



FINAL
SITE MANAGEMENT PLAN

Northeastern Gravure Cylinder Service
1439 Saratoga Road
Town of Moreau, Saratoga County, NY

NYSDEC Site Number 546029
Contract Work Authorization Number: D006132-31

Shaw Project Number: 134685.31

April 2014

Prepared for:

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New York State Department of Environmental Conservation
Division of Environmental Remediation, Region 5
1115 NYS Route 86
Ray Brook, New York 12977-0296

Submitted by:

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Latham, New York, 12110

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TOWN OF MOREAU, SARATOGA COUNTY, NEW YORK

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Revisions to Final Approved Site Management Plan:

Revision #	Submitted Date	Summary of Revision	DEC Approval Date

APRIL 2014

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1.0 INTRODUCTION AND DESCRIPTION OF REMEDIAL PROGRAM

1.1 Introduction

This Site Management Plan (SMP) has been prepared as an element of the remedial program at Northeastern Gravure Cylinder Service located in the Town of Moreau, Saratoga County, New York (hereinafter referred to as the “Site”) under the New York State (NYS) Inactive Hazardous Waste Disposal Site Remedial Program administered by New York State Department of Environmental Conservation (NYSDEC). Figures showing the location and boundaries of this 1.9-acre site are provided in **Figures 1 and 1A**. The boundaries of the site are more fully described in the metes and bounds site description that is included as part of the Environmental Easement.

1.1.1 General

Site remedial activities were completed in several phases, the last of which occurred in 2008. The final remedy included the excavation of a 75 foot by 60 foot area at the rear of the building, disposal of approximately 1,400 tons of impacted soil material, post-remediation groundwater monitoring, and restriction of site usage in the form of an environmental easement which is described in this SMP.

The selected remedy addressed contaminated soil only; contaminated groundwater remains at the site and is hereafter referred to as ‘remaining contamination’. This SMP was prepared to manage contamination remaining at the site until the Environmental Easement is released in accordance with ECL Article 71, Title 36. All reports associated with the site may be viewed by contacting the NYSDEC or its successor agency managing environmental issues in New York State.

This SMP was prepared by Shaw Environmental & Infrastructure Engineering of New York, P.C., on behalf of NYSDEC, in accordance with the requirements in NYSDEC Program Policy DER-10 “Technical Guidance for Site Investigation and Remediation” (DER-10; **Appendix A**), dated May 2010, and the guidelines provided by NYSDEC. This SMP addresses the means for implementing the Institutional Controls (ICs) and Engineering Controls (ECs) that are required by the Environmental Easement for the site.

1.1.2 Purpose

The site contains contamination left behind after completion of the remedial action. Engineering Controls have been incorporated into the site remedy to control exposure to remaining contamination during the use of the site to ensure protection of public health and the

environment. An Environmental Easement granted to the NYSDEC, and recorded with the Saratoga County Clerk, will require compliance with this SMP and all ECs and ICs placed on the site. The ICs place restrictions on site use, and mandate operation, maintenance, monitoring and reporting measures for all ECs and ICs. This SMP specifies the methods necessary to ensure compliance with all ECs and ICs required by the Environmental Easement for contamination that remains at the site. This plan has been prepared for and approved by the NYSDEC; 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.

This SMP provides a detailed description of all procedures required to manage remaining contamination at the site after completion of the Remedial Action, including: (1) implementation and management of all Engineering and Institutional Controls; (2) media monitoring; and (3) performance of inspections, certification of results, and submittal of Periodic Review Reports and annual Site-Wide Inspection Reports.

To address these needs, this SMP includes two plans: (1) an Engineering and Institutional Control Plan for implementation and management of EC/ICs and (2) a Monitoring Plan for implementation of Site Monitoring. This plan also includes a description of Periodic Review Reports for the periodic submittal of data, information, recommendations, and certifications to 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 and comply with the SMP is a violation of both the Environmental Easement and Environmental Conservation Law, and is grounds for revocation of the Certificate of Completion (COC) along with other applicable penalties.

1.1.3 Revisions

Revisions to this plan will be proposed in writing to the NYSDEC's project manager. 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.

1.2 Site Background

1.2.1 Site Location and Description

The site is located 1439 Saratoga Road (NYS Route 9) in the Town of Moreau, County of Saratoga, New York and is identified as parcel 63.4-1-1 on the Town of Moreau tax map. The site consists of a one-story building, associated paved parking area and undeveloped land at the

rear of the parcel. The site is approximately 1.9-acres in size and is bounded immediately by commercial properties in all directions; Drywall Center, Inc. (the Tierny property) is to the north and northeast, Moore's Lumber and Building Supply and Citgo gas station and mini-mart are to the southwest, and Sun Haven Motel is to the southeast. United States Route 9 is oriented along the site's southeast border in a southwest-northeast direction. Residential developments are present to the west of the site, immediately beyond the commercial properties and the Town of Moreau landfill is located approximately 1,500 feet to the north of the Site, beyond the north side of Butler Road. No on-site water bodies are present and the nearest surface water resource is the Hudson River, located approximately 2,500 feet north of the site.

1.2.2 Site History

The site is a former industrial facility that conducted copper, nickel and chrome plating of engraved printing cylinders used in the gravure printing process. The production process used specialized equipment to first engrave cylinders and then subject them to the copper, nickel or chrome plating process. Copper plating equipment was first installed at the facility in January 1980, followed shortly thereafter by equipment for chrome plating in March of that year. Small chips of copper generated during the engraving process were often used in processes for both plating and recycling of cylinders. During the chrome plating process, newly engraved cylinders were placed directly into a bath of hexavalent chromium and subsequently rinsed. Chrome cylinders were also recycled by applying heat to the cylinder and then immersing them in hydrochloric acid to strip the old chrome layer prior to plating.

Frequent water rinsing and cleaning during each of the three processes produced trace amounts of copper, nickel and hexavalent chromium in the waste stream. Waste water from the chrome, copper, and nickel plating processes were discharged into two 2,000-gallon underground holding tanks located behind the processing building. NYSDEC officials inspected the facility in September 1985 and reported a release of wastewater from the holding tanks after they were found leaking and overflowing. After the 1985 inspection, the site was listed as a Class 2 site in the Registry of Inactive Hazardous Waste Disposal Sites in New York State due to the reported overflows. It is unclear when the facility officially ceased operations; however, the facility was operational at the time of a RCRA inspection conducted in June of 2002.

1.2.3 Geologic Conditions - Site Geology and Hydrogeology

Information from historic investigations along with data gathered during the Remedial Investigation (RI) field program indicate that subsurface soil at the site is comprised of unconsolidated deposits of glacial origin overlying bedrock of the Snake Hill Formation. Within

the unconsolidated deposits are two distinct geological units; fine glaciolacustrine sediments composed of sand and silt (deep unit) and deposits of deltaic sands (shallow unit). Together the units reach an observed thickness of approximately 130 feet and appear to be lacustrine delta and lake bottom sediments that are likely associated with glacial lakes Albany (13,200 years before present [YBP]), Quaker Springs (13,000 YBP), or Coveville (12,900 YBP). As observed in the field, the lower portion of glaciolacustrine sediments were primarily gray, soft, varved silts and clays while the upper portions were primarily gray, medium to fine sand, with silt and frequent seams of silt, silty clay and clay. The deltaic sand deposits observed above the glaciolacustrine deposits consisted of fine to coarse sand mixtures with traces of silt. A geologic cross section of the site is shown on **Figures 2 and 2A**; **Figure 2** is a map of the site which indicates the locations shown on the cross section while **Figure 2A** shows geologic cross section.

Water level measurements obtained at the site on January 24, 2005 and May 16, 2006 show groundwater depths generally range from 35 feet to 45 feet below ground surface (bgs). Groundwater table contour maps produced using this groundwater level data indicate groundwater flow in both the shallow and deep hydrogeologic units is predominantly toward the north. The average linear velocity of groundwater is estimated to be between 2.12 feet per day (ft/day) and 3.97 ft/day in the shallow unit and between 0.22 ft/day and 0.38 ft/day in the deep unit. Monitoring well construction specifications are included in **Tables 1**.

1.3 *Summary of Remedial Investigation Findings*

A Remedial Investigation (RI)/Feasibility Study (FS) was performed in April-May 2006 to characterize the nature and extent of contamination at the site. The RI/FS was conducted by the NYSDEC using state funds because the potential responsible party (PRP) declined to implement the RI/FS at the site when requested by the NYSDEC. Additionally, several site-specific investigations were conducted between September 1985 and the 2006 RI; these investigations are listed below. It is important to note that sampling and analysis performed during the course of these investigations was not conducted under the quality control and assurance guidelines required of a NYSDEC approved RI and is discussed solely for informational purposes. In general, these previous investigations revealed the presence of metal contaminants in soil (surface and subsurface) and groundwater media above pertinent standards, criteria and guidance values (SCGs).

- Spill Area Investigation, NYSDEC Lead - October 1985
- Subsurface Soil Investigation, PRP Lead - July 1986

- Field Investigation, PRP Lead - June 1988
- Phase II Investigation, PRP Lead - 1995
- Phase II Investigation, Adjacent Property Owner Lead - April 1999
- Field Investigation, PRP Lead - July 1999
- Field Investigation, PRP Lead - October 2000
- Interim Characterization Sampling Event, NYSDEC Lead - January 2005

The results of the 2006 RI are described in detail in the following referenced report, which is included as **Appendix B** and summarized below:

“Northeastern Gravure Cylinder Service Site, Remedial Investigation Final Report”, April 2007, Prepared by O’Brien & Gere Engineers.

The RI determined that hazardous waste was present at the site in the form of chromium, hexavalent chromium, and copper contaminated soil and groundwater. Improper discharges of contaminated waste waters resulted in the contamination of subsurface soils and groundwater beneath the site. Consistent with the RI/FS Work Plan, the RI field investigation included the collection of samples from groundwater, surface water, subsurface soil and surface soil media as well as test pit excavation and sampling, industrial rinsewater holding tank sampling, sampling of potable water from an adjacent property, monitoring well installation and development, and hydraulic conductivity testing. The locations of both on-site and off-site sample points are presented on **Figures 3 and 4**.

In order to determine whether contaminants were present at concentration levels of concern within soil and water media, the analytical results were compared to two classes of SCGs. Groundwater, drinking water and surface water sample results were compared to both the NYSDEC’s “Ambient Water Quality Standards and Guidance Values” as defined in the Division of Water’s Technical and Operation Guidance Series (T.O.G.S.) document and Part 5 of the New York State Sanitary Code as regulated by New York State Department of Health (NYSDOH). Soil results were compared to 6 NYCRR Subpart 375-6.8(b) - “Restricted Use Soil Cleanup Objectives - Residential”. Additionally, background surface soil samples were collected from areas unaffected by historic site operations and located at least 50 feet southeast of the site. The samples were analyzed for total metals and the results were used to determine background COC concentrations and compared to relevant RI data to determine appropriate site remediation goals.

After reviewing site data and evaluating potential public health and environmental exposure routes, NYSDEC and NYSDOH determined hazardous waste present in the form of chromium, hexavalent chromium and copper contaminated soil and water had created a significant threat to human health and required immediate action.

1.4 *Summary of Remedial Actions*

The site was remediated in accordance with the selected remedy outlined in the May 2007 Proposed Remedial Action Plan (PRAP) and July 2007 Record of Decision (ROD) for the site, the latter of which is included as **Appendix C**. The main components of remediation at this site were site preparation, excavation of impacted materials, removal of USTs, and backfill of excavation areas. The ROD set clean-up goals of 36 ppm for chromium, 22 ppm for hexavalent chromium, and 270 ppm for copper. Site excavation began on December 14, 2009 and was completed on January 8, 2010. Additional excavation work was performed on August 10, 2010 and October 11, 2010 following the review of confirmation sample results. A figure showing areas where excavation was performed is included as **Figure 5**. Details regarding the completion of these activities can be found in the Construction Certification Final Report for the Northeastern Gravure Cylinder Service Site Remedial Construction, April 2011, prepared by Camp Dresser & McKee (CDM)

, which has been included as **Appendix D**:

1.5 *Site-Related Treatment Systems*

No long-term treatment systems were installed as part of the site remedy.

1.6 *Remaining Contamination*

All contaminated soils were removed to the extent practical, but it is likely that residual chromium and copper contamination above clean-up goals remain in the subsurface soils on the property. However, based on the subsurface sampling completed to date, the depth and concentration of the residual contamination presents a very low risk for future impacts. Because the excavation was continued until end-point sample data reported concentrations below cleanup values, residual contamination would most likely be confined to isolated areas beyond the location of end-point samples.

Remaining contamination is also expected to be present within groundwater. Active groundwater extraction, treatment and discharge was one of three options evaluated by NYSDEC as part of the FS; however, this option was determined to be infeasible. After removal of the source area

through excavation, it is presumed that the contaminants would dissipate through natural means. Groundwater will be sampled on a semi-annual basis as described below in order to monitor remaining contamination. Restrictions on usage will also be included in the environmental easement in order to eliminate exposure.

2.0 ENGINEERING AND INSTITUTIONAL CONTROL PLAN

2.1 Introduction

2.1.1 General

Since contaminated groundwater remains beneath the site, Engineering Controls and Institutional Controls (EC/ICs) are required to protect human health and the environment. This Engineering and Institutional Control Plan describes the procedures for the implementation and management of all EC/ICs at the site. The EC/IC Plan is one component of the SMP and is subject to revision by NYSDEC.

2.1.2 Purpose

This plan provides:

- A description of all EC/ICs on the site;
- The basic implementation and intended role of each EC/IC;
- A description of the key components of the ICs set forth in the Environmental Easement;
- A description of the features to be evaluated during each required inspection and periodic review;
- A description of plans and procedures to be followed for implementation of EC/ICs, such as the implementation of the Excavation Work Plan for the proper handling of remaining contamination that may be disturbed during maintenance or redevelopment work on the site; and
- Any other provisions necessary to identify or establish methods for implementing the EC/ICs required by the site remedy, as determined by the NYSDEC.

2.2 Engineering Controls

2.2.1 Engineering Control System

All requirements for engineering controls have been met through the remedial actions discussed in Section 1.4, whereby all surface and subsurface soils exceeding SCGs have been excavated to the extent practicable and disposed of offsite, greatly reducing or eliminating the likelihood of contaminant exposures by way of airborne dust or direct contact with contaminated media.

2.3 *Institutional Controls*

A series of Institutional Controls is required by the site ROD to: (1) implement, maintain and monitor Engineering Control systems; (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 residential, commercial, and industrial uses only. Adherence to these Institutional Controls on the site is required by the Environmental Easement and will be implemented under this Site Management Plan. These Institutional Controls are:

- Compliance with the Environmental Easement and this SMP by the Grantor and the Grantor's successors and assigns;
- All Engineering Controls must be operated and maintained as specified in this SMP;
- All Engineering Controls on the Controlled Property must be inspected at a frequency and in a manner defined in the SMP.
- Groundwater and other environmental or public health monitoring must be performed as defined in this SMP;
- Data and information pertinent to Site Management of the Controlled Property must be reported at the frequency and in a manner defined in this SMP.

The site has a series of Institutional Controls in the form of site restrictions. Adherence to these Institutional Controls is required by the Environmental Easement. Institutional Controls identified in the Environmental Easement may not be discontinued without an amendment to or extinguishment of the Environmental Easement. Site restrictions that apply to the Controlled Property are:

- The property may only be used for restricted residential use as defined by 6NYCRR Part 375 provided that the long-term Engineering and Institutional Controls included in this SMP are employed. Commercial or industrial use will be allowed in accordance with local zoning.
- The property may not be used for a higher level of use, such as unrestricted use without additional remediation and amendment of the Environmental Easement, as approved by the NYSDEC;
- All future activities on the property that will disturb remaining contaminated material must be conducted in accordance with this SMP;
- The use of the groundwater underlying the property as a source of potable or process water, without necessary water quality treatment as determined by NYSDOH, is prohibited;

- Vegetable gardens and farming on the property are prohibited;
- The site owner or remedial party will submit to NYSDEC a written statement that certifies, under penalty of perjury, that: (1) Both engineering and institutional controls employed at the Controlled Property are unchanged from the previous certification or that any changes to the controls were approved by the NYSDEC; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. This certification shall be submitted annually, or an alternate frequency of time that NYSDEC determines to be appropriate and will be prepared and submitted by a professional engineer or other such expert that the NYSDEC finds acceptable. NYSDEC will notify the property owner in writing when the certification is no longer needed. NYSDEC retains the right to access such Controlled Property at any time in order to evaluate the continued maintenance of any and all controls.
- The operation of the components of the site remedy and post-remedial monitoring as well as adherence to this site management plan will continue until all remedial objectives have been achieved, or until NYSDEC determines that continued operation is technically impracticable or not feasible.

2.3.1 Excavation Work Plan

The site has been remediated for restricted residential use. Any future intrusive work that will penetrate the soil cover to depths greater than 20 feet below ground surface (ft bgs) or encounters or disturbs the remaining contamination will be performed in compliance with the Excavation Work Plan (EWP) that is attached to this SMP as **Appendix E**; intrusive work penetrating the soil cover to a depth less than 20 ft bgs will not require an EWP. 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 Community Air Monitoring Plan (CAMP) prepared for the site. A sample HASP is attached as **Appendix F** to this SMP that is in current compliance with DER-10, and 29 CFR 1910, 29 CFR 1926, and all other applicable Federal, State and local regulations.

Based on future changes to State and federal health and safety requirements, and specific methods employed by future contractors, the HASP and CAMP will be updated and re-submitted with the notification provided in Section A-1 of the EWP. Any intrusive construction work will be performed in compliance with the EWP, HASP and CAMP, and will be included in the periodic inspection and certification reports submitted under the Site Management Reporting Plan (See Section 5).

The site owner and associated parties preparing these documents submitted to the State, and parties performing this work, are completely responsible for the safe performance of all intrusive work, the structural integrity of excavations, proper disposal of excavation water, control of

runoff from open excavations into remaining areas of contamination, and for structures that may be affected by excavations (such as building foundations and bridge footings). The site owner will ensure that site development activities will not interfere with, or otherwise impair or compromise, the monitoring activities described in this SMP.

2.4 *Inspections and Notifications*

2.4.1 *Inspections*

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

- Whether Engineering Controls 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;
- Sampling and analysis of appropriate media during monitoring events;
- If site records are complete and up to date; and
- Changes, or needed changes, to the remedial or monitoring system;

Inspections will be conducted in accordance with the procedures set forth in the Monitoring Plan of this SMP (**Section 3**). The reporting requirements are outlined in the Periodic Review Reporting section of this plan (**Section 5**).

If an emergency, such as a natural disaster or an unforeseen failure of any of the ECs occurs, an inspection of the site will be conducted within 5 days of the event to verify the effectiveness of the EC/ICs implemented at the site by a qualified environmental professional as determined by NYSDEC.

2.4.2 *Notifications*

Notifications will be submitted by the property owner to the NYSDEC as needed for the following reasons:

- 60-day advance notice of any proposed changes in site use that are required under the terms of 6NYCRR Part 375, and/or Environmental Conservation Law.
- 7-day advance notice of any proposed ground-intrusive activities pursuant to the Excavation Work Plan.
- Notice within 48-hours of any damage or defect to the foundations structures that reduces or has the potential to reduce the effectiveness of other Engineering Controls 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, earthquake, or other natural disaster that reduces or has the potential to reduce the effectiveness of Engineering Controls 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 shall be submitted to the NYSDEC within 45 days and shall describe and document 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 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.

2.5 *Contingency Plan*

Emergencies may include injury to personnel, fire or explosion, environmental release, or serious weather conditions. If an emergency, such as a natural disaster or an unforeseen failure of any of the ECs occurs, an inspection of the site will be conducted within 5 days of the event to verify the effectiveness of the EC/ICs implemented at the site by a qualified environmental professional as determined by NYSDEC.

2.5.1 *Emergency Telephone Numbers*

In the event of any environmentally related situation or unplanned occurrence requiring assistance the Owner or Owner's representative(s) should contact the appropriate party from the contact list below. For any emergency, the appropriate emergency first responders should be

contacted immediately; prompt contact should also be made to a qualified environmental professional as well. These emergency contact lists must be maintained in an easily accessible location at the site.

Table 2: Emergency Contact Numbers

Medical, Fire, and Police:	911
One Call Center:	(800) 272-4480 (3 day notice required for utility markout)
Poison Control Center:	(800) 222-1222
Pollution Toxic Chemical Oil Spills:	(800) 424-8802
NYSDEC Spills Hotline	(800) 457-7362

2.5.2 Map and Directions to Nearest Health Facility

Site Location: 1439 Saratoga Road (US Route 9)

Town of Moreau, Saratoga County, New York

Nearest Hospital Name: Glens Falls Hospital
100 Park Street
Glens Falls, New York, 12801
Phone: 518-926-1000
web: www.glensfallshospital.org

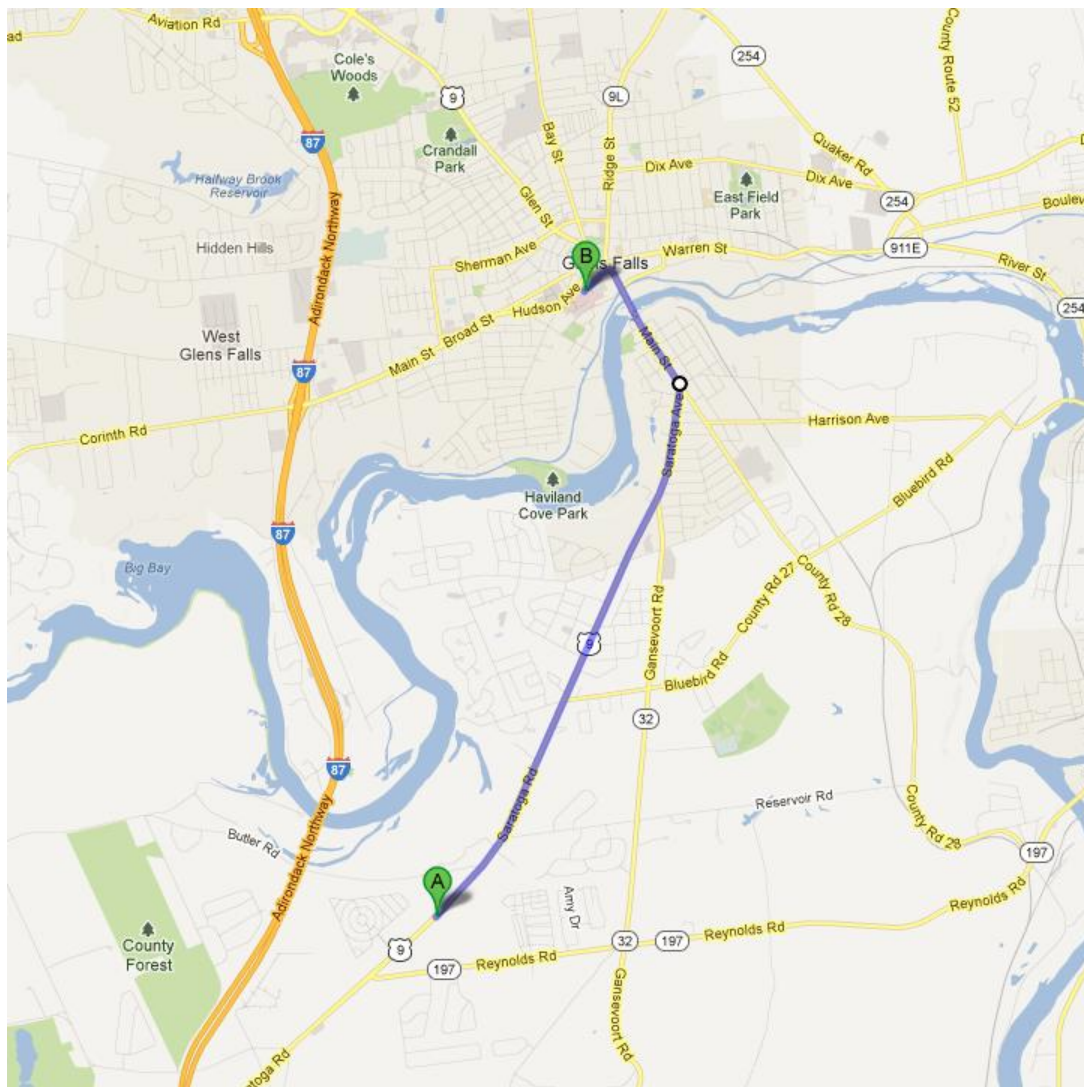
Directions to the Hospital:

1. Head north on US Route 9/Saratoga Road toward Butler Road.
2. Continue on US Route 9. Turn left onto NYS Route 32/US Route 9/Main St.
3. Continue to follow NY-32 North/US Rt. 9 North/Main St. across Hudson River
4. Turn left onto Park Street.

Total Distance: Approximately 4.4 miles

Total Estimated Time: Approximately 10 minutes

Map Showing Route from the site to the Hospital:



2.5.3 *Response Procedures*

As appropriate, the fire department and other emergency response group will be notified immediately by telephone of the emergency. The emergency telephone number list is found at the beginning of this Contingency Plan (**Table 2**). The list will also be posted prominently at the site and made readily available to all personnel at all times.

All spills of a hazardous nature should be reported to the NYSDEC Spills Hotline within 24 hours of the occurrence. Spills should immediately be contained so as to prevent migration to storm sewers or surface water bodies. When possible, impacted materials should be removed and containerized so long as it is safe to do so. Additionally, if the spill is too large to contain and poses an immediate threat to the individuals at or near the site, the appropriate emergency first responders and qualified environmental professional should be contacted immediately.

3.0 *SITE MONITORING PLAN*

3.1 *Introduction*

3.1.1 *General*

The Monitoring Plan describes the measures for evaluating the performance and effectiveness of the remedy to reduce or mitigate contamination at the site, the soil cover system, and all affected site media identified below. This Monitoring Plan may only be revised with the approval of NYSDEC.

3.1.2 *Purpose and Schedule*

This Monitoring 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, particularly ambient groundwater standards and Part 375 SCOs for soil;
- Assessing achievement of the remedial performance criteria.
- Evaluating site information periodically to confirm that the remedy continues to be effective in protecting public health and the environment; and
- Preparing the necessary reports for the various monitoring activities.

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

- Sampling locations, protocol, and frequency;
- Information on all designed monitoring systems;
- Analytical sampling program requirements;
- Reporting requirements;
- Quality Assurance/Quality Control (QA/QC) requirements;
- Inspection and maintenance requirements for monitoring wells;
- Monitoring well decommissioning procedures; and
- Annual inspection and periodic certification.

Semi-annual monitoring of the performance of the remedy and overall reduction in contamination on-site and off-site will be conducted for the first two years. The frequency thereafter will be determined by NYSDEC. Trends in contaminant levels in groundwater in the affected areas will be evaluated to determine if the remedy continues to be effective in achieving remedial goals. Monitoring programs are summarized in **Table 3** and outlined in detail in the following **Sections 3.2 and 3.3**.

Table 3: Monitoring Schedule

Monitoring Program	Frequency*	Matrix	Analysis
Monitoring Well Sampling	Semi-annual; second and fourth quarters of each calendar year	Groundwater	Total Chromium, Copper by EPA Method 6010; Total Hexavalent Chromium by EPA Method 7196A

* The frequency of events will be conducted as specified until otherwise approved by NYSDEC and NYSDOH

3.2 Media Monitoring Program

Groundwater monitoring will be performed on a semi-annual basis (two sampling events per year) to assess the performance of the remedy.

3.2.1 Groundwater Monitoring

The network of 13 monitoring wells selected for sampling were installed during and prior to the April-May 2006 RI field investigation for the purpose of monitoring both up-gradient and down-gradient groundwater conditions at the site. Four of the 13 wells are screened within the deep hydrogeological unit while the remaining nine are screened within the shallow unit. Each of the monitoring wells is shown on **Figures 3 and 4**, and their construction details are summarized in **Table 1**. Additionally, the cross section shown on **Figure 2A** shows the screen settings relative to the two hydrogeological units as well as baseline water levels.

Each of the wells to be sampled is listed below.

- MW-1S
- MW-1D
- MW-2
- MW-9
- EHC-2D
- HC-101S

- MW-3
- MW-6
- MW-8S
- MW-8D
- HC-101D
- HC-102
- HC-103

3.2.1.1 *Sampling Protocol*

All monitoring well sampling activities will be recorded in a field book and on the groundwater-sampling log presented in **Appendix G**. Other observations (e.g., well integrity, etc.) will be noted on the well sampling log. The well sampling log will serve as the inspection form for the groundwater monitoring well network. Each sampling event will follow the low-flow groundwater sampling procedure discussed in United States Environmental Protection Agency (USEPA) Region I Low Stress Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells, included as **Appendix H**. Additionally, **Appendix A** establishes the quality control procedures that will be required for each event.

3.2.1.2 *Monitoring Well Repairs, Replacement and Decommissioning*

If biofouling or silt accumulation occurs in the on-site and/or off-site monitoring wells, the wells will be physically agitated/surged and redeveloped. Additionally, monitoring wells will be properly decommissioned and replaced (as per the Monitoring Plan), 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 condition of monitoring wells will be noted during sampling.

The NYSDEC will be notified prior to any repair or decommissioning of monitoring wells for the purpose of replacement, and the repair or decommissioning and replacement process will be documented in the subsequent periodic report. Well decommissioning without replacement will be done only with the prior approval of NYSDEC. Well abandonment will be performed in accordance with procedures approved by NYSDEC for groundwater monitoring well decommissioning. Monitoring wells that are decommissioned because they have been rendered unusable will be reinstalled in the nearest available location, unless otherwise approved by the NYSDEC.

3.3 *Site-Wide Inspection*

Site-wide inspections will be performed on a regular schedule at a minimum of once per year. Site-wide inspections will also be performed after all severe weather conditions that may affect

Engineering Controls or monitoring devices. During these inspections, an inspection form will be completed (**Appendix I**). 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;
- Confirmation that site records are up to date.

3.4 Monitoring Quality Assurance/Quality Control

All sampling and analyses will be performed in accordance with the quality assurance/quality control requirements outlined in Chapter 2 of DER-10 (**Appendix A**).

3.5 Monitoring Reporting Requirements

Forms and any other information generated during regular monitoring events and inspections will be kept on file on-site. All forms, and other relevant reporting formats used during the monitoring/inspection events, will be (1) subject to approval by NYSDEC and (2) submitted at the time of the Periodic Review Report, as specified in the Reporting Plan of this SMP.

All monitoring results will be reported to NYSDEC on a periodic basis in the Periodic Review Report. A letter report will also be prepared following the completion of the second and fourth sampling events. The report will include, at a minimum:

- Date of event;
- Personnel conducting sampling;
- Description of the activities performed;
- Type of samples collected (e.g., soil, groundwater, 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; and
- A determination as to whether groundwater conditions have changed since the last reporting event.

Data will be reported in hard copy or digital format as determined by NYSDEC. Monitoring program deliverables are detailed in the following **Table 4**. The frequency of events will be conducted as specified until otherwise approved by NYSDEC.

Table 4: Schedule of Monitoring/Inspection Deliverables

Task	Reporting Frequency*
Periodic Review Report	5 years
Groundwater Monitoring Report	Annual
Site -Wide Inspection Report	Annual

4.0 OPERATION AND MAINTENANCE PLAN

4.1 Introduction

The site remedy does not rely on any mechanical systems, such as sub-slab depressurization systems, air sparge/ soil vapor extraction systems, or water treatment systems to protect public health and the environment. Therefore, the operation and maintenance of such components is not included in this SMP.

5.0 PERIODIC REVIEW REPORT AND CERTIFICATIONS

5.1 Certification of Engineering and Institutional Controls

After the last inspection of the reporting period, a qualified environmental professional or Professional Engineer licensed to practice in New York State will prepare the following certification:

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;
- Nothing has occurred that would impair the ability of the control to protect the public health and environment;
- Nothing has occurred 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;
- If a financial assurance mechanism is required under the oversight document for the site, the mechanism remains valid and sufficient for the intended purpose under the document;
- Use of the site is compliant with the environmental easement;
- The engineering control systems are performing as designed and are effective;
- To the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program and generally accepted engineering practices; and
- The information presented in this report is accurate and complete.
- 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, [name], of [business address], am certifying as [Owner or Owner’s Designated Site Representative] for the site.

The signed certification will be included in the Periodic Review Report described below.

5.2 *Periodic Review Report*

A Periodic Review Report will be submitted to the Department every five years, beginning eighteen months after the Certificate of Completion or equivalent document (e.g., Satisfactory Completion Letter, No Further Action Letter, etc.) is issued. In the event that the site is subdivided into separate parcels with different ownership, a single Periodic Review Report will be prepared that addresses the site as a whole. The report will be prepared in accordance with NYSDEC DER-10 and submitted within 45 days of the end of each certification period. Media sampling results will also be incorporated into the Periodic Review Report. 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 inspection forms and other records generated for the site during the reporting period in electronic format;
- A summary of any discharge monitoring data and/or information generated during the reporting period with comments and conclusions;
- Data summary tables and graphical representations of contaminants of concern by media (groundwater, soil vapor), 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 contaminant 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 electronically in a NYSDEC-approved format;
- A site evaluation, which includes the following:
 - The compliance of the remedy with the requirements of the site-specific RAWP, 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 site contamination based on inspections or data generated by the Monitoring Plan for the media being monitored;
 - Recommendations regarding any necessary changes to the remedy and/or Monitoring Plan; and

- The overall performance and effectiveness of the remedy.

The Periodic Review Report will be submitted, in hard-copy format, to the NYSDEC Central Office and Regional Office in which the site is located, and in electronic format to NYSDEC Central Office, Regional Office and the NYSDOH Bureau of Environmental Exposure Investigation.

5.3 *Corrective Measures 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 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 plan until it is approved by the NYSDEC.

Table 1

Monitoring Well Specifications
On-site and Off-site Wells
Northeastern Gravure Cylinder Service Site
Moreau, New York

Well No.	Date Completed	Measuring Point	Ground Elevation	Screen Depth		Screen Elevation	
		Elevation		Top	Bottom	Top	Bottom
EHC-2S	12-Apr-89	352.18	349.87	47.0	72.0	302.9	277.9
EHC-2D	11-Apr-89	351.85	349.96	85.0	110.0	265.0	240.0
HC-101S	Oct-00	351.20	348.91	35.0	45.0	313.9	303.9
HC-101D	Oct-00	351.48	348.91	65.0	80.0	283.9	268.9
HC-102	Oct-00	351.76	348.77	35.0	45.0	313.8	303.8
HC-103	Oct-00	352.70	349.93	35.0	45.0	314.9	304.9
MW-1S	16-Jun-88	351.24	349.01	35.0	40.0	314.0	309.0
MW-1D	May-92	351.47	349.00	77.0	87.0	272.0	262.0
MW-2	16-Jun-88	350.48	348.41	35.0	40.0	313.4	308.4
MW-3	16-Jun-88	351.49	349.38	35.0	40.0	314.4	309.4
MW-4S	16-Jun-88	351.21	349.25	35.0	40.0	314.3	309.3
MW-4D	May-92	351.71	349.52	78.0	88.0	271.5	261.5
MW-5S	May-92	350.93	348.37	32.0	42.0	316.4	306.4
MW-6S	May-92	352.38	350.03	32.0	42.0	318.0	308.0
MW-7	1-May-06	351.37	348.43	33.4	53.4	315.0	295.0
MW-8S	2-May-06	353.53	350.46	33.5	53.5	317.0	297.0
MW-8D	3-May-06	353.56	350.48	68.4	88.4	282.1	262.1
MW-9	3-May-06	353.40	350.54	39.7	59.7	310.8	290.8

Notes:

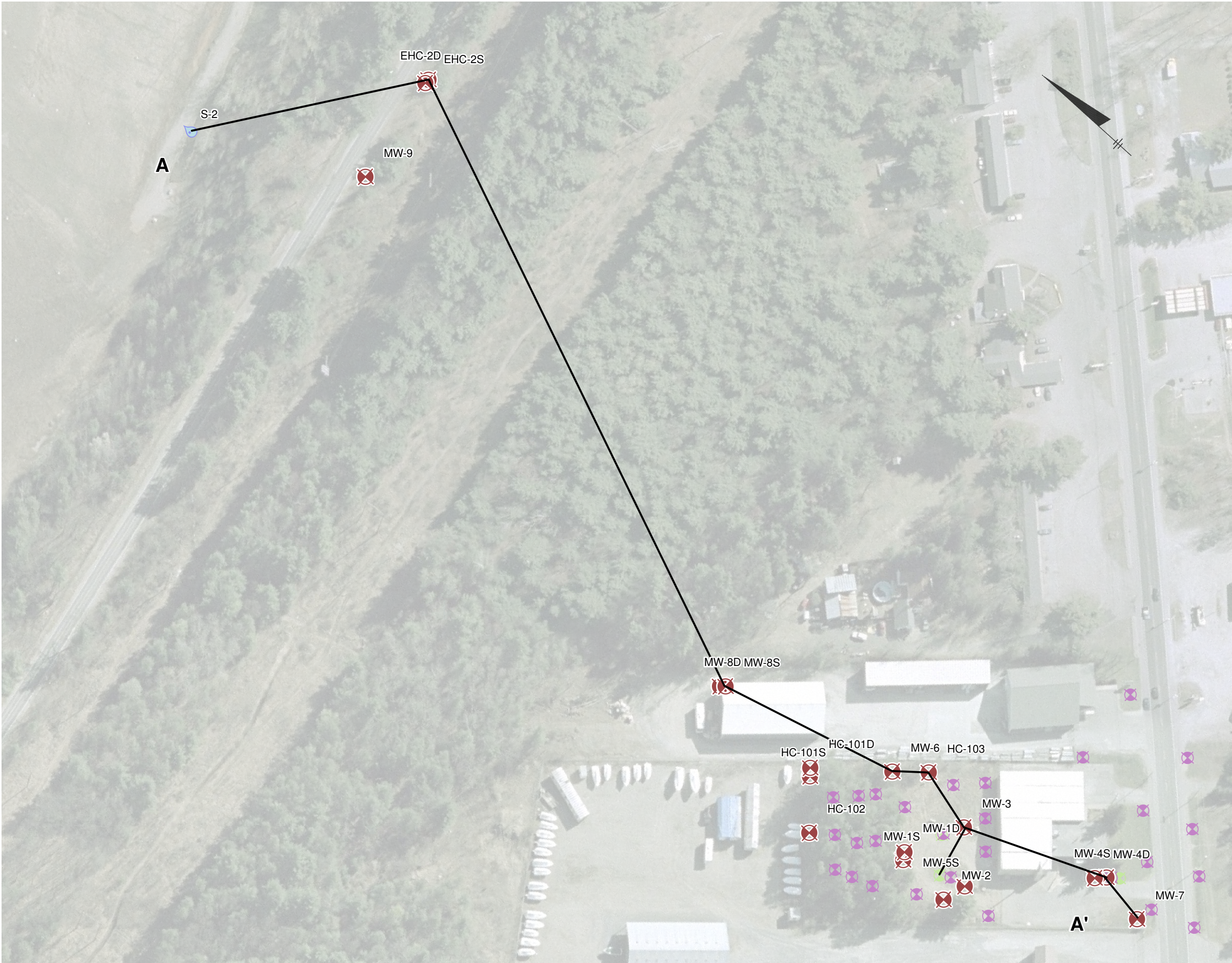
1. All depths in feet below ground surface
2. All elevations in feet above mean sea level

Figures

Figure 1A - NEGC Tax Map



Disclaimer: This map was prepared by the Saratoga County Internet Geographic Information System (GIS). The map was compiled using the most current GIS data available. The aerial photography (orthoimagery) was prepared by the N.Y.S. Office of Cyber Security and Critical Infrastructure Coordination during the year 2001-2007. Parcel and municipal boundaries are derived from tax maps and do not represent a land survey.



This document was developed in color. Reproduction in B/W may not represent the data as intended.

FIGURE 2

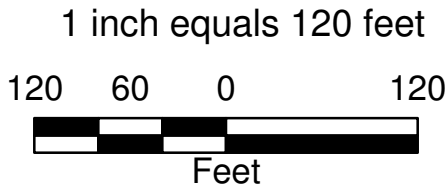
LEGEND

- Cross Section A-A'
- Monitoring Well
- Surface Soil
- Surface Water

NEW YORK STATE
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CONSERVATION

**NORTHEASTERN GRAVURE
CYLINDER SERVICE SITE**

**CROSS-SECTION A-A'
LOCATION MAP**



August 31, 2006
cross_section_location.mxd



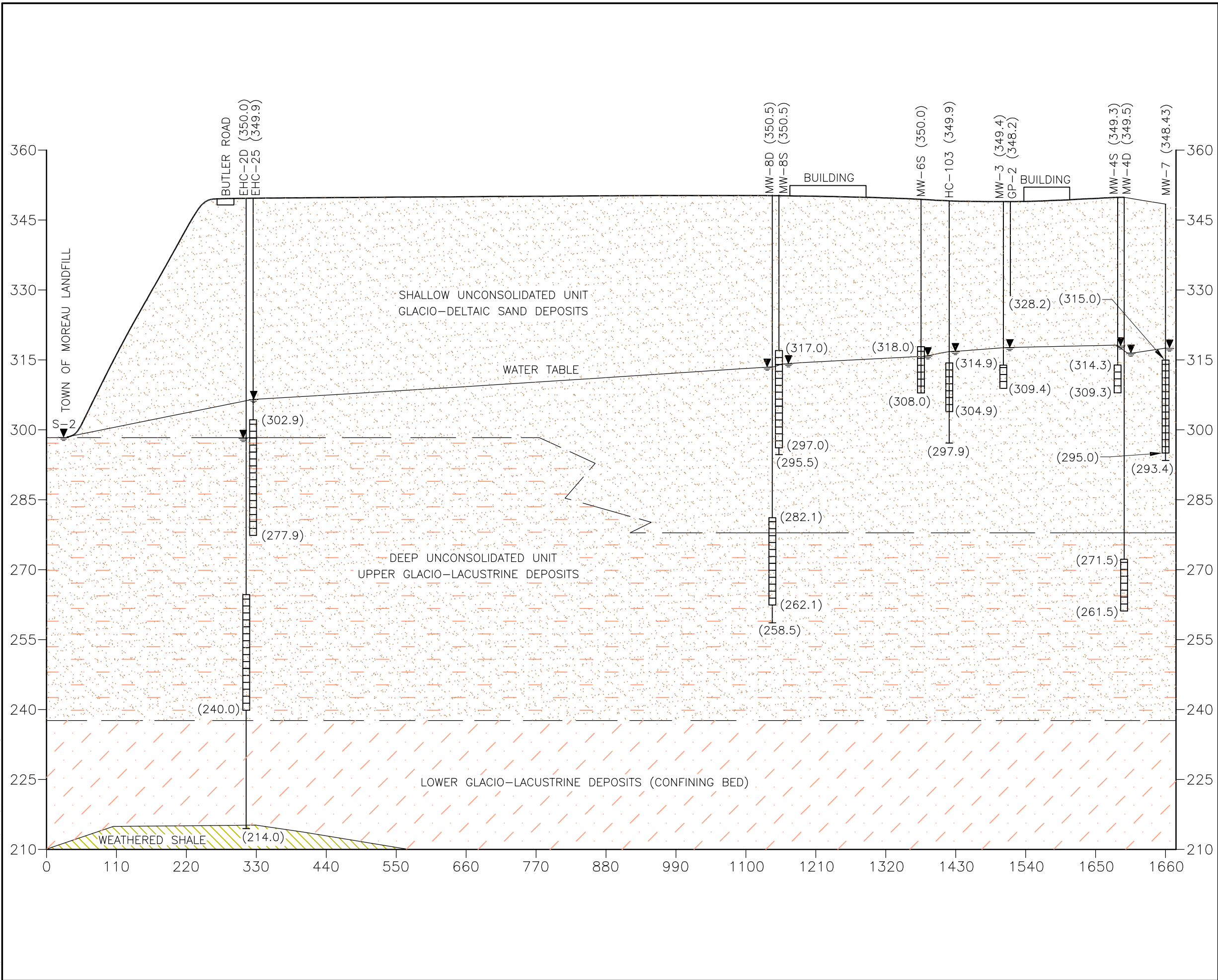


FIGURE 2A

LEGEND



Well Screen



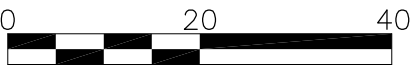
Water Table
(elevations
measured on
May 16, 2006)

(349.87)
Elevation in feet
AMSL

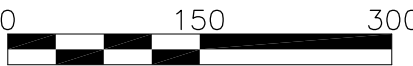
NEW YORK STATE
DEPARTMENT OF
ENVIRONMENTAL
CONSERVATION

NORTHEASTERN GRAVURE
CYLINDER SERVICE SITE

CROSS SECTION
A-A'



VERTICAL SCALE IN FEET



HORIZONTAL SCALE IN FEET

FILE NO. 10653.35918
APRIL 2007





FIGURE 3

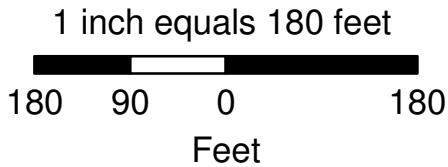
Locations

- Surface Water
- Monitoring Well
- Surface Soil
- Tap Water
- Test Pit
- Geoprobe
- Pumping Well
- chain_link_fence
- Test Pit Outlines

NEW YORK STATE
DEPARTMENT OF
ENVIRONMENTAL
CONSERVATION

**NORTHEASTERN GRAVURE
CYLINDER SERVICE SITE**

**SAMPLE LOCATION MAP
ON-SITE AND OFF-SITE**



August 18, 2006
survey base map_small_scale.mxd



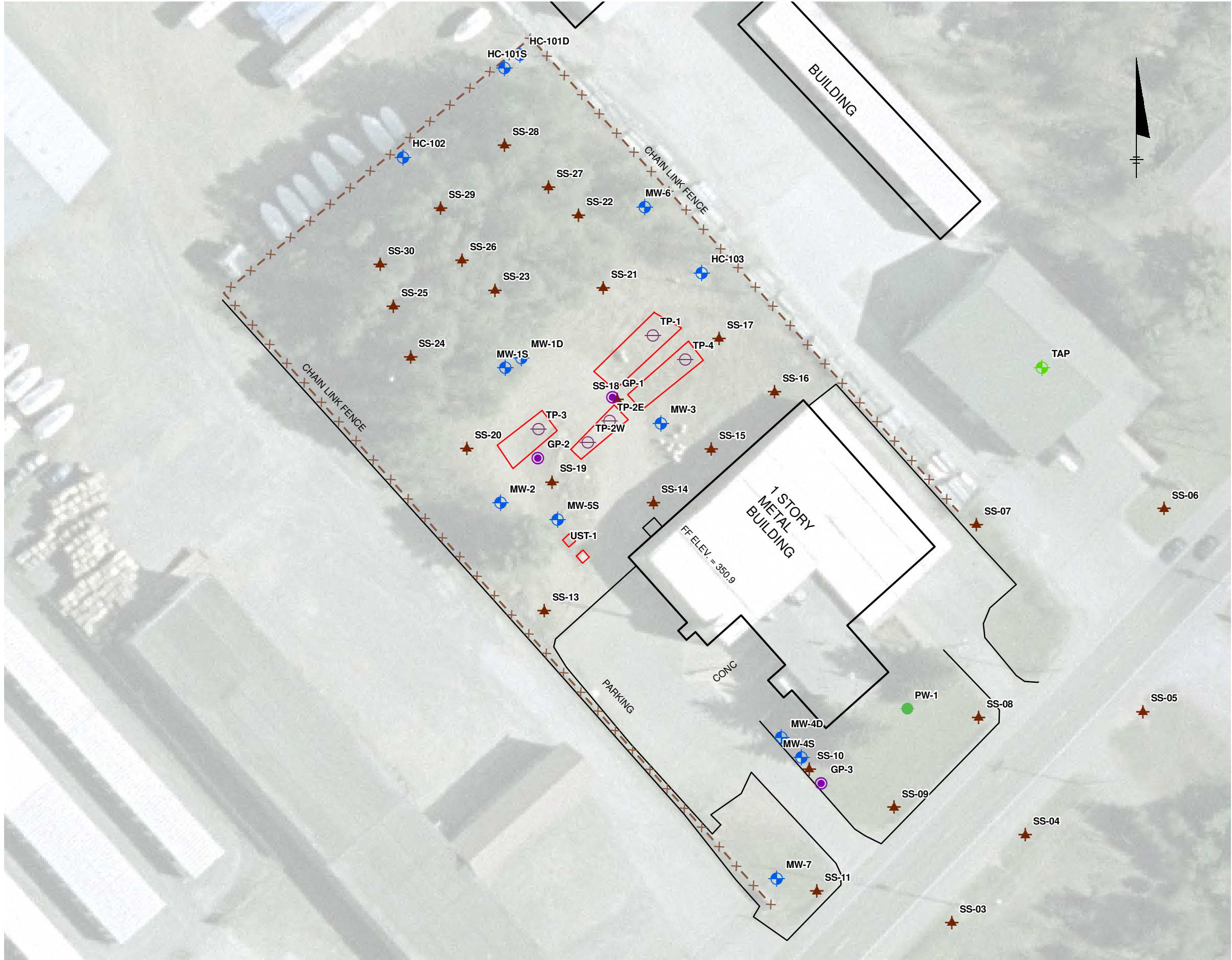


FIGURE 4

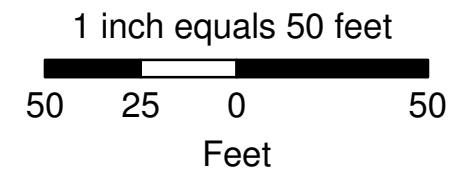
Locations

- Surface Water
- Monitoring Well
- Surface Soil
- Tap Water
- Test Pit
- Geoprobe
- Pumping Well
- Chain Link Fence
- Test Pit Outlines
- Soil Excavation

NEW YORK STATE
DEPARTMENT OF
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**NORTHEASTERN GRAVURE
CYLINDER SERVICE SITE**

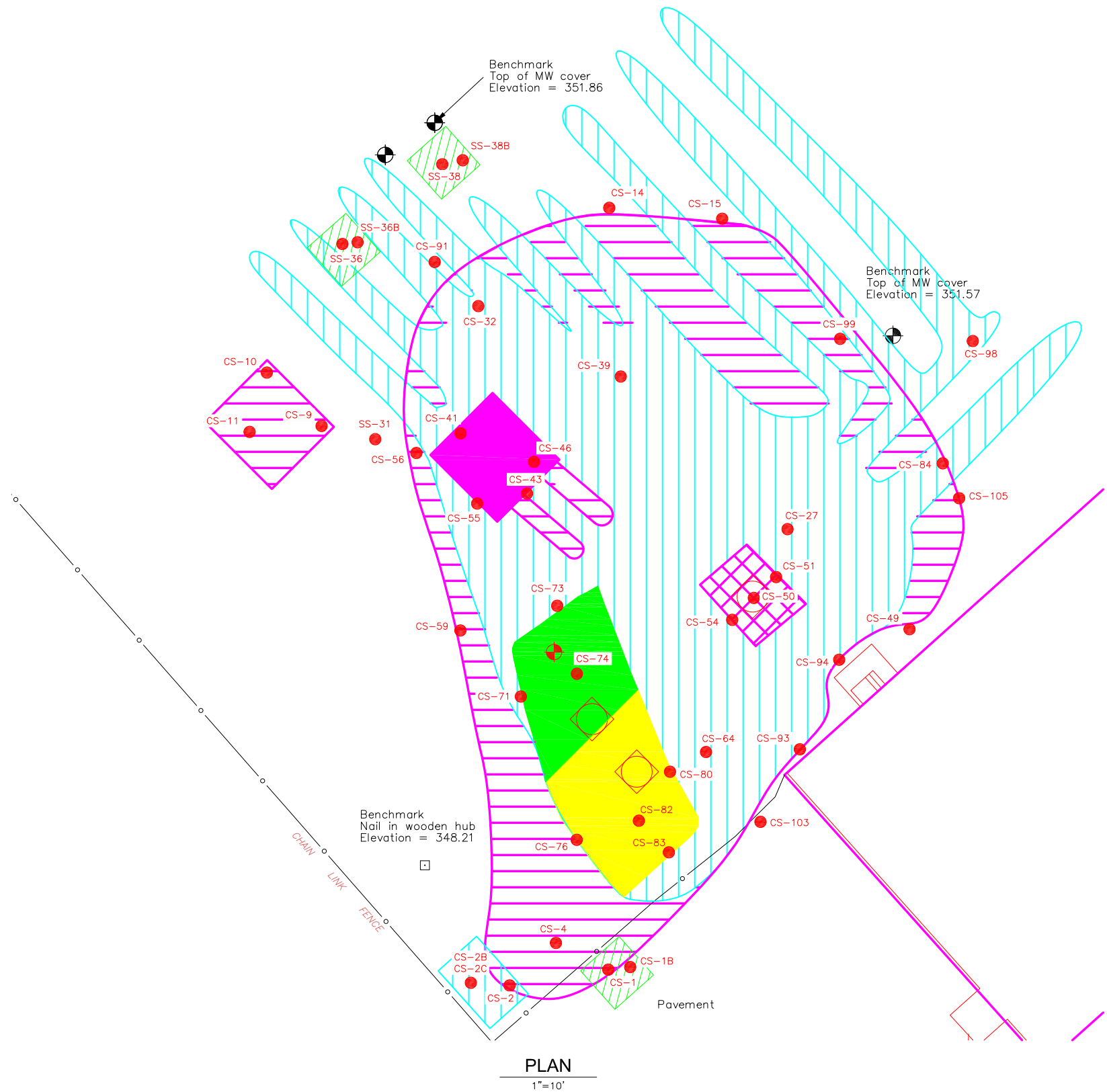
**SAMPLE LOCATION MAP
ON-SITE**



April 10, 2007
survey base map_small_scale.mxd



FIGURE 5



LEGEND

- 1 FT DEEP EXCAVATED AREA
- 1 FT DEEP EXCAVATED AREA, AUGUST 2010
- 4 FT DEEP EXCAVATED AREA
- 8 FT DEEP EXCAVATED AREA
- 9 FT DEEP EXCAVATED AREA
- 16 FT DEEP EXCAVATED AREA
- 20 FT DEEP EXCAVATED AREA
- CONFIRMATION SAMPLE LOCATION
- MONITORING WELL
- REMOVED MONITORING WELL
- CHAIN LINK FENCE
- UNDERGROUND STORAGE TANK
- CONFIRMATION SURFACE SAMPLE LOCATION

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TO WHICH THE SEAL OF A PROFESSIONAL ENGINEER OR
LAND SURVEYOR HAS BEEN ATTACHED.

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REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY:	H HALLETT
DRAWN BY:	R HAINES
SHEET CHK'D BY:	H HALLETT
CROSS CHK'D BY:	J BLAUM
APPROVED BY:	
DATE:	FEBRUARY 2010

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NYSDEC
NEGC-SITE NO. 5-46-029
MOREAU, SARATOGA COUNTY, NEW YORK

CONSTRUCTION CERTIFICATION REPORT
COMPLETED DEPTH AND LIMIT OF EXCAVATION

PROJECT NO.	0897-73783
FILE NAME:	APPENDIX C
SHEET NO.	APPENDIX C