Department of Environmental Conservation

Division of Environmental Remediation

Record of Decision

Northeastern Gravure Cylinder Service Site
Town of Moreau, Saratoga County, New York
Site Number 546029

July, 2007

New York State Department of Environmental Conservation
ELIOT SPITZER, *Governor*   Alexander B. Grannis, *Commissioner*

DECLARATION STATEMENT - RECORD OF DECISION

Northeastern Gravure Cylinder Service Inactive Hazardous Waste Disposal Site
Town of Moreau, Saratoga County, New York
Site No. 546029

Statement of Purpose and Basis

The Record of Decision (ROD) presents the selected remedy for the Northeastern Gravure Cylinder Service site, a Class 2 inactive hazardous waste disposal site. The selected remedial program was chosen in accordance with the New York State Environmental Conservation Law and is not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40CFR300), as amended.

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (the Department) for the Northeastern Gravure Cylinder Service inactive hazardous waste disposal site, and the public's input to the Proposed Remedial Action Plan (PRAP) presented by the Department. A listing of the documents included as a part of the Administrative Record is included in Appendix B of the ROD.

Assessment of the Site

Actual or threatened releases of hazardous waste constituents from this site, if not addressed by implementing the response action selected in this ROD, presents a current or potential significant threat to public health and/or the environment.

Description of Selected Remedy

Based on the results of the Remedial Investigation and Feasibility Study (RI/FS) for the Northeastern Gravure Cylinder Service site and the criteria identified for evaluation of alternatives, the Department has selected excavation and offsite disposal of contaminated soil followed by onsite and offsite groundwater monitoring and institutional controls. The components of the remedy are as follows:

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

2. All soils with contaminants of concern (COC) concentrations above SCGs and the former underground holding tanks, including associated sludge, will be removed and disposed of offsite (Figure 5). Following excavation, clean backfill and topsoil will be deposited onsite, graded, and seeded for restoration. Clean soil will constitute soil that meets the Division of Environmental Remediation's criteria for backfill or local site background.

3. Imposition of institutional controls in the form of an environmental easement that will: (a) require compliance with the approved site management plan; (b) restrict the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by NYSDOH; (c) require the property owner to complete and submit to the Department a periodic certification of institutional and engineering controls; and (d) designate the property as suitable for "residential use" as defined by NYCRR Part 375. The property may also be used for commercial or industrial purposed if approved by local zoning.

4. Development of a site management plan which will include the following institutional and engineering controls: (a) periodic monitoring of groundwater using existing onsite and offsite monitoring wells; and (b) provisions for the continued proper operation and maintenance of the components of the remedy.

5. The property owner will provide a periodic certification of institutional and engineering controls, prepared and submitted by a professional engineer or such other expert acceptable to the Department, until the Department notifies the property owner in writing that this certification is no longer needed. This submittal will: (a) contain certification that the institutional controls and engineering controls put in place are still in place and are either unchanged from the previous certification or are compliant with Department-approved modifications; (b) allow the Department access to the site; and (c) state that nothing has occurred that would impair the ability of the control to protect public health or the environment, or constitute a violation or failure to comply with the site management plan unless otherwise approved by the Department.

6. 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.

New York State Department of Health Acceptance

The New York State Department of Health (NYSDOH) concurs that the remedy selected for this site is protective of human health.

Declaration

The selected remedy is protective of human health and the environment, complies with State and Federal requirements that are legally applicable or relevant and appropriate to the remedial action to the extent practicable, and is cost effective. This remedy utilizes permanent solutions and alternative treatment or resource recovery technologies, to the maximum extent practicable, and satisfies the preference for remedies that reduce toxicity, mobility, or volume as a principal element.

JUL 30 2007

Date

Dale A. Desnoyers, Director
Division of Environmental Remediation

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SECTION 1: SUMMARY OF THE RECORD OF DECISION

The New York State Department of Environmental Conservation (Department), in consultation with the New York State Department of Health (NYSDOH), has selected this remedy for Northeastern Gravure Cylinder Service. The presence of hazardous waste has created significant threats to human health and/or the environment that are addressed by this remedy. As more fully described in Sections 3 and 5 of this document, improper discharge of contaminated waste waters resulted in the disposal of hazardous wastes, including heavy metals such as chromium and copper. These wastes have contaminated the soil and groundwater at the site, and have resulted in:

- A significant threat to human health associated with current and potential exposure to contaminated soil and groundwater.
- A significant environmental threat associated with the potential impacts of contaminants to surface water resources.

To eliminate or mitigate these threats, the Department has selected excavation and offsite disposal of all contaminated soil above standards, criteria and guidance followed by onsite and offsite groundwater monitoring and institutional controls.

The selected remedy, discussed in detail in Section 8, is intended to attain the remediation goals identified for this site in Section 6. The remedy must conform with officially promulgated standards and criteria that are directly applicable, or that are relevant and appropriate. The selection of a remedy must also take into consideration guidance, as appropriate. Standards, criteria and guidance are hereafter called SCGs.

SECTION 2: SITE LOCATION AND DESCRIPTION

The Northeastern Gravure Cylinder Service (NEGC) Site is a 1.9 acre property located at 1439 Saratoga Road (NYS Route 9), in the Town of Moreau, Saratoga County, New York (Figure 1). The site consists of a vacant one-story former industrial building, associated paved parking area and undeveloped land. The site is bordered to the northeast by Drywall Center, Inc. (the Tierny property), to southwest by Moore's Lumber and Building Supply and Citgo gas station and mini-mart, and to the southeast by the Sun Haven Motel. The Town of Moreau Landfill is located approximately 1500 feet to the north of the NEGC Site, on the north side of Butler Road. No on-site surface water bodies are present. The nearest surface water resource is the Hudson River, located approximately 2500 feet north of NEGC.

Based on previous investigations and the soil boring information gathered during the RI field program, unconsolidated deposits of glacial origin, reaching an observed thickness of 130 feet, overlie bedrock of the Snake Hill Formation throughout the Site. Two major types of unconsolidated deposits were identified in the vicinity of the Site; these include, in ascending order, fine glaciolacustrine sediments (sand, silt) and deltaic sand deposits. The unconsolidated deposits appear to be lacustrine delta and lake bottom sediments that are likely associated with glacial lakes Albany (13,200 years before present), Quaker Springs (13,000 years before present), or Coveville (12,900 years before present).

Water level measurements obtained at the Site on January 24, 2005 and May 16, 2006 indicate that the depth to groundwater is approximately 35 feet to 45 feet below ground surface (bgs). Based on these groundwater level data, groundwater table contour maps for the shallow (deltaic sand) and deep (fine glaciolacustrine sediments) units were prepared. Groundwater flow in both the shallow and deep hydrogeologic units is predominantly toward the north.

SECTION 3: SITE HISTORY

3.1: Operational/Disposal History

The NEGC Site is a former industrial facility that conducted copper, nickel, and chrome plating and engraving of printing cylinders used in the gravure printing process.

Chrome plating equipment, installed at the NEGC facility in March 1980, was used in addition to copper and nickel plating equipment at various times of facility operation. During the chrome plating process, after a cylinder was engraved, it was placed in a hexavalent chromium bath, then rinsed. Trace amounts of hexavalent chromium were transferred to the rinse water during this process. Waste water from the chrome plating rinse tank was discharged into two 2,000-gallon underground holding tanks located behind the processing building. The Department found these tanks overflowing and leaking when inspected in September 1985. Another process conducted at NEGC involved the dechrome and rechrome of cylinders that were worn from use. The chromium was heated and stripped off before being placed in a hexavalent chrome bath. Hydrochloric acid was used to strip the old chrome layer, then discharged into the dechrome and rechrome waste stream. Sodium hypoferric sulfate was added to the waste stream to convert hexavalent chromium to trivalent chromium. This solution was discharged to the holding tanks behind the building.

Copper plating equipment was installed in the facility in January 1980 and engraving production officially commenced in February 1981. An electronic engraving machine was installed in 1985. Small chips of copper, removed during the engraving process, were later sold as scrap. A copper plating process was also used in the recycling of cylinders. Frequent water rinsing and cleaning during this process produced trace amounts of copper in the waste stream. Waste water from the copper plating rinse tank was discharged into the two holding tanks at the rear of the building. In 1989, copper plating was replaced by nickel plating. A release of wastewater from the holding tanks was reported in 1985. The date the facility ceased operations is unclear. However, the facility was operational at the time of a RCRA inspection conducted in June 2002.

3.2: Remedial History

In 1985, the Department listed the site as a Class 2 site in the Registry of Inactive Hazardous Waste Disposal Sites in New York. This classification is based on the reported overflow spillage of industrial rinseate wastewater to the ground surface from the two 2,000 gallon concrete underground holding tanks. A Class 2 site is a site where hazardous waste presents a significant threat to the public health or the environment and action is required.

A brief summary of the previous investigations at the site is presented below.

Spill Area Investigation, (Department Lead) 1985:

In October 1985, six surface water and waste water samples were collected from the following areas:

- Reported spill area
- West septic underground tank
- East septic underground tank
- Above ground aeration tank
- Composite of waste drums 1, 2, and 3
- Waste drum 4

Acetone, methyl isobutyl ketone, toluene, cyanide, chromium, copper, and lead were detected. Additional site investigation activities were conducted based upon the results of this investigation. The results of this investigation are presented for informational purposes only. The sampling and analyses were not conducted under the quality control and assurance guidelines required of a Department approved RI.

Subsurface Soil Investigation, Potential Responsible Party (PRP) Lead - 1986:

In July 1986, three soil borings, (SB-1, SB-2 and SB-3), were installed north of the NEGC building to a depth of 36 feet bgs. Samples from the ground surface, 4 to 6 feet bgs, 20 to 22 feet bgs, and 34 to 36 feet bgs were analyzed for cadmium, chromium, copper, lead, nickel, and zinc. Two additional soil samples were collected in the "spill area" from unknown locations at depths of 3 and 6 feet bgs and analyzed for Environmental Protection Agency (EPA) Method 601, 602 and 603 compounds (aromatic/purgeable hydrocarbons). Only three SB-1 samples, from the ground surface, from 4 to 6 feet bgs and 20 to 22 feet bgs, exhibited total chromium concentrations exceeding SCGs.

Also in 1986, VOCs (benzene, chlorobenzene, 1,3-dichlorobenzene and toluene) were detected in liquid samples collected from inside the two holding tanks in the spill area. The results of this investigation are presented for informational purposes only. The sampling and analyses were not conducted under the quality control and assurance guidelines required of a Department approved RI.

Field Investigation, (PRP Lead) 1988:

In June 1988, four 2-inch diameter stainless steel monitoring wells, designated MW-1, MW-2, MW-3, and MW-4, were installed at the Site (Figure 2). The well screen interval for each of these wells is from 35 to 40 feet bgs. The wells were developed, but not sampled at this time.

Phase II Investigation Report, (PRP Lead) 1995:

From May 1992 to March 1994, a ground penetrating radar (GPR) survey was conducted and seven soil borings and four groundwater monitoring wells were installed. The soil borings were advanced upgradient and in the spill area associated with the release of waste water in 1985 and the leach field areas at the rear of the process building. The depths of the borings ranged from 4 feet bgs to 42 feet bgs. Soil samples from some of these borings were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), pesticides and inorganics compounds (metals).

The two shallow and two deep monitoring wells (MW-5S, MW-6S, MW-1D and MW-4D), were installed with screened intervals from 32 to 42 feet bgs and from 77 to 88 feet bgs, respectively. In June of 1992 samples collected from MW-5S and MW-6S were analyzed for the full list of TCL/TAL constituents (VOCs, SVOCs, PCBs/Pesticides, Inorganics (Metals)). MW-1S, MW-1D, MW-4S, MW-4D and onsite production well PW-1 were also sampled and analyzed for VOCs, SVOCs and inorganic compounds only. In March 1994 samples collected from MW-1S, MW-4S, MW-5S and MW-6S were analyzed for filtered and unfiltered chromium, hexavalent chromium, copper, iron, manganese, sodium, and zinc. Total chromium and hexavalent chromium were detected above SCGs in seven (7) of the groundwater samples. The results of this investigation are presented for informational purposes only. The sampling and analyses were not conducted under the quality control and assurance guidelines required of a Department approved RI.

Phase II Investigation Report, (Adjacent Property Owner) 1999:

A Phase II Environmental Site Assessment (ESA) was conducted at the Moore's Lumber property located adjacent to the Site to the west and northwest. April 1999 groundwater monitoring well and potable water supply well sample results indicated slightly elevated levels of lead and chromium in wells adjacent to the Site. The results of this investigation are presented for informational purposes only. The sampling and analyses were not conducted under the quality control and assurance guidelines required of a Department approved RI.

Field Investigation, (PRP Lead) 1999:

In July 1999, two soil borings (HC-1, HC-2) located within or adjacent to the area where waste water was released, were advanced to a depth of 12 feet bgs. Soil samples from 2 to 4 feet and 10 to 12 feet bgs from both borings were analyzed for total chromium and hexavalent chromium. Additionally, groundwater samples from wells MW-1S, MW-4S, MW-5S, and MW-6S were analyzed for filtered and unfiltered chromium and hexavalent chromium. All four (4) soil samples and one (1) groundwater sample exhibited total chromium concentrations exceeding SCGs. The results of this investigation are presented for informational purposes only. The sampling and analyses were not conducted under the quality control and assurance guidelines required of a Department approved RI.

Field Investigation, (PRP Lead) 2000:

In October 2000, six soil borings were advanced at various locations at the site. Soil samples from various depth intervals were analyzed for the full list of TCL/TAL compounds. Four of the borings were completed as monitoring wells, HC-101S, HC-101D, HC-102, and HC-103. The shallow wells (HC-101S, HC-102, HC-103) were screened from 35 to 45 feet bgs. HC-101D was screened from 65 to 80 feet bgs. None of the soil samples exhibited exceedences of SCGs for the site contaminants of concern (COCs). Total chromium and hexavalent chromium were detected above SCGs in two (2) of the groundwater samples. The results of this investigation are presented for informational purposes only. The sampling and analyses were not conducted under the quality control and assurance guidelines required of a Department approved RI.

Interim Characterization Sampling Event, (Department Lead) 2005:

During the January 2005 interim characterization sampling event, fourteen (14) monitoring wells were sampled and analyzed for VOCs, SVOCs, PCBs/Pesticides, and total metals. No VOCs, SVOCs or PCBs/Pesticides were detected above their respective SCGs. Chromium was detected above the SCG in seven (7) of the groundwater samples. Copper was detected above the SCG in three (3) of the groundwater samples. Hexavalent chromium was detected above the SCG at HC-103 only. Although the groundwater samples were not collected using low flow methods as in the 2006 RI, the laboratory results were validated by a third party.

In summary, previous investigations conducted at the site from 1985 to 2005, revealed the presence of metal contaminants in the surface and subsurface soils. Hexavalent chromium was detected in the soil within the tank overflow spill area, which is estimated to encompass an area of approximately 2,200 square feet. Chromium was also detected in the onsite monitoring wells at concentrations that exceed the groundwater SCGs. VOCs, SVOCs, and PCBs/Pesticides were not detected in the soils or groundwater above their respective SCGs.

SECTION 4.0: ENFORCEMENT STATUS

Potentially Responsible Parties (PRPs) are those who may be legally liable for contamination at a site. This may include past or present owners and operators, waste generators, and haulers.

The PRPs for the site, documented to date, include: Mr. Roger A. Weiler, Intaglio Corporation, and Northeastern Gravure Cylinder Service, Inc.

The PRPs declined to implement the RI/FS at the site when requested by the Department and therefore the RI/FS was conducted by the Department with State funds. After the remedy is selected, the PRPs will again be contacted to assume responsibility for the remedial program. If an agreement cannot be reached with the PRPs, the Department will evaluate the site for further action under the State Superfund. The PRPs are subject to legal actions by the state for recovery of all response costs the state has incurred.

SECTION 5: SITE CONTAMINATION

A remedial investigation/feasibility study (RI/FS) has been conducted to evaluate the alternatives for addressing the significant threats to human health and the environment.

5.1: Summary of the Remedial Investigation

The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site. The RI was conducted during April and May 2006. The field activities and findings of the investigation are described in the RI report.

Consistent with the RI/FS Work Plan, the field investigations included the collection of samples from the following environmental media:

- Groundwater
- Surface water
- Subsurface soil
- Surface soil

In addition to this sampling, the RI field investigation activities included:
- Test pit excavation and sampling
- Industrial rinseate holding tank sampling
- Sampling of potable water from adjacent property
- Monitoring well installation and development
- Hydraulic conductivity testing

5.1.1: Standards, Criteria, and Guidance (SCGs)

To determine whether the soil and groundwater contain contamination at levels of concern, data from the investigation were compared to the following SCGs:

- Groundwater, drinking water, and surface water SCGs are based on the Department's "Ambient Water Quality Standards and Guidance Values" and Part 5 of the New York State Sanitary Code.

- Soil SCGs are based on 6 NYCRR Subpart 375-6.8(b) – "Restricted Use Soil Cleanup Objectives - Residential".

- Background surface soil samples were taken from five (5) locations. These locations were at least 50 feet southeast of the site, and were unaffected by historic or current site operations. The samples were analyzed for total metals. The results of the background sample analysis were compared to relevant RI data to determine appropriate site remediation goals.

Based on the RI results, in comparison to the SCGs and potential public health and environmental exposure routes, certain media and areas of the site require remediation. These are summarized in Section 5.1.2. More complete information can be found in the RI report.

5.1.2: Nature and Extent of Contamination

This section describes the findings of the investigation for all environmental media that were investigated.

As described in the RI report, many soil and groundwater samples were collected to characterize the nature and extent of contamination. As seen in Figures 3 and 4 and summarized in Table 1, the main categories of contaminants that exceed their SCGs are inorganics (metals). For comparison purposes, where applicable, SCGs are provided for each medium.

Chemical concentrations are reported in parts per billion (ppb) for water and parts per million (ppm) for soil.

Table 1 summarizes the degree of contamination for the contaminants of concern in surface soil, subsurface soil and groundwater and compares the data with the SCGs for the site. The following are the media, which were investigated, and a summary of the findings of the investigation.

Surface Soil

A total of thirty (30) surface soil samples were collected from 0 to 2 inches bgs as part of the RI. The objective of the surface soil sampling was to characterize onsite surface soil and background surface soil from areas not known to be associated with the Site. The locations of the surface soil samples are shown on Figures 2 and 3.

To characterize background conditions, five (5) surface soil samples were obtained at locations to the southeast of the site. The highest detected background concentrations of chromium and copper were 20.5 ppm and 70.5 ppm, respectively. Hexavalent chromium was not detected in the five (5) background surface soil samples collected offsite. A summary of the detected metals is provided on Table 2.

Twenty-five (25) surface soil samples were collected at locations onsite and on adjacent properties. All surface soil samples were analyzed for total metals, hexavalent chromium, and total organic carbon (TOC). A summary of the detected metals is provided on Table 1.

Contaminants of Concern in Surface Soil

As shown on Figure 3, chromium, copper or hexavalent chromium were detected in each of the twenty-five (25) surface soil samples. The detected concentrations of chromium ranged from 5.9 ppm to 1,690 ppm. Chromium levels exceeded the SCG of 36 ppm for trivalent chromium at four (4) locations. Copper concentrations were detected from a minimum of 6.7 ppm to a maximum of 4,310 ppm. Copper exceeded the SCG of 270 ppm at three (3) locations. Hexavalent chromium was detected in one (1) surface soil sample at 25.0 ppm, which slightly exceeded the SCG of 22 ppm.

In summary, COC concentrations exceeded surface soil SCGs at the following locations:

- SS-13 and SS-20, collected next to low mounds of soil and concrete
- SS-14, collected adjacent to the NEGC facility doorway
- SS-18 and SS-19, collected in vicinity of the historic spill area

Subsurface Soil

A total of twenty-one (21) subsurface soil samples were collected from three (3) soil borings (GP-1, GP-2, GP-3) at 4 foot depth intervals. The soil borings were located at potential subsurface source areas, which included the historic spill area, the vicinity of MW-4S and the leach fields. Subsurface soil samples were analyzed for total metals, hexavalent chromium, and TOC.

The locations of the soil borings are shown on Figure 2. A summary of the detected COCs is provided on Table 1.

Contaminants of Concern in Subsurface Soil
Chromium, copper and hexavalent chromium were detected in subsurface soil samples from GP-2. Chromium was detected at 547 ppm from 0 to 4 feet bgs and 53 ppm from 4 to 8 feet bgs. These two (2) detected concentrations exceeded the SCG for trivalent chromium of 36 ppm. Hexavalent chromium and copper concentrations were below their respective SCGs in the GP-2 soil samples. The detected concentrations of COCs in the soil samples collected from GP-1 and GP-3 were below SCGs.

An objective of the RI was to characterize the leach field areas as potential sources of contamination. Four (4) test pits were excavated in an attempt to locate the leach fields. TP-2 and TP-3 were excavated crossing two of the three identified leach fields. TP-1 and TP-4 were excavated in an attempt to locate the third leach field. However, the third leach field was not found. Based upon further review of historic documents and field verification, the third leach field may be located to the northeast of TP-3. An additional attempt to locate this third leach field will be conducted during the design phase of the remediation.

A total of five (5) subsurface soil samples were collected from the test pits on April 18, 2006. Of the soil samples collected, samples TP-2W and TP-3 were collected from the gravel/soil bedding material surrounding the leach field piping. Three (3) samples were collected from non-stained soil from the test pits. Test pit soil samples were analyzed for total metals, hexavalent chromium, and total organic carbon. The test pit locations are shown on Figure 2. A summary of the detected metal contaminants is provided on Table 1.

Chromium was detected in samples TP-2W and TP-3 at 76.3 ppm and 178 ppm, respectively. These two (2) detected concentrations exceeded the SCG for chromium of 36 ppm. The detected concentrations of COCs in the remaining three (3) test pit soil samples were below SCGs.

Groundwater

Groundwater monitoring wells MW-1D, MW-4D, MW-8D, HC-101D, and EHC-2D are screened in the deep hydrogeological unit. The remaining 13 groundwater monitoring wells are screened in the shallow hydrogeological unit. As summarized on Table 1, the COCs detected in the groundwater are chromium, copper and hexavalent chromium. The distribution of detected COC concentrations are shown on Figure 4.

Contaminants of Concern in Groundwater
Chromium was detected in seventeen (17) of the eighteen (18) monitoring wells sampled. The detected chromium concentrations ranged from a minimum of 0.89 ppb to a maximum of 1,220 ppb at HC-102 and HC-103, respectively. The detected chromium concentrations in shallow hydrogeologic unit groundwater samples exceeded the SCG of 50 ppb at HC101S, HC-103, and MW-8S.

Copper was detected in each of the eighteen monitoring wells sampled. The detected copper concentrations ranged from a minimum of 1.6 ppb to a maximum of 15,000 ppb at MW-1D and MW-6, respectively. The detected copper concentrations in shallow hydrogeological unit groundwater samples exceeded the SCG of 200 ppb at MW-6.

Hexavalent chromium was detected in seven of the eighteen monitoring wells sampled. The detected hexavalent chromium concentrations ranged from a minimum of 46 ppb at MW-7, MW-8D, and MW-9 to a maximum of 850 ppb at HC-103. The detected hexavalent chromium concentrations in shallow hydrogeological unit groundwater samples exceeded the SCG of 50 ppb at HC-101S, HC-103, and MW-8S.

The detected chromium, hexavalent chromium, and copper concentrations in the deep unconsolidated unit ground water samples exceeded the SCGs at EHC-2D only. However, the EHC-2D sample exhibited high turbidity (greater than 999 NTUs). It is also the only well to exhibit numerous detected concentrations of other metal analytes above SCGs. The metals concentrations observed in the EHC-2D sample are likely associated with the elevated turbidity. Since hexavalent chromium and chromium concentrations detected in the deep hydrogeological unit groundwater samples are limited to only the highly turbid EHC-2D sample, it cannot be concluded that the deep aquifer has been impacted by the site COCs.

Surface Water

Surface water samples were collected during two separate sampling events as part of the RI field activities to evaluate potential contaminant migration from groundwater to a surface water drainage ditch adjacent to the Moreau Landfill. Surface water sample S-1 was collected in January 2005 and S-2, S-3, and S-4 were collected in May 2006. S-1 was analyzed for VOCs, SVOCs, PCBs/Pesticides, total metals, and hexavalent chromium. Surface water samples S-2, S-3, and S-4 were analyzed for total metals and hexavalent chromium. The locations of the surface water samples are shown on Figure 4.

As summarized in Table 1, no COCs were detected above SCGs in the surface water samples. No VOCs, SVOCs, PCBs or pesticides were detected in surface water sample S-1 during the January 2005 sampling event. Chromium was detected in the S-1 sample at 19.7 ppb.

In May 2006, chromium was detected at 0.96 ppb and 10 ppb in S-3 and S-4, respectively. Copper was not detected in S-1, but was detected at 3.3 ppb, 2.2 ppb and 3.5 ppb in S-2, S-3, and S-4, respectively. Hexavalent chromium was not detected in any of the four (4) surface water samples.

No site-related surface water contamination of concern was identified during the RI/FS. Therefore, no remedial alternatives need to be evaluated for surface water.

Potable Water and Former Underground Holding Tank Water

A tap water sample was collected from the adjacent Tierny property office building, located northeast of the site. A water sample was collected from one of the two 2,000-gallon underground holding tanks (the other tank had previously been filled with sand). The samples were analyzed for total metals and hexavalent chromium.

Chromium and copper were detected in the tap water sample at 0.00054 mg/L and 0.0023 mg/L, respectively. Both detected concentrations were below the respective Class GA groundwater standards of 0.05 mg/L and 0.2 mg/L. Hexavalent chromium was not detected in the tap water sample.

Chromium and copper were detected in the UST water sample at 0.0024 mg/L and 0.0585 mg/L, respectively. Both detected concentrations were below the respective Class GA groundwater standards of 0.05 mg/L and 0.2 mg/L. Hexavalent chromium was not detected in the UST water sample.

5.2: Interim Remedial Measures

An interim remedial measure (IRM) is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before completion of the RI/FS.

There were no IRMs performed at this site during the RI/FS.

5.3: Summary of Human Exposure Pathways:

This section describes the types of human exposures that may present added health risks to persons at or around the site. A more detailed discussion of the human exposure pathways can be found in Section 6 of the RI report. An exposure pathway describes the means by which an individual may be exposed to contaminants originating from a site. An exposure pathway has five elements: [1] a contaminant source, [2] contaminant release and transport mechanisms, [3] a point of exposure, [4] a route of exposure, and [5] a receptor population.

The source of contamination is the location where contaminants were released to the environment (any waste disposal area or point of discharge). Contaminant release and transport mechanisms carry contaminants from the source to a point where people may be exposed. The exposure point is a location where actual or potential human contact with a contaminated medium may occur. The route of exposure is the manner in which a contaminant actually enters or contacts the body (e.g., ingestion, inhalation, or direct contact). The receptor population is the people who are, or may be, exposed to contaminants at a point of exposure.

An exposure pathway is complete when all five elements of an exposure pathway exist. An exposure pathway is considered a potential pathway when one or more of the elements currently does not exist, but could in the future. Current and potential exposure pathways are discussed below.

There are currently no completed pathways of exposure at this site.

It is possible that current off-site residents and future on-site employees or residents could ingest contaminated groundwater if drinking water wells are installed or if existing drinking water wells are utilized. However, the site and adjacent properties are served by public water. Therefore, exposure to contaminated groundwater via ingestion, direct contact, or inhalation is unlikely.

Potential on-site exposure pathways to surface soil include ingestion of contaminated surface soil and inhalation of fugitive dust from contaminated surface soil by construction workers, future residents, future employees, or trespassers.

Potential on-site exposure pathways to subsurface soil include inhalation of contaminated fugitive dust and ingestion of contaminated subsurface soil from open trenches/excavations by construction workers.

5.4: Summary of Environmental Assessment

This section summarizes the assessment of existing and potential future environmental impacts presented by the site. Environmental impacts include existing and potential future exposure pathways to fish and wildlife receptors, as well as damage to natural resources such as aquifers and wetlands.

The following environmental exposure pathways and ecological risks have been identified:

Samples from the potential ground water discharge points (S-1, S-2, S-3, S-4) located to the north and down-gradient of the site, did not contain elevated levels of COCs. Therefore, a viable exposure pathway to fish and wildlife receptors is not currently present.

Site contamination has also impacted the groundwater resource in the shallow unconsolidated hydrogeologic unit.

SECTION 6: SUMMARY OF THE REMEDIATION GOALS

Goals for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375. At a minimum, the remedy selected must eliminate or mitigate all significant threats to public health and/or the environment presented by the hazardous waste disposed at the site through the proper application of scientific and engineering principles.

The remediation goals for this site are to eliminate or reduce to the extent practicable:

- Exposures of persons at or around the site to hexavalent chromium, chromium, and copper in surface and subsurface soil, and
- The release of contaminants from soil into groundwater that may create exceedances of groundwater quality standards; and
- The release of contaminants from surface soil into ambient air through wind borne dust.

Further, the remediation goals for the site include attaining to the extent practicable:

- Ambient groundwater quality standards and
- Reduction of total chromium, hexavalent chromium, and copper concentrations in surface and subsurface soils to less than their respective SCGs.

SECTION 7: SUMMARY OF THE EVALUATION OF ALTERNATIVES

The selected remedy must be protective of human health and the environment, be cost-effective, comply with other statutory requirements, and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. Potential remedial alternatives for the Northeast

Gravure Cylinder Services Site were identified, screened, and evaluated in the FS report that is available at the document repositories established for this site.

A summary of the remedial alternatives that were considered for this site is discussed below. The present worth represents the amount of money invested in the current year that would be sufficient to cover all present and future costs associated with the alternative. This enables the costs of remedial alternatives to be compared on a common basis. As a convention, a time frame of 30 years is used to evaluate present worth costs for alternatives with an indefinite duration. This does not imply that operation, maintenance, or monitoring would cease after 30 years if remediation goals are not achieved.

7.1: Description of Remedial Alternatives

The following potential remedies were considered to address the contaminated soil and groundwater at the site.

Common Components of Alternatives 2, 3, & 4

An environmental easement and a site management plan, to include groundwater monitoring and periodic reviews, are common elements to each of the alternatives being evaluated for the Site. A description of these common elements is included below.

Environmental Easement. An Institutional Control (IC), in the form of an environmental easement, would consist of land use restrictions and groundwater use restrictions. Land use restrictions, such as a prohibition against excavations, would restrict activities that could result in unacceptable exposure to contaminated soil. Groundwater use restrictions would preclude the use of groundwater at the site as a source of potable water without prior notification and approval from the Department. Restrictions related to soil and groundwater would be implemented on the Site property.

Site Management Plan. Since impacted soil or groundwater remains onsite or offsite, each alternative would require periodic site management reviews as part of a Site Management Plan. The periodic reviews would focus on evaluating the onsite and offsite conditions with regard to the continuing protection of human health and the environment with information provided by groundwater monitoring results and documented field inspections. Groundwater monitoring would be implemented to track COC concentrations both onsite and offsite and would be instrumental in detecting changes in contaminant levels over time.

Alternative 1: No Action

The No Action Alternative is evaluated as a procedural requirement and as a basis for comparison. This alternative would leave the site in its present condition and would not provide any additional protection to human health or the environment.

Alternative #1: No Action

Present Worth: .... *{$0}*
Capital Cost: .... *{$0}*
Annual Costs: .... *{$0}*

Alternative #2: Capping, Environmental Easement, and Site Management Plan

Present Worth: .... *{$821,000}*
Capital Cost: .... *{$240,000}*
Annual Costs: .... *{$46,800}*

Alternative 2 would include capping, an environmental easement and a site management plan. In addition to the components presented above, this alternative would involve the following process option:

Capping. A cap/cover would consist of the following minimum components (listed from the finished grade down): 6 inches topsoil, 24 inches soil material as a barrier protection layer, tri-planar geonet, 40 mil linear low density polyethylene, 6 inches soil bedding layer. The objective of the cap would be to cover all soils with concentrations of COC's exceeding site background and/or SCG's and to minimize the potential exposures. For cost estimation purposes, the cap was assumed to be approximately 0.56 acres in extent.

Alternative #3: Source Material Excavation with Offsite Disposal, Environmental Easement, and Site Management Plan

Present Worth: .... *{$445,000}*
Capital Cost: .... *{$290,000}*
Annual Costs: .... *{$37,800}*

Alternative 3 would include source material excavation and offsite disposal, an environmental easement, and a site management plan. This alternative would involve the following process option in addition to the common components presented previously.

Source material excavation. The objectives of a source material excavation are the same as described above in the Cap/Cover remedial action. Following confirmation of the extent of soil contamination during the Remedial Design (RD) phase, the Remedial Action (RA) phase would include the excavation and disposal of all soil exceeding SCGs, the former underground holding tanks and associated sludge. For cost estimation purposes, a volume of 500 cubic yards was assumed. Excavation would be conducted using conventional construction equipment. Excavated material would be transported to a proper disposal site. It is assumed that most of the material would be non-hazardous. For cost estimation purposes, 10 cubic yards of material was assumed to be hazardous waste, and thus would require transportation and disposal as such. Following excavation, clean backfill and topsoil would be deposited onsite, graded, and seeded for restoration.

Alternative #4: Source Material Excavation with Offsite Disposal, Groundwater Extraction, Treatment & Discharge, Environmental Easement, and Site Management Plan

Present Worth: .... *{$3,623,000}*
Capital Cost: .... *{$2,258,000}*
Annual Costs: .... *{$333,000}*

Alternative 4 would include the following: source material excavation and off site disposal; groundwater extraction, treatment and discharge; an environmental easement, and a site management plan. This alternative would involve the following process options in addition to the common components presented previously.

Source material excavation. As described above in Alternative 3.

Onsite groundwater extraction. A groundwater extraction system was assumed to consist of three 80-foot deep extraction wells to collect groundwater. The flowrate was assumed to be approximately 25 gallons per minute (gpm) per well. For purposes of the FS, an approximate production rate of 75 gpm was assumed for collection of onsite groundwater. It was anticipated that extracted groundwater would be treated using precipitation to treat hexavalent chromium, trivalent chromium, and copper in groundwater. Specifically, the treatment train was anticipated to consist of hexavalent chromium reduction, precipitation, liquid solids separation, solids management, and effluent pH conditioning. Treated groundwater would be discharged to the storm sewer. A remediation duration of 1 to 5 years was estimated based upon the assumptions that the source would be removed and that the existing aquifer geochemical conditions are such that contaminants would remain in solution during flushing. Also, for cost estimation purposes, a treatability study was assumed to be necessary as a pre-design activity.

7.2 Evaluation of Remedial Alternatives

The criteria to which potential remedial alternatives are compared are defined in 6 NYCRR Part 375, which governs the remediation of inactive hazardous waste disposal sites in New York. A detailed discussion of the evaluation criteria and comparative analysis is included in the FS report.

The first two evaluation criteria are termed "threshold criteria" and must be satisfied in order for an alternative to be considered for selection.

1. Protection of Human Health and the Environment. This criterion is an overall evaluation of each alternative's ability to protect public health and the environment.

2. Compliance with New York State Standards, Criteria, and Guidance (SCGs). Compliance with SCGs addresses whether a remedy will meet environmental laws, regulations, and other standards and criteria. In addition, this criterion includes the consideration of guidance which the Department has determined to be applicable on a case-specific basis.

The next five "primary balancing criteria" are used to compare the positive and negative aspects of each of the remedial strategies.

3. Short-term Effectiveness. The potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment during the construction and/or implementation are evaluated. The length of time needed to achieve the remedial objectives is also estimated and compared against the other alternatives.

4. Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of the remedial alternatives after implementation. If wastes or treated residuals remain on-site after the selected remedy has been implemented, the following items are evaluated: 1) the magnitude of the remaining risks, 2) the adequacy of the engineering and/or institutional controls intended to limit the risk, and 3) the reliability of these controls.

5. Reduction of Toxicity, Mobility or Volume. Preference is given to alternatives that permanently and significantly reduce the toxicity, mobility or volume of the wastes at the site.

6. Implementability. The technical and administrative feasibility of implementing each alternative are evaluated. Technical feasibility includes the difficulties associated with the construction of the remedy and the ability to monitor its effectiveness. For administrative feasibility, the availability of the necessary personnel and materials is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, institutional controls, and so forth.

7. Cost-Effectivness. Capital costs and annual operation, maintenance, and monitoring costs are estimated for each alternative and compared on a present worth basis. Although cost-effectiveness is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the other criteria, it can be used as the basis for the final decision. The costs for each alternative are presented in Table 2.

This final criterion is considered a "modifying criterion" and is taken into account after evaluating those above. It is evaluated after public comments on the Proposed Remedial Action Plan have been received.

8. Community Acceptance. Concerns of the community regarding the RI/FS reports and the PRAP have been evaluated. The responsiveness summary (Appendix A) presents the public comments received and the manner in which the Department addressed the concerns raised.

In general, the public comments received were supportive of the selected remedy.

SECTION 8: SUMMARY OF THE SELECTED REMEDY

Based on the Administrative Record (Appendix B) and the discussion presented below, the Department has selected **Alternative #3, Source Material Excavation with Offsite Disposal, Environmental Easement and Site Management Plan,** as the remedy for this site. The elements of this remedy are described at the end of this section.

The selected remedy is based on the results of the RI and the evaluation of alternatives presented in the FS. Alternative 3 is the recommended alternative. Alternative 3 is expected to achieve the remedial objectives and will provide similar attainment of SCGs as the other alternatives at a lower cost. Remedial objectives will be achieved under Alternative 3 through the following remedy components:

- Excavation of source material
- Environmental Easement
- Site Management Plan

Alternative 3 was selected because, as described below, it satisfies the threshold criteria and provides the best balance of the primary balancing criteria described in Section 7.2. It will achieve the remediation goals for the site by immediately removing the contaminated soils that pose the most significant threat to public health and the environment, it will remove the potential source of contamination to groundwater, and create the conditions needed to restore groundwater quality through natural attenuation. Alternatives 2 and 4 would have also complied with the threshold selection criteria but to a lesser degree or with higher cost.

In the comparative analysis of alternatives, the performance of each alternative relative to the others was evaluated for each criterion. Alternative 3 was selected over the remaining alternatives also attaining the two threshold criteria by a comparison to the primary balancing criteria (long-term effectiveness and permanence; reduction of toxicity, mobility, or volume through treatment; short-term effectiveness; implemetability; and cost). As discussed in the following subsections, Alternatives 2, 3 and 4 satisfy the threshold criteria by providing protection to human health and the environment and by complying with the identified SCGs. Therefore, each alternative was eligible for selection as the final remedy.

Overall Protection of Human Health and the Environment

With respect to protection of human health, each alternative would provide a level of protectiveness from potential groundwater and soil exposures through institutional controls. Alternatives 2, 3 and 4 would be more protective of human health than Alternative 1 for impacts due to soil exposure, through capping or soil excavation and disposal.

Alternative 4 would provide for greater protection of the environment with respect to contaminated groundwater through onsite and offsite treatment. Alternatives 1, 2 and 3 would rely on natural attenuation of groundwater for protection of the environment. Containment or removal of soil contamination afforded in Alternatives 2, 3 and 4 would result in a better prognosis for natural attenuation than under Alternative 1, where no source control would be provided.

Compliance with Standards, Criteria and Guidance

As summarized in Table 1, chemical-specific COCs were identified for groundwater and soil. Alternatives 1, 2 and 3 would prevent or control groundwater usage and rely upon natural attenuation to meet SCGs. Alternative 4 could achieve SCGs for groundwater using both groundwater treatment and natural attenuation. Containment or removal of soil contamination afforded in Alternatives 2, 3 and 4 would result in a better prognosis for natural attenuation than under Alternative 1, where no action is proposed.

Attainment of soil SCGs would immediately follow implementation of Alternatives 3 and 4. Alternative 1 would not meet soil SCGs. For Alternative 2, soil SCGs would not be attained, but potential exposures would be addressed through containment and isolation of the contamination.

Long-Term Effectiveness and Permanence

Achieving long-term effectiveness is best accomplished by excavation and removal of the contaminated overburden soils as described in Alternatives 3 and 4. The groundwater would be permanently protected from dissolved contaminant migration. A cap/cover of the contaminated soils as described in Alternative 2 would be effective in isolating the contaminated soils from human and environmental exposure but is not a permanent solution. The cap/cover would require regular inspections and maintenance for at least 30 years and additional institutional controls would need to be imposed to protect the remedy from alterations or damage.

The groundwater recovery and treatment described in Alternative 4 would permanently remove the COCs. The long-term effectiveness of groundwater treatment is unknown and may require a period of time exceeding five years to attain SCGs. Alternative 1 does not permanently remove or contain the contaminated soil.

Reduction of Toxicity, Mobility, or Volume Through Treatment

In Alternative 2, capping of the contaminated soil would reduce the mobility of COCs but would require long-term monitoring and maintenance. For Alternatives 3 and 4, excavation and disposal of contaminated soil at a secure facility would reduce the toxicity, mobility, and volume of the impacted soil. Alternative 1 does not provide any reduction in toxicity, mobility or volume of the contaminated soil.

Extraction and treatment of groundwater, included in Alternative 4, would reduce the mobility, toxicity and volume of the contaminated groundwater both onsite and offsite. Natural attenuation of groundwater, included in Alternatives 1, 2, and 3, would reduce toxicity of COCs in groundwater.

Short Term Effectiveness

Alternative 1 could be implemented immediately. Alternative 2, 3, and 4 would require approximately 1 to 2 years to implement and site soil RAOs would be achieved at the completion of the remedy. Engineering controls would be implemented during construction of the alternatives that would be adequately protective of the community and the environment.

Based on hydraulic conductivity testing and estimated volumes, Alternative 4 would require 1 to 5 years to attain SCGs in groundwater. It is also anticipated that natural attenuation of groundwater, once the source has been removed (Alternative 3), would also require 1 to 5 years to achieve SCGs, based upon the natural groundwater flow rate. For Alternatives 1 and 2, which do not include source removal, achieving SCGs through natural attenuation may require greater than 5 years.

Implementability

Each alternative would be implementable. The technologies that were considered are common remedial elements, well understood and would be reliable. Pending treatability studies and pilot testing, the overall effectiveness of a groundwater recovery and treatment system is unknown at this time. Each alternative would allow for additional remedial actions to be implemented if necessary, and would be readily monitored and maintained.

Cost

Alternative 1, the no action alternative, would have no costs.

Alternative 2, the soil capping with groundwater monitoring alternative, is the second most expensive alternative with an estimated present worth of approximately $821,000.

Alternative 3, the soil excavation and offsite disposal with groundwater monitoring alternative, is the third most expensive alternative with an estimated present worth of approximately $445,000.

Alternative 4, the soil excavation and offsite disposal with groundwater extraction and treatment alternative, is the most expensive alternative with an estimated present worth of approximately $3,623,000.

The estimated present worth cost to implement the remedy is $445,000. The cost to construct the remedy is estimated to be $290,000 and the estimated average annual costs for 5 years is $37,800.

The elements of the selected remedy are as follows:

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

2. All soils with COC concentrations above SCGs and the former underground holding tanks, including associated sludge, will be removed and disposed of offsite (Figure 5). Following excavation, clean backfill and topsoil will be deposited onsite, graded, and seeded for restoration. Clean soil will constitute soil that meets the Division of Environmental Remediation's criteria for backfill or local site background.

3. Imposition of institutional controls in the form of an environmental easement that will: (a) require compliance with the approved site management plan; (b) restrict the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by NYSDOH; (c) require the property owner to complete and submit to the Department a periodic certification of institutional and engineering controls; and (d) designate the property as suitable for "residential use" as defined by NYCRR Part 375. The property may also be used for commercial or industrial purposes if approved by local zoning.

4. Development of a site management plan which will include the following institutional and engineering controls: (a) periodic monitoring of groundwater using existing onsite and offsite wells; and (b) provisions for the continued proper operation and maintenance of the components of the remedy.

5. The property owner will provide a periodic certification of institutional and engineering controls, prepared and submitted by a professional engineer or such other expert acceptable to the Department, until the Department notifies the property owner in writing that this certification is no longer needed. This submittal will: (a) contain certification that the institutional controls and engineering controls put in place are still in place and are either unchanged from the previous certification or are compliant with Department-approved modifications; (b) allow the Department access to the site; and (c) state that nothing has occurred that would impair the ability of the control to protect public health or the environment, or constitute a violation or failure to comply with the site management plan unless otherwise approved by the Department.

6. 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.

SECTION 9: HIGHLIGHTS OF COMMUNITY PARTICIPATION

As part of the remedial investigation process, a number of Citizen Participation activities were undertaken to inform and educate the public about conditions at the site and the potential remedial alternatives. The following public participation activities were conducted for the site:

- Repositories for documents pertaining to the site were established.
- A public contact list, which included nearby property owners, elected officials, local media and other interested parties, was established.
- A fact sheet announcing the public comment period and the public meeting was sent to all parties on the contact list.
- A public meeting was held on June 19, 2007 to present and receive comment on the PRAP.
- A responsiveness summary (Appendix A) was prepared to address the comments received during the public comment period for the PRAP.

TABLE 1
Nature and Extent of Contamination
April & May 2006

SURFACE SOIL	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[d] (ppm)[a]	Frequency of Exceeding SCG
Inorganic Compounds	Chromium (Cr)	5.9 to 1,690	36	4 of 25
	Hexavalent Chromium (Cr)	ND to 25	22	1 of 25
	Copper (Cu)	6.7 to 4,310	270	3 of 25

SUBSURFACE SOIL	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[d] (ppm)[a]	Frequency of Exceeding SCG
Inorganic Compounds	Chromium (Cr)	3.4 to 547	36	4 of 27
	Hexavalent Chromium (Cu)	ND to 6.9	22	0 of 27
	Copper (Cu)	5.3 to 160	270	0 of 27

GROUNDWATER Shallow Wells	Contaminants of Concern	Concentration Range Detected (ppb)[a]	SCG[c] (ppb)[a]	Frequency of Exceeding SCG
Inorganic Compounds	Chromium (Cr)	ND to 1,220	50	3 of 13
	Hexavalent Chromium (Cr)	ND to 850	50	3 of 13
	Copper (Cu)	1.8 to 15,000	200	1 of 13

GROUNDWATER Deep Wells	Contaminants of Concern	Concentration Range Detected (ppb)[a]	SCG[c] (ppb)[a]	Frequency of Exceeding SCG
Inorganic Compounds	Chromium (Cr)	ND to 543	50	1 of 5
	Hexavalent Chromium (Cr)	ND to 120	50	1 of 5
	Copper (Cu)	1.6 to 228	200	1 of 5

TABLE 1
Nature and Extent of Contamination
April & May 2006

SURFACE WATER	Contaminants of Concern	Concentration Range Detected (ppb)[a]	SCG[c] (ppb)[a]	Frequency of Exceeding SCG
Inorganic Compounds	Iron (Fe)	ND to 1,370	300	3 of 4

[a] ppb = parts per billion, which is equivalent to micrograms per liter, ug/L, in water;
ppm = parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;
ug/m^3 = micrograms per cubic meter

[b] SCG = standards, criteria, and guidance values;

[c] Groundwater, drinking water, and surface water SCGs are based on the Department's "Ambient Water Quality Standards and Guidance Values" and Part 5 of the New York State Sanitary Code.

[d] Soil SCGs are based on the 6 NYCRR Subpart 375-6 – "Restricted Use Soil Cleanup Objectives – Residential".

ND = not detected above method detection limits.
SB = soil background

TABLE 2
Background Surface Soil Samples
May 2006 (SS-1 thru SS-5)

SURFACE SOIL BACKGROUND	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[d] (ppm)[a]	Frequency of Exceeding SCG
Inorganic Compounds	Chromium (Cr)	8.4 to 20.5	36	0 of 5
	Hexavalent Chromium (Cr)	ND	22	0 of 5
	Copper (Cu)	24.7 to 70.5	270	0 of 5

[a] ppb = parts per billion, which is equivalent to micrograms per liter, ug/L, in water;
ppm = parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;
ug/m^3 = micrograms per cubic meter

[b] SCG = standards, criteria, and guidance values;

[c] Groundwater, drinking water, and surface water SCGs are based on the Department's "Ambient Water Quality Standards and Guidance Values" and Part 5 of the New York State Sanitary Code.

[d] Soil SCGs are based on the 6 NYCRR Subpart 375-6 – "Restricted Use Soil Cleanup Objectives – Residential".

ND = not detected above method detection limits.
SB = soil background

Table 3
Remedial Alternative Costs

Remedial Alternative	Capital Cost ($)	Annual Costs ($)	Total Present Worth ($)
No Action w/ Monitoring	0	0	0
Capping w/ Monitoring	240,000	46,800	821,000
Source Removal w/ Monitoring	290,000	37,800	445,000
Ground Water Extraction, Source Removal w/ Monitoring	2,258,000	333,000	3,623,000

APPENDIX A

Responsiveness Summary
RESPONSIVENESS SUMMARY

Northeastern Gravure Cylinder Service
Town of Moreau, Saratoga County, New York
Site No. 546029

The Proposed Remedial Action Plan (PRAP) for the Northeastern Gravure Cylinder Service site, was prepared by the New York State Department of Environmental Conservation (the Department) in consultation with the New York State Department of Health (NYSDOH) and was issued to the document repositories on May 29, 2007. The PRAP outlined the remedial measure proposed for the contaminated soil and groundwater at the Northeastern Gravure Cylinder Service site.

The release of the PRAP was announced by sending a notice to the public contact list, informing the public of the opportunity to comment on the proposed remedy.

A public meeting was held on June 19, 2007, which included a presentation of the Remedial Investigation (RI) and the Feasibility Study (FS) as well as a discussion of the proposed remedy. The meeting provided an opportunity for citizens to discuss their concerns, ask questions and comment on the proposed remedy. These comments have become part of the Administrative Record for this site. The public comment period for the PRAP ended on June 27, 2007.

This responsiveness summary responds to all questions and comments raised during the public comment period. The following are the comments received, with the Department's responses:

COMMENT 1: Will the imposition of an Environmental Easement restricting groundwater use, impede or restrict the future activities at the site and who will pay for the cost of groundwater sampling?

RESPONSE 1: Section 8, paragraph 3 states "Imposition of institutional controls in the form of an environmental easement that will require (a) compliance with the approved site management plan; (b) restricting the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by NYSDOH; (c) the property owner to complete and submit to the Department a periodic certification of institutional and engineering controls; and (d) designate the property as suitable for "residential use" as defined by NYCRR Part 375. The property may also be used for commercial or industrial uses if approved by local zoning."

The available municipal drinking water system and the "residential use" soil cleanup goals as defined in NYCRR Part 375 will allow for residential, commercial and industrial reuse of the property.

The cost of groundwater sampling will be incurred by the Potential Responsible Party's (PRP's). If the PRP's cannot or will not conduct the approved Site Management Plan, the Department will implement the Plan using a standby engineering consultant. All costs incurred will continue to be the responsibility of the PRP's.

COMMENT 2: How will the Department prevent future releases of hazardous materials from this site and how can the public respond to possible releases?

RESPONSE 2: Section 8, paragraph 5 states "The property owner will provide a periodic certification of institutional and engineering controls, prepared and submitted by a professional engineer or such other expert acceptable to the Department, until the Department notifies the property owner in writing that this certification is no longer needed. This submittal will: (a) contain certification that the institutional controls and engineering controls put in place are still in place and are either unchanged from the previous certification or are compliant with Department-approved modifications; (b) allow the Department access to the site; and (c) state that nothing has occurred that would impair the ability of the control to protect public health or the environment, or constitute a violation or failure to comply with the site management plan unless otherwise approved by the Department."

The Department will continue to enter and inspect the site after the remedy is complete and as the Site Management Plan is implemented. The Environmental Conservation Law and the Navigation Law state that all suspected releases of hazardous materials must be reported to the Department.

APPENDIX B

Administrative Record

Administrative Record

Northeastern Gravure Cylinder Service
Site No. 546029

1. "Proposed Remedial Action Plan for the Northeastern Gravure Cylinder Service site", dated May 2007, prepared by the Department.

2. "Northeastern Gravure Cylinder Service Site, Fact Sheet", May 2007, prepared by the Department.

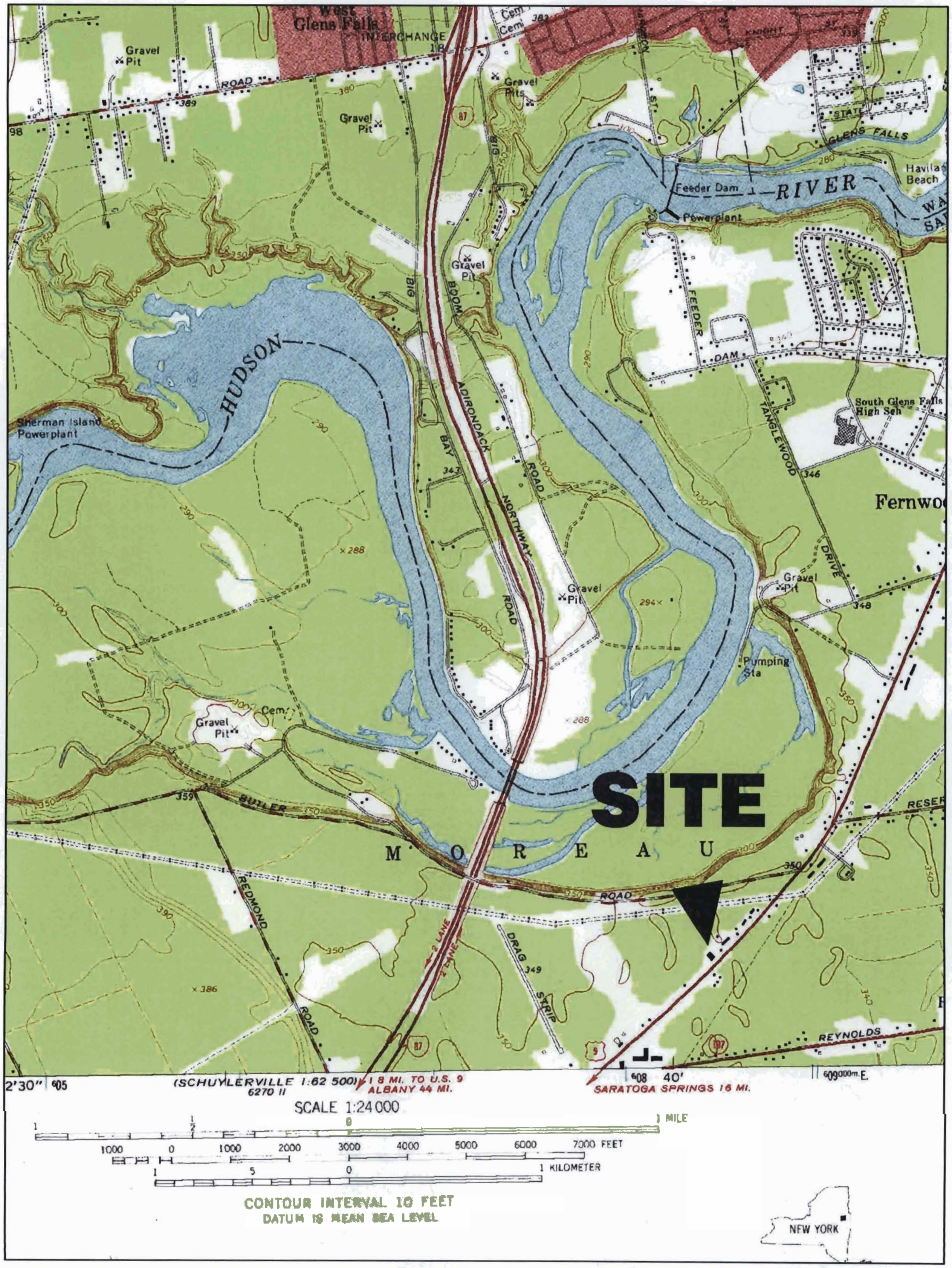
3. "Northeastern Gravure Cylinder Service Site, Feasibility Study Final Report", May 2007, prepared by O'Brien & Gere Engineers.

4. "Northeastern Gravure Cylinder Service Site, Remedial Investigation Final Report", April 2007, prepared by O'Brien & Gere Engineers.

5. "Northeastern Gravure Cylinder Service Site, Remedial Investigation/Feasibility Study Work Plan", November 2005, prepared by O'Brien & Gere Engineers.

6. "Northeastern Gravure Cylinder Service Site, Citizen Participation Plan", November 2005, prepared by O'Brien & Gere Engineers.

7. Referral Memorandum dated June 5, 2002 for the Remedial Investigation/Feasibility Study of the Northeastern Gravure Cylinder Site.



O'BRIEN & GERE ENGINEERS INC.	**SITE LOCATION MAP** **Northeastern Gravure Cylinder Service** **Moreau, New York**	FILE NO. **35918.002** DATE **April 2007** **FIGURE 1**

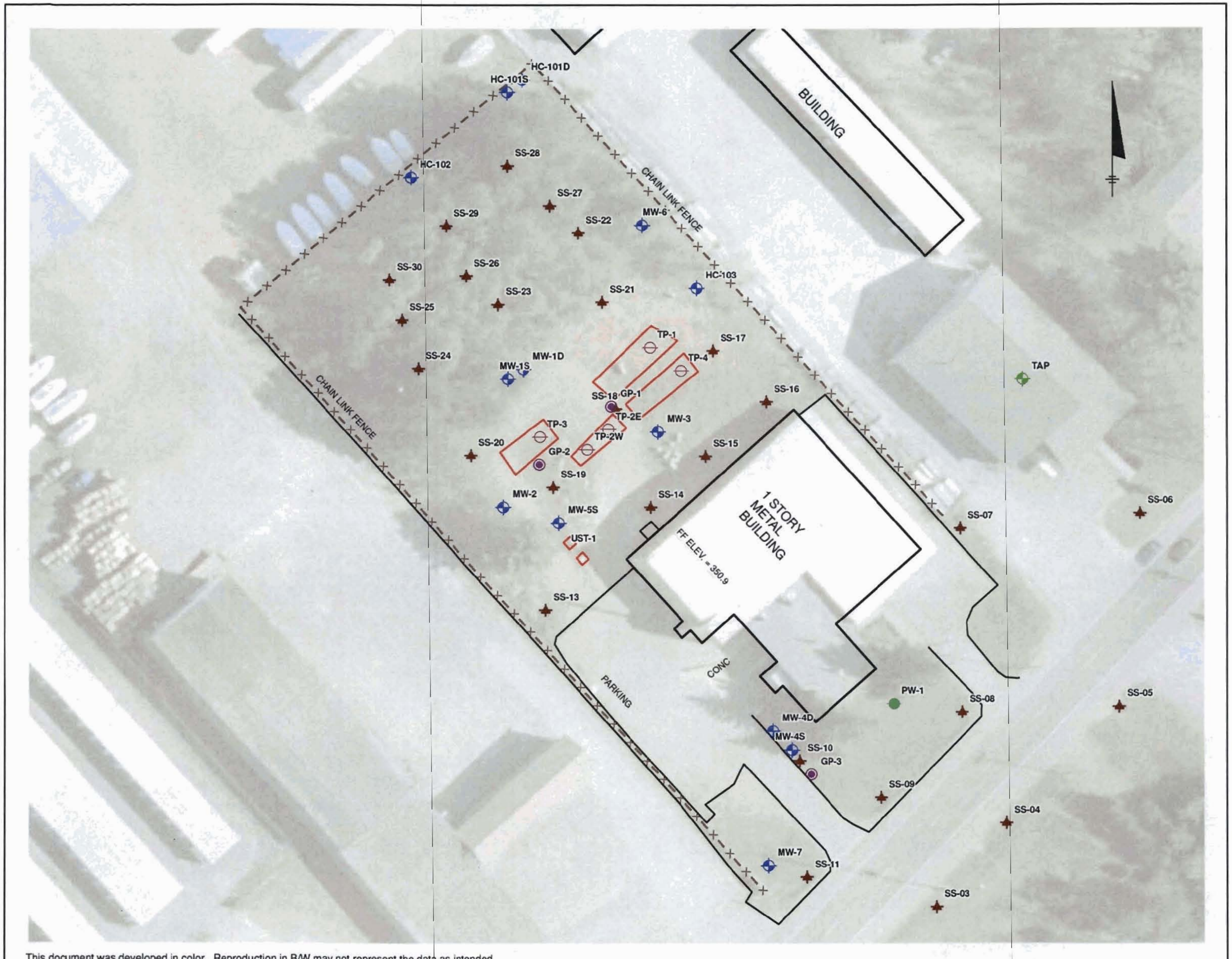


FIGURE 2

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 ENVIRONMENTAL CONSERVATION

NORTHEASTERN GRAVURE CYLINDER SERVICE SITE

SAMPLE LOCATION MAP ON-SITE

1 inch equals 50 feet

50 25 0 50

Feet

April 10, 2007
survey base map_small_scale.mxd

O'BRIEN & GERE ENGINEERS, INC.

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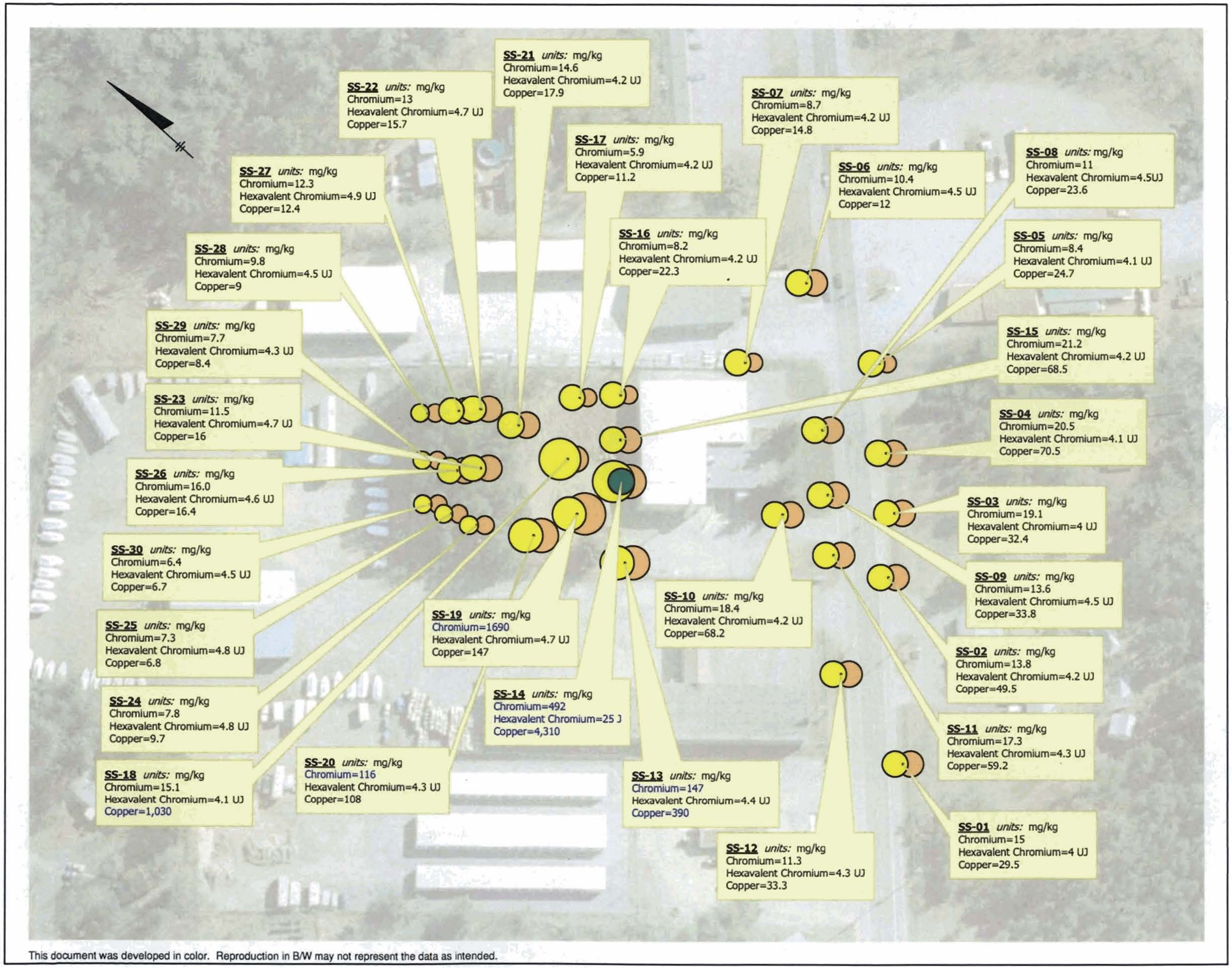
08/18/06

FIGURE 3



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08/18/06

Legend

- · Nondetect
- ○ 1 - 10
- ○ 10 - 100
- ○ 100 - 1,000
- ○ 1,000 - 10,000
- Hexavalent Chromium
- Copper
- Chromium

Blue text indicates exceedance of 6NYCRR Part 375 SCO.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

NORTHEASTERN GRAVURE CYLINDER SERVICE SITE

CONTAMINANTS OF CONCERN FOR SURFACE SOIL SAMPLES COLLECTED ON MAY 1-2, 2006

1 inch equals 90 feet

90 45 0 90

Feet

August 18, 2006
SS_chromium_hexchrom.mxd

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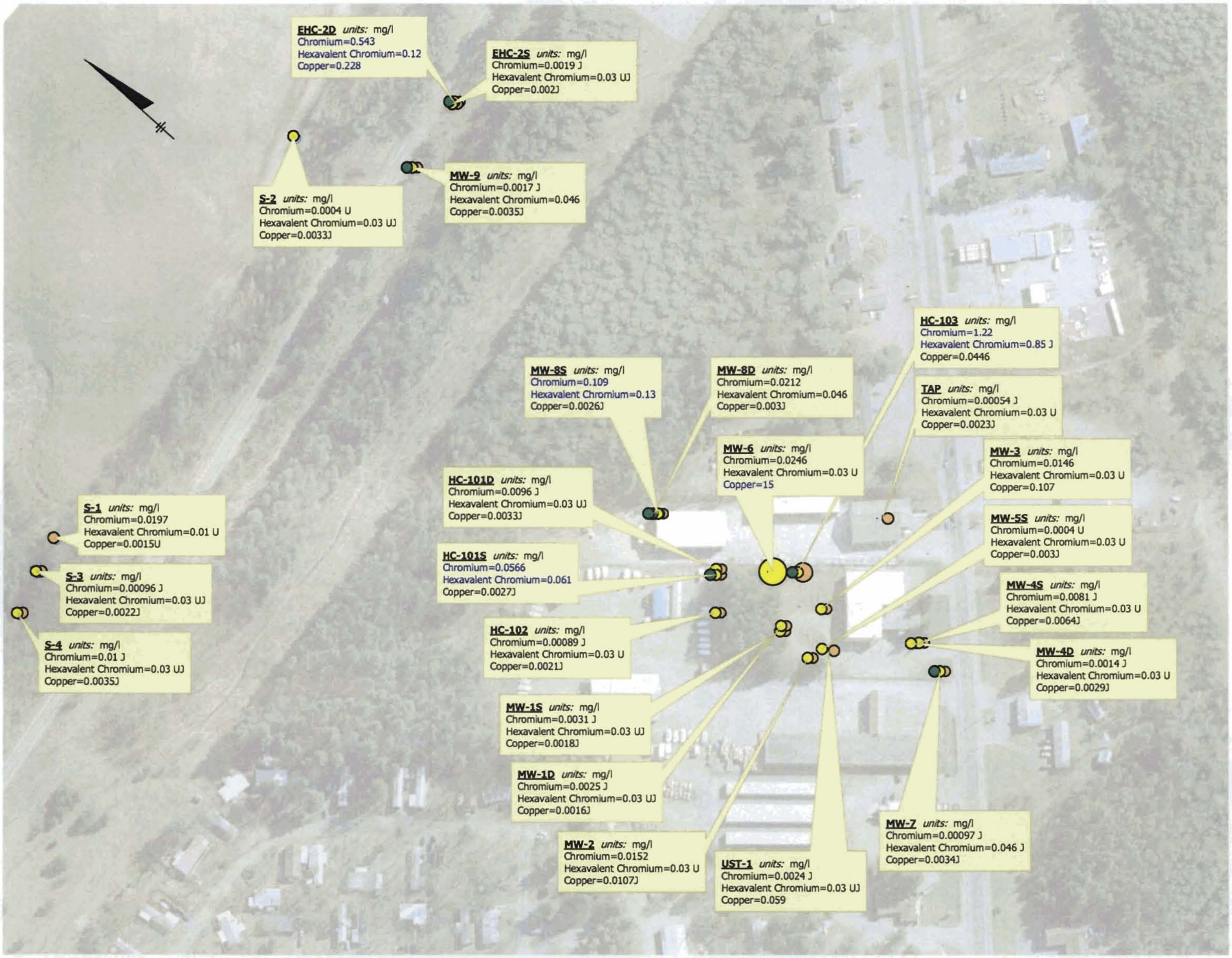

This document was developed in color. Reproduction in B/W may not represent the data as intended.

FIGURE 4

Legend

- Monitoring Well
- Surface Water
- Non-detect
- 0 - 1
- 1 - 10
- 10 - 100
- Copper
- Hexavalent Chromium
- Chromium

Blue text indicates exceedance of NYS Class GA Water Quality Standards

S-1 sample was collected on January 25, 2005

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

NORTHEASTERN GRAVURE CYLINDER SERVICE SITE

CONTAMINANTS OF CONCERN FOR GROUND WATER AND SURFACE WATER SAMPLES COLLECTED IN MAY 2006

1 inch equals 175 feet

175 87.5 0 175

Feet

April 10, 2007
survey base map.mxd

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FIGURE 5

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Locations

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

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

NORTHEASTERN GRAVURE CYLINDER SERVICE SITE

ALTERNATIVE 3 APPROXIMATE SOIL EXCAVATION AREA

1 inch equals 50 feet

50 25 0 50

Feet

January 3, 2007
survey base map_small_scale.mxd

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