ground Surface Elev.: 430.5 ft.

Location Sketch:

Scale:

Depth (Ft.)	Sample/Run Number	Sample/Int/Type	Blows/6 in.	N	Recovery (Ft).	Recovery (%)	RQD (%)	PID Field (ppm)	PID Headspace (ppm)	Drilling Water Level	Geologic Col.	Stratigraphic Description	Misc. Test	Well Column	Well Materials
-22												Dark gray fine to coarse SAND, some fine to medium gravel, little silt, loose, wet.			Bottom of well set at 22.0'
-24												Bottom of boring at 22 ft.			
-26															
-28															
-30															
-32															
-34															
-36															
-38															
-40															
-42															
-44															

Geologist Initials: TRO
Geologist Signature:
Project No.: 130.09

Remarks:

Water Levels

Date	Time	Elevation
21OCT93	10:18	422.08

Date Start/Finish: 11/7/08
Drilling Company: Parratt Wolff
Driller's Name: Jim Lansing
Drilling Method: Hollow Stem Auger
Auger Size: 4.25" ID
Rig Type: Ingersoll Rand A300
Sampling Method: 2' x 2" Split Spoon

Northing: 935219.3
Easting: 538454.2
Casing Elevation: 429.48' AMSL

Borehole Depth: 40' bgs
Surface Elevation: 429.86' AMSL

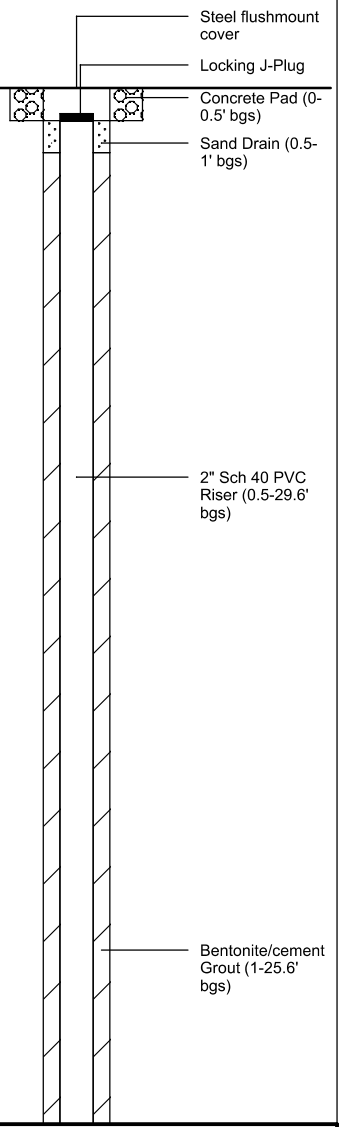
Descriptions By: Christin Cifelli

Well/Boring ID: **MW08-5D**

Client: New York State Electric and Gas

Location: West Main Street
Goshen, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
0	430								
		1	0-2	1.4	6 7 13 16	20	0.0		Brown fine to medium SAND, moist. White/grey medium to coarse GRAVEL, some medium Sand and Concrete, moist. Dark brown/grey fine to coarse GRAVEL (burnt fragmented debris), moist.
		2	2-4	0.9	3 4 5 4	9	0.0		Brown Silty CLAY, trace coarse Sand to fine Gravel, moist. White and black material from 2.3-2.4' bgs (Coke/Ash).
5	425	3	4-6	1.0	3 3 4 3	7	0.0		
		4	6-8	1.1	3 2 2 3	4	0.0		Brown Silty CLAY, trace coarse Sand, moist.
		5	8-10	1.4	4 5 7 20	12	0.0		Brown Silty CLAY, some coarse Sand to medium Gravel, moist. Wet from 8.0-8.5' bgs. Coarse to very coarse GRAVEL (Shale) from 8.3-8.9' bgs. Brown SILT, some Clay, little Sand and fine to medium Gravel (Shale), moist.
10	420	6	10-12	1.1	21 17 17 22	34	0.0		Brown very fine SAND and SILT, little fine to medium Gravel, moist. Wet from 10.2-10.8' bgs. Fine to medium GRAVEL (Shale) at 10.55' bgs.
		7	12-14	0.5	26 50 NA NA	50+	0.0		Brown very fine SAND and SILT, trace coarse Sand and fine Gravel, moist. Brown very coarse GRAVEL at 12.2-12.3' bgs. SAA, grey.
15	415	8	14-16	1.1	28 30 26 22	56	35.3		Grey very fine SAND, wet. Grey very fine SAND and SILT, little Clay and fine Gravel, moist. Very coarse GRAVEL (Shale) from 14.9-15.0' bgs.



Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level; OLM = Oil-like material; TLM = Tar-like material

ARCADIS
Infrastructure, environment, buildings

Client: New York State Electric and Gas

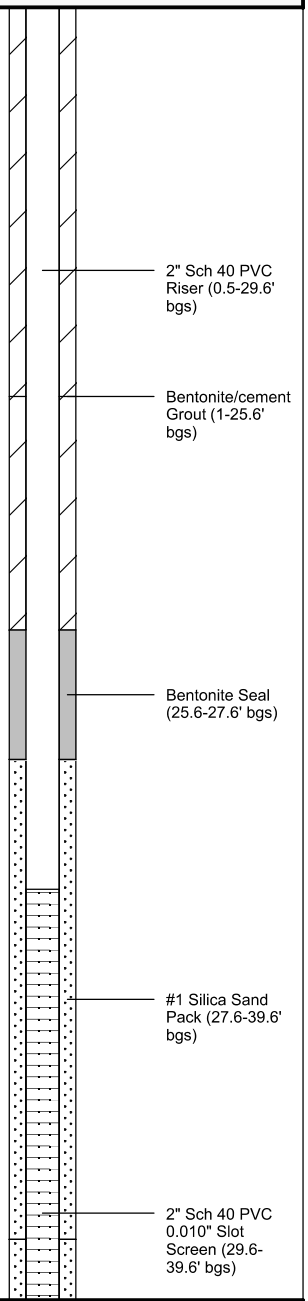
Well/Boring ID: **MW08-5D**

Borehole Depth: 40' bgs

Site Location:
West Main Street
Goshen, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
					10				Grey very fine SAND, wet.
		9	16-18	1.0	12 13 12	25	4.4		Grey very fine SAND and SILT, some fine to medium Gravel, moist. Fine to medium SAND lense from 16.3-16.4' bgs.
		10	18-20	1.0	13 12 12 12	24	0.0		Grey very fine SAND and SILT, little Clay, trace coarse Sand to medium Gravel, moist.
20	410								
		11	20-22	1.9	6 8 7 7	15	0.0		Grey very fine SAND and SILT, some fine to medium Gravel, moist. Grey very fine SAND and SILT, trace Clay, little Gravel, moist.
		12	22-24	0.9	7 12 12 14	24	0.0		Grey very fine SAND and SILT, some Clay and medium to coarse Gravel, moist.
25	405	13	24-26	1.1	12 14 16 22	30	0.0		SAA, medium to very coarse Gravel, moist.
		14	26-28	1.3	26 46 42 32	88	0.0		Grey very fine SAND and SILT, trace Clay and very coarse Gravel, moist. Medium Gravel (Shale) ~ 26.5-26.6' bgs Fine to medium SAND lense from 27.0-27.1' bgs.
		15	28-30	1.2	16 21 31 24	52	0.0		Grey very fine SAND and SILT, some fine to coarse Gravel (TILL), moist. Very coarse GRAVEL (Shale) from 28.6-29.2' bgs.
30	400								
		16	30-32	1.4	16 18 21 20	37	0.0		Grey very fine SAND and SILT, some coarse Sand to very coarse Gravel (TILL), moist. SAA, fine to medium Gravel (TILL), moist. Black medium to coarse SAND (TILL), moist.
		17	32-34	1.3	26 24 18 14	42	0.0		Grey very fine SAND and SILT, some coarse Sand to fine Gravel (TILL), moist. SAA, little coarse Sand (TILL), moist. Medium GRAVEL (Shale) from 32.5-32.7' bgs.
35	395	18	34-36	1.2	21 22 26 16	48	0.0		Grey very fine SAND and SILT, little coarse Sand to very coarse Gravel (TILL), moist.

Well/Boring Construction



Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level; OLM = Oil-like material; TLM = Tar-like material

ARCADIS
Infrastructure, environment, buildings

Client: New York State Electric and Gas

Well/Boring ID: **MW08-5D**

Borehole Depth: 40' bgs

Site Location:
West Main Street
Goshen, 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
		19	36-38	0.8	18 22 22 26	44	0.0		Grey very fine SAND and SILT, little medium to coarse Sand to medium Gravel (TILL), moist.	#1 Silica Sand Pack (27.6-39.6' bgs) 2" Sch 40 PVC 0.010" Slot Screen (29.6-39.6' bgs)
		20	38-40	0.9	31 26 50 12	50+	0.0		SAA.	
40	390									
45	385									
50	380									
55	375									

Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level; OLM = Oil-like material; TLM = Tar-like material

ARCADIS
Infrastructure, environment, buildings

Date Start/Finish: 11/7/08
Drilling Company: Parratt Wolff
Driller's Name: Jim Lansing
Drilling Method: Hollow Stem Auger
Auger Size: 4.25" ID
Rig Type: Ingersoll Rand A300
Sampling Method: 2' x 2" Split Spoon

Northing: 935217.0
Easting: 538449.9
Casing Elevation: 429.50' AMSL

Borehole Depth: 20' bgs
Surface Elevation: 429.98' AMSL

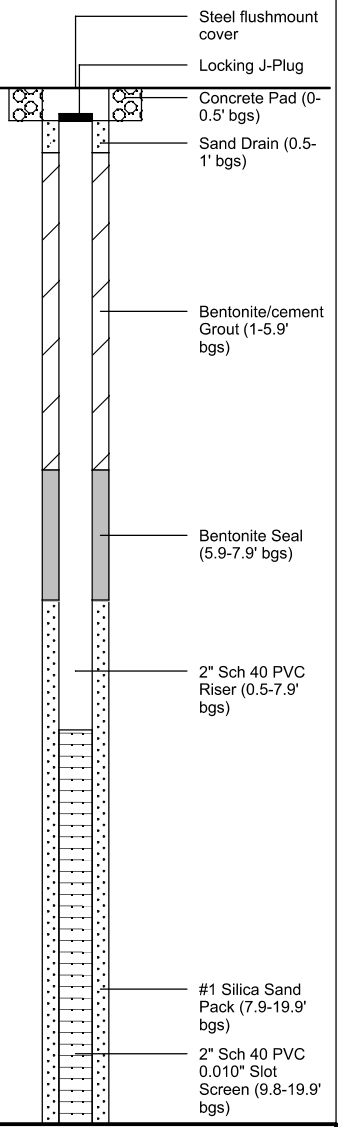
Descriptions By: Christin Cifelli

Well/Boring ID: **MW08-5S**

Client: New York State Electric and Gas

Location: West Main Street
Goshen, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
0	430	1	0-2	1.4	6 7 13 16	20	0.0		Brown fine to medium SAND, moist. White/grey medium to coarse GRAVEL, some medium Sand and Concrete, moist. Dark brown/grey fine to coarse GRAVEL (burnt fragmented debris), moist.
		2	2-4	0.9	3 4 5 4	9	0.0		Brown Silty CLAY, trace coarse Sand to Fine Gravel, moist.
5	425	3	4-6	1.0	3 3 4 3	7	0.0		
		4	6-8	1.1	3 2 2 3	4	0.0		Brown Silty CLAY, trace coarse Sand, moist.
		5	8-10	1.4	4 5 7 20	12	0.0		Brown Silty CLAY, some coarse Sand to medium Gravel, moist. Brown SILT, some Clay, little Sand and fine to medium Gravel (Shale), moist.
10	420	6	10-12	1.1	21 17 17 22	34	0.0		Brown very fine SAND and SILT, little fine to medium Gravel, moist.
		7	12-14	0.5	26 50	50+	0.0		Brown very fine SAND and SILT, trace coarse Sand and fine Gravel, moist. SAA, grey in color.
15	415	8	14-16	1.1	28 30 26 22	56	35.3		Grey very fine SAND, moist. Grey very fine SAND and SILT, little Clay and fine Gravel, moist.



Well/Boring Construction

Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level; OLM = Oil-like material; TLM = Tar-like material

ARCADIS
Infrastructure, environment, buildings

Client: New York State Electric and Gas

Well/Boring ID: **MW08-5S**

Borehole Depth: 20' bgs

Site Location:
West Main Street
Goshen, NY

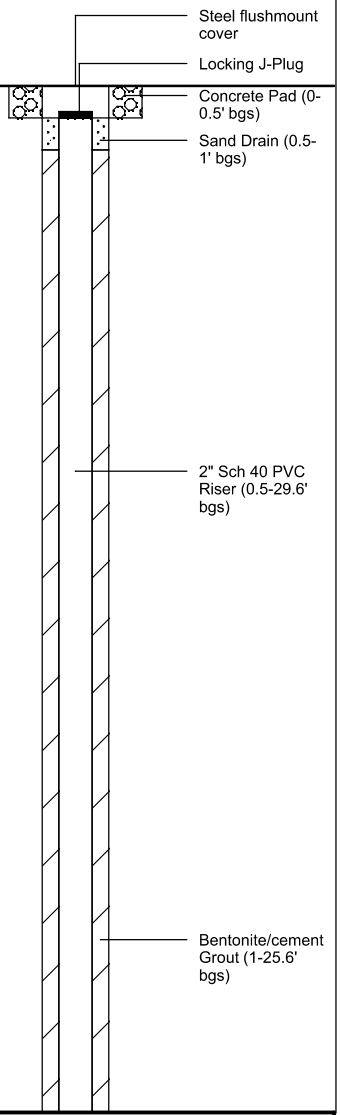
DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
		9	16-18	1.0	10 12 13 12	25	4.4		Grey very fine SAND, wet. Grey very fine SAND and SILT, some fine to medium Gravel, moist.	#1 Silica Sand Pack (7.9-19.9' bgs) 2" Sch 40 PVC 0.010" Slot Screen (9.8-19.9' bgs)
		10	18-20	1.0	13 12 12 12	24	0.0		Grey very fine SAND and SILT, little Clay, trace coarse Sand to medium Gravel, moist.	
20	410									
25	405									
30	400									
35	395									

Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level; OLM = Oil-like material; TLM = Tar-like material

ARCADIS
Infrastructure, environment, buildings

Date Start/Finish: 11/13/08 **Drilling Company:** Parratt Wolff **Driller's Name:** Jim Lansing **Drilling Method:** Hollow Stem Auger **Sampling Method:** 4' x 2" Macrocore **Rig Type:** Ingersoll Rand A300	**Northing:** 935278.5 **Easting:** 538479.4 **Casing Elevation:** 428.61' AMSL **Borehole Depth:** 40' bgs **Surface Elevation:** 429.15' AMSL **Descriptions By:** Christin Cifelli	**Well/Boring ID:** **MW08-6D** **Client:** New York State Electric and Gas **Location:** West Main Street Goshen, NY

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
430 / 0						Brown very fine SAND, moist.
	1	0-4	2.0	0.0		Brown fine GRAVEL, moist.
						Red medium GRAVEL (Brick), moist.
				0.0		Black/brown coarse SAND to very coarse GRAVEL, some fine Gravel (Coal and Slag).
425 / 5	2	4-8	1.4	0.0		Brown fine GRAVEL, moist.
						Black medium to coarse GRAVEL, some Coal pieces, moist.
				0.0		White fine to medium GRAVEL (Ash), moist.
420 / 10	3	8-12	2.6	0.0		Black medium GRAVEL, trace very coarse Gravel (Slag), moist.
						White fine to medium GRAVEL (Ash), moist.
				0.0		Brown CLAY, moist.
415 / 15	4	12-16	3.6	0.0		Brown fine to medium SAND, some coarse Sand and Clay, moist.
						Grey Silty CLAY, little fine to medium Gravel, moist.
						Brown SILT, some fine to coarse Gravel, very coarse at the base, moist.
				0.0		Grey CLAY, moist.



ARCADIS
Infrastructure, environment, buildings

Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level; OLM = Oil-like material; TLM = Tar-like material

Client: New York State Electric and Gas

Well/Boring ID: **MW08-6D**

Borehole Depth: 40' bgs

Site Location:
West Main Street
Goshen, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
							Grey Silty CLAY, some fine to coarse Sand, moist.
							Grey SHALE (fractured zone), moist.
					0.0		Grey SILT and CLAY, some fine to very coarse Gravel, moist.
		5	16-20	3.4			Fine to medium SAND lense at 18.0-18.2' bgs.
	410				0.0		Shale fragmented zone at 19.4-19.5' bgs.
20							Grey Silty CLAY, trace fine to medium Gravel, moist.
					0.0		
		6	20-24	2.7			Grey fine SAND, moist.
					0.0		Grey fine to medium GRAVEL and fine to medium SAND, moist.
	405						Grey/ black medium SAND, moist.
25					0.0		
		7	24-28	2.5			Grey very fine SAND and SILT, some coarse Sand and medium Gravel, moist.
					0.0		
							Grey Silty CLAY, some coarse Sand to medium Gravel, moist.
	400	8	28-30	0.85	0.0		Refusal - No Recovery.
30							Grey medium GRAVEL, some very fine Sand and Silt (TILL), moist.
					0.0		Grey SILT and very fine SAND, some medium to very coarse Gravel (TILL), moist.
		9	30-34	1.4			
					0.0		Refusal - No Recovery.
	395						Grey SILT, some very fine Sand, little fine Gravel (TILL), moist.
35		10	34-36	0.5	0.0		Refusal - No Recovery.

Well/Boring Construction

- 2" Sch 40 PVC Riser (0.5-29.6' bgs)
- Bentonite/cement Grout (1-25.6' bgs)
- Bentonite Seal (25.6-27.6' bgs)
- #1 Silica Sand Pack (27.6-39.6' bgs)
- 2" Sch 40 PVC 0.010" Slot Screen (29.6-39.6' bgs)

ARCADIS
Infrastructure, environment, buildings

Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level; OLM = Oil-like material; TLM = Tar-like material

Client: New York State Electric and Gas

Well/Boring ID: **MW08-6D**

Borehole Depth: 40' bgs

Site Location:
West Main Street
Goshen, NY

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
	11	36-38	1.3	0.0		Black/grey medium SAND (TILL), moist. Grey very fine SAND and SILT, little Clay and coarse Sand to medium Gravel (TILL), moist. Refusal - No Recovery.	#1 Silica Sand Pack (27.6-39.6' bgs) 2" Sch 40 PVC 0.010" Slot Screen (29.6-39.6' bgs)
390	12	38-40	1	0.0		Grey very fine SAND and SILT, little Clay and coarse Sand to medium Gravel (TILL), moist. No Recovery.	
40							
385							
45							
380							
50							
375							
55							

ARCADIS
Infrastructure, environment, buildings

Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level; OLM = Oil-like material; TLM = Tar-like material

Date Start/Finish: 11/13/08
Drilling Company: Parratt Wolff
Driller's Name: Jim Lansing
Drilling Method: Hollow Stem Auger
Sampling Method: 4' x 2" Macrocore
Rig Type: Ingersoll Rand A300

Northing: 935282.7
Easting: 538477.5
Casing Elevation: 428.60' AMSL

Borehole Depth: 20' bgs
Surface Elevation: 428.96' AMSL

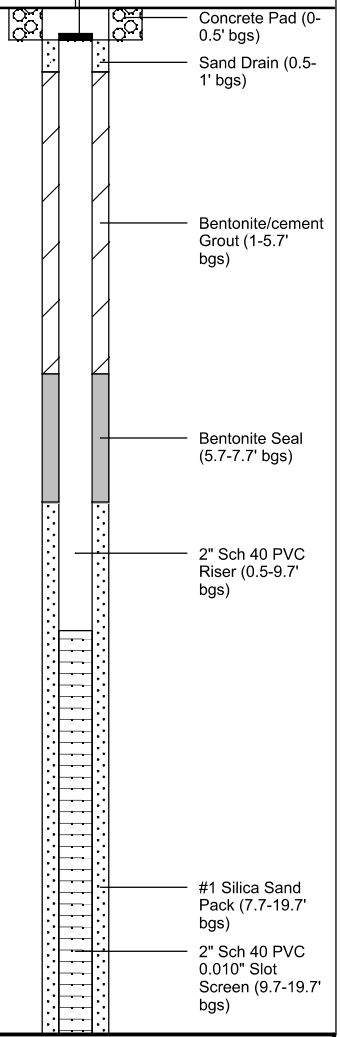
Descriptions By: Christin Cifelli

Well/Boring ID: **MW08-6S**

Client: New York State Electric and Gas

Location: West Main Street
Goshen, NY

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
430 / 0						
	1	0-4	2.0	0.0		Brown very fine SAND, moist.
						Brown fine GRAVEL, moist.
						Red medium GRAVEL (Brick), moist.
				0.0		Black/brown coarse SAND to very coarse GRAVEL, some fine Gravel (Coal and Slag).
425 / 5	2	4-8	1.4	0.0		Brown fine GRAVEL, moist.
						Black medium to coarse GRAVEL, some Coal pieces, moist.
				0.0		White fine to medium GRAVEL (Ash), moist.
420 / 10	3	8-12	2.6	0.0		Black medium GRAVEL, trace very coarse Gravel (Slag), moist.
						White fine to medium GRAVEL (Ash), moist.
				0.0		Brown CLAY, moist.
415 / 15	4	12-16	3.6	0.0		Brown fine to medium SAND, some coarse Sand and Clay, moist.
						Grey Silty CLAY, little fine to medium Gravel, moist.
						Brown SILT, some fine to coarse Gravel, very coarse at the base, moist.
				0.0		Grey CLAY, moist.



Well/Boring Construction

ARCADIS
Infrastructure, environment, buildings

Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level; OLM = Oil-like material; TLM = Tar-like material

Client: New York State Electric and Gas

Well/Boring ID: **MW08-6S**

Borehole Depth: 20' bgs

Site Location:
West Main Street
Goshen, NY

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
410	5	16-20	3.4	0.0 0.0		Grey Silty CLAY, some fine to coarse Sand, moist. Grey SHALE (fractured zone), moist. Grey SILT and CLAY, some fine to very coarse Gravel, moist.	#1 Silica Sand Pack (7.7-19.7' bgs) 2" Sch 40 PVC 0.010" Slot Screen (9.7-19.7' bgs)

20 — 405 — 25 — 400 — 30 — 395 — 35

ARCADIS
Infrastructure, environment, buildings

Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level; OLM = Oil-like material; TLM = Tar-like material

Date Start/Finish: 10/16/08
Drilling Company: Parratt Wolff
Driller's Name: Jim Lansing
Drilling Method: Hollow Stem Auger
Sampling Method: 4' x 2" Macrocore
Rig Type: Ingersoll Rand A300

Northing: 935164.4
Easting: 538531.8
Casing Elevation: 435.77' AMSL

Borehole Depth: 40' bgs
Surface Elevation: 436.08' AMSL

Descriptions By: Christin Cifelli

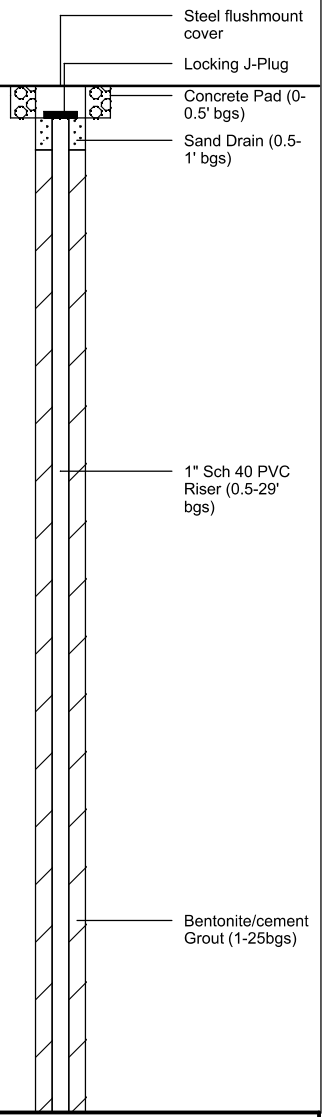
Well/Boring ID: **MW08-7D**

Client: New York State Electric and Gas

Location: West Main Street
Goshen, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
0	435	1	0-4	3.4	0.0		Dark brown TOPSOIL, moist.
							Black fine SAND, moist.
							Light brown fine SAND, little Silt and Clay, trace medium Gravel, moist.
					0.0		Coarse SAND lense at 2.2-2.3' bgs.
5	430	2	4-8	3.6	0.0		Light brown very fine SAND and SILT, little to trace Clay, trace medium Gravel, moist.
							Coarse GRAVEL (rock fragments) at 4.5-4.7' bgs.
					0.0		
10	425	3	8-12	3.8	0.0		SAA without rock fragments.
					0.0		Light brown medium to coarse SAND, moist.
							Light brown very fine SAND and SILT, trace Clay and medium Gravel, moist.
15		4	12-16	3.2	0.0		SAA.
							Brown fine to coarse SAND and medium GRAVEL, moist.
					0.0		Pieces of SHALE at 16.0'bgs.

Well/Boring Construction



ARCADIS
Infrastructure, environment, buildings

Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level; OLM = Oil-like material; TLM = Tar-like material

Client: New York State Electric and Gas

Well/Boring ID: **MW08-7D**

Borehole Depth: 40' bgs

Site Location:
West Main Street
Goshen, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
	420						
		5	16-20	1.9	0.0		Grey very fine SAND and SILT, some medium Gravel, trace Clay, moist.
					0.0		
20							
	415	6	20-24	1.9	0.0		SAA without Shale.
					0.0		
25							
	410	7	24-28	2.6	0.0		Grey Silty CLAY, trace Cobbles, moist.
					0.0		
30		8	28-32	3.1	0.0		Grey SILT and CLAY, trace medium Gravel (TILL), moist.
	405				0.0		
		9	32-36	2.7	0.0		Grey SILT and CLAY, some Gravel (TILL), moist.
35							Grey medium to coarse SAND and GRAVEL, some Clay (TILL), moist.
					0.0		

Well/Boring Construction

- 1" Sch 40 PVC Riser (0.5-29' bgs)
- Bentonite/cement Grout (1-25bgs)
- Bentonite Seal (25-27' bgs)
- #1 Silica Sand Pack (27-39' bgs)
- 1" Sch 40 PVC 0.010" Slot Screen (29-39' bgs)

Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level; OLM = Oil-like material; TLM = Tar-like material

ARCADIS
Infrastructure, environment, buildings

Client: New York State Electric and Gas

Well/Boring ID: **MW08-7D**

Borehole Depth: 40' bgs

Site Location:
West Main Street
Goshen, NY

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
400	10	36-40	1.8	0.0 0.0		Grey fine SAND and SILT, some Gravel, trace Clay (TILL), moist.	#1 Silica Sand Pack (27-39' bgs) 1" Sch 40 PVC 0.010" Slot Screen (29-39' bgs)
40 / 395							
45 / 390							
50 / 385							
55							

Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level; OLM = Oil-like material; TLM = Tar-like material

ARCADIS
Infrastructure, environment, buildings

Date Start/Finish: 10/16/08
Drilling Company: Parratt Wolff
Driller's Name: Jim Lansing
Drilling Method: Hollow Stem Auger
Sampling Method: 4' x 2" Macrocore
Rig Type: Ingersoll Rand A300

Northing: 935161.9
Easting: 538532.7
Casing Elevation: 435.90' AMSL

Borehole Depth: 16' bgs
Surface Elevation: 436.10' AMSL

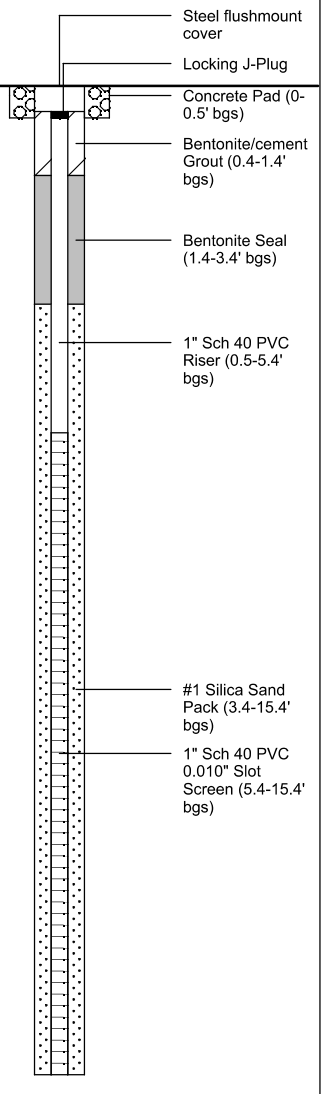
Descriptions By: Christin Cifelli

Well/Boring ID: **MW08-7S**

Client: New York State Electric and Gas

Location: West Main Street
Goshen, NY

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
0 / 435	1	0-4	3.4	0.0		Dark brown TOPSOIL, moist.
						Black fine SAND, moist.
				0.0		Light brown fine SAND, little Silt and Clay, trace medium Gravel, moist.
5 / 430	2	4-8	3.6	0.0		Light brown very fine SAND and SILT, little to trace Clay, trace medium Gravel, moist.
				0.0		
10 / 425	3	8-12	3.8	0.0		SAA without rock fragments.
				0.0		Light brown medium to coarse SAND, moist.
						Light brown very fine SAND and SILT, trace Clay and medium Gravel, moist.
15	4	12-16	3.2	0.0		SAA.
						Brown fine to coarse SAND and medium GRAVEL, moist.
				0.0		

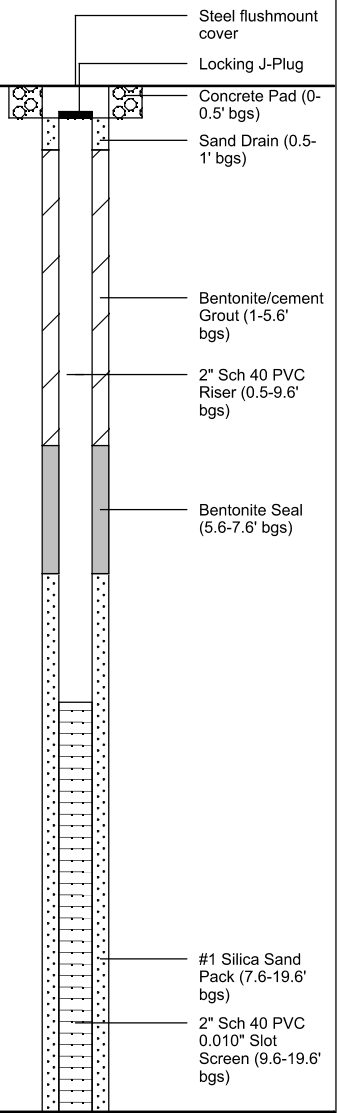


ARCADIS
Infrastructure, environment, buildings

Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level; OLM = Oil-like material; TLM = Tar-like material

Date Start/Finish: 11/5/08 **Drilling Company:** Parratt Wolff **Driller's Name:** Jim Lansing **Drilling Method:** Hollow Stem Auger **Sampling Method:** 4' x 2" Macrocore **Rig Type:** Ingersoll Rand A300	**Northing:** 935168.3 **Easting:** 538471.9 **Casing Elevation:** 430.61' AMSL **Borehole Depth:** 20' bgs **Surface Elevation:** 431.03' AMSL **Descriptions By:** Christin Cifelli	**Well/Boring ID:** **MW08-8S** **Client:** New York State Electric and Gas **Location:** West Main Street Goshen, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
0	430	1	0-4	2.6	0.0		Grey coarse SAND and medium GRAVEL, moist.
					0.0		Brown very fine to fine SAND, moist.
					0.0		Brown Silty CLAY, moist.
5	425	2	4-8	3.7	0.0		Black medium to coarse SAND, moist.
					0.0		Brown Silty CLAY, trace medium Gravel, moist.
					0.0		Grey fine to coarse SAND, some medium Gravel, moist.
10	420	3	8-12	3.7	0.0		Brown Silty CLAY, some fine to medium Gravel, moist.
					0.0		Brown very fine SAND and SILT, little fine Gravel, wet.
		4	12-16	3.8	0.0		Grey/brown SILT and very fine SAND, trace Clay and fine to medium Gravel, moist.
15					0.0		



ARCADIS
Infrastructure, environment, buildings

Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level; OLM = Oil-like material; TLM = Tar-like material

Client: New York State Electric and Gas

Well/Boring ID: **MW08-8S**

Borehole Depth: 20' bgs

Site Location:
West Main Street
Goshen, NY

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
415							
	5	16-20	2.8	0.0		Grey very fine SAND and SILT, moist.	#1 Silica Sand Pack (7.6-19.6' bgs)
				0.0		Grey SILT, some very fine Sand, little fine to medium Gravel, moist.	2" Sch 40 PVC 0.010" Slot Screen (9.6-19.6' bgs)
20 / 410							
25 / 405							
30 / 400							
35							

ARCADIS
Infrastructure, environment, buildings

Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level; OLM = Oil-like material; TLM = Tar-like material

Date Start/Finish: 11/18/08
Drilling Company: Parratt Wolff
Driller's Name: Jim Lansing
Drilling Method: Hollow Stem Auger
Sampling Method: 4' x 2" Macrocore
Rig Type: Ingersoll Rand A300

Northing: 935230.7
Easting: 538529.3
Casing Elevation: 429.99' AMSL

Borehole Depth: 32' bgs.
Surface Elevation: 430.37' AMSL

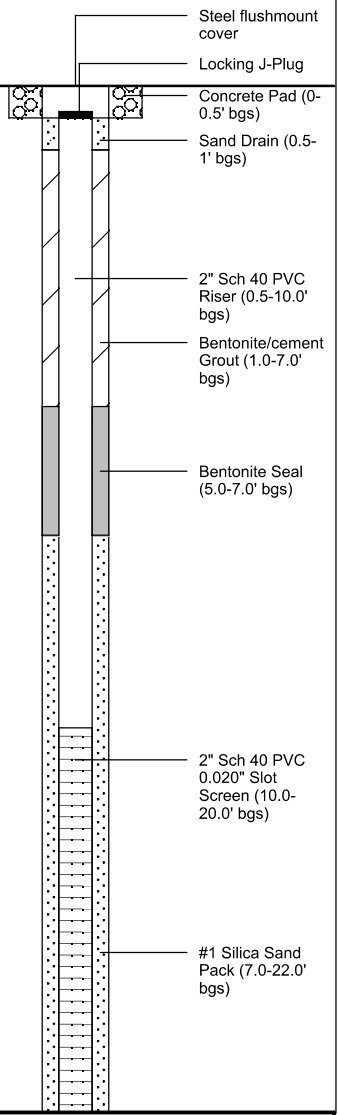
Descriptions By: Christin Cifelli

Well/Boring ID: **NMW08-02**

Client: New York State Electric and Gas

Location: West Main Street
Goshen, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
0	0						Black coarse SAND and medium GRAVEL, moist.
					0.2		Brown medium SAND and medium GRAVEL, moist.
							Brown/grey/black CLAY and SILT, some fine to coarse Gravel, OLM staining, moist.
					3.4		
5	-5				42.2		Light brown/grey CLAY, some SILT, moist.
							Dark grey material with odor from 4.2-4.3' bgs.
					142		Dark grey/black material with odor from 7.1-7.4' bgs
							Grey very coarse SAND and coarse GRAVEL, moist.
							Brown/grey CLAY and SILT, moist.
					15.6		Brown/grey CLAY and SILT, some coarse Sand to medium Gravel, moist.
10	-10						Grey Silty CLAY, some medium Sand to coarse Gravel, moist.
							Fine to medium Sand lense from 9.8-9.9' bgs.
							Black lense of material with odor at 10.25' bgs.
					7.5		Medium Gravel of Shale at 10.6-10.8' bgs.
							Grey CLAY and SILT, trace coarse Sand, moist.
							Grey fine to coarse Sand lense, OLM staining from 12.5-12.7' bgs.
					1443		
							OLM saturated fine to medium Sand from 13.9-14.0' bgs.
15	-15				227		



ARCADIS
Infrastructure, environment, buildings

Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level; OLM = Oil-like material; TLM = Tar-like material

Client: New York State Electric and Gas

Well/Boring ID: **NMW08-02**

Borehole Depth: 32' bgs.

Site Location:
West Main Street
Goshen, NY

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
				389		Grey Silty CLAY, some coarse Sand to very coarse Gravel, moist. Medium Sand lense at 16.1' bgs.	#1 Silica Sand Pack (7.0-22.0' bgs)
				756		Reddish/brown fine SAND saturated with OLM, moist.	2" Sch 40 PVC 0.020" Slot Screen (10.0-20.0' bgs)
20 -20						Grey Silty CLAY, moist.	
				73.7		Grey Silty CLAY, some coarse Sand to very coarse Gravel, moist.	Cement/Bentonite Grout (20'-22' bgs) 2" Sch 40 PVC Sump (20.0-22.0' bgs)
25 -25							
30 -30							
35 -35							

ARCADIS
Infrastructure, environment, buildings

Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level; OLM = Oil-like material; TLM = Tar-like material

Date Start/Finish: 11/7/2016
Drilling Company: Parratt Wolff
Driller's Name: Ian Grassie
Drilling Method: Hollow Stem Auger
Auger Size: 3 1/4"
Rig Type: CME truck-mounted
Sampling Method: 2' x 2" Split Spoon

Northing: 935190.2510
Easting: 538497.4100
Casing Elevation: 429.820

Borehole Depth: 28' bgs
Surface Elevation: 430.200

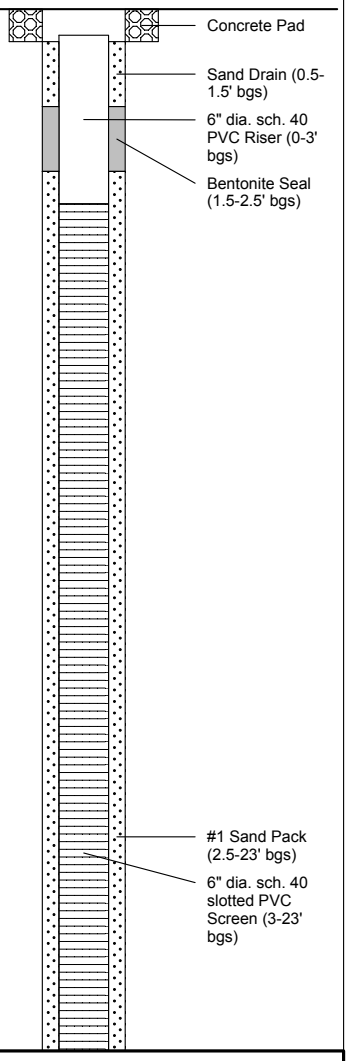
Descriptions By: Marcus Hagan

Well/Boring ID: **NMW16-01**

Client: New York State Electric and Gas

Location: West Main Street
Goshen, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
0	430	1	0-2	1.5	0 5 5 5	10	0.0		Pre-augered. Asphalt removed. Dark brown fine SAND, some Silt and Clay, little fine subangular gravel, moist.
		2	2-4	1.4	3 3 3 6	6	0.0		Gray fine to coarse subrounded GRAVEL, some fine Sand, poorly sorted , moist. Dark brown SILT, some trace fine Sand, loose, moist. Brown CLAY, trace Silt, no dilatency, dense, dry.
5	425	3	4-6	0.9	5 6 7 7	13	0.3		Light brown CLAY, some fine to coarse subrounded Gravel, dry, dense.
		4	6-8	1.7	11 11 19 8	30	0.2		Light brown CLAY, some Silt, trace fine Sand, no dilatency, moist. Coarse GRAVEL lens at 7' bgs.
		5	8-10	1.6	4 5 6 6	11	0.0		Light brown CLAY, some Silt, trace fine to coarse Sand, trace fine subangular Gravel, cohesive, dense, moist.
10	420	6	10-12	1.8	10 12 11 13	23	0.0		
		7	12-14	1.0	14 19 18 18	37	0.4		Gray CLAY and SILT, some very fine Sand, trace coarse Gravel, dense, moist. Angular coarse GRAVEL, some fine Sand and Silt, little Clay, loose, wet.
15	415	8	14-16	1.7	15 16 18 20	34	19.2		Gray SILT and fine SAND, some Clay, trace fine angular Gravel, moist, dense, some coal tar-like odor.



Remarks: bgs = below ground surface; NA = not available;
PID = photoionization detector; ppm = parts per million

ARCADIS Design & Consultancy for natural and built assets

Client: New York State Electric and Gas

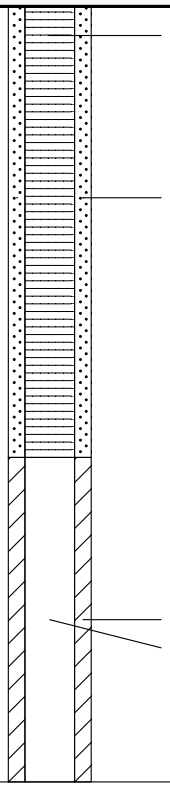
Well/Boring ID: **NMW16-01**

Borehole Depth: 28' bgs

Site Location:
West Main Street
Goshen, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
		9	16-18	1.7	12 15 15 13	30	1.7		Light gray SILT and CLAY, trace fine Sand, dense, moist. Gravel lense at 16.9-17' bgs.
		10	18-20	0.7	4 4 7 8	11	4.9		Dark gray CLAY, little Silt, trace fine to coarse Sand, dry, dense.
20	410	11	20-22	1.1	4 5 7 8	12	1.3		
		12	22-24	1.9	8 10 14 14	24	1.2		Gray SILT, trace fine Sand, wet, loose. Gray-brown CLAY and SILT, some fine to coarse Sand, trace fine Gravel, dense, dry. [TILL]
25	405	13	24-26	1.9	11 12 14 19	26	0.0		
									Drilled to 28' bgs to set bottom of sump. End of boring.
30	400								
35	395								

Well/Boring Construction



Remarks: bgs = below ground surface; NA = not available;
PID = photoionization detector; ppm = parts per million

ARCADIS Design & Consultancy for natural and built assets

Date Start/Finish: 11/8/2016
Drilling Company: Parratt Wolff
Driller's Name: Ian Grassie
Drilling Method: Hollow Stem Auger
Auger Size: 3 1/4"
Rig Type: CME truck-mounted
Sampling Method: 2' x 2" Split Spoon

Northing: 935194.4480
Easting: 538505.5650
Casing Elevation: 429.880

Borehole Depth: 40.5' bgs
Surface Elevation: 430.202

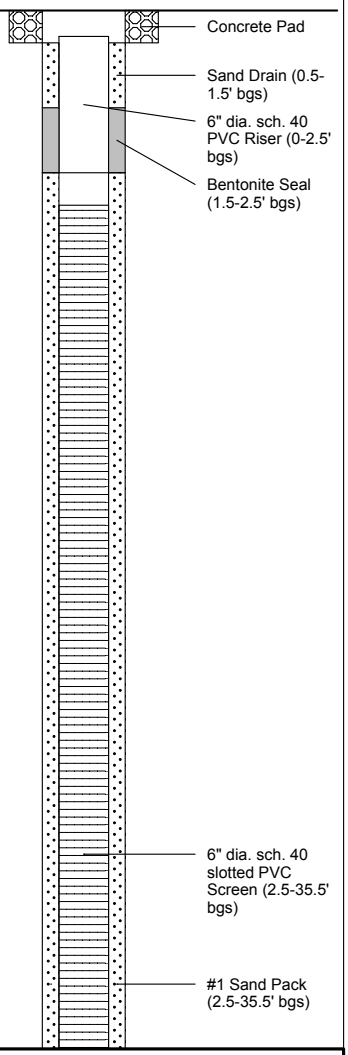
Descriptions By: Marcus Hagan

Well/Boring ID: **NMW16-02**

Client: New York State Electric and Gas

Location: West Main Street
Goshen, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
0	430	1	0-2	NA	NA 11 5 5	16	0.0		Pre-augered. Asphalt removed. Brown fine SAND, some fine to coarse subangular Gravel, trace Silt, dry, loose.
		2	2-4	NA	50/.4	NA	0.2		Light brown fine SAND and CLAY, dense, slight coal tar-like odors, dry.
5	425	3	4-6	NA	4 4 4 5	8	1.0		Light brown CLAY, some Silt, trace Organics (Wood), trace fine Sand and angular Gravel, coal tar-like odor, wet, loose.
		4	6-8	NA	5 2 2 3	4	1.0		Brown SILT and CLAY, little Organics (Timbers), trace fine Sand and fine angular Gravel, slight coal tar-like odor, wet, loose.
		5	8-10	NA	3 3 3 3	6	0.1		Brown stiff CLAY, some Silt, little fine to coarse Sand, some fine angular Gravel, slight coal tar-like odor, dense, wet.
10	420	6	10-14	NA	WOH	NA	1.9		
15	415	7	14-16	NA	WOH	NA	NA		No recovery.



Remarks: bgs = below ground surface; NA = not available;
PID = photoionization detector; ppm = parts per million; WOH = weight of hammer

ARCADIS Design & Consultancy for natural and built assets

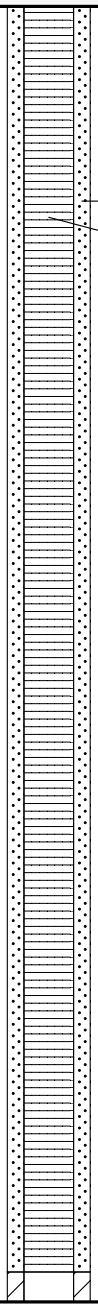
Client: New York State Electric and Gas

Well/Boring ID: **NMW16-02**

Borehole Depth: 40.5' bgs

Site Location:
West Main Street
Goshen, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
		8	16-18	0.0	WOH	NA	NA		No recovery.	
		9	18-20	1.2	WOH	NA	3.5		Brown-gray SILT and fine to coarse SAND, trace Clay, wet, no cohesiveness, loose.	
20	410	10	20-22	1.0	5 6 9 11	15	1.2		Gray CLAY and SILT, little fine Sand, little fine subrounded Gravel, wet, stiff.	
		11	22-24	2.0	5 2 1 1	3	9.2		Gray SILT, little fine to coarse Sand, trace Clay and Organics (Wood), slight coal tar-like odor, loose, wet.	
25	405	12	24-26	0.0	1 1 1 1	2	NA		No recovery.	
		13	26-28	0.0	WOH	NA	NA			
		14	28-30	0.0	WOH	NA	NA			
30	400	15	30-32	0.0	WOH	NA	NA			
		16	32-34	0.0	WOH	NA	NA			
35	395	17	34-36	1.2	1 1 5 8	6	0.0		Gray SILT, some fine to coarse Sand, trace fine subangular Gravel, loose, wet. Gray CLAY and SILT, little fine to coarse Sand, trace fine subangular Gravel, dense, dry. [TILL]	



Remarks: bgs = below ground surface; NA = not available;
PID = photoionization detector; ppm = parts per million; WOH = weight of hammer

ARCADIS Design & Consultancy for natural and built assets

Client: New York State Electric and Gas

Well/Boring ID: **NMW16-02**

Borehole Depth: 40.5' bgs

Site Location:
West Main Street
Goshen, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
40	390								Drilled to 40.5' bgs to set bottom of sump. End of boring.	Grout; 6" dia. sch. 40 PVC Sump (35.5-40.5' bgs)
45	385									
50	380									
55	375									

Remarks: bgs = below ground surface; NA = not available;
PID = photoionization detector; ppm = parts per million; WOH = weight of hammer

ARCADIS Design & Consultancy for natural and built assets

Date Start/Finish: 11/10/2016
Drilling Company: Parratt Wolff
Driller's Name: Bill Rice
Drilling Method: Hollow Stem Auger
Auger Size: 3 1/4"
Rig Type: CME truck-mounted
Sampling Method: 2' x 2" Split Spoon

Northing: 935199.9680
Easting: 538517.3420
Casing Elevation: 429.950

Borehole Depth: 31.3' bgs
Surface Elevation: 430.318

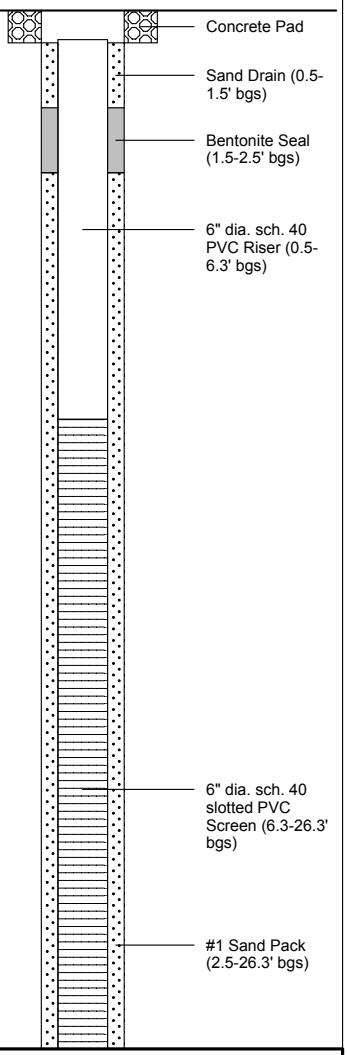
Descriptions By: Marcus Hagan

Well/Boring ID: **NMW16-03**

Client: New York State Electric and Gas

Location: West Main Street
Goshen, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
0	430				NA				Pre-augered. Asphalt removed.
		1	0-2	0.9	8 7 3	NA	6.0		Brown fine SAND, some fine to coarse subangular Gravel, little Silt, dry, loose. Brown CLAY and SILT, some fine Sand, dry, dense.
		2	2-4	1.3	8 5 12 12	15	27.4		Brown fine SAND, little fine to coarse subangular Gravel, trace Silt, dry, loose. Dark brown SILT and ORGANICS (WOOD), little Cinders (Brick), little fine Sand, moderate coal tar-like odor, moist, loose.
5	425	3	4-6	1.9	10 12 16 18	17	1.1		Brown CLAY and SILT, little fine Gravel, trace fine Sand, dense, dry.
		4	6-8	2.0	16 20 25 28	28	150.3		coal tar-like odor from 6-13' bgs.
		5	8-10	1.3	14 26 21 29	45	35.3		Moist from 8-13' bgs.
10	420	6	10-12	2.0	12 15 15 15	47	5.8		Color changed to Black-brown.
		7	12-14	1.5	18 20 26 18	30	298		Black-brown SILT, some Clay, little coarse angular Gravel, little fine Sand, oil-like material in coarse Gravel, strong coal tar-like odor, dense, wet.
15	415	8	14-16	1.1	4 10 13 13	46	239		



Remarks: bgs = below ground surface; NA = not available;
PID = photoionization detector; ppm = parts per million

ARCADIS Design & Consultancy for natural and built assets

Client: New York State Electric and Gas

Well/Boring ID: **NMW16-03**

Borehole Depth: 31.3' bgs

Site Location:
West Main Street
Goshen, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
		9	16-18	1.6	8 8 9 15	23	313		Brown SILT and fine SAND, some Clay, trace fine Gravel, strong coal tar-like odor, wet, dense.	6" dia. sch. 40 slotted PVC Screen (6.3-26.3' bgs)
		10	18-20	0.8	4 6 7 7	17	20.5		Gray SILT and fine SAND, some Clay, little fine to coarse angular Gravel, moist, dense.	#1 Sand Pack (2.5-26.3' bgs)
20	410	11	20-22	1.6	3 4 6 7	13	10.9			
		12	22-24	2.0	7 8 12 15	10	3.7			
25	405	13	24-26	1.3	7 12 12 16	20	8.7		Gray fine SAND and SILT, some fine to coarse Gravel, oil-like material in coarse Gravel, little Clay, dense, dry. Gray SILT and CLAY, some fine Sand, little fine Gravel, some oil-like material in coarse Gravel, dense, dry.	
		14	26-28	1.4	30 78 27 20	105	74.9 1.4		Gray SILT and CLAY, some fine Sand, some fine to coarse angular Gravel, dense, dry. [TILL]	Grout 6" dia. sch. 40 PVC Sump (26.3-31.3' bgs)
30	400								Drilled to 31.3' bgs to set bottom of sump. End of boring.	
35	395									

Remarks: bgs = below ground surface; NA = not available;
PID = photoionization detector; ppm = parts per million

ARCADIS Design & Consultancy for natural and built assets

Date Start/Finish: 11/14/2016
Drilling Company: Parratt Wolff
Driller's Name: Layne Pech
Drilling Method: Hollow Stem Auger
Auger Size: 3 1/4"
Rig Type: CME truck-mounted
Sampling Method: 2' x 2" Split Spoon

Northing: 935205.1050
Easting: 538524.5680
Casing Elevation: 430.110

Borehole Depth: 32.4' bgs
Surface Elevation: 430.436

Descriptions By: Marcus Hagan

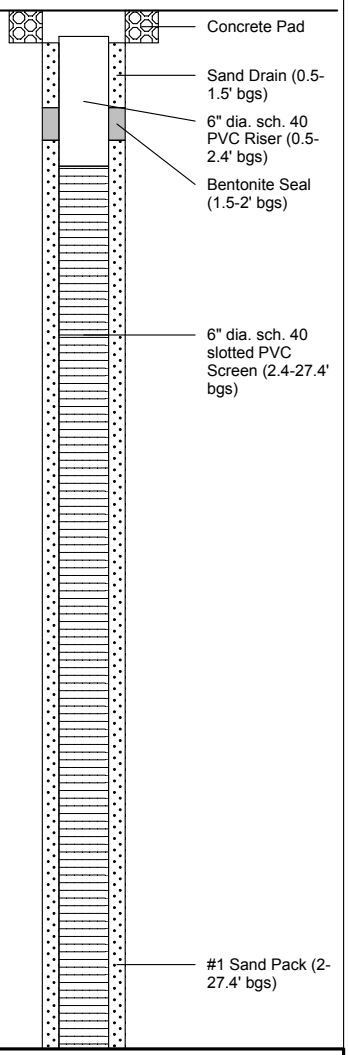
Well/Boring ID: **NMW16-04**

Client: New York State Electric and Gas

Location: West Main Street
Goshen, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
0	430	1	0-2	1.1	NA 8 8 5	16	0.0		Pre-augered. Asphalt removed. Gray coarse GRAVEL, little fine Sand, little Silt, loose, dry.
		2	2-4	0.3	102/.2	NA	0.0		Brown SILT and CLAY, little fine Sand, trace fine Gravel, dense, dry. Limited recovery from 2-4' bgs. Augered through interval.
5	425	3	4-6	1.4	3 7 17 16	24	0.0		Brown stiff CLAY, little Silt, trace fine angular Gravel, cohesive, dense, wet.
		4	6-8	1.2	6 12 19 18	31	0.0		
		5	8-10	1.7	5 6 17 22	23	0.0		
10	420	6	10-12	1.7	7 18 25 38	43	0.0		Dark brown and gray fine SAND and SILT, some Clay, little fine to coarse subangular Gravel, dense, dry. [TILL]
		7	12-14	1.2	22 24 28 30	52	0.0		
15	415	8	14-16	1.6	5 7 12 7	19	392.4		Brown fine SAND and SILT, little Clay, trace fine subangular Gravel, dense, wet. Gray fine SAND, some Silt, little Clay, oil-like material and oil-like material, coal tar-like odor, wet, loose.

Well/Boring Construction



Remarks: bgs = below ground surface; NA = not available;
PID = photoionization detector; ppm = parts per million

ARCADIS Design & Consultancy for natural and built assets

Client: New York State Electric and Gas

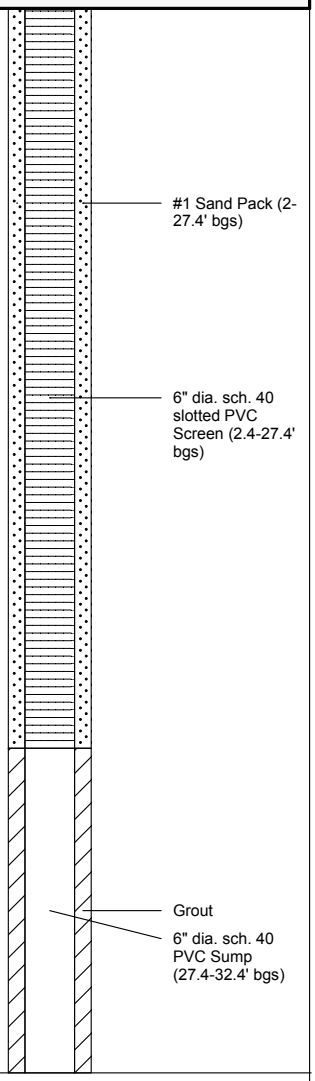
Well/Boring ID: **NMW16-04**

Borehole Depth: 32.4' bgs

Site Location:
West Main Street
Goshen, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
		9	16-18	0.7	18 12 18 14	20	24.7		Gray very fine SAND and SILT, trace fine to coarse angular Gravel, wet, loose, slight coal tar-like odor.
		10	18-20	0.0	4 5 8 8	13	NA		No recovery.
20	410	11	20-22	1.5	4 5 10 8	15	1.0		Gray SAND and SILT, some Clay, little fine subrounded Gravel, dense, moist.
		12	22-24	1.4	7 11 12 12	23	5.4		
25	405	13	24-26	1.7	10 11 13 15	24	2.1		Dry. Moist.
		14	26-28	1.9	18 18 27 50/.3	45	0.7		Gray SILT and CLAY, little fine Sand, little fine to coarse subangular Gravel, dense, dry. [TILL]
30	400								Drilled to 32.4' bgs to set bottom of sump. End of boring.
35	395								

Well/Boring Construction



Remarks: bgs = below ground surface; NA = not available;
PID = photoionization detector; ppm = parts per million

ARCADIS Design & Consultancy for natural and built assets

Date Start/Finish: 11/16/2016
Drilling Company: Parratt Wolff
Driller's Name: Layne Pech
Drilling Method: Hollow Stem Auger
Auger Size: 3 1/4"
Rig Type: CME truck-mounted
Sampling Method: 2' x 2" Split Spoon

Northing: 935206.9050
Easting: 538533.7250
Casing Elevation: 430.740

Borehole Depth: 32' bgs
Surface Elevation: 430.736

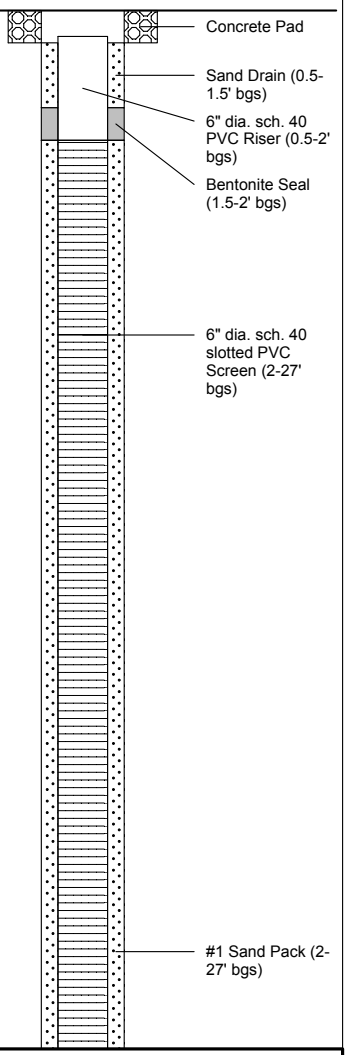
Descriptions By: Marcus Hagan

Well/Boring ID: **NMW16-05**

Client: New York State Electric and Gas

Location: West Main Street
Goshen, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
0	430	1	0-2	0.9	0 5 6 4	11	0.0		Pre-augered. Asphalt removed. Dark brown fine SAND, some Silt, little fine to coarse angular Gravel, loose, dry.
		2	2-4	0.8	5 6 9 11	15	0.0		Brown CLAY and SILT, little fine to coarse angular Gravel, trace fine Sand, dense, moist.
5	425	3	4-6	0.9	9 12 17 22	29	0.0		Light brown very stiff CLAY and SILT, trace fine Sand and asphalt, low plasticity, dry, dense.
		4	6-8	1.6	19 24 24 26	48	0.0		Dark brown fine SAND and fine angular GRAVEL, some Silt, little Clay, moist, loose.
		5	8-10	1.7	30 15 20 27	35	0.0		Light brown very stiff CLAY and SILT, trace fine Sand, low plasticity, dry, dense. Coarse angular GRAVEL lens, some fine Sand, loose, dry. Light brown very stiff CLAY and SILT, trace fine Sand and fine angular Gravel, low plasticity, dense, dry.
10	420	6	10-12	2.0	8 16 20 23	36	0.0		
		7	12-14	1.3	17 20 27 29	47	0.0		Gray-brown, little fine to coarse angular Gravel.
15	415	8	14-16	0.9	5 6 8 15	14	392.4		Gray, slight coal tar-like odor.



Remarks: bgs = below ground surface; NA = not available;
PID = photoionization detector; ppm = parts per million

ARCADIS Design & Consultancy for natural and built assets

Client: New York State Electric and Gas

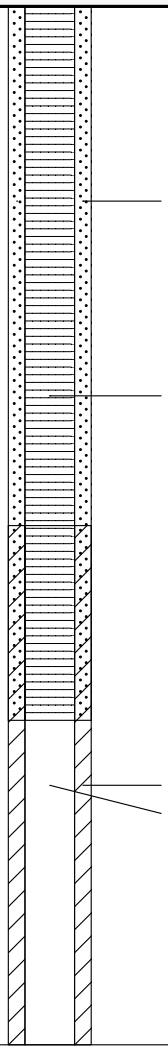
Well/Boring ID: **NMW16-05**

Borehole Depth: 32' bgs

Site Location:
West Main Street
Goshen, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
		9	16-18	1.8	13 17 20 18	37	24.7		oil-like material at 16.5-17' bgs in coarse Gravel. Strong coal tar-like odor.
		10	18-20	1.8	15 15 15 15	30	NA		Gray SILT, some very fine Sand and angular Gravel, trace Clay, loose, wet. Gray SILT and CLAY, little very fine Sand, trace fine angular Gravel, stiff, dense, wet.
20	410	11	20-22	1.2	4 4 7 12	11	1.0		Gray SILT and CLAY, trace very fine Sand and fine angular Gravel, high plasticity, dense, dry.
		12	22-24	1.1	5 8 14 15	22	5.4		
25	405	13	24-26	1.6	4 7 17 16	24	2.1		Little fine to coarse Gravel, wet, dense.
		14	26-28	1.6	8 29 29 28	58	0.7		Oil-like material/NAPL just above Till at 26.5' bgs. Gray CLAY and SILT, little fine Sand and fine subangular Gravel, stiff, dense, dry. [TILL]
		15	28-30	1.0	30 50 47 24	97			
30	400								Drilled to 32' bgs to set bottom of sump. End of boring.
35	395								

Well/Boring Construction



Remarks: bgs = below ground surface; NA = not available;
PID = photoionization detector; ppm = parts per million

ARCADIS Design & Consultancy for natural and built assets

Date Start/Finish: 12/11/18
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: Jolaan Price, Mike Wright
Drilling Method: Hollow stem auger
Auger Size: 4 1/4 inch
Rig Type: Ingersol Rand A300
Sampling Method: NA

Northing: NA
Easting: NA
Casing Elevation: 432.61 ft. AMSL

Borehole Depth: 40.0 ft. bgs
Surface Elevation: 430.60 ft. AMSL

Descriptions By: NA

Well/Boring ID: **MW18-04D**

Client: New York Electric and Gas Corporation

Location: NYSEG Goshen Former MGP Site, 250 West Main Street, Goshen, NY 10924

DRAFT

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 / 0

Blind drilled to 40 ft. bgs to install replacement monitoring well. See boring log MW08-04D for additional information.

5 / -5

10 / -10

15 / -15

20 / -20

25 / -25

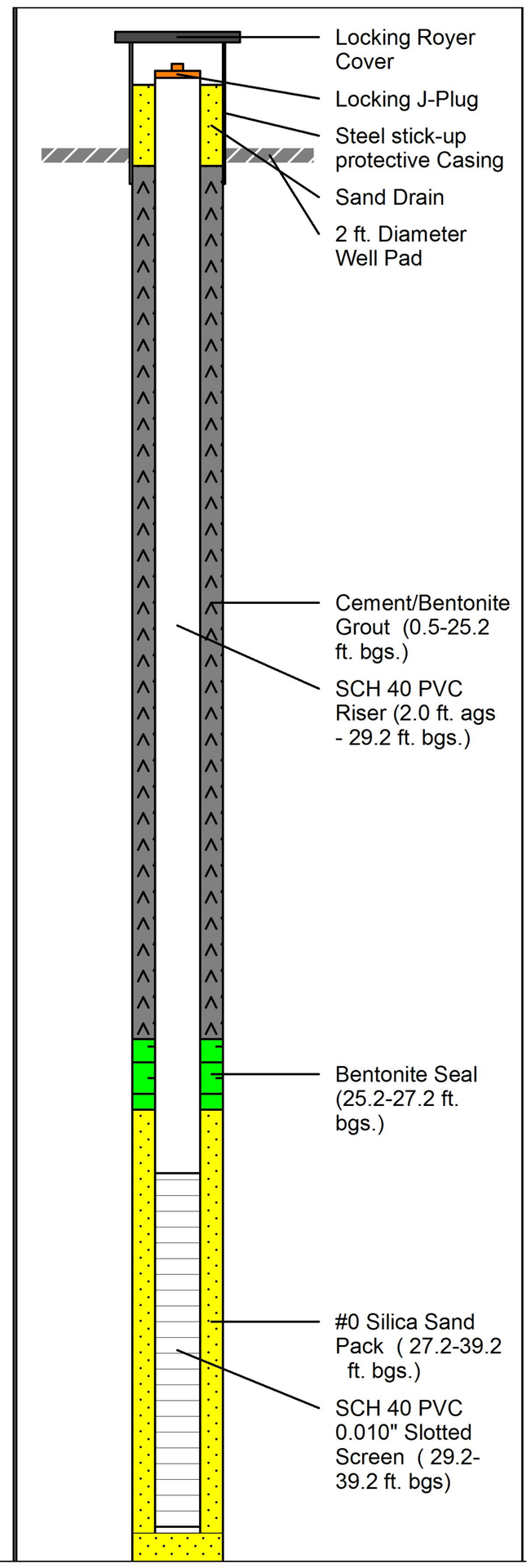
30 / -30

35 / -35

Drilling becoming difficult at approximately 35 ft. bgs.

40 / -40

End of boring 40.0 ft. bgs.



ARCADIS Design & Consultancy for natural and built assets

Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level.
Borings hand cleared from 0-5 ft. bgs prior to drilling.

Date Start/Finish: 12/10/18
Drilling Company: Parratt-Wolff, Inc
Driller's Name: Jolaan Price, Mike Wright
Drilling Method: Hollow stem auger
Auger Size: 4 1/4 inch
Rig Type: Ingersol Rand A300
Sampling Method: NA

Northing: NA
Easting: NA
Casing Elevation: 432.74 ft. AMSL

Borehole Depth: 20.0 ft. bgs
Surface Elevation: 430.70 ft. AMSL

Descriptions By: NA

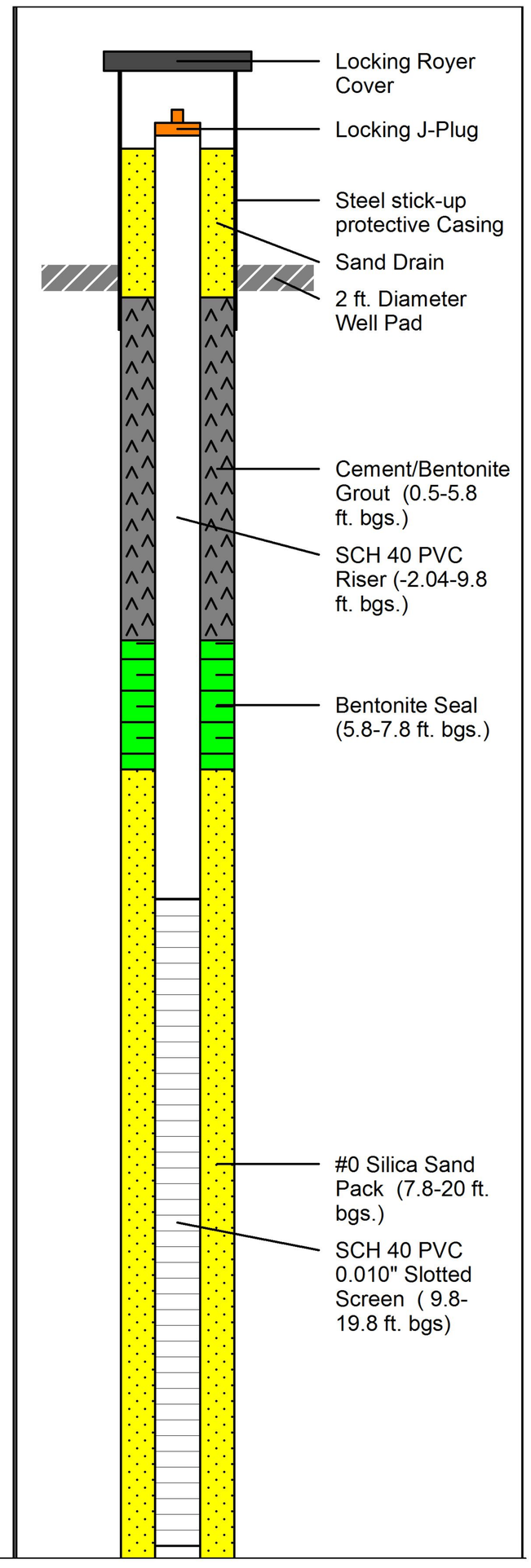
Well/Boring ID: **MW18-04S**

Client: New York State Electric and Gas Corporation

Location: 250 West Main Street, Goshen, NY 10924

DRAFT

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 / 0								Blind drilled to 20 ft. bgs to install replacement monitoring well. See boring log MW08-04S for additional information.	
5 / -5									
10 / -10									
15 / -15									
20 / -20								End of boring 20.0 ft. bgs.	



ARCADIS Design & Consultancy for natural and built assets

Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level; PID = photoionization detector; ppm = parts per million.
Borings hand cleared from 0-5 ft. bgs prior to drilling.

Date Start/Finish: 12/12/18
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: Jolaan Price, Mike Wright
Drilling Method: Hollow stem auger
Auger Size: 4 1/4 inch
Rig Type: Ingersol Rand A300
Sampling Method: NA

Northing: NA
Easting: NA
Casing Elevation: 432.33 ft. AMSL

Borehole Depth: 36.2 ft. bgs
Surface Elevation: 430.37 ft. AMSL

Descriptions By: NA

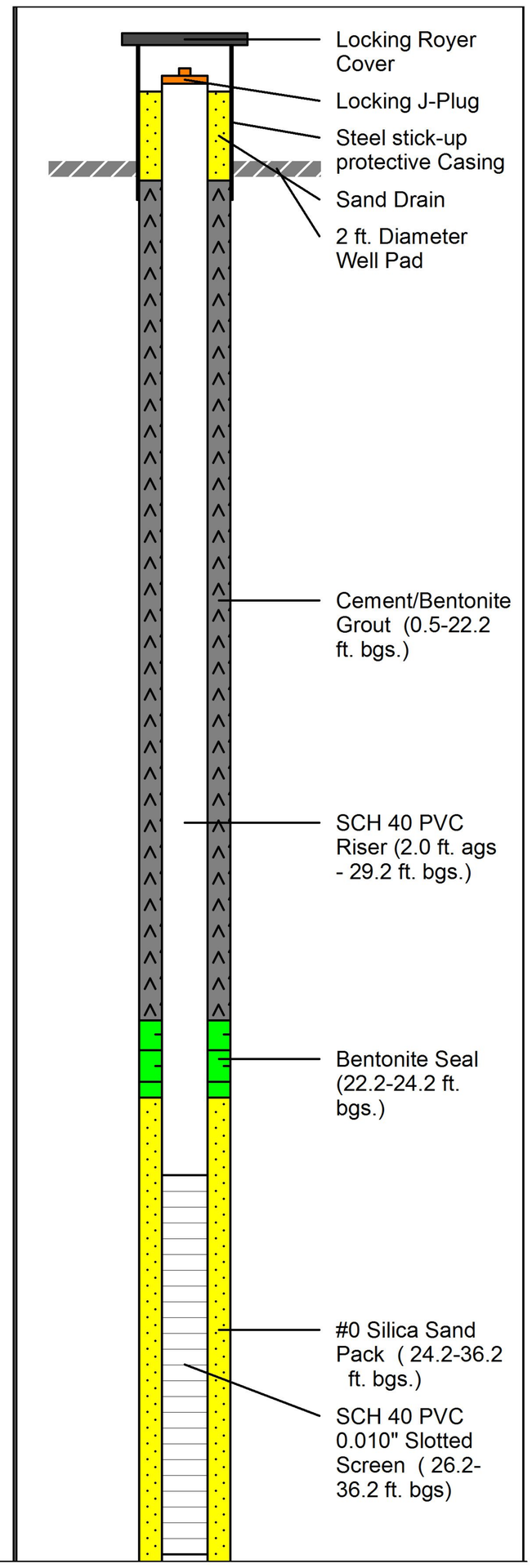
Well/Boring ID: **MW18-08D**

Client: New York Electric and Gas Corporation

Location: NYSEG Goshen Former MGP Site, 250 West Main Street, Goshen, NY 10924

DRAFT

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	0								Blind drilled to 36.2 ft. bgs to install replacement monitoring well. See boring log MW08-08D for additional information.	
5	-5									
10	-10									
15	-15									
20	-20									
25	-25									
30	-30									
35	-35								Drilling becoming difficult at approximately 35 ft. bgs.	
									End of boring 36.2 ft. bgs.	



ARCADIS Design & Consultancy for natural and built assets

Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level.
Borings hand cleared from 0-5 ft. bgs prior to drilling.

Arcadis of New York, Inc.

One Lincoln Center

110 West Fayette Street

Suite 300

Syracuse, New York 13202

Tel 315 446 9120

Fax 315 449 0017

www.arcadis.com