CLINTON WEST STATE SUPERFUND SITE
TOMPKINS COUNTY, ITHACA, NEW YORK

FINAL ENGINEERING REPORT

NYSDEC Site Number: 755015
Standby Engineering Services Contract D007624-04

Prepared for:
New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau E
625 Broadway
Albany, New York 12233-7017

Prepared by:
EA Engineering, P.C. and its Affiliate
EA Science and Technology
6712 Brooklawn Parkway, Suite 104
Syracuse, New York 13211-2158
(315) 431-4610

SEPTEMBER 2013

CERTIFICATIONS

I, Christopher Canonica, am currently a registered professional engineer licensed by the State of New York, I had primary direct responsibility for implementation of the remedial program activities, and I certify that the remedial design was implemented and that all construction activities were completed in substantial conformance with the Department-approved remedial design.

I certify that the data submitted to the Department with this Final Engineering Report demonstrates that the remediation requirements set forth in the Record of Decision and Pilot Study Conceptual Design Report and in all applicable statutes and regulations have been or will be achieved in accordance with the time frames, if any, established in for the remedy.

I certify that all use restrictions, institutional controls, engineering controls, and/or any operation and maintenance requirements applicable to the site are contained in an environmental easement created and recorded pursuant Environmental Conservation Law 71-3605 and that all affected local governments, as defined in Environmental Conservation Law 71-3603, have been notified that such easement has been recorded.

I certify that a Site Management Plan has been submitted for the continual and proper operation, maintenance, and monitoring of all engineering controls employed at the site, including the proper maintenance of all remaining monitoring wells and that such plan has been approved by Department.

I certify that any financial assurance mechanisms required by the Department pursuant to Environmental Conservation Law have been executed.

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, Christopher Canonica, of EA Engineering, P.C., am certifying as Owner's Designated Site Representative for the site.

Christopher J. Canonica
NYS Professional Engineer #070876

9-13-13
Date

Signature

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LIST OF ACRONYMS

Acronym	Definition
cis-1,2-DCE	*cis*-1,2-Dichloroethene
COC	Contaminant of Concern
CVOC	Chlorinated Volatile Organic Compound
DUSR	Data Usability Summary Report
EA	EA Engineering, P.C. and its affiliate EA Science and Technology
FER	Final Engineering Report
FS	Feasibility Study
HASP	Health and Safety Plan
LCS	LCS, Inc.
M/WBE	Minority/Women Business Enterprises
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
O&M	Operation and Maintenance
PCE	Tetrachloroethene
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
RA	Remedial Action
RAO	Remedial Action Objective
RD	Remedial Design
RI	Remedial Investigation
ROD	Record of Decision
SCGs	Standards, Criteria, and Guidance
SCO	Soil Cleanup Objective
SSDS	Sub-slab Depressurization System
TCE	Trichloroethene
VC	Vinyl Chloride
VI	Vapor Intrusion
VOCs	Volatile Organic Compound

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FINAL ENGINEERING REPORT

1.0 BACKGROUND AND SITE DESCRIPTION

1.1 INTRODUCTION

The New York State Department of Environmental Conservation (NYSDEC) issued Work Assignment No. D007624-04 to EA Engineering, P.C., and its affiliate EA Science and Technology (EA) to perform an enhanced anaerobic bioremediation pilot study as part of the ongoing remedial action (RA) at the Clinton West Plaza site (755015). The site is located at 609–625 West Clinton Street in the City of Ithaca, Tompkins County, New York (Figure 1). Based on the findings of a pre-design investigation and Pilot Study Conceptual Design Report (Appendix A), EA completed a pilot study to determine the potential effectiveness of an enhanced anaerobic bioremediation program at the site.

The Pilot Study Summary Report (Appendix B) summarizes current conditions at the site and provides recommendations for future management at the site. The conclusions and recommendations from the resulting data produced during pilot study implementation are used in this Final Engineering Report (FER) to evaluate the effectiveness of meeting the remediation goals and objectives outlined in the NYSDEC Record of Decision (ROD) (NYSDEC 2010)[1].

The Pilot Study Conceptual Design Report (Appendix A) for this site was based on the ROD (NYSDEC 2010)[1], and the Pre-Design Investigation and Pilot Study Program Letter Work Plan (EA 2010)[2] completed by EA. The Pilot Study Conceptual Design Report is a component of the NYSDEC Administrative Record, developed under Standby Engineering Services contract D004438-47 and dated September 28, 2011.

1.2 SITE DESCRIPTION

The 2.49-acre site is commercially developed with an active 36,254 ft^2 shopping plaza that was constructed in 1970 and is currently owned by Clinton West, Ltd. (Tax Map ID No: 79-6-8.2). The site is surrounded by residential neighborhoods and a retail property (Figure 2). Clinton West Laundry is located at 609 West Clinton Street within the Clinton West Plaza, Ithaca, New York.

The Clinton West Plaza site was identified as being developed with at least a portion of the existing structure since 1961, based on historical aerial photographs. The existing structure has been historically utilized as a commercial storefront. Based on historical documentation, the site has included a dry cleaning facility from at least 1970 until 2000, when it was converted to a laundry-only facility with drop-off/pick-up of dry cleaning services.

[1] NYSDEC. 2010. Record of Decision, Clinton West Plaza State Superfund Project, City of Ithaca, Tompkins County, New York Site Number 755015. May.
[2] EA. 2010. Pre-Design Investigation and Pilot Study Program Letter Work Plan. December.

1.3 SITE HISTORY

The Clinton West Plaza site was initially reported as a potential site with contamination after First Niagara Bank of Rochester, New York retained LCS, Inc. (LCS) of Buffalo, New York to conduct an Environmental Transaction Screening, Environmental Site Assessment Report in December 2005 (LCS 2005)[3]. The Environmental Site Assessment Report concluded that a Phase II investigation was warranted to assess the environmental conditions on-site due to the former operational history of a dry cleaner facility at the site. LCS completed the Phase II subsurface investigation and supplemental subsurface investigations (LCS 2006)[4], and determined that soil and groundwater contamination associated with dry cleaning chemicals, notably tetrachloroethene (PCE), existed at the site. PCE is a solvent commonly used in the dry cleaning process. Based on the findings of the Phase II investigation, the site was listed on the NYSDEC Registry of Inactive Hazardous Waste Disposal Sites in New York State as a Class 2 site (Site No. 755015).

1.4 REMEDIAL INVESTIGATION AND FEASIBILITY STUDY

A Remedial Investigation (RI)/Feasibility Study (FS) Report was prepared by Fagan Engineers (2009)[5] for the Clinton West Plaza site. The findings of the RI/FS have been presented below.

- No on-site soil source for chlorinated volatile organic compounds (CVOCs) was identified or delineated during the RI, and the report suggested that CVOC soil concentrations detected greater than site standards, criteria, and guidance (SCGs) values were likely related to elevated CVOC groundwater concentrations.

- Groundwater concentrations of CVOCs have been reported greater than site SCGs dating back to 2006 (LCS 2005)[3]. Two groundwater sampling events conducted during the RI in 2008 and 2009 identified a dissolved-phase CVOC plume in an area south of the former dry cleaners building.

- Soil vapor intrusion (VI) sampling identified an exceedance of the New York State Department of Health (NYSDOH) Air Guideline for PCE within the current laundry facility.

- The FS recommended installation of a sub-slab depressurization system (SSDS), a pre-design investigation, "source area" chemical-oxidation, injection of a hydrogen release compound, implementation of institutional controls, and long-term monitoring.

[3] LCS. 2005. Environmental Transaction Screening, Environmental Site Assessment Report. West Clinton Plaza, 609-625 West Clinton Street, Ithaca, New York. December.
[4] LCS. 2006. Subsurface Soil and Groundwater Investigation and Supplemental Subsurface Soil and Groundwater Investigation. West Clinton Plaza, 609-625 West Clinton Street, Ithaca, New York. May.
[5] Fagan Engineers. 2009. RI/FS Report, Clinton West Plaza, 609-625 West Clinton Street, Ithaca, New York. July.

1.5 RECORD OF DECISION

NYSDEC issued a ROD for the Clinton West Plaza site in May 2010[1]. The list of contaminants of concern (COCs) and their respective SCGs for the site are provided in Table 1. The selected remedy detailed in the ROD included a remedial design (RD) program that would provide details necessary for the construction, and operation and maintenance (O&M) of the overall remedial program. The selected remedy included injection of chemical-oxidants, enhanced anaerobic bioremediation, the installation of a sub-slab vapor mitigation system at the laundry tenant space, cover system over all vegetated areas, implementation of institutional controls in the form of an environmental easement, and development of a Site Management Plan should contamination remain in-place.

1.6 PRE-DESIGN INVESTIGATION SUMMARY AND BASIS OF DESIGN REPORT

NYSDEC/EA identified that the primary *in-situ* degradation reaction to be targeted during the RD would be direct anaerobic reductive dechlorination. In order to accurately design the enhanced anaerobic bioremediation element of the remedy, the bulleted list below presents the objectives that were identified during the planning of the pre-design investigation.

- Determine the potential presence and extent of on-site soil contamination source(s).
- Monitor the potential for VI at the site and at structures within the site vicinity.
- Further define the vertical extent of CVOC contamination in groundwater at the site.
- Determine if natural attenuation processes are occurring under current conditions.
- Evaluate the hydrogeological, geochemical, and microbiological characteristics to define pre-design parameters for the pilot study program.

The historical investigations and pre-design investigation identified subsurface soil areas with concentrations above site soil cleanup objectives (SCOs). The areas of concern were located primarily to the south and southeast of the former dry cleaning facility. A review of soil data presented in the RI/FS Report (Fagan Engineers 2009)[5] revealed that the two subsurface soil samples collected in areas south of the former dry cleaning facility, and at depths ranging between 8 and 16 ft below ground surface, had reported volatile organic compound (VOC) concentrations above SCOs. Similarly, subsurface soil samples collected during the pre-design investigation south of the facility and at depths below 8 ft had reported concentrations of VOCs above site SCOs.

The soil samples were collected from depth intervals within the saturated zone and, therefore, are not likely representative of the subsurface soil, but include the contaminant fraction from groundwater. The subsurface soil areas of concern identified were located within a low-permeability soil unit identified during soil boring advancement (e.g., gray clay) and are likely

the result of dense non-aqueous phase liquid mass diffusion processes. Treatment in this soil type utilizing an injection method of substrate delivery would need to be low-volume high-concentration in order to mimic the current diffusion transport processes. Therefore, subsurface soil areas of concern were targeted during the development of the pilot study conceptual design and injection point layout.

Groundwater impacts were identified in six wells at concentrations greater than applicable SCG values (Figure 3). The highest concentrations of CVOCs were detected at TPMW-3, TPMW-4, MMW-01, and MW-16. Based upon groundwater data collected in May 2010, the estimated groundwater contaminant plume covered approximately 0.13 acre and extended to an approximate depth of 20 ft. Based on groundwater gauging data, shallow groundwater has been estimated to generally flow south-southwest towards Six Mile Creek. However, localized groundwater flows radially from the Clinton West Plaza.

Analysis of the *in-situ* microbiological populations during the pre-design investigation indicated that community structure was dominated by methanogens, but also identified existing populations of known dechlorinating bacteria (i.e., *Dehalococcoides, Dehalobacter,* and *Desulfurmonas*). Analysis of natural attenuation parameters indicated that anaerobic conditions are present within the dissolved-phase groundwater plume and reductive dechlorination appeared to be occurring. The pre-design investigation data suggested that methanogensis was occurring (e.g., elevated methane and ethane/ethene concentrations, negative oxidation-reduction potential, neutral pH, decreased nitrate and sulfate concentrations, etc.) at the site and that available hydrogen may have been a limiting factor in the development of favorable dechlorinating bacteria populations.

Further details on the historical and pre-design investigation results are provided in the Pilot Study Conceptual Design Report (Appendix A).

2.0 SUMMARY OF SITE REMEDY

The RI/FS completed by Fagan Engineers in 2009[4], evaluated five alternative remedial technologies. The final selection of the RA was presented in the ROD issued by the NYSDEC in May 2010[1]. The selected remedy included injection of chemical-oxidants, enhanced anaerobic bioremediation, the installation of a sub-slab vapor mitigation system at the laundry tenant space, cover system over all vegetated areas, implementation of institutional controls in the form of an environmental easement, and development of a Site Management Plan should contamination remain in-place. The Pilot Study Conceptual Design Report (Appendix A) evaluated the appropriateness of the selected remedy using data collected during the pre-design investigation following the issuance of the ROD. The Pilot Study Conceptual Design was approved and implemented beginning in October 2011. The effectiveness of enhanced anaerobic bioremediation was evaluated during a 1 year pilot study completed from October 2011 to November 2012. The pilot study met the substantive requirements of the ROD; therefore, the pilot study will be referred to as the site remedy in this report.

2.1 REMEDIAL ACTION OBJECTIVES

Based on the results of the RI, the following remedial action objectives (RAOs) were identified for this site. The remediation goals for this site were established to eliminate or reduce to the extent possible impacts to public health and environmental protection.

- Exposures of persons at or around the site to VOCs in soil, groundwater, and indoor air.
- Environmental exposures of flora or fauna to VOCs in soil and groundwater.
- The release of contaminants from soil into groundwater that may create exceedances of groundwater quality standards.
- The release of contaminants from soil and groundwater into indoor air through soil vapor.

2.1.1 Groundwater RAOs

RAOs for Public Health Protection

- Prevent people from drinking groundwater with contaminant levels exceeding drinking water standards.
- Prevent contact with contaminated groundwater.
- Prevent inhalation of contaminants from groundwater.

RAOs for Environmental Protection

- Restore the groundwater aquifer to meet ambient groundwater quality criteria, to the extent feasible.

2.1.2 Soil RAOs

RAOs for Public Health Protection

- Prevent ingestion/direct contact with potentially contaminated soil.

2.1.3 Soil Vapor RAOs

RAOs for Public Health Protection

- Mitigate impacts to public health resulting from existing, or the potential for, soil VI into the indoor air of buildings at or near a site.

2.2 DESCRIPTION OF SELECTED REMEDY

The site was remediated under a pilot study program in accordance with the remedy selected by the NYSDEC in the May 2010 ROD[1] and the Pilot Study Conceptual Design Report included in Appendix A. The major components of the selected remedy are described herein. Any site-related COCs within saturated subsurface soil were to be addressed by the remedy associated with the remediation of contaminated groundwater. Under the pilot study program, *in-situ* chemical oxidation was not performed.

The specific elements of this alternative (as presented in the May 2010 ROD[1]) are identified below.

The elements of the selected restricted use remedy are as follows:

- A RD program will be implemented to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program.

- *In-situ* chemical oxidation applied through a grid network of injection wells to target the primary COCs in groundwater.

- Enhanced anaerobic bioremediation applied by direct injection of a carbon source to further degrade remnant primary COCs in groundwater.

- Installation of a soil vapor mitigation system for the laundry tenant space of the Clinton West Plaza building to mitigate the potential for soil VI.

- Construction of a cover system over all vegetated areas to prevent exposure to potentially contaminated soils. The cover could consist of a paving system, concrete, or clean soil.

- The operation of the components of the remedy will continue until the remedial objectives have been achieved, or until the Department determines that continued operation is technically impracticable or not feasible.

- Provision to impose an institutional control in the form of an environmental easement for the controlled property that:

  – Requires the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);

  – Allows the use and development of the controlled property for restricted residential use in portions of the property zoned for residential use by the City of Ithaca;

  – Allows the use and development of the controlled property for commercial use in portions of the property zoned for commercial use by the City of Ithaca;

  – Restricts the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the Department, NYSDOH, or County Department of Health;

  – Requires compliance with the Department approved Site Management Plan.

- If the remedy results in contamination remaining at the site that does not allow for unrestricted use, a Site Management Plan will be required, this includes the following:

  – An Institutional and Engineering Control 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:

    - Institutional Controls: an environmental easement as discussed above.
    - Engineering Controls: a SSDS as discussed above.

    This plan includes, but is not limited to:

    - Descriptions of the provisions of the environmental easement including any groundwater use restrictions;

- Provisions for the management and inspection of the identified engineering controls;
- Maintaining site access controls and Department notification; and
- The steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

– A Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but is not limited to:

- Monitoring of groundwater, soil vapor, and indoor air to assess the performance and effectiveness of the remedy;
- A schedule of monitoring and frequency of submittals to the Department;
- Provision to evaluate the potential for VI for any buildings developed on the site, including provision for mitigation of any impacts identified;
- Provision to evaluate the potential for soil VI for existing buildings if building use changes significantly or if a vacant building becomes occupied.

– An Excavation Management Plan which describes management of soil and other media in the event of excavations in potentially contaminated portions of the site.

– An O&M Plan to assure continued operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical components of the remedy. The plan includes, but is not limited to:

- Compliance monitoring of treatment systems to assure proper O&M, as well as providing the data for any necessary permit or permit equivalent reporting;
- Maintaining site access controls and Department notification; and
- Providing the Department access to the site and O&M records.

- To maximize the net environmental benefit, green remediation and sustainability efforts are considered in the design and implementation of the remedy to the extent practicable, including:

  – Using renewable energy sources
  – Reducing greenhouse gas emissions
  – Conservation of natural resources.

2.2.1 Site Management Plan

As required under the 2010 ROD[1], EA has developed a Site Management Plan (EA 2013)[6] that includes the following activities:

- Continued groundwater monitoring.
- Continued evaluation of the potential for VI for the structures identified as susceptible to soil VI (Clinton West Laundry and Structure 01 at 415 Center Street).
- Identification of any use restrictions on the site.
- Provisions for the continued proper operation and maintenance of the components of the remedy.

2.2.2 Environmental Easement

Additionally, EA is assisting NYSDEC in preparing an environmental easement for the site. The easement has five exhibits, as summarized below.

1. Schedule A—A legal description of the property subject to the environmental easement.
2. Schedule B—An American Land Title Association/American Congress on Surveying and Mapping Survey.
3. Schedule C—A narrative description of the contaminated areas, institutional and/or engineering controls, and the monitoring/inspection, maintenance, and reporting requirements.
4. Schedule D—Maps/diagrams of as-built controls.
5. Schedule E—A clean, legible copy of the U.S. Geological Survey Quadrangle map.

The environmental easement is currently being prepared and will be included as an Addendum to the Clinton West Site Management Plan (EA 2013)[6] once recorded.

[6] EA. 2013. DRAFT Site Management Plan, Clinton West Plaza (755015), Tompkins County, New York. June.

3.0 INTERIM REMEDIAL MEASURES, OPERABLE UNITS, AND REMEDIAL CONTRACTS

Results of the RI indicated that due to the presence of CVOCs in groundwater and soil vapor, potential existed for human health exposure via the VI pathway. Site contaminants addressed through the remedy selection process were PCE, trichloroethene (TCE), *cis*-1,2-dichloroethene (*cis*-1,2-DCE), and vinyl chloride (VC). As outlined in the ROD[1], the selected RA required the installation of a SSDS to mitigate the potential for VI at the Clinton West Laundry facility. The design and installation of this element of the ROD were conducted as an interim remedial measure to mitigate the potential for human health exposure to site related contaminants.

NYSDEC initiated the interim remedial measure using an existing NYSDEC Standby Remedial Contractor, Groundwater & Environmental Services, Inc., to perform the SSDS installation activities. A pre-design pressure field extension test was completed on December 9, 2010. Based on the pressure field extension test, EA issued a memo (EA 2010)[7] to NYSDEC indicating that SSDS would be a suitable technique to mitigate the potential for VI at the Clinton West Laundry facility. Following NYSDEC approval, Groundwater & Environmental Services, Inc., under the supervision of EA, installed the system fan, interior and exterior piping, and exterior system discharge on February 7, 2011.

During design and installation activities, EA provided technical assistance on design requirements and system sizing, as well as on-site oversight support and system installation documentation.

EA prepared a post-installation mitigation system information package (EA 2011)[8] for the property owner that detailed a description of the system installed, the installation and warranty information, how to check that the system is operating properly, the maintenance and inspection of the system, and contact information should the system become non-operational. The information package also included the NYSDOH fact sheets on VI and PCE, the results of the diagnostic testing (communication or pressure field extension testing) of the sub-slab environment within the structure, a system installation photo log, and the fan specifications and warranty. The information package was provided to NYSDEC for review and comment prior to distribution to the property owner.

[7] EA. 2010. Pressure Field Extension Testing– 609 West Clinton Street, Ithaca, NY. 13 December.
[8] EA. 2011. Clinton West Plaza (755015) Sub-Slab Depressurization System Information Package. February.

4.0 DESCRIPTION OF REMEDIAL ACTIONS PERFORMED

Remedial activities completed at the site were conducted in accordance with the remedy selected by the NYSDEC in the May 2010 ROD[1], and detailed in the Pre-Remedial Design Investigation and Pilot Study Program Letter Work Plan (EA 2010)[2], and the Pilot Study Conceptual Design Report (Appendix A). The remedy outlined in the design was approved by the NYSDEC in September 2011. NYEG Drilling, LLC performed the substrate injections. EA provided overall remedial implementation, including post-injection monitoring. Injections were completed November 1–4, 2011. EA performed post-injection monitoring from November 2011 to November 2012. The Pilot Study Summary Report was completed in March 2013 (Appendix B). The major components of the selected remedy are described herein. All deviations from the ROD are noted in Section 4.8.

4.1 GOVERNING DOCUMENTS

The Pilot Study Conceptual Design Report provided in Appendix A served as the governing document for the RA at the Clinton West site. There were no significant changes to the work as defined by the Pilot Study Conceptual Design Report.

EA prepared all site documents including plans, material information, analytical results, and all other items as defined by the design report.

4.1.1 Health and Safety Plan

A Generic Health and Safety Plan (HASP) (EA, 2006a)[9] was developed for field activities performed under the NYSDEC Standby Contract Nos. D004438 and D004441. EA prepared a site-specific HASP Addendum, which was included as Attachment B to the Pre-Remedial Design Investigation and Pilot Study Program Letter Work Plan (EA 2010)[2]. The HASP Addendum supplements the Generic HASP with site-specific information to protect the health and safety of personnel while performing field investigation activities during the pre-design investigation and pilot study for the Clinton West Plaza site.

The HASP Addendum was in place prior to the initiation of work at the site and was in compliance with NYSDEC requirements. All remedial work performed under this RA was in full compliance with governmental requirements, including site and worker safety requirements mandated by Federal Occupational Safety and Health Administration.

The HASP Addendum was complied with for all remedial and invasive work performed at the site.

[9] EA. 2006a. Generic Health and Safety Plan for Work Assignments. June.

4.1.2 Quality Assurance Plan

The site-specific Quality Assurance Project Plan (QAPP) Addendum was included as Attachment A to the Pre-Remedial Design Investigation and Pilot Study Program Letter Work Plan (EA 2010)[2] approved by the NYSDEC. A Generic QAPP (EA, 2006b)[10] was developed for field activities performed under the NYSDEC Standby Engineering Services Contract No. D004438. The QAPP Addendum was for the pre-design field investigation and pilot study tasks under Work Assignment D004438-47 for the Clinton West Plaza site. The Generic QAPP and site-specific QAPP Addendum describe the specific policies, objectives, organization, functional activities, and quality assurance (QA)/quality control (QC) activities designed to achieve the project data quality objectives.

4.2 REMEDIAL PROGRAM ELEMENTS

4.2.1 Contractors and Consultants

EA performed the RD, supervised the substrate injections, and performed post-injection monitoring during the pilot study period.

As required by Standby Engineering Services Contracts, EA made good-faith efforts to subcontract work out to NYS Certified Minority Business Enterprises and Women Business Enterprises. Minority/Women Business Enterprises (M/WBE) Quarterly Reports documenting this effort are on file with NYS M/WBE.

Subcontractors hired by EA to assist in site activities included the following:

Subcontractors

- ***Mitkem/Spectrum Analytical, $33,641.78 (8.6 percent of Contract)***—Laboratory analysis of samples collections for characterization and documentation sampling was performed.

- ***Regenesis, $27,844.00 (7.1 percent of Contract)***—Provided injection substrate material and minor preliminary remedial design services.

- ***Paragon Environmental Construction/NYEG Drilling, LLC, $17,285.00 (4.4 percent of Contract)***—Completed pre-design installation of temporary and permanent monitoring wells. Provided direct push capable drill rig and operator to complete substrate injection.

- ***Microbial Insights, $10,056.00 (2.6 percent of Contract)***—Provided laboratory analysis of microbiological populations and ecosystem structures.

[10] EA. 2006b. Generic Quality Assurance Project Plan for Work Assignments. Revised October.

- ***Prudent Engineering (M/WBE), $9,885.22 (2.5 percent of Contract)***—Performed all required site surveying. This included surveying newly installed monitoring wells.

- ***Environmental Data Services (M/WBE), $783.00 (<1 percent of Contract)***—Provided independent third party analysis of analytical data and data usability reports.

EA is the Engineer responsible for certifying remedial construction activities.

4.2.2 Site Preparation

EA prepared the site prior to the substrate injection. A temporary storage container was mobilized to the site on October 21, 2011, and substrate material was delivered and stored on-site in this container.

- EA marked out substrate injection locations on October 31, 2011.

- Mark-out of utilities was performed in September 2011 as a call-out from NYEG Drilling, LLC.

- Minor brush removal was completed by NYEG Drilling, LLC and EA as needed during substrate injections.

4.2.3 General Site Controls

The Clinton West Laundry and other tenants of the building were able to remain in full operation during the RA. Measures were continuously taken to minimize business disruption and to work with the Owner. General site controls implemented daily are summarized herein.

Site Security

The site is located in a residential/commercial area and there were no restrictions to access during the substrate injection. Traffic cones were placed to provide a safety zone around the truck-mounted and walk-behind direct-push rigs. EA's field technician provided site security during operational hours. Injection equipment was not left on-site during the RA. The temporary storage unit at the site was locked during non-operational hours and was demobilized after the injection phase was completed.

Decontamination

Equipment was decontaminated prior to site demobilization.

4.2.4 Nuisance Controls

Due to the nature of the RA, nuisance controls were generally not required during the week-long substrate injection phase. Noise generated on-site was mitigated by performing work only between the hours of 8:00 a.m. and 4:00 p.m. Vehicle traffic was also limited to normal working hours.

The nature of direct-push technology creates a smear zone around the drilling rods tool string with decreased hydraulic conductivity. Fractures in the smear zone eventually open and allow for the pressure to slowly decrease and the injected material to be absorbed into the surrounding soil. The combination of this smear zone, site-specific soil type and conditions, and the viscous substrate reagent resulted in minor day-lighting of injected material at the ground surface of each of the injection points. To prevent the material from coming into contact with automobiles, pets, or people, day-lighting material was contained by using dedicated acetate sleeves inserted into the injection point after drilling rod extraction. Typically, after 20–45 minutes, the material would be accepted into the soil matrix and slowly drain from the acetate sleeve. The acetate sleeve was then removed and the injection points were backfilled (#0 sand to 2 ft below ground surface, bentontite pellets, and asphalt patch where needed) at the end of the injection phase.

To prevent any impacts or surface damage to residential areas, grassy areas were covered with 6-mil polyethylene sheeting during the injection phase.

After the injection phase was completed, the asphalt parking lot was pressure-washed of any remaining organic substrate material, which was minimal.

Odor Control

No odors were generated during construction.

Complaints

EA's field technician maintained contact with adjacent residents and acted as a point of contact for public complaints during the injection phase of the RA. No public complaints were made during the RA.

4.2.5 Reporting

Daily field reports summarizing construction activities at the site were prepared by EA. Daily field reports contained the following information:

- Summary of the day's construction activities.
- Summary of on-site equipment, personnel, and visitors.

- Summary of samples collected, if any, during the day. This includes documentation, characterization, sediment samples, etc.

- Summary of any health and safety issues, project schedule issues, budget issues, storm water/erosion/sediment control issues, community air monitoring issues, and any other items of concern noted.

- Any miscellaneous comments on the day's activities.

- Photo log depicting construction photos taken during the day, with captions below each photograph.

All daily reports are included in electronic format in the Pilot Study Summary Report (Appendix B). An as-built construction drawing identifying locations of site features and injection point layout is provided in Appendix C. The daily reports also include photo logs in electronic format.

4.3 CONTAMINATED MATERIALS REMOVAL

No contaminated material was generated or removed from the site during the implementation of the RA.

4.4 POST-REMEDIAL DOCUMENTATION SAMPLING

Under the pilot study program, EA completed a 1-year performance monitoring period, post-injection. Groundwater monitoring was initially completed monthly (four times including the baseline event) and then quarterly (three times). Monthly monitoring events were completed in October 2011 (baseline), November 2011, December 2011, and January 2012. Quarterly monitoring events were completed in April 2012, July 2012, and October/November 2012.

Pilot study performance monitoring data were used to develop a weight-of-evidence evaluation of system performance/efficiency and to document potential future design criteria. The list of parameters measured during performance monitoring included the following:

- Parent CVOC compounds and their dechlorination products (*cis*-DCE, VC, and ethene)

- Substrate strength indicators (total organic carbon and volatile fatty acids)

- Microbiological community structural groups

- Indicators of geochemical conditions (oxidation-reduction potential, dissolved oxygen, ferrous iron, sulfate, methane, and pH).

CVOCs and their dechlorination products were measured to determine treatment effectiveness. It should be noted that slow-release substrates, like Hydrogen Release Compound®, typically

demonstrate lag times to stimulate measurable increases in the rate of degradation of CVOCs that may be in the order of 6–12 months or more.

A detailed summary of the post-injection groundwater monitoring program and results are available in the Pilot Study Summary Report (Appendix B).

4.4.1 Sampling Approach and Methodology

The detailed sampling procedures and protocols, number of environmental samples collected, as well as the QA/QC procedures, were provided in the Pilot Study Conceptual Design Report (Appendix A). Groundwater samples were collected using low-flow purging methodologies. A peristaltic pump was used to evacuate standing water from the well casing until groundwater conditions reached stabilization. Upon stabilization, groundwater samples were collected utilizing dedicated disposable polyethylene bailers. Samples were labeled, packaged, and shipped to the designated laboratory with sufficient wet ice to maintain 4˚C through shipment. Additionally, a field duplicate and matrix spike/matrix spike duplicate were collected for analysis during each monitoring event. Trip blanks were included in each cooler shipment and analyzed for VOCs. Groundwater sampling purge forms completed during the field activities are provided in the Pilot Study Summary Report (Appendix B).

Groundwater samples were collected from 11 monitoring wells: TPMW-3, TPMW-4, TPMW-6, MMW-01, MMW-02, MMW-03, MMW-04, MW-14, TPM-01, TPM-02, and TPM-03 (Figure 4). Background monitoring wells were located to the east (MMW-03) and north (TPMW-6) of the treatment zone. TPMW-3 and TPMW-4 are located in the suspected source area. Downgradient monitoring wells MMW-01, MMW-02, MMW-04, and MW-14 are located to the south and southwest of the suspected source area. The additional monitoring wells are located adjacent to the plume area identified in the Pilot Study Conceptual Design Report (Appendix A). Additionally, during the April 2012 monitoring event, groundwater samples were collected from four additional monitoring wells (TPMW-1, TPMW-5, MW-15, and MW-16) to assess the potential for substrate influences in areas further west and downgradient of the targeted treatment zone. Groundwater samples collected as part of the pilot study program were submitted to Spectrum Analytical, Inc. and analyzed for the suites presented in Table 2 and in accordance with NYSDEC Analytical Services Protocol.

4.4.2 Post-Injection Grondwater Monitoring Results

Baseline Groundwater Monitoring Results

During the baseline monitoring event the highest concentrations of PCE and TCE were detected at TPMW-3 (690 µg/L and 410 µg/L, respectively) and TPMW-4 (26 µg/L and 51 µg/L, respectively). These concentrations exceed the NYSDEC Ambient Water Quality Standards and were consistent with historical investigations. These two monitoring wells are within the pilot study treatment zone and located in the area of the site where injection points were most densely clustered. Groundwater samples collected at monitoring well MMW-01 detected concentrations of *cis*-1,2-DCE (370 D µg/L) and VC (200 D µg/L) greater than NYSDEC Ambient Water

Quality Standards; MMW-01 is located at the western edge of the treatment zone and hydraulically downgradient of the suspected former source area. Estimated trace concentrations of CVOCs were also detected at temporary monitoring points TPM-02 and TPM-03, and monitoring well MMW-02 within the pilot study treatment zone.

Post-Injection Groundwater Monitoring Results

Pilot study CVOC results indicate that concentrations of PCE and TCE have been significantly reduced within the targeted treatment zone. At monitoring location TPMW-3, PCE groundwater concentrations have been reduced from 690 µg/L (baseline) to 12 µg/L (October 2012), which results in a 98 percent reduction of PCE at TPMW-3. Groundwater analytical results for PCE at monitoring location TPMW-4 reported a reduction from 26 µg/L (baseline) to non-detect levels (October 2012), an overall 100 percent reduction. Furthermore, PCE has not been detected at monitoring location TPMW-4 since the January 2012 monitoring event for three consecutive quarterly monitoring events. Additionally, concentrations of TCE have been reduced from 410 µg/L to 31 µg/L (92 percent reduction) and from 51 µg/L to non-detect (100 percent reduction) at monitoring locations TPMW-3 and TPMW-4, respectively. PCE and TCE were not detected at other monitoring locations within the pilot study treatment zone, which suggests that the substrate injection process did not displace impacted groundwater to areas inside or outside of the target treatment zone.

Baseline and post-injection groundwater monitoring results are summarized in Tables 3 and 4, respectively. Baseline, post-injection, and end-point groundwater monitoring results are illustrated in Figure 4. All exceedences of SCOs are highlighted.

4.4.3 Quality Assurance/Quality Control

Groundwater samples were collected in accordance with QA/QC procedures detailed in the Pilot Study Conceptual Design Report (Appendix A). Groundwater samples were labeled, packaged, and shipped to the designated laboratory with sufficient wet ice to maintain 4˚C through shipment. Additionally, a field duplicate and matrix spike/matrix spike duplicate were collected for analysis during each monitoring event. Trip blanks were included in each cooler shipment and analyzed for VOCs.

4.4.4 Data Usability Summary Report

Data Usability Summary Reports (DUSRs) were prepared for all data generated during this remedial performance evaluation program. These DUSRs and the associated Form Is are provided in the Pilot Study Summary Report (Appendix B).

The analytical results for samples collected as part of the pilot study program are valid and usable with qualifications as noted in each DUSR. Data qualifiers were taken into account during the interpretation of the analytical results. Analytical results were simplified for preparation of the analytical results summary tables. Qualifier flags were limited to “U” for non-detects, “J” for estimated values based upon results of the validation, “UJ” for non-detect values

that were estimated based on the validation, and "R" for values that were deemed as unusable during the validation process based on QC deficiencies. A majority of the analytical results for acetone and 2-butanone were rejected based on the data evaluation, due to low initial calibration of reference response factor values.

Overall, there was no significant impact regarding the usability of the data set. The validator has determined that after thorough review of each data set, with the exception of the compounds flagged for rejection, each sample collected during the pilot study is valid and should be considered usable. It should be noted that acetone and 2-butanone were not compounds of interest for determining the effectiveness of the pilot study.

4.5 CONTAMINATION REMAINING AT THE SITE

Following the RA, concentrations of CVOCs greater than the applicable SCGs were identified at three monitoring wells at concentrations that were significantly reduced from pre-pilot study baseline concentrations. Based upon groundwater data collected in May 2010, the estimated groundwater contaminant plume covered approximately 0.13 acre and extended to an approximate depth of 20 ft. The contaminant plume as of October 2012 was predominantly restricted to TPMW-3. Reductive dechlorination daughter compounds were identified at concentrations greater than their relevant SCGs at adjacent monitoring wells TPMW-4 and MMW-01.

The RA targeted this area using enhanced anaerobic bioremediation to eliminate chlorinated compounds through reductive dechlorination. Daughter compounds (*cis*-1,2-DCE and VC) commonly produced during the anaerobic reductive dechlorination process were consistently detected at TPMW-3, TPMW-4, and MMW-01. Groundwater data show that these compounds increased in concentration following the injection event and steadily decreased sequentially at each monitoring location. These daughter compound concentration trends suggest that the substrate material was effective in enhancing dechlorination within the targeted treatment zone to favorable operational endpoints. Additionally, the changes observed in molar fractions clearly indicate that sequential anaerobic dechlorination was occurring. Once PCE and TCE were depleted, total molar concentration decreased as *cis*-1,2-DCE and VC were transformed to ethenes.

While significant reductions in concentrations in groundwater were achieved during the RA, results of the final groundwater monitoring event indicate that CVOCs exceed groundwater SCGs at TPMW-3 (*cis*-1,2-DCE, *trans*-1,2-DCE, PCE, TCE, and VC), TPMW-4 (VC), and MMW-01 (*cis*-1,2-DCE and VC). Observed soil samples with COCs detected at concentrations greater than their respective SCGs were collected from the saturated zone during the pre-design investigation. As such, secondary treatment of impacted subsurface soil was addressed under the pilot study program. However, post-RA confirmation soil samples were not collected as part of the pilot study program.

Since soil was not excavated or existing caps disturbed during this RA, potentially impacted subsurface soil remains at depth and below an asphalt parking lot.

4.6 OTHER ENGINEERING CONTROLS

With the exception of the SSDS (detailed in Section 3.0) installed at the Clinton West Laundry, the remedy for the site did not require the construction of any other engineering control systems.

Procedures for continued groundwater monitoring will be provided in the O&M plan detailed in Section 4 of the Site Management Plan. The monitoring plan also addresses inspection procedures that relate to the SSDS located in the Clinton West Laundry building, which are currently completed by NYSDEC.

4.7 INSTITUTIONAL CONTROLS

The site remedy requires that an environmental easement be placed on the property to (1) implement, maintain, and monitor the engineering controls; (2) prevent future exposure to remaining contamination by controlling disturbances of the subsurface contamination; and, (3) limit the use and development of the site to commercial use only.

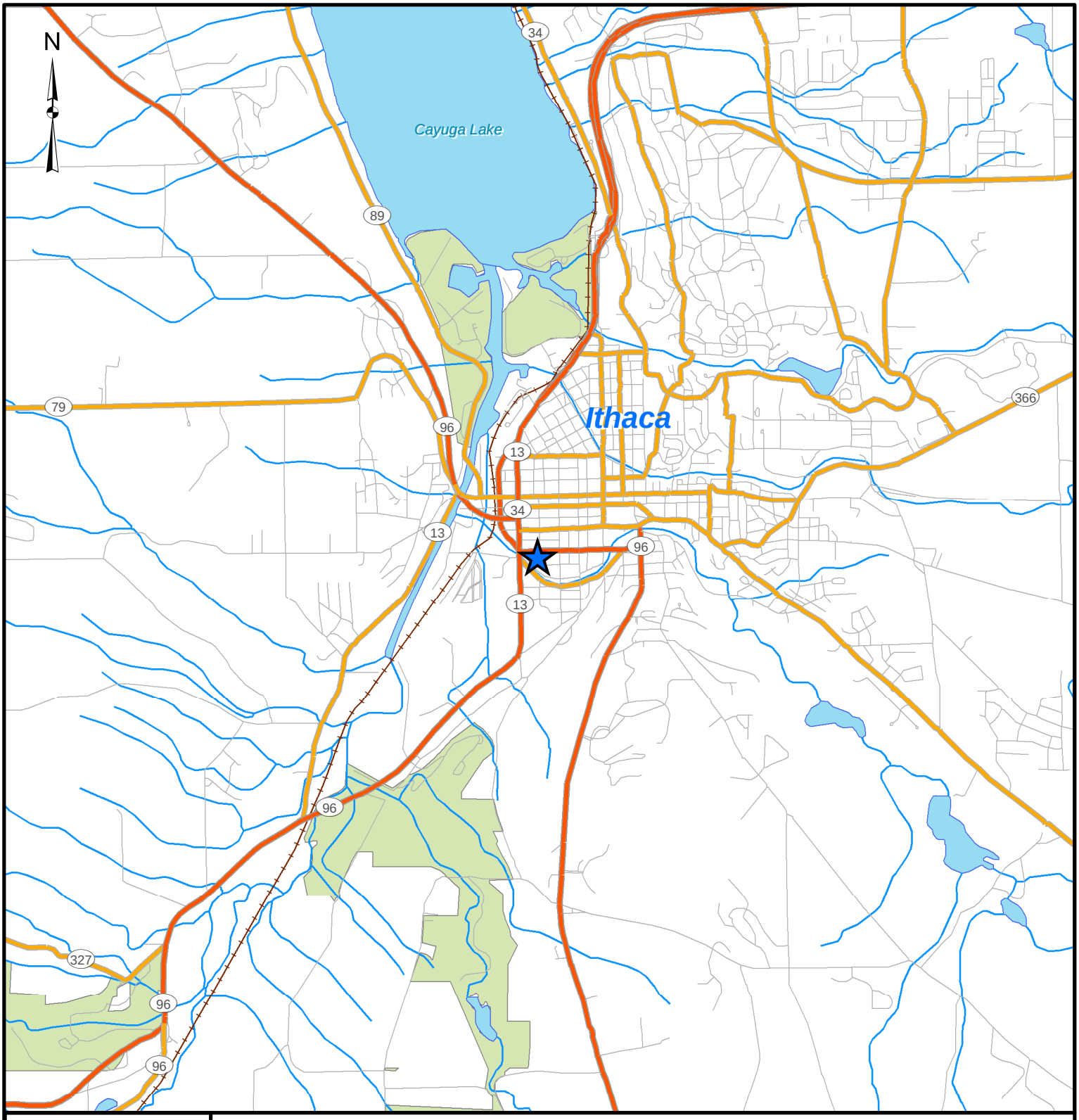
The environmental easement for the site is currently being prepared by the Department for filing with the Tompkins County Clerk. A recorded copy will be placed into the Site Management Plan (EA 2013)[6] for the site.

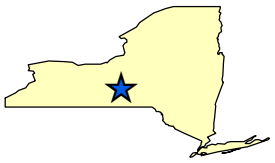
4.8 DEVIATIONS FROM THE REMEDIAL DESIGN

No significant deviations were made from the Conceptual Design Report (Appendix A) and Letter Work Plan (EA 2010)[2]. Minor deviations included injection point placement based on field conditions (e.g., overhead utilities, fences, buildings, etc.).

4.9 PROJECT COMPLETION

Substantial completion was reached on November 1, 2012 after the last performance monitoring event was completed. The Pilot Study Summary Report (Appendix B), which detailed the RA and performance monitoring, was then completed. The Pilot Study Summary Report was finalized in March 2013 (Appendix B). All analytical data generated as part of this Contract were processed through the EQuIS data processor and submitted to NYSDEC following project completion.





Legend

- Highway
- Major Road
- Local Road
- Park
- Rivers & Streams
- Surface Water Body

0 1 2 Miles

1 in = 1 miles

Source: ESRI Street Maps USA

CLINTON WEST PLAZA (755015)
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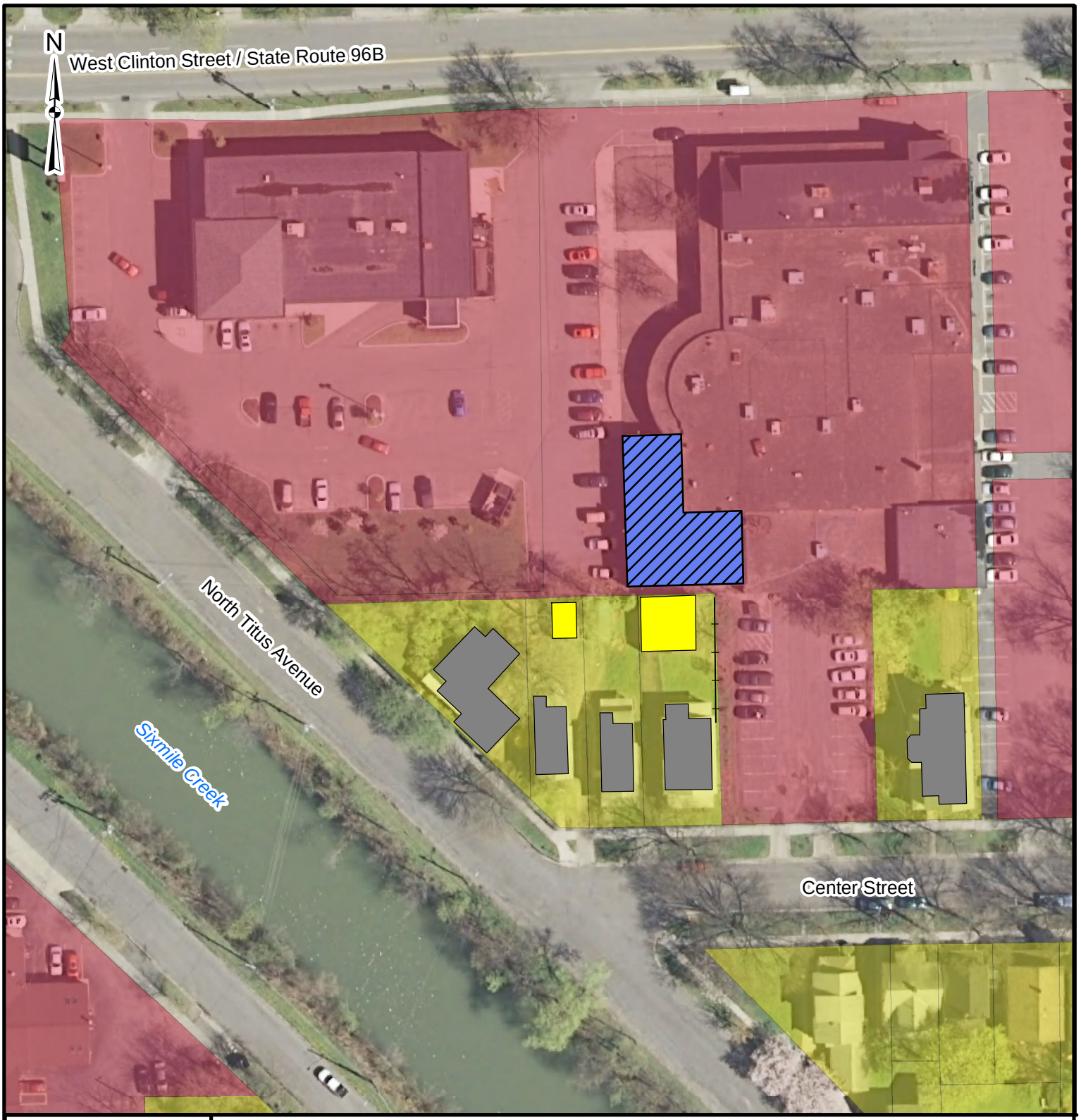
ITHACA, NEW YORK

FIGURE 1
Site Location Map

PROJECT MGR:	DESIGNED BY:	CREATED BY:	CHECKED BY:	SCALE:	DATE:	PROJECT NO:	FILE NO:
RSC	CJS	CJS	RSC	AS SHOWN	SEPTEMBER 2013	14907.04	GIS/PROJECTS/ 1490704_FIG1.MXD



Legend

Select Structures
- Dry Cleaners
- Residence
- Utility Building

Zoning
- Commercial
- Residential

0 70 140 Feet

1 inch = 70 feet

Source: Orthoimagery: NYSGIS Clearinghouse, Natural Color - 2007; Property Parcels: Tompkins County 2010

CLINTON WEST PLAZA (755015)
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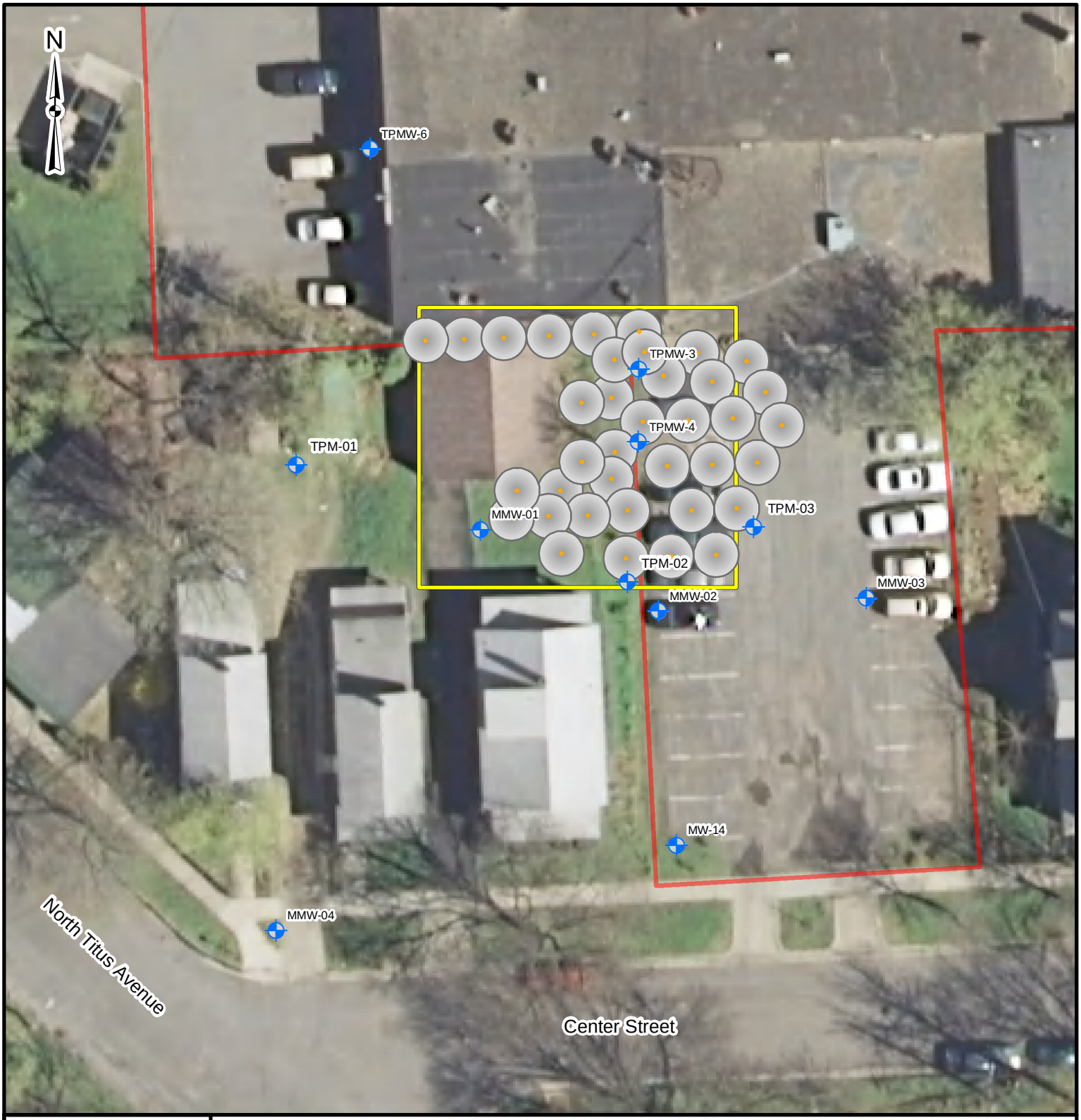
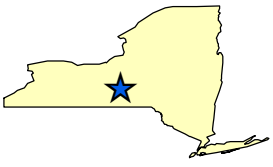
FIGURE 2
Site and Surrounding Area

PROJECT MGR:	DESIGNED BY:	CREATED BY:	CHECKED BY:	SCALE:	DATE:	PROJECT NO:	FILE NO:
RSC	CJS	CJS	RSC	AS SHOWN	SEPTEMBER 2013	14907.04	GIS/PROJECTS/ 1490704_FIG2.MXD





Legend

- Property Boundary
- Pilot Study Treatment Area
- Pilot Study Monitoring Points
- Injection Point
- Radius of Influence

Feet
0 15 30

1 inch = 30 feet

Source: Orthoimagery: NYSGIS Clearinghouse, Natural Color - 2007

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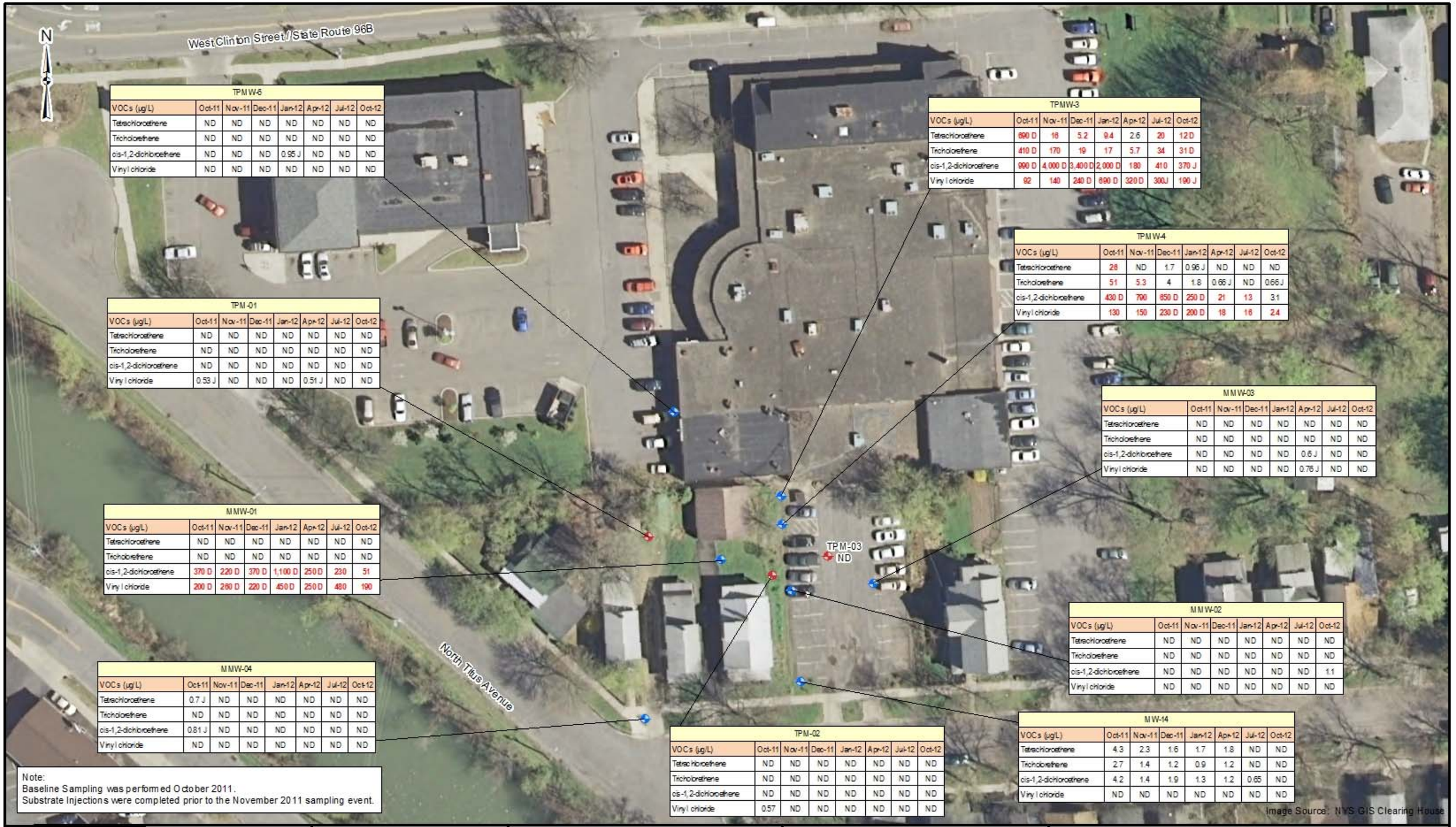
FIGURE 3
Pilot Study Treatment Area
and Substrate Injection Points

PROJECT MGR:	DESIGNED BY:	CREATED BY:	CHECKED BY:	SCALE:	DATE:	PROJECT NO:	FILE NO:
RSC	CJS	CJS	RSC	AS SHOWN	SEPTEMBER 2013	14907.04	GIS/PROJECTS/ 1490704_FIG3.MXD



TPMW-6							
VOCs (µg/L)	Oct-11	Nov-11	Dec-11	Jan-12	Apr-12	Jul-12	Oct-12
Tetrachloroethene	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	ND	ND	ND	ND	ND	ND	ND
cis-1,2-dichloroethene	ND	ND	ND	0.95 J	ND	ND	ND
Vinyl chloride	ND	ND	ND	ND	ND	ND	ND

TPMW-3							
VOCs (µg/L)	Oct-11	Nov-11	Dec-11	Jan-12	Apr-12	Jul-12	Oct-12
Tetrachloroethene	690 D	16	5.2	9.4	2.6	20	12 D
Trichloroethene	410 D	170	19	17	5.7	34	31 D
cis-1,2-dichloroethene	990 D	4,000 D	3,400 D	2,000 D	180	410	370 J
Vinyl chloride	92	140	240 D	890 D	320 D	300J	190 J

TPMW-4							
VOCs (µg/L)	Oct-11	Nov-11	Dec-11	Jan-12	Apr-12	Jul-12	Oct-12
Tetrachloroethene	26	ND	1.7	0.95 J	ND	ND	ND
Trichloroethene	51	5.3	4	1.8	0.65 J	ND	0.66 J
cis-1,2-dichloroethene	430 D	790	850 D	250 D	21	13	3.1
Vinyl chloride	130	150	230 D	200 D	18	16	2.4

TPM-01							
VOCs (µg/L)	Oct-11	Nov-11	Dec-11	Jan-12	Apr-12	Jul-12	Oct-12
Tetrachloroethene	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	ND	ND	ND	ND	ND	ND	ND
cis-1,2-dichloroethene	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	0.53 J	ND	ND	ND	0.51 J	ND	ND

MMW-03							
VOCs (µg/L)	Oct-11	Nov-11	Dec-11	Jan-12	Apr-12	Jul-12	Oct-12
Tetrachloroethene	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	ND	ND	ND	ND	ND	ND	ND
cis-1,2-dichloroethene	ND	ND	ND	ND	0.6 J	ND	ND
Vinyl chloride	ND	ND	ND	ND	0.76 J	ND	ND

MMW-01							
VOCs (µg/L)	Oct-11	Nov-11	Dec-11	Jan-12	Apr-12	Jul-12	Oct-12
Tetrachloroethene	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	ND	ND	ND	ND	ND	ND	ND
cis-1,2-dichloroethene	370 D	220 D	370 D	1,100 D	250 D	230	51
Vinyl chloride	200 D	260 D	220 D	450 D	250 D	480	190

MMW-02							
VOCs (µg/L)	Oct-11	Nov-11	Dec-11	Jan-12	Apr-12	Jul-12	Oct-12
Tetrachloroethene	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	ND	ND	ND	ND	ND	ND	ND
cis-1,2-dichloroethene	ND	ND	ND	ND	ND	ND	1.1
Vinyl chloride	ND	ND	ND	ND	ND	ND	ND

MMW-04							
VOCs (µg/L)	Oct-11	Nov-11	Dec-11	Jan-12	Apr-12	Jul-12	Oct-12
Tetrachloroethene	0.7 J	ND	ND	ND	ND	ND	ND
Trichloroethene	ND	ND	ND	ND	ND	ND	ND
cis-1,2-dichloroethene	0.81 J	ND	ND	ND	ND	ND	ND
Vinyl chloride	ND	ND	ND	ND	ND	ND	ND

TPM-02							
VOCs (µg/L)	Oct-11	Nov-11	Dec-11	Jan-12	Apr-12	Jul-12	Oct-12
Tetrachloroethene	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	ND	ND	ND	ND	ND	ND	ND
cis-1,2-dichloroethene	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	0.57	ND	ND	ND	ND	ND	ND

MW-14							
VOCs (µg/L)	Oct-11	Nov-11	Dec-11	Jan-12	Apr-12	Jul-12	Oct-12
Tetrachloroethene	4.3	2.3	1.6	1.7	1.8	ND	ND
Trichloroethene	2.7	1.4	1.2	0.9	1.2	ND	ND
cis-1,2-dichloroethene	4.2	1.4	1.9	1.3	1.2	0.65	ND
Vinyl chloride	ND	ND	ND	ND	ND	ND	ND

Note:
Baseline Sampling was performed October 2011.
Substrate Injections were completed prior to the November 2011 sampling event.

Image Source: NYS GIS Clearing House

CLINTON WEST PLAZA (755015)
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FIGURE 4
Chlorinated Volatile Organic Compounds
Detected in Groundwater Samples
October 2011 - October 2012

0 25 50 100 Feet
1 inch = 50 feet

Legend

- Groundwater Monitoring Well
- Temporary Monitoring Well

VOCs Volatile Organic Compounds.
µg/L Micrograms per Liter (parts per billion)
ND Not Detected.
NS Not Sampled.
J Value is an estimate.
D Value is the result of a dilution.

Values in RED indicate concentration in exceedance of NYSDEC Ambient Water Quality Standards.

PROJECT MGR:	DESIGNED BY:	CREATED BY:	CHECKED BY:	PROJECT NO:	DATE:	SCALE:	FILE NO:
RSC	DCC	CJS	RSC	14907.04	SEPTEMBER 2013	AS SHOWN	GIS/PROJECTS/ 1490704_FIG9.MXD

TABLE 1 CONTAMINANTS OF CONCERN
STANDARDS, CRITERIA, AND GUIDANCE

Constituent	Standard, Criteria, and Guidance	Units
GROUNDWATER		
1,1-Dichloroethene	5	µg/L
Chloroform	7	µg/L
cis -1,2-Dichloroethene	5	µg/L
Tetrachloroethene	5	µg/L
trans -1,2-Dichloroethene	5	µg/L
Trichloroethene	5	µg/L
Vinyl Chloride	2	µg/L

NOTE: Contaminants of Concern from 2010 Record of Decision.
Standards, Criteria, and Guidance - Ambient Water Quality Standards and Guidance Values (TOGS 1.1.1); 6 NYCRR Part 703, Surface Water and Groundwater Quality Standards; and Part 5 of the New York State Sanitary Code (10 NYCRR Part 5).

TABLE 2 PILOT STUDY ANALYTICAL PROGRAM

	Sample Matrix	VOC	Metabolic Acids	Methane/ ethane/ ethene	Sulfate	Nitrate	TOC	CENSUS Analysis
BASELINE GROUNDWATER SAMPLING								
No. of Samples	Aqueous	11	11	11	11	11	11	---
Field Duplicate		1	---	---	1	1	---	---
Trip Blank/Rinse Blank		1	---	---	---	---	---	---
Matrix Spike/Matrix Spike Duplicate		2	---	---	---	---	---	---
Total No. of Analyses		16	11	11	12	12	11	---
PERFORMANCE MONITORING SAMPLING								
No. of Samples	Aqueous	70	70	70	70	70	70	---
Field Duplicate		6	3	4	4	4	5	---
Trip Blank/Rinse Blank		12	---	---	---	---	---	---
Matrix Spike/Matrix Spike Duplicate		12	---	---	---	---	2	---
Total No. of Analyses		100	73	74	74	74	77	---
MICROBIOLOGICAL MONITORING								
No. of Samples	Bio-Trap	---	---	---	---	---	---	6
Field Duplicate		---	---	---	---	---	---	---
Trip Blank/Rinse Blank		---	---	---	---	---	---	---
Matrix Spike/Matrix Spike Duplicate		---	---	---	---	---	---	---
Total No. of Analyses		---	---	---	---	---	---	6

NOTE: VOC = Volatile organic compound EPA Method 8260B
TOC = Total Organic Carbon by EPA Method 9060 (aqueous)
EPA = U.S. Environmental Protection Agency
Methane/Ethane/Ethene by RSK175.
Sulfate by EPA Method 375.4.
Nitrate by EPA Method 352.1.
Dashes (---) indicate no sample taken.
Laboratory quality control samples were collected at a rate of 1 per 20 samples per sampling event.

TABLE 3 SUMMARY OF DETECTED VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER SAMPLES - OCTOBER 2011 (BASELINE)

Parameters List EPA Method 8260B	MW ID	TPMW-3		TPMW-4		TPMW-6		TPM-01		TPM-02		TPM-03		MMW-01		NYSDEC AWQS (µg/L)
	Lab ID	K2097-07/DL		K2097-06/DL		K2097-11		K2097-13		K2097-04		K2097-05		K2097-12/DL		
	Screened Interval	6 - 16 ft bgs		6 - 16 ft bgs		6 - 16 ft bgs		18 - 28 ft bgs		18 - 28 ft bgs		14.5 - 24.5 ft bgs		10 - 20 ft bgs		
	Sample Type	Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		
	Sample Date	10/20/2011		10/20/2011		10/21/2011		10/21/2011		10/20/2011		10/20/2011		10/21/2011		
Acetone	(µg/L)	(<2.2)	R	(<2.2)	R	7.8	R	7.0	R	(<2.2)	R	6.1	R	5.8	R	50 (g)
2- Butanone	(µg/L)	(<2.1)	R	(<2.1)	R	(<2.1)	R	(<2.1)	R	(<2.1)	U	(<2.1)	R	(<2.1)	R	50 (g)
Carbon disulfide	(µg/L)	(<0.34)	U	(<0.34)	U	(<0.34)	U	(<0.34)	U	1.7		(<0.34)	U	(<0.34)	U	---
1,1- Dichloroethene	(µg/L)	3.2		2.1		(<0.39)	U	(<0.39)	U	(<0.39)	U	(<0.39)	U	0.8	J	5 (s)
cis -1,2- Dichloroethene	(µg/L)	**990**	**D**	**430**	**D**	(<0.48)	U	(<0.48)	U	(<0.48)	U	(<0.48)	U	**370**	**D**	5 (s)
trans -1,2- Dichloroethene	(µg/L)	**12**		4.7		(<0.65)	U	(<0.65)	U	(<0.65)	U	(<0.65)	U	1.6		5 (s)
Tetrachloroethene	(µg/L)	**690**	**D**	**26**		(<0.65)	U	(<0.65)	U	(<0.65)	U	(<0.65)	U	(<0.65)	U	5 (s)
Trichloroethene	(µg/L)	**410**	**D**	**51**		(<0.36)	U	(<0.36)	U	(<0.36)	U	(<0.36)	U	0.81	J	5 (s)
Vinyl chloride	(µg/L)	**92**		**130**		(<0.50)	U	0.53	J	0.57	J	(<0.50)	U	**200**	**D**	2 (s)

Parameters List EPA Method 8260B	MW ID	MMW-02		MMW-03		MMW-04		MW-14		DUP-01[(a)]		TRIP BLANK		TRIP BLANK		NYSDEC AWQS (µg/L)
	Lab ID	K2097-02		K2097-03		K2097-10		K2097-01		K2097-08		K2097-09		K2097-14		
	Screened Interval	10 - 20 ft bgs		10 - 20 ft bgs		20 - 30 ft bgs		5 - 15 ft bgs		6 - 16 ft bgs		NA		NA		
	Sample Type	Groundwater		Groundwater		Groundwater		Groundwater		QA/QC		QA/QC		QA/QC		
	Sample Date	10/20/2011		10/20/2011		10/20/2011		10/20/2011		10/20/2011		10/20/2011		10/21/2011		
Acetone	(µg/L)	(<2.2)	R	(<2.2)	R	11	R	7.2	R	(<2.2)	R	6.5	J	5.9	J	50 (g)
2- Butanone	(µg/L)	(<2.1)	R	(<2.1)	R	(<2.1)	R	(<2.1)	R	(<2.1)	R	(<2.1)	R	(<2.1)	R	---
Carbon disulfide	(µg/L)	0.69	J	(<0.34)	U	(<0.34)	U	(<0.34)	U	(<0.34)	U	(<0.34)	U	(<0.34)	U	---
1,1- Dichloroethene	(µg/L)	(<0.39)	U	(<0.39)	U	(<0.39)	U	(<0.39)	U	(<0.39)	U	(<0.39)	U	(<0.39)	U	5 (s)
cis -1,2- Dichloroethene	(µg/L)	0.71	J	(<0.48)	U	0.81	J	4.2		0.7	J	(<0.48)	U	(<0.48)	U	5 (s)
trans -1,2- Dichloroethene	(µg/L)	(<0.65)	U	(<0.65)	U	(<0.65)	U	(<0.65)	U	(<0.65)	U	(<0.65)	U	(<0.65)	U	5 (s)
Tetrachloroethene	(µg/L)	(<0.65)	U	(<0.65)	U	0.71	J	4.3		(<0.65)	U	(<0.65)	U	(<0.65)	U	5 (s)
Trichloroethene	(µg/L)	(<0.36)	U	(<0.36)	U	(<0.36)	U	2.7		(<0.36)	U	(<0.36)	U	(<0.36)	U	5 (s)
Vinyl chloride	(µg/L)	(<0.50)	UJ	(<0.50)	U	(<0.50)	U	(<0.50)	U	(<0.50)	U	(<0.50)	U	(<0.50)	U	2 (s)

(a) DUP-01 sample was collected at TPMW-4

NOTE: EPA = U.S. Environmental Protection Agency
ID = Identification
bgs = Below ground surface
NYSDEC = New York State Department of Environmental Conservation
AWQS = Ambient Water Quality Standard
µg/L = Micrograms per liter
R = Sample result is rejected due to serious deficiencies. The presence or absence of the analyte cannot be verified
(g) = NYSDEC Ambient Water Quality Standards guidance value
U = Analyte was analyzed for, but not detected above the laboratory reporting limit
--- = No guidance value
J = Analyte detected below the practical quantification limit (PQL)
(s) = NYSDEC Ambient Water Quality Standards standard value
D = Indicates the compound concentration is the result of a dilution
NA = Not Available
QA/QC = Quality Assurance/Quality Control
UJ = Analyte was not detected above the sample reporting limit; and the reporting limit is approximate
Analytical data results provided by Spectrum Analytical, Inc. Data validation performed by Environmental Data Services, Inc.
Bold and shaded values indicate that the analyte was detected greater than the NYSDEC Ambient Water Quality Standards

TABLE 4 SUMMARY OF DETECTED VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER SAMPLES - NOVEMBER 2011

Parameters List EPA Method 8260B	MW ID	TPMW-3		TPMW-4		TPMW-6		TPM-01		TPM-02		TPM-03		MMW-01		NYSDEC AWQS (µg/L)
	Lab ID	K2523-08/DL		K2523-06/DL		K2523-09		K2523-12		K2523-10/DL		K2523-11/DL		K2523-13/DL		
	Screened Interval	6 - 16 ft bgs		6 - 16 ft bgs		6 - 16 ft bgs		18 - 28 ft bgs		18 - 28 ft bgs		14.5 - 24.5 ft bgs		10 - 20 ft bgs		
	Sample Type	Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		
	Sample Date	11/29/2011		11/29/2011		11/30/2011		11/30/2011		11/30/2011		11/30/2011		11/30/2011		
Acetone	(µg/L)	4.9	J	(<2.2)	R	(<2.2)	R	(<2.2)	R	(<2.2)	R	(<2.2)	R	(<2.2)	R	50 (g)
2- Butanone	(µg/L)	(<2.1)	R	(<2.1)	R	(<2.1)	R	(<2.1)	R	5.6	J	(<2.1)	R	(<2.1)	R	50 (g)
1,1- Dichloroethene	(µg/L)	(<0.39)	U	(<0.39)	U	(<0.39)	U	(<0.39)	U	(<0.39)	U	(<0.39)	U	(<0.39)	U	5 (s)
cis -1,2- Dichloroethene	(µg/L)	**4,000**	**D**	**790**	**J**	(<0.48)	U	(<0.48)	U	(<0.48)	U	(<0.48)	U	**220**	**D**	5 (s)
trans -1,2- Dichloroethene	(µg/L)	**130**		**7.8**	**J**	(<0.65)	U	(<0.65)	U	(<0.65)	U	(<0.65)	U	0.99	J	5 (s)
Tetrachloroethene	(µg/L)	**16**		(<0.65)	U	(<0.65)	U	(<0.65)	U	(<0.65)	U	(<0.65)	U	(<0.65)	U	5 (s)
Trichloroethene	(µg/L)	**170**		**5.3**	**J**	(<0.36)	U	(<0.36)	U	(<0.36)	U	(<0.36)	U	0.66	J	5 (s)
1,2,4- Trimethylbenzene	(µg/L)	(<0.40)	U	(<0.40)	U	(<0.40)	U	(<0.40)	U	(<0.40)	U	(<0.40)	U	(<0.40)	U	5 (s)
Vinyl chloride	(µg/L)	**140**		**150**		(<0.50)	U	(<0.50)	U	(<0.50)	U	(<0.50)	U	**260**	**D**	2 (s)

Parameters List EPA Method 8260B	MW ID	MMW-02		MMW-03		MMW-04		MW-14		DUPLICATE[(a)]		TRIP BLANK		TRIP BLANK 2		NYSDEC AWQS (µg/L)
	Lab ID	K2523-01/DL		K2523-02/DL		K2523-05/DL		K2523-04		K2523-07DL		K0761-09		K2097-14		
	Screened Interval	10 - 20 ft bgs		10 - 20 ft bgs		20 - 30 ft bgs		5 - 15 ft bgs		6 - 16 ft bgs		NA		NA		
	Sample Type	Groundwater		Groundwater		Groundwater		Groundwater		QA/QC		QA/QC		QA/QC		
	Sample Date	11/29/2011		11/29/2011		11/29/2011		11/29/2011		11/29/2011		11/29/2012		11/30/2012		
Acetone	(µg/L)	2.7	J	(<2.2)	R	2.3	J	2.9	J	4.5	J	(<2.2)	R	(<2.2)	R	50 (g)
2- Butanone	(µg/L)	(<2.1)	R	(<2.1)	R	(<2.1)	R	(<2.1)	R	(<2.1)	R	(<2.1)	R	(<2.1)	R	---
1,1- Dichloroethene	(µg/L)	(<0.39)	U	(<0.39)	U	(<0.39)	U	(<0.39)	U	(<0.39)	U	(<0.39)	U	(<0.39)	U	5 (s)
cis -1,2- Dichloroethene	(µg/L)	(<0.48)	U	(<0.48)	U	(<0.48)	U	1.4		**3,900**	**D**	(<0.48)	U	(<0.48)	U	5 (s)
trans -1,2- Dichloroethene	(µg/L)	(<0.65)	U	(<0.65)	U	(<0.65)	U	(<0.65)	U	**140**		(<0.65)	U	(<0.65)	U	5 (s)
Tetrachloroethene	(µg/L)	(<0.65)	U	(<0.65)	U	(<0.65)	U	2.3		**16**		(<0.65)	U	(<0.65)	U	5 (s)
Trichloroethene	(µg/L)	(<0.36)	U	(<0.36)	U	(<0.36)	U	1.4		**160**		(<0.36)	U	(<0.36)	U	5 (s)
1,2,4- Trimethylbenzene	(µg/L)	0.89	J	0.69	J	(<0.40)	U	(<0.40)	U	(<0.40)	U	(<0.40)	U	(<0.40)	U	5 (s)
Vinyl chloride	(µg/L)	(<0.50)	U	(<0.50)	U	(<0.50)	U	(<0.50)	U	**130**		(<0.50)	U	(<0.50)	U	2 (s)

(a) DUPLICATE sample was collected at TPMW-3.

NOTE: EPA = U.S. Environmental Protection Agency
ID = Identification
bgs = Below ground surface
NYSDEC = New York State Department of Environmental Conservation
AWQS = Ambient Water Quality Standard
µg/L = Micrograms per liter
J = Analyte detected below the practical quantification limit (PQL)
R = Sample result is rejected due to serious deficiencies. The presence or absence of the analyte cannot be verified
(g) = NYSDEC Ambient Water Quality Standards guidance value
U = Analyte was analyzed for, but not detected above the laboratory reporting limit
(s) = NYSDEC Ambient Water Quality Standards standard value
D = Indicates the compound concentration is the result of a dilution
NA = Not Available
QA/QC = Quality Assurance/Quality Control
--- = No guidance value
Analytical data results provided by Spectrum Analytical, Inc. Data validation performed by Environmental Data Services, Inc.
Bold and shaded values indicate that the analyte was detected greater than the NYSDEC Ambient Water Quality Standards

TABLE 4 SUMMARY OF DETECTED VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER SAMPLES - DECEMBER 2011

Parameters List EPA Method 8260B	MW ID	TPMW-3		TPMW-4		TPMW-6		TPM-01		TPM-02		TPM-03		MMW-01		NYSDEC AWQS (µg/L)
	Lab ID	K2728-04/DL		K2728-06/DL		K2723-01		K2723-03		K2728-04		K2728-07		K2728-03/DL		
	Screened Interval	6 - 16 ft bgs		6 - 16 ft bgs		6 - 16 ft bgs		18 - 28 ft bgs		18 - 28 ft bgs		14.5 - 24.5 ft bgs		10 - 20 ft bgs		
	Sample Type	Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		
	Sample Date	12/28/2011		12/28/2011		12/27/2011		12/27/2011		12/28/2011		12/28/2011		12/28/2011		
Acetone	(µg/L)	8.5	J	8.6	J	(<2.2)	R	(<2.2)	R	(<2.2)	R	(<2.2)	R	(<2.2)	R	50 (g)
2- Butanone	(µg/L)	(<2.1)	R	**110**	**J**	(<2.1)	R	(<2.1)	R	6.1	J	(<2.1)	R	(<2.1)	R	50 (g)
Carbon disulfide	(µg/L)	(<0.34)	U	(<0.34)	U	(<0.34)	U	(<0.34)	U	0.63	J	(<0.34)	U	(<0.34)	U	---
1,1- Dichloroethene	(µg/L)	**5.3**		1.5		(<0.39)	U	(<0.39)	U	(<0.39)	U	(<0.39)	U	0.88	J	5 (s)
cis -1,2- Dichloroethene	(µg/L)	**3,400**	**D**	**650**	**D**	(<0.48)	U	(<0.48)	U	(<0.48)	U	(<0.48)	U	**370**	**D**	5 (s)
trans -1,2- Dichloroethene	(µg/L)	**84**		**10**		(<0.65)	U	(<0.65)	U	(<0.65)	U	(<0.65)	U	1.6		5 (s)
Hexachlorobutadiene	(µg/L)	(<0.41)	U	(<0.41)	U	(<0.41)	U	(<0.41)	U	**0.69**	**J**	**0.53**	**J**	(<0.41)	U	0.5 (s)
Tetrachloroethene	(µg/L)	**5.2**	**J**	1.7	J	(<0.65)	U	(<0.65)	U	(<0.65)	U	(<0.65)	U	(<0.65)	UJ	5 (s)
Trichloroethene	(µg/L)	**19**		4		(<0.36)	U	(<0.36)	U	(<0.36)	U	(<0.36)	U	(<0.36	U	5 (s)
Vinyl chloride	(µg/L)	**240**	**D**	**230**	**D**	(<0.50)	U	(<0.50)	U	(<0.50)	U	(<0.50)	U	**220**	**D**	2 (s)

Parameters List EPA Method 8260B	MW ID	MMW-02		MMW-03		MMW-04		MW-14		DUPLICATE [(b)]		TRIP BLANK		TRIP BLANK		NYSDEC AWQS (µg/L)
	Lab ID	K2728-02		K2723-04		K2723-02		K2728-01		K2728-08/DL		K2723-05		K2728-09		
	Screened Interval	10 - 20 ft bgs		10 - 20 ft bgs		20 - 30 ft bgs		5 - 15 ft bgs		10 - 20 ft bgs		NA		NA		
	Sample Type	Groundwater		Groundwater		Groundwater		Groundwater		QA/QC		QA/QC		QA/QC		
	Sample Date	12/28/2011		12/27/2011		12/27/2011		12/28/2011		12/28/2011		12/27/2011		12/28/2011		
Acetone	(µg/L)	(<2.2)	R	(<2.2)	R	(<2.2)	R	(<2.2)	R	(<2.2)	R	(<2.2)	R	(<2.2)	R	50 (g)
2- Butanone	(µg/L)	(<2.1)	R	(<2.1)	R	(<2.1)	R	(<2.1)	R	(<2.1)	R	(<2.1)	R	(<2.1)	R	---
Carbon disulfide	(µg/L)	(<0.34)	U	(<0.34)	U	(<0.34)	U	(<0.34)	U	(<0.34)	U	(<0.34)	U	(<0.34)	U	---
1,1- Dichloroethene	(µg/L)	(<0.39)	U	(<0.39)	U	(<0.39)	U	(<0.39)	U	0.87	J	(<0.39)	U	(<0.39)	U	5 (s)
cis -1,2- Dichloroethene	(µg/L)	0.66	J	(<0.48)	U	(<0.48)	U	1.9		**360**	**D**	(<0.48)	U	(<0.48)	U	5 (s)
trans -1,2- Dichloroethene	(µg/L)	(<0.65)	U	(<0.65)	U	(<0.65)	U	(<0.65)	U	1.6		(<0.65)	U	(<0.65)	U	5 (s)
Hexachlorobutadiene	(µg/L)	(<0.41)	U	(<0.41)	U	(<0.41)	U	(<0.41)	U	(<0.41)	U	0.63	J	(<0.41)	U	0.5 (s)
Tetrachloroethene	(µg/L)	(<0.65)	UJ	(<0.65)	U	(<0.65)	U	1.6	J	(<0.65)	UJ	(<0.65)	U	(<0.65)	UJ	5 (s)
Trichloroethene	(µg/L)	(<0.36)	U	(<0.36)	U	(<0.36)	U	1.2		(<0.36)	U	(<0.36)	U	(<0.36)	U	5 (s)
Vinyl chloride	(µg/L)	(<0.50)	U	(<0.50)	U	(<0.50)	U	(<0.50)	U	**230**	**D**	(<0.50)	U	(<0.50)	U	2 (s)

(b) DUPLICATE sample was collected at MMW-01.

TABLE 4 SUMMARY OF DETECTED VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER SAMPLES - JANUARY 2012

Parameters List EPA Method 8260B	MW ID	TPMW-3		TPMW-4		TPMW-6		TPM-01		TPM-02		TPM-03		MMW-01		NYSDEC AWQS (µg/L)
	Lab ID	L0152-09/DL		L0152-08/DL		L0152-12		L0152-11		L0152-10		L0152-05		K2728-03/DL		
	Screened Interval	6 - 16 ft bgs		6 - 16 ft bgs		6 - 16 ft bgs		18 - 28 ft bgs		18 - 28 ft bgs		14.5 - 24.5 ft bgs		10 - 20 ft bgs		
	Sample Type	Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		
	Sample Date	1/26/2012		1/26/2012		1/26/2012		1/26/2012		1/26/2012		1/26/2012		1/26/2012		
Acetone	(µg/L)	12	J	16	J	(<2.2)	R	(<2.2)	R	(<2.2)	R	(<2.2)	R	(<2.2)	R	50 (g)
2- Butanone	(µg/L)	(<2.1)	R	(<2.1)	R	(<2.1)	R	(<2.1)	R	4.4	J	(<2.1)	R	(<2.1)	R	---
Carbon disulfide	(µg/L)	(<0.34)	U	(<0.34)	U	(<0.34)	U	(<0.34)	U	0.91	J	(<0.34)	U	(<0.34)	U	---
1,1- Dichloroethene	(µg/L)	4.3		0.63	J	(<0.39)	U	(<0.39)	U	(<0.39)	U	(<0.39)	U	2.5		5 (s)
cis -1,2- Dichloroethene	(µg/L)	**2,000**	**D**	**250**	**D**	0.95	J	(<0.48)	U	(<0.48)	U	(<0.48)	U	**1,100**	**D**	5 (s)
trans -1,2 Dichloroethene	(µg/L)	**90**		**6.8**		(<0.65)	U	(<0.65)	U	(<0.65)	U	(<0.65)	U	4.4		5 (s)
Tetrachloroethene	(µg/L)	**9.4**	**J**	0.96	J	(<0.41)	UJ	(<0.65)	U	(<0.65)	U	(<0.65)	UJ	(<0.41)	UJ	5 (s)
Trichloroethene	(µg/L)	**17**		1.8		(<0.65)	U	(<0.36)	U	(<0.36)	U	(<0.36)	U	(<0.65)	U	5 (s)
Vinyl chloride	(µg/L)	**690**	**D**	**200**	**D**	(<0.36)	U	(<0.50)	U	(<0.50)	U	(<0.50)	U	**450**	**D**	2 (s)

Parameters List EPA Method 8260B	MW ID	MMW-02		MMW-03		MMW-04		MW-14		DUPLICATE[(c)]		TRIP BLANK		TRIP BLANK 2		NYSDEC AWQS (µg/L)
	Lab ID	L0152-01		L0152-06		L0152-02		L0152-03		L0152-13/DL		L0152-04		L0152-14		
	Screened Interval	10 - 20 ft bgs		10 - 20 ft bgs		20 - 30 ft bgs		5 - 15 ft bgs		6 - 16 ft bgs		NA		NA		
	Sample Type	Groundwater		Groundwater		Groundwater		Groundwater		QA/QC		QA/QC		QA/QC		
	Sample Date	1/25/2012		1/26/2012		1/25/2012		1/25/2012		1/26/2012		1/25/2012		1/26/2012		
Acetone	(µg/L)	(<2.2)	R	(<2.2)	R	(<2.2)	R	(<2.2)	R	17	J	(<2.2)	R	(<2.2)	R	50 (g)
2- Butanone	(µg/L)	(<2.1)	R	(<2.1)	R	(<2.1)	R	(<2.1)	R	(<2.1)	R	(<2.1)	R	(<2.1)	R	---
Carbon disulfide	(µg/L)	(<0.34)	U	(<0.34)	U	(<0.34)	U	(<0.34)	U	(<0.34)	U	(<0.34)	U	(<0.34)	U	---
1,1- Dichloroethene	(µg/L)	(<0.39)	U	(<0.39)	U	(<0.39)	U	(<0.39)	U	0.87	J	(<0.39)	U	(<0.39)	U	5 (s)
cis -1,2- Dichloroethene	(µg/L)	(<0.48)	J	(<0.48)	U	(<0.48)	U	1.3		**240**	**D**	(<0.48)	U	(<0.48)	U	5 (s)
trans -1,2 Dichloroethene	(µg/L)	(<0.65)	U	(<0.65)	U	(<0.65)	U	(<0.65)	U	1.6		(<0.65)	U	(<0.65)	U	5 (s)
Tetrachloroethene	(µg/L)	(<0.65)	UJ	(<0.65)	UJ	(<0.65)	U	1.7	J	(<0.41)	U	(<0.41)	UJ	(<0.41)	UJ	5 (s)
Trichloroethene	(µg/L)	(<0.36)	U	(<0.36)	U	(<0.36)	U	0.9	J	0.86	J	(<0.65)	U	(<0.65)	U	5 (s)
Vinyl chloride	(µg/L)	(<0.50)	U	(<0.50)	U	(<0.50)	UJ	(<0.50)	U	**210**	**D**	(<0.36)	U	(<0.36)	U	2 (s)

(c) DUPLICATE sample was collected at TPMW-4.
NOTE: UJ = Analyte was not detected above the sample reporting limit; and the reporting limit is approximate

TABLE 4 SUMMARY OF DETECTED VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER SAMPLES - APRIL 2012

Parameters List EPA Method 8260B	MW ID	TPMW-1		TPMW-3		TPMW-4		TPMW-5		TPMW-6		TPM-01		TPM-02		TPM-03		MMW-01		NYSDEC AWQS (µg/L)
	Lab ID	LO815-15		LO815-07		LO815-06		LO815-17		LO815-13		LO815-12		LO815-10		LO815-09		LO815-11		
	Screened Interval	2 - 12 ft bgs		6 - 16 ft bgs		6 - 16 ft bgs		6 - 16 ft bgs		6 - 16 ft bgs		18 - 28 ft bgs		18 - 28 ft bgs		14.5 - 24.5 ft bgs		10 - 20 ft bgs		
	Sample Type	Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		
	Sample Date	4/25/2012		4/25/2012		4/25/2012		4/25/2012		4/25/2012		4/25/2012		4/25/2012		4/25/2012		4/25/2012		
Acetone	(µg/L)	(<2.2)	R	19	J	13	J	(<2.2)	R	(<2.2)	R	(<2.2)	R	2.7	J	(<2.2)	R	(<2.2)	R	50 (g)
Bromodichloromethane	(µg/L)	(<0.26)	U	(<0.26)	U	(<0.26)	U	(<0.26)	U	(<0.26)	U	(<0.26)	U	(<0.26)	U	(<0.26)	U	(<0.26)	U	5 (s)
2- Butanone	(µg/L)	(<2.1)	R	(<2.1)	R	(<2.1)	R	(<2.1)	R	(<2.1)	R	(<2.1)	R	25	J	(<2.1)	R	(<2.1)	R	---
Chloroform	(µg/L)	(<0.33)	U	(<0.33)	U	(<0.33)	U	0.71	J	(<0.33)	U	(<0.33)	U	(<0.33)	U	(<0.33)	U	(<0.33)	U	7 (s)
1,1- Dichloroethene	(µg/L)	(<0.39)	U	0.74	J	(<0.39)	U	(<0.39)	U	(<0.39)	U	(<0.39)	U	(<0.39)	U	(<0.39)	U	(<0.39)	U	5 (s)
cis -1,2- Dichloroethene	(µg/L)	0.65	J	**180**		**21**		(<0.48)	U	(<0.48)	U	(<0.48)	U	(<0.48)	U	(<0.48)	U	**250**	**D**	5 (s)
trans -1,2- Dichloroethene	(µg/L)	(<0.65)	U	**13**		3.1		(<0.65)	U	(<0.65)	U	(<0.65)	U	(<0.65)	U	(<0.65)	U	0.98	J	5 (s)
Methylene Chloride	(µg/L)	(<0.41)	U	(<0.41)	U	(<0.41)	U	(<0.41)	U	(<0.41)	U	(<0.41)	U	(<0.41)	U	(<0.41)	U	(<0.41)	U	5 (s)
Tetrachloroethene	(µg/L)	(<0.65)	U	2.6		(<0.65)	U	(<0.65)	U	(<0.65)	U	(<0.65)	U	(<0.65)	U	(<0.65)	U	(<0.65)	U	5 (s)
Trichloroethene	(µg/L)	(<0.36)	U	**5.7**		0.66	J	(<0.36)	U	(<0.36)	U	(<0.36)	U	(<0.36)	U	(<0.36)	U	(<0.36)	U	5 (s)
Vinyl chloride	(µg/L)	0.64	J	**320**	**D**	**18**		(<0.50)	U	(<0.50)	U	0.51	J	(<0.50)	U	(<0.50)	U	**250**	**D**	2 (s)

Parameters List EPA Method 8260B	MW ID	MMW-02		MMW-03		MMW-04		MW-14		MW-15		MW-16		DUPLICATE[d]		TRIP BLANK		TRIP BLANK 2		NYSDEC AWQS (µg/L)
	Lab ID	LO815-03		LO815-08		LO815-01		LO815-05		LO815-02		LO815-16		LO815-14		LO81504		LO81518		
	Screened Interval	10 - 20 ft bgs		10 - 20 ft bgs		10 - 20 ft bgs		20 - 30 ft bgs		20 - 30 ft bgs		5 - 15 ft bgs		6 - 16 ft bgs		NA		NA		
	Sample Type	Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		QA/QC		QA/QC		QA/QC		
	Sample Date	4/24/2012		4/25/2012		4/24/2012		4/25/2012		4/24/2012		4/25/2012		4/25/2012		4/24/2012		4/25/2012		
Acetone	(µg/L)	(<2.2)	R	7.3	J	(<2.2)	R	(<2.2)	R	(<2.2)	R	(<2.2)	R	13	J	(<2.2)	R	(<2.2)	R	50 (g)
Bromodichloromethane	(µg/L)	(<0.26)	U	(<0.26)	U	(<0.26)	U	(<0.26)	U	(<0.26)	U	3.3		(<0.26)	U	(<0.26)	U	(<0.26)	U	5 (s)
2- Butanone	(µg/L)	(<2.1)	R	(<2.1)	R	(<2.1)	R	(<2.1)	R	(<2.1)	R	(<2.1)	R	(<2.1)	R	(<2.1)	R	(<2.1)	R	---
Chloroform	(µg/L)	(<0.33)	U	(<0.33)	U	(<0.33)	U	(<0.33)	U	(<0.33)	U	**13**		(<0.33)	U	(<0.33)	U	(<0.33)	U	7 (s)
1,1- Dichloroethene	(µg/L)	(<0.39)	U	(<0.39)	U	(<0.39)	U	(<0.39)	U	(<0.39)	U	(<0.39)	U	(<0.39)	U	(<0.39)	U	(<0.39)	U	5 (s)
cis -1,2- Dichloroethene	(µg/L)	(<0.48)	U	0.60	J	(<0.48)	U	1.2		(<0.48)	U	1.6		**20**		(<0.48)	U	(<0.48)	U	5 (s)
trans -1,2- Dichloroethene	(µg/L)	(<0.65)	U	(<0.65)	U	(<0.65)	U	(<0.65)	U	(<0.65)	U	(<0.65)	U	3		(<0.65)	U	(<0.65)	U	5 (s)
Methylene Chloride	(µg/L)	(<0.41)	U	(<0.41)	U	(<0.41)	U	(<0.41)	U	(<0.41)	U	(<0.41)	U	(<0.41)	U	0.53	J	(<0.41)	U	5 (s)
Tetrachloroethene	(µg/L)	(<0.65)	U	(<0.65)	U	(<0.65)	U	1.8		(<0.65)	U	**11**		(<0.65)	U	(<0.65)	U	(<0.65)	U	5 (s)
Trichloroethene	(µg/L)	(<0.36)	U	(<0.36)	U	(<0.36)	U	1.2		(<0.36)	U	1.5		0.65	J	(<0.36)	U	(<0.36)	U	5 (s)
Vinyl chloride	(µg/L)	(<0.50)	U	0.76	J	(<0.50)	U	(<0.50)	U	(<0.50)	U	(<0.50)	U	**17**		(<0.50)	U	(<0.50)	U	2 (s)

(d) DUPLICATE sample was collected at TPMW-4.

TABLE 4 SUMMARY OF DETECTED VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER SAMPLES - JULY 2012

Parameters List EPA Method 8260B	MW ID	TPMW-3		TPMW-4		TPMW-6		TPM-01		TPM-02		TPM-03		MMW-01		NYSDEC AWQS (µg/L)
	Lab ID	L1639-03/DL		L1639-04		L1639-13		L1639-07		L1639-10		L1639-12		L1639-09/DL		
	Screened Interval	6 - 16 ft bgs		6 - 16 ft bgs		6 - 16 ft bgs		18 - 28 ft bgs		18 - 28 ft bgs		14.5 - 24.5 ft bgs		10 - 20 ft bgs		
	Sample Type	Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		
	Sample Date	7/25/2012		7/25/2012		7/26/2012		7/26/2012		7/26/2012		7/26/2012		7/26/2012		
Acetone	(µg/L)	(<2.2)	R	21	J	(<2.2)	R	(<2.2)	R	6.9	J	(<2.2)	R	(<2.2)	R	50 (g)
2- Butanone	(µg/L)	(<2.1)	R	(<2.1)	R	(<2.1)	R	(<2.1)	R	110	J	(<2.1)	R	(<2.1)	R	---
1,2- Dichloroethane	(µg/L)	(<0.41)	U	(<0.41)	U	(<0.41)	U	(<0.41)	U	(<0.41)	U	(<0.41)	U	(<0.41)	U	0.6 (s)
1,1- Dichloroethene	(µg/L)	(<0.39)	U	(<0.39)	UJ	(<0.39)	U	(<0.39)	UJ	(<0.39)	U	(<0.39)	U	(<0.39)	U	5 (s)
cis -1,2- Dichloroethene	(µg/L)	**410**		**13**		(<0.48)	U	(<0.48)	U	(<0.48)	U	(<0.48)	U	**230**		5 (s)
trans -1,2- Dichloroethene	(µg/L)	**5.1**		(<0.65)	U	(<0.65)	U	(<0.65)	U	(<0.65)	U	(<0.65)	U	1.5		5 (s)
Methylene Chloride	(µg/L)	(<0.41)	UJ	(<0.41)	U	(<0.41)	U	(<0.41)	UJ	(<0.41)	U	(<0.41)	U	(<0.41)	U	5 (s)
Tetrachloroethene	(µg/L)	**20**		(<0.65)	U	(<0.65)	U	(<0.65)	U	(<0.65)	U	(<0.65)	U	(<0.65)	U	5 (s)
Trichloroethene	(µg/L)	**34**		(<0.36)	U	(<0.36)	U	(<0.36)	U	(<0.36)	U	(<0.36)	U	(<0.36)	U	5 (s)
1,2,3- Trichloropropane	(µg/L)	(<0.82)	UJ	(<0.82)	U	(<0.82)	U	(<0.82)	U	(<0.82)	U	(<0.82)	U	(<0.82)	U	0.04 (s)
Vinyl chloride	(µg/L)	**300**	**J**	**16**		(<0.50)	U	(<0.50)	U	(<0.50)	U	(<0.50)	U	**480**		2 (s)

Parameters List EPA Method 8260B	MW ID	MMW-02		MMW-03		MMW-04		MW-14		DUPLICATE[e]		TRIP BLANK		TRIP BLANK 2		NYSDEC AWQS (µg/L)
	Lab ID	L1639-02		L1639-01		L1639-08		L1639-11		L1639-05/DL		L1639-06		L1639-14		
	Screened Interval	10 - 20 ft bgs		10 - 20 ft bgs		10 - 20 ft bgs		20 - 30 ft bgs		6 - 16 ft bgs		NA		NA		
	Sample Type	Groundwater		Groundwater		Groundwater		Groundwater		QA/QC		QA/QC		QA/QC		
	Sample Date	7/25/2012		7/25/2012		7/26/2012		7/26/2012		7/25/2012		7/25/2012		7/26/2012		
Acetone	(µg/L)	(<2.2)	R	(<2.2)	R	(<2.2)	R	4.5	J	10	J	(<2.2)	R	(<2.2)	R	50 (g)
2- Butanone	(µg/L)	(<2.1)	R	(<2.1)	R	(<2.1)	R	(<2.1)	J	(<2.1)	R	(<2.1)	R	(<2.1)	R	---
1,2- Dichloroethane	(µg/L)	(<0.41)	U	(<0.41)	U	**1.5**		(<0.41)	U	(<0.41)	U	(<0.41)	U	(<0.41)	U	0.6 (s)
1,1- Dichloroethene	(µg/L)	(<0.39)	U	(<0.39)	U	(<0.39)	U	(<0.39)	U	1.8		(<0.39)	U	(<0.39)	U	5 (s)
cis -1,2- Dichloroethene	(µg/L)	(<0.48)	U	(<0.48)	U	(<0.48)	U	0.65	J	**560**		(<0.48)	U	(<0.48)	U	5 (s)
trans -1,2- Dichloroethene	(µg/L)	(<0.65)	U	(<0.65)	U	(<0.65)	U	(<0.65)	U	**6.1**		(<0.65)	U	(<0.65)	U	5 (s)
Methylene Chloride	(µg/L)	(<0.41)	UJ	(<0.41)	UJ	(<0.41)	U	(<0.41)	U	(<0.41)	U	1	J	(<0.41)	U	5 (s)
Tetrachloroethene	(µg/L)	(<0.65)	U	(<0.65)	U	(<0.65)	U	(<0.65)	U	**23**		(<0.65)	U	(<0.65)	U	5 (s)
Trichloroethene	(µg/L)	(<0.36)	U	(<0.36)	U	(<0.36)	U	(<0.36)	U	**41**		(<0.36)	U	(<0.36)	U	5 (s)
1,2,3- Trichloropropane	(µg/L)	(<0.82)	UJ	(<0.82)	UJ	**18**	**J**	(<0.82)	U	(<0.82)	UJ	(<0.82)	UJ	(<0.82)	U	0.04 (s)
Vinyl chloride	(µg/L)	(<0.50)	U	(<0.50)	U	(<0.50)	U	(<0.50)	U	**570**	**J**	(<0.50)	U	(<0.50)	U	2 (s)

(e) DUPLICATE sample was collected at TPMW-3.

TABLE 4 SUMMARY OF DETECTED VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER SAMPLES - OCTOBER/NOVEMEBER 2012

Parameters List EPA Method 8260B	MW ID	TPMW-3		TPMW-4		TPMW-6		TPM-01		TPM-02		TPM-03		MMW-01		NYSDEC AWQS (µg/L)
	Lab ID	L2322-08/DL		L2322-06		L2322-09		L2322-10		L2322-11		L2322-12		L2322-05		
	Screened Interval	6 - 16 ft bgs		6 - 16 ft bgs		6 - 16 ft bgs		18 - 28 ft bgs		18 - 28 ft bgs		14.5 - 24.5 ft bgs		10 - 20 ft bgs		
	Sample Type	Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		Groundwater		
	Sample Date	11/1/2012		11/1/2012		11/1/2012		11/1/2012		11/1/2012		11/1/2012		11/1/2012		
Acetone	(µg/L)	27	J	21		(<2.2)	R	(<2.2)	R	(<2.2)	R	(<2.2)	R	(<2.2)	R	50 (g)
2- Butanone	(µg/L)	(<2.1)	R	(<2.1)	R	(<2.1)	R	(<2.1)	R	88	J	(<2.1)	R	(<2.1)	R	---
1,2- Dichloroethane	(µg/L)	(<0.41)	U	(<0.41)	U	(<0.41)	U	(<0.41)	U	(<0.41)	U	(<0.41)	U	(<0.41)	U	0.6 (s)
1,1- Dichloroethene	(µg/L)	3.3	DJ	(<0.39)	U	(<0.39)	U	(<0.39)	U	(<0.39)	U	(<0.39)	U	(<0.39)	U	5 (s)
cis -1,2- Dichloroethene	(µg/L)	**370**	**J**	3.1		(<0.48)	U	(<0.48)	U	(<0.48)	U	(<0.48)	U	**51**		5 (s)
trans -1,2- Dichloroethene	(µg/L)	**7.9**	**D**	(<0.65)	U	(<0.65)	U	(<0.65)	U	(<0.65)	U	(<0.65)	U	(<0.65)	U	5 (s)
Methylene Chloride	(µg/L)	(<0.41)	UJ	(<0.41)	U	(<0.41)	UJ	(<0.41)	UJ	(<0.41)	UJ	(<0.41)	UJ	(<0.41)	UJ	5 (s)
Tetrachloroethene	(µg/L)	**12**	**D**	(<0.65)	U	(<0.65)	U	(<0.65)	U	(<0.65)	U	(<0.65)	U	(<0.65)	U	5 (s)
Trichloroethene	(µg/L)	**31**	**D**	(<0.36)	U	(<0.36)	U	(<0.36)	U	(<0.36)	U	(<0.36)	U	(<0.36)	U	5 (s)
1,2,3- Trichloropropane	(µg/L)	(<0.82)	U	(<0.82)	U	(<0.82)	U	(<0.82)	U	(<0.82)	U	(<0.82)	U	(<0.82)	U	0.04 (s)
Vinyl chloride	(µg/L)	**190**	**J**	**2.4**		(<0.50)	U	(<0.50)	U	(<0.50)	U	(<0.50)	U	**190**		2 (s)

Parameters List EPA Method 8260B	MW ID	MMW-02		MMW-03		MMW-04		MW-14		DUPLICATE[f]		TRIP BLANK		TRIP BLANK 2		NYSDEC AWQS (µg/L)
	Lab ID	L2322-04		L2322-01		L2322-02		L2322-03		L2322-07		L2322-14		L2322-13		
	Screened Interval	10 - 20 ft bgs		10 - 20 ft bgs		10 - 20 ft bgs		20 - 30 ft bgs		6 - 16 ft bgs		NA		NA		
	Sample Type	Groundwater		Groundwater		Groundwater		Groundwater		QA/QC		QA/QC		QA/QC		
	Sample Date	11/1/2012		10/31/2012		10/31/2012		11/1/2012		11/1/2012		10/31/2012		11/1/2012		
Acetone	(µg/L)	(<2.2)	R	(<2.2)	R	5.0	J	(<2.2)	R	(<2.2)	R	(<2.2)	R	(<2.2)	R	50 (g)
2- Butanone	(µg/L)	(<2.1)	R	(<2.1)	R	(<2.1)	R	(<2.1)	R	(<2.1)	R	(<2.1)	R	(<2.1)	R	---
1,2- Dichloroethane	(µg/L)	(<0.41)	U	(<0.41)	U	(<0.41)	U	(<0.41)	U	(<0.41)	U	(<0.41)	U	(<0.41)	U	0.6 (s)
1,1- Dichloroethene	(µg/L)	(<0.39)	U	(<0.39)	U	(<0.39)	U	(<0.39)	U	(<0.39)	U	(<0.39)	U	(<0.39)	U	5 (s)
cis -1,2- Dichloroethene	(µg/L)	1.1		(<0.48)	U	(<0.48)	U	(<0.48)	U	4.3		(<0.48)	U	(<0.48)	U	5 (s)
trans -1,2- Dichloroethene	(µg/L)	(<0.65)	U	(<0.65)	U	(<0.65)	U	(<0.65)	U	(<0.65)	U	(<0.65)	U	(<0.65)	U	5 (s)
Methylene Chloride	(µg/L)	(<0.41)	UJ	(<0.41)	UJ	(<0.41)	UJ	1.1	UJ	(<0.41)	UJ	1.2		1.1	J	5 (s)
Tetrachloroethene	(µg/L)	(<0.65)	U	(<0.65)	U	(<0.65)	U	(<0.65)	U	(<0.65)	U	(<0.65)	U	(<0.65)	U	5 (s)
Trichloroethene	(µg/L)	(<0.36)	U	(<0.36)	U	(<0.36)	U	(<0.36)	U	(<0.36)	U	(<0.36)	U	(<0.36)	U	5 (s)
1,2,3- Trichloropropane	(µg/L)	(<0.82)	U	(<0.82)	U	(<0.82)	U	(<0.82)	U	(<0.82)	U	(<0.82)	U	(<0.82)	U	0.04 (s)
Vinyl chloride	(µg/L)	(<0.50)	U	(<0.50)	U	(<0.50)	U	(<0.50)	U	**3.3**		(<0.50)	U	(<0.50)	U	2 (s)

(f) DUPLICATE sample was collected at TPMW-4.