Department of Environmental Conservation

Division of Environmental Remediation

Record of Decision

NYSEG - Central Ave. Mechanicville MGP Site

Mechanicville, Saratoga County, New York
Site Number 5-46-033

March 2006

New York State Department of Environmental Conservation
GEORGE E. PATAKI, *Governor* DENISE M. SHEEHAN, *Commissioner*

DECLARATION STATEMENT - RECORD OF DECISION

NYSEG - Central Ave. - Mechanicville MGP Site
Mechanicville, Saratoga County, New York
Site No. 5-46-033

Statement of Purpose and Basis

The Record of Decision (ROD) presents the selected remedy for the NYSEG - Central Ave. - Mechanicville MGP 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 (NYSDEC) for the NYSEG - Central Ave. - Mechanicville MGP inactive hazardous waste disposal site, and the public's input to the Proposed Remedial Action Plan (PRAP) presented by the NYSDEC. 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 the environment.

Description of Selected Remedy

Based on the results of the Remedial Investigation and Feasibility Study (RI/FS) for the NYSEG - Central Ave. - Mechanicville MGP Site and the criteria identified for evaluation of alternatives, the NYSDEC has selected removal of source area contamination with bedrock NAPL recovery. The components of the remedy are as follows:

- Removal to the top of bedrock of all soil containing PAH concentrations greater than 500 ppm or soil containing visual tar or NAPL;
- Removed soil will be treated or disposed off-site;
- Purifier waste remaining in or near the North Central Avenue embankment will be removed and disposed off-site;
- A NAPL recovery system will be installed for the bedrock;

- An institutional control in form of an environmental easement will be required for the remedy;

- A site management plan (SMP) will be developed and implemented; and,

- An evaluation of indoor air quality will be required if occupied structures were to be constructed on the site in the future.

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.

MAR 3 1 2006

Date

Dale A. Desnoyers, Director
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RECORD OF DECISION

NYSEG - Central Ave. Mechanicville MGP Site
Mechanicville, Saratoga County, New York
Site No. 5-46-033

March, 2006

SECTION 1: SUMMARY OF THE RECORD OF DECISION

The New York State Department of Environmental Conservation (NYSDEC), in consultation with the New York State Department of Health (NYSDOH), has selected this remedy for the **NYSEG - Central Ave. - Mechanicville MGP Site.** The presence of hazardous waste has created significant threats to public health and the environment that are addressed by this remedy. As more fully described in Sections 3 and 5 of this document, operations at the former manufactured gas plant have resulted in the disposal of hazardous wastes, including coal tar and non-aqueous phase liquids. These wastes contain chemicals including polycyclic aromatic hydrocarbons and benzene, toluene, ethylbenzene and xylenes (BTEX). These wastes have contaminated the subsurface soils, bedrock, sediments, groundwater and surface water at, and in the vicinity of the site and have resulted in:

- a significant threat to public health and the environment associated with exposure to coal tar which seeps from the streambed of the Anthony Kill.
- a significant threat to public health associated with exposure to MGP contaminants in subsurface soils and groundwater.
- a significant environmental threat associated with the impacts of contaminants to the groundwater resource, surface water, subsurface soils and bedrock.

To eliminate or mitigate these threats, the NYSDEC has selected the following remedy:

- A remedial design program will be implemented to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program.
- Removal to the top of bedrock of all soil containing PAH concentrations greater than 500 ppm or soil containing visual tar or NAPL;
- Removed soil will be treated or disposed off-site;

- Purifier waste remaining in or near the North Central Avenue embankment will be removed and disposed off-site;

- A NAPL recovery system will be installed for the bedrock;

- An institutional control in form of an environmental easement will be required for the remedy;

- A site management plan (SMP) will be developed and implemented; and,

- An evaluation of indoor air quality will be required if occupied structures were to be constructed on the site in the future.

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 site is located in the City of Mechanicville, Saratoga County, New York (Figures 1 & 2). The rectangular site covers approximately 1.8 acres and is owned by New York State Electric and Gas Corporation. The site is bordered on the north by the Anthony Kill, on the east by North Central Avenue (U.S. Route 4), on the south by Ferris Lane, and on the west by an abandoned railroad property. The eastern half of the site is currently unoccupied. The western half of the site is leased to a fuel distributer. The site is fenced with minimal vegetation and covered with gravel and stone.

The former site structures that were associated with coal gasification were concentrated on the eastern part of the site. The only structures that currently remain within the former MGP portion of the property are the office and gas regulator buildings.

The neighborhood around the site is mixed commercial/industrial and residential. A gasoline station exists southeast of the site. An automobile repair business is located across the Anthony Kill, opposite the site. The residences closest to the site are situated to the south.

The site gently slopes towards the Anthony Kill except at the bank where it is a steep drop. The bank height is approximately fifteen feet. The Anthony Kill also reportedly backs-up behind the North Central Ave. bridge during major storm events and/or when debris restricts the culvert at the bridge.

The Champlain Canal once bordered the site to the east, prior to North Central Avenue. The canal was elevated and the water surface was approximately ten feet above the gas plant. The canal was abandoned in 1916.

SECTION 3: SITE HISTORY

3.1: Operational/Disposal History

A manufactured gas plant (MGP) was operated on this site by the New York State Electric and Gas Corporation (NYSEG) and predecessor companies from 1901 to 1955. The layout of the facility during operations is shown on Figure 3. The plant used the carbureted water gas process to produce gas from coal for lighting, cooking, and heating.

It is not likely that waste disposal occurred at the site at predetermined periods. However, as operations required, wastes were removed from the system; the wastes may have been spilled or disposed of on-site. Purifier waste (described in Section 5.1.2) was reportedly disposed off-site, piled along the road for potential haulers or spread on the lot west of the active plant. Also, MGP by-products may have been released to the environment through breaks or leaks in plant containment structures or piping.

3.2: Remedial History

In 1981 NYSEG collected soil samples from the filter bed area and the gas relief holder foundation. A sample from the filter beds area exceeded the threshold for the characteristic of reactivity, indicating the soil would be considered a hazardous waste.

In 1986, the NYSDEC first listed the site as a Class 2a site in the Registry of Inactive Hazardous Waste Disposal Sites in New York (the Registry). Class 2a is a temporary classification assigned to a site that has inadequate and/or insufficient data for inclusion in any of the other classifications. In the same year NYSEG initiated field investigation activities at the site to assess the potential presence of residual by-product waste associated with MGP activities.

In September 1988 structural repairs were undertaken on the North Central Avenue bridge over the Anthony Kill. During the repairs a sheen was observed on the sediments. Analysis of the sediment showed contaminants that were likely associated with the former MGP operations. NYSEG took responsibility for the disposal of 22 tons of sediment.

In 1989, the NYSDEC listed the site as a Class 2 site in the Registry. A Class 2 site is a site where hazardous waste presents a significant threat to public health or the environment and action is required.

By the end of 2004 NYSEG had conducted five investigative phases and one risk assessment phase. Each of these phases was an expansion of the information of the previous investigation. The SRI was the last investigation conducted. This report provides a summary of the earlier investigations, as well as presenting the results of the latest investigation.

In 1999, NYSEG removed contaminated soil from the site. Section 5.2 provides information regarding this interim remedial measure, which also partially removed the holder structure.

A NAPL gauging and passive recovery program has been ongoing since 2001. Approximately 24 monitoring wells are inspected at least monthly for the presence of NAPL. Passive recovery includes lowering bailers or pumping NAPL from the monitoring wells on a periodic basis as NAPL is recharged within the well.

SECTION 4: 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 PRP for the site, documented to date is the New York State Electric and Gas Corporation (NYSEG).

The NYSDEC and NYSEG entered into a Consent Order on February 23, 1993 to implement a RI/FS remedial program. On March 30, 1994 NYSEG entered into a second Consent Order with the NYSDEC to continue those remedial elements subsequent to the RI/FS, specifically, remedial design and remedial construction including post-remedial operation and maintenance.

SECTION 5: SITE CONTAMINATION

A remedial investigation/feasibility study (RI/FS) has been conducted to evaluate the alternatives for addressing the significant threats to public 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. A summary of the field activities and findings of the investigation are described in the SRI.

The following activities were conducted during the RI:

- Research of historical information;
- Installation of at least 138 soil borings and 60 monitoring wells for analysis of soils and groundwater as well as the physical properties of soil, bedrock and hydrogeologic conditions. Many of the site monitoring wells have been sampled and analyzed once per year for seven years;
- Excavation of at least five test pits;
- Collection of approximately 27 surface soil samples and at least 74 subsurface soil samples for analysis;

- Collection of a minimum of six surface water samples;

- Collection of a minimum of 43 sediment samples;

- Probing the Anthony Kill along 42 transects and probing the Hudson River at the Kill's confluence along seven near-shore transects;

Indoor air samples were collected from the garage, and office/storeroom in 1988. The office/storeroom building was razed since the sampling event.

To determine whether the soil, groundwater, surface water and sediment 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 NYSDEC "Ambient Water Quality Standards and Guidance Values" and Part 5 of the New York State Sanitary Code.

- Soil SCGs are based on the NYSDEC "Technical and Administrative Guidance Memorandum (TAGM) 4046; Determination of Soil Cleanup Objectives and Cleanup Levels".

- Sediment SCGs are based on the NYSDEC "Technical Guidance for Screening Contaminated Sediments."

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 below. More complete information can be found in the RI report.

5.1.1: Site Geology and Hydrogeology

The site is in the Anthony Kill valley. The valley is a post-glacial tributary valley of the Hudson River Valley following the most recent glacial period.

Overburden at the site is approximately four to twenty-seven feet thick. The overburden consists primarily of fill. The fill material is underlain by a discontinuous layer of native material.

The majority of fill contains sand and gravel, with lesser amounts of silt, clay and pebbles. Materials related to the former MGP site include broken concrete foundations, coal, brick fragments, clinkers , slag and wood chips. The scarce native material is likely alluvial in nature.

The bedrock beneath the site is the Snake Hill Formation and is composed of dark gray shale. The shale exhibits pencil-shaped breaks; these breaks were produced by stresses associated with the movement of bedrock blocks along two tear faults running generally east-west, and the ramping of bedrock blocks to the west along thrust faults. The Anthony Kill is the surficial expression of the northern tear fault. The significance of this geologic condition is that the highly fractured bedrock allows for a substantial flow of water, both contaminated and non-

contaminated, through the rock. DNAPL would be expected to migrate preferentially through zones of more intense cleavage.

Both shallow groundwater flow and groundwater flow within the deep bedrock at the site is from the southwest to the northeast toward the Anthony Kill. The depth to groundwater is approximately five feet below the ground surface.

5.1.2: Nature of Contamination

As described in the RI report, many soil, groundwater, bedrock and sediment samples were collected to characterize the nature and extent of contamination. As summarized in Table 1, the main categories of contaminants that exceed their SCGs are certain volatile organic compounds (VOCs) and certain semivolatile organic compounds (SVOCs).

The manufactured gas was cooled and purified prior to distribution. Two principal waste materials were produced in this process: coal tar and purifier waste. Coal tar was an reddish brown oily liquid by-product which formed as a condensate as the gas cooled. Purifier waste was a mixture of iron filings and wood chips which was used to remove cyanide and sulfur gases from the gas mix prior to distribution. Both waste materials were found during the remedial investigations.

Coal tar does not readily dissolve in water. Materials such as this are commonly referred to as a non-aqueous phase liquid, or NAPL. Thus, the terms NAPL and coal tar are used interchangeably in this document. Although most coal tars are slightly more dense than water, the difference in density is slight. Consequently, they can either float or sink when in contact with water.

Unlike NAPL, purifier waste is a solid waste of oatmeal consistency. Purifier waste has the potential to contribute cyanide and create acidic conditions in nearby surface water and/or groundwater. It contains high concentrations of sulfur and cyanide and has a characteristic blue color from complex ferrocyanides.

Specific volatile organic compounds of concern are benzene, toluene, ethylbenzene and xylenes. These are referred to collectively as BTEX in this document. Specific semivolatile organic compounds of concern are the polycyclic aromatic hydrocarbons (PAHs):

acenaphthene
acenaphthylene
anthracene
benzo(a)anthracene
benzo(a)pyrene
benzo(b)fluoranthene
benzo(g,h,i)perylene
benzo(k)fluoranthene
pyrene
chrysene

fluoranthene
indeno(1,2,3-cd)pyrene
2-methylnaphthalene
naphthalene
phenanthrene
dibenzo(a,h)anthracene

Total PAH concentrations as referred to in this plan are the summation of the individual PAHs listed above. The italicized PAHs are probable human carcinogens. The summation of the italicized PAHs is referred to in this document as total carcinogenic PAHs (cPAHs).

Tars contain high levels of PAH compounds, often greater than 100,000 parts per million. Tars also exceed SCGs for BTEX by several orders of magnitude. In certain tar samples, enough benzene may be present to require that the material be managed as a hazardous waste.

Pesticides and metals were analyzed for in all media and determined not to be of concern. Analysis of five surface soil samples collected in 1993 showed PCBs at concentrations greater than one ppm but less than 10 ppm in the former transformer storage areas and an area proximate to the former filter beds. The former filter beds were excavated during the recent IRM, and the former transformer areas were removed after 1993. Therefore, the NYSDEC has concluded that PCBs are not a contaminant of concern at the site.

5.1.3: Extent of Contamination

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

Chemical concentrations are reported in parts per billion (ppb) for groundwater, and parts per million (ppm) for waste, soil, and sediment. For comparison purposes, where applicable, SCGs are provided for each medium.

Table 1 summarizes the degree of contamination for the contaminants of concern in 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 water is an additional media of concern with respect to the occasional discharge of NAPL into the Anthony Kill.

Waste Materials

The RI data support the conclusion that much of the tar presence resulted from leakage of the former gas relief holder (see Figure 3 for location of this structure). Overburden material, which was saturated with NAPL, and NAPL-producing fractures in the underlying bedrock, were observed near the north end of the former gas relief holder during the 1999 and 2000 IRM and SRI. Observations of NAPL in the overburden are limited to the former MGP portion of the site and along the west side of North Central Avenue. No significant MGP contamination was found along the former Champlain Canal alignment adjacent to the site.

The majority of NAPL was found in the top of the bedrock and along major fractures over a lateral extent of about 2 acres. Off-site NAPL is found mainly in the bedrock to the east of the site; the main thrust fault and southern tear fault likely contribute to a preferential migration of NAPL to the east. (see Figure 4). The eastern extent of NAPL in the bedrock is approximately 400 feet from the site; the northern extent is approximately 80 feet from the site. NAPL was not found west or south of the site. NAPL was found as shallow as 3 feet near the former filter bed area and as deep as 150 feet on the Getty property. Because of the partitioning into the water phase of more soluble compounds in the NAPL, a greater volume of rock is adversely impacted by groundwater contamination.

The interconnection between the overburden and bedrock fracture system beneath the site and the Anthony Kill was evident by the observation of bubbling NAPL seeps in the kill when drilling activities were conducted at the site. NAPL was observed discharging into the Anthony Kill along the northern site boundary as bedrock wells were being drilled near the former relief holder, over 150 feet away. Upon further investigation, it became apparent that the tar discharge was directly related to the drilling. NAPL discharges into the stream were also observed at times when drilling activities were not occurring at the site.

Within the overall limits of contamination, some pockets of mobile NAPL were found. Wells drilled into these pockets slowly accumulate tar, and disturbances to ordinary groundwater flow patterns can redistribute the NAPL.

Two bedrock wells (MW-10D and MW-42D, shown on Figure 4) continue to accumulate NAPL, four years after they were drilled. From this evidence, the NYSDEC has concluded that mobile or potentially mobile NAPL is still present in the subsurface. The NAPL that moves into these wells is located far beneath the ground surface, at depths of 82-114 feet and 140-175 feet. Approximately 170 gallons have been recovered from wells MW-10D and MW-42D to date.

Two wells completed in the overburden also accumulate NAPL. One of these (RH-01S) is installed in the backfill material from the 1999 IRM (described in Section 5.2). The presence of mobile NAPL in this well is evidence that the NAPL which was noted in the sidewalls of the 1999 IRM excavation has flowed back into the excavation, and in so doing has recontaminated the backfill materials. Fifteen gallons of NAPL have been recovered from well RH-01S to-date.

In summary, NAPL at the site is located in the bedrock, both on property owned by NYSEG and property owned by others. In addition, preferential migration routes for NAPL are connected to the Anthony Kill. Further, NAPL is capable of migrating through the rock in sufficient quantities to replenish recovery wells.

Purifier waste was observed along the North Central Avenue embankment. During the IRM a portion of the waste was removed and the remainder covered with crushed stone. The site investigations did not find any other extensive purifier waste disposal areas. This is corroborated by the lack of groundwater exceeding total cyanide standards.

Surface Soil

BTEX and cyanide, where detected in surface soil, were at concentrations less than 0.01 ppm. Total PAHs in surface soil ranged from less than one ppm to 320 ppm. The 320 ppm sample was located in Ferris Lane. The next highest surface soil value was 191 ppm located within the site on the east side.

Five surface soil samples were collected from private residential properties south of Ferris Lane at NYSDOH-concurred locations. The concentrations of PAHs and cPAHs collected from these properties were less than 3.0 ppm and 1.0 ppm respectively.

Subsurface Soil

Higher concentrations of BTEX (greater than 10 ppm) in subsurface soil are co-located with soil containing NAPL near the former relief holder. The maximum detected BTEX concentration was 2,640 ppm which was collected near the former relief holder. Subsequent to the IRM excavation in this area, the highest BTEX concentration found in soil was 67 ppm. This value exceeds the SCG of 10 ppm for total volatile organic compounds. A high (437 ppm) BTEX value was found off-site at soil boring SB-45, but was concluded to be unrelated to the former MGP operations. All other off-site subsurface soil BTEX values were within SCG values.

Similar to BTEX, higher concentrations of PAHs (greater than 1,000 ppm) in subsurface soil were also found co-located with soil containing NAPL (Figure 5). The areal extent of PAHs exceeding SCGs is greater than that of BTEX exceeding SCGs however. Soil exceeding the SCG of 500 ppm total semi-volatiles encompasses the eastern side of the former MGP operations area including the former relief holder and includes pockets to the north.

The IRM did not significantly reduce the concentrations of PAHs in on-site subsurface soils, which range from not detected to 29,930 ppm. As shown by the excavation endpoint sampling, many of the higher concentrations (greater than 1,000 ppm PAHs) remained following the IRM soil removal. The IRM did, however, remove a substantial volume of PAH contaminated soil. Off-site, PAHs were not detected in subsurface soils above SCGs.

Cyanide was not detected in 59 of the 64 subsurface soil samples analyzed for cyanide. The highest concentration of cyanide found in the subsurface soil was 21 ppm in on-site soil boring SB-17 northeast of the former gas relief holder. The cyanide detections were limited to two areas: one north of the relief holder and one co-located with PAHs greater than 500 ppm in the northwest corner of the site. With the removal of purifier waste during the IRM, the cyanide-affected area north of the relief holder was reduced, but insufficient post-IRM cyanide data exists to confirm full removal.

Groundwater

The location of groundwater contamination generally corresponds to the locations of NAPL and soil exceeding the SCGs. This would be expected since groundwater which has come in contact

with the coal tar or with impacted subsurface soil would become contaminated by dissolution of PAHs and BTEX compounds into the groundwater.

Overburden

During the RI, groundwater from overburden wells containing NAPL was not analyzed. Thus, only five out of 14 wells were sampled for analysis. The substantial concentrations of contaminants in NAPL (described in Waste Materials above), has been shown to cause contravention of groundwater standards. Therefore, for the sampled wells, the concentration ranges presented in this subsection represent only dissolved phase contaminants and thus likely do not represent the worse case, or highest value of contaminants.

BTEX was consistently detected in wells MW-4 and MW-12, which are north and east of the former relief holder. The highest concentration of BTEX in overburden groundwater on-site, for the wells that were sampled, was 30 ppb in MW-21S. MW-21S is located in the north-central area of the site.

Off-site, BTEX exceeding groundwater standards was limited to wells located in the west embankment of North Central Avenue between Ferris Street and the Anthony Kill. 255 ppb BTEX was found in well MW-14S located in the embankment.

As expected, relatively higher PAH concentrations were co-located with wells containing higher BTEX. Dissolved PAHs were found as high as 267 ppb in well MW-21S.

Cyanide concentrations in groundwater, where detected, did not exceed the groundwater standard for samples collected after the IRM.

In summary:

- overburden groundwater quality is severely impacted by the presence of NAPL (up to six orders of magnitude above SCGs, based on NAPL analysis at similar MGP sites).
- MGP impacts to off-site overburden groundwater quality is limited in lateral extent to the embankment area.
- The IRM did not improve overburden groundwater quality.

Bedrock

MGP aqueous phase contamination in the bedrock aquifer extends further to the north and southeast as compared to the overburden aquifer. The highest concentration of BTEX found was 2,630 ppb in well MW-35I, located approximately 80 feet north of the site (north of the Anthony Kill). PAHs were generally not detected in analyzed aqueous phase samples.

Most deep bedrock wells were installed after the IRM, therefore, no quantitative evaluation was made regarding the effect, in any, of the IRM on deep bedrock groundwater quality.

Surface Water

Analysis of 18 surface water samples did not identify any BTEX, PAHs or cyanide in excess of the SCGs. However, NAPL has been observed discharging into the stream adjacent to the site, a contravention of the narrative water quality standard of "No residue attributable to sewage, industrial wastes or other wastes, nor visible oil film nor globules of grease" (6 NYCRR 703.2).

Sediments

The Anthony Kill is a fast-flowing stream with a bedrock bottom. Stream probing and reconnaissance activities were therefore undertaken in an effort to find localized areas of soft sediment. The stream was probed along seven transects upstream of the site, and 35 transects adjacent to or downstream of the site. The probing consisted of prodding the bottom with a fiberglass pole with a steel point. The sediment thickness was less than two feet at 39 transects and six inches or less at 18 transects. The thickest sediment found was 2.5 feet in the center of the stream channel at transect AS-29, immediately upstream of the North Central Avenue bridge. From the probing and reconnaissance tasks, the NYSDEC concludes that the majority of the bottom of the Anthony Kill is shale bedrock; no significant depositional areas exist between the site and its confluence with the Hudson River.

NAPL was observed along four transects located adjacent to the site; a thin layer (less than six inches) of sediments existed at three of the transects. Also, coal tar seepage was observed at six locations on the south bank adjacent to the site. As described previously, a correlation was observed between NAPL seepage into the kill and drilling at certain locations; the drilling locations were generally in a line between the former relief holder and the Anthony Kill, including off-site well MW-35I north of the stream. Coal tar has also been observed on the bottom of the stream. The visual observance of NAPL or sheens occurs primarily adjacent to the eastern, former MGP operations location of the site.

The Hudson River was also probed, both upstream and downstream of the Anthony Kill confluence. No visual evidence of MGP contamination was observed.

Thirty-eight sediment samples were collected from the Anthony Kill. The collected samples represent sediment that is transient, and the sediment is likely re-suspended during high volume flows. Five sediment samples were also collected from the Hudson River at the confluence with the Anthony Kill.

BTEX was not detected in any Anthony Kill samples. PAHs in Anthony Kill samples range from not detected to 2,500 ppm. The majority of samples from the most recent sampling event - the Supplemental Remedial Investigation - contained less than 4 ppm PAHs. Higher concentrations of PAHs are indicative of the occasional tar seeps into the Anthony Kill. Certain Hudson River sediment values exceeded the sediment SCG both upstream and downstream of the Anthony Kill confluence.

While NAPL was observed on occasion to be discharging to the creek, there was not a strong association between the discharge and significant accumulation or deposition of sediment

containing NAPL and/or PAH concentrations (greater than 10 ppm). In addition, any active remedy proposed to reduce NAPL and/or PAH concentrations in sediment would require prior elimination of all NAPL discharges from the bedrock to the stream. As explained in Section 8, the proposed remedy is expected to reduce NAPL discharge to the kill, but not eliminate the discharge in the short-term. For these reasons, the NYSDEC does not consider the discontinuous sediment veneer in the Anthony Kill to be a media of concern. The NYSDEC also concludes the Hudson River sediments are not significantly impacted by contaminants of MGP origin.

Soil Gas/Sub-Slab Vapor/Air

Soil gas analysis has not been conducted. One building at the site is currently in use by an oil distributer. The building is located approximately 100 feet from NAPL-impacted overburden. In the event that the future use of the on-site buildings changes, indoor air sampling and/or soil vapor testing would be necessary to evaluate the potential for exposure of building occupants to MGP associated vapors.

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.

Between October 1999 and April 2000, NYSEG completed an IRM to excavate contaminated soil and the remnants of underground former MGP structures at the Mechanicville site.

The overall goal of the IRM was to eliminate any source of NAPL that was accessible by excavation and remove any preferential migration pathways for site contaminants to reach the Anthony Kill. Figure 6 identifies areas excavated during the IRM. The contents of the former gas relief holder foundation, the former filter bed and associated piping encountered during excavation were removed. The gas relief holder foundation has circular concrete walls and appeared to have a bedrock and concrete bottom at a depth of 12 to 15 feet. Approximately seven feet of the holder foundation wall below ground surface was removed. The IRM generated approximately 6,500 tons (approximately 4,000 cubic yards (cy)) of contaminated soil and other wastes. Imported soil and certain thermally treated site soil was used as backfill for the excavations.

A substantial quantity of groundwater and NAPL was found to be present in the area of the holder. During excavation, groundwater was encountered about eight feet below ground surface. NYSEG attempted to dewater the holder by pumping out about 9,000 gallons. However, the next day it was discovered that the water level in the holder had returned to the same elevation as the groundwater outside the holder. In total, approximately 68,000 gallons of water (minus a small quantity of equipment decontamination water) was removed from the holder and transported off-site for treatment and/or fuel blending.

Purifier waste was removed from the road embankment along North Central Avenue and disposed of off-site. Some waste remained, however, which was subsequently covered with crushed stone.

A test trench parallel to the Anthony Kill was excavated to locate and remove piping that was suspected to be a preferential conveyance for contaminants to the stream. The trench was excavated along the top of bank to bedrock. All pipes and structures located during the excavation were removed and disposed of. A NAPL recovery system consisting of horizontal collection pipes connected to vertical stand pipes was installed following pipe removal in the test trench.

As noted previously, twenty-six post-excavation samples were collected and analyzed for BTEX and PAHs. The results of the post-excavation samples indicate that there were still relatively high concentrations of contaminants (greater than 1,000 ppm PAHs) in the soil.

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 7.6 of the Supplemental Remedial Investigation 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.

Although previous site investigations have indicated that there is a potential for exposure to MGP related contamination, a complete exposure pathway has not been demonstrated. The potential exposure pathways for this site include:

- Exposure to contaminated surface soil and subsurface soil could occur by either direct contact or ingestion of soil. The majority of the site is surrounded by fencing and covered with gravel and stone, therefore, exposure is not likely. Removal of heavily contaminated soils from the site, as part of the previous interim remedial measure, has further reduced the likelihood of human exposure to site related contaminants.

- Exposure to contaminated groundwater could occur by either consumption of or contact with groundwater. The surrounding area is served by public water, so exposure is not likely. The closest known domestic wells near this site are approximately a mile southwest (upgradient) of the site. In addition, a private well survey did not indicate the use of groundwater for private water supply.

- Exposure to contaminated surface water or contaminated sediment, when present, in the Anthony Kill could occur by either direct contact or ingestion, during recreational use (i.e. fishing or swimming).

These potential pathways need to be addressed through the remediation proposed for the site.

5.4: Summary of Environmental Impacts

This section summarizes the 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 Fish and Wildlife Impact Analysis, which is included in the Supplemental Remedial Investigation Report, presents a detailed discussion of the existing and potential impacts from the site to fish and wildlife receptors. The following environmental exposure pathways and ecological risks have been identified:

- Site contamination has impacted the groundwater resource in the overburden and bedrock aquifers. These aquifers would otherwise be useable if not contaminated.

- Groundwater is the primary transport mechanism of site contaminants that potentially affect the surface water and sediment quality of the Anthony Kill. Groundwater with NAPL seeping into the sediments is a complete and potentially important pathway.

- Wildlife may be exposed to contaminants in the sediment, when present, through ingestion and absorption by resident macroinvertebrates;

Wildlife habitat within the site is limited due to the site's developed and active use.

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 375-1.10. 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 site-related contaminants in soil, bedrock and groundwater;

- migration of NAPL in the subsurface soil and bedrock;
- NAPL discharges to the Anthony Kill;
- off-site migration of groundwater that does not attain New York State Groundwater Quality Standards;
- the contravention of NYSDEC surface water quality criteria by site related constituents in the Anthony Kill.

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

- ambient groundwater quality standards;
- TAGM 4046 values for the individual contaminants of concern.

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 NYSEG - Central Avenue - Mechanicville MGP Site were identified, screened and evaluated in the FS report which is available at the document repositories identified in Section 1.

In developing remedial alternatives, the site was conceptually viewed with three contaminated media: the on-site overburden (soil), shallow and deep bedrock, and the discharge of NAPL into the Anthony Kill. Removal and/or containment of the bedrock was dismissed as a remedy without detailed evaluation, since such remedies would be costly without a proportional accompanying benefit. Therefore, the remedial alternatives varied primarily in their ability to address overburden contamination and NAPL discharge to the Anthony Kill.

A summary of the remedial alternatives that were considered for this site are 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, groundwater, sediment and surface water at the site.

Alternative 1 - No Further Action

The No Further Action alternative recognizes remediation of the site conducted under the IRM. To evaluate the effectiveness of the remediation completed under the IRM, only continued monitoring is necessary.

Continued groundwater monitoring in existing monitoring wells would access the degree to which natural biodegradation processes were having an effect on the concentration of contaminants. An environmental easement would be implemented to limit site access, development and groundwater use.

Although the IRM reduced hot-spot areas of contamination in the shallow-subsurface, it was not substantial enough to mitigate the significant public health and environmental threat. This alternative would leave the site in its present condition and would not provide protection to public health or the environment.

Alternative 2a - Containment of Source Area, Removal of Contaminated Soil Greater Than 1,000 ppm PAHs Outside Source Area, NAPL Recovery

Present Worth: *$5,385,000*
Capital Cost: *$2,523,000*
Annual OM&M: *$230,000*

This alternative would provide containment of contaminated soil within the source area. For this alternative the source area would be considered the former relief holder area (see Figure 7). A vertical cutoff wall would be installed to the top of bedrock; the design would determine the material of construction for the wall, such as soil-cement, bentonite slurry, or steel sheetpile for example. A low permeability cap consisting of a high density polyethylene membrane and a two-foot thick barrier protection layer capable of supporting vegetation would be placed over the contained area to reduce infiltration. Long-term extraction and treatment of groundwater within the wall would occur. Outside of the containment area, soil containing PAHs in concentrations greater than 1,000 ppm, would be excavated and disposed offsite (approximately 400 cubic yards).

A NAPL recovery system would be installed for the bedrock. A minimum of ten new extraction wells would be provided, with additional wells as needed until determined that any further wells would only marginally increase NAPL recovery. The design would determine the type of extraction wells.

Purifier waste remaining in or near the North Central Avenue embankment and not within the contained area would be removed and disposed off-site. The delineation of the limits of removal would be visual, based upon the presence of wood chips or soils exhibiting a prussian blue coloration.

Since the remedy would result in contamination above unrestricted levels remaining at the site an institutional control in form of an environmental easement would be required for the remedy. The environmental easement would:

(a) restrict the use of the site to "restricted-commercial use", which is a land use for the primary purpose of buying, selling or trading of merchandise or services. Passive recreational uses, such as golf courses, bike or walking paths would be included as "restricted-commercial use".

(b) restrict the use of groundwater on the site; and

(c) require management of the site in accordance with the provisions of the site management plan to be approved for the site by the NYSDEC.

A site management plan (SMP) would be developed and implemented. The SMP would identify the institutional controls and engineering controls (IC/ECs) required for the remedy and details their implementation. The SMP for this remedy would include:

(a) An IC/EC control plan to establish the controls and procedures necessary to (i) manage residual contaminated soils that may be excavated from the site during future activities, including the procedures for soil characterization, handling, health and safety of the workers and the community as well as, disposal/reuse in accordance with applicable NYSDEC regulations and procedures, (ii) evaluate the potential for vapor intrusion for any buildings developed on the site, including mitigation of any impacts identified, (iii) maintain use restrictions regarding site development or groundwater use identified in the environmental easement and (iv) require the property owner to provide an Institutional Control/Engineering Control (IC/EC) certification, as required by regulations, on a periodic basis.

(b) A monitoring plan to monitor the overburden and bedrock aquifers;

(c) An operation and maintenance plan to provide the detailed procedures necessary to operate and maintain the NAPL and groundwater collection systems; and,

(d) a monitoring plan to monitor sediment deposition in the Anthony Kill.

This remedy would take approximately one year to design and one year to construct.

Alternative 2b - Containment of Entire Site, NAPL Recovery

Present Worth: *$8,934,000*
Capital Cost: *$4,144,000*
Annual OM&M: *$386,000*

This alternative differs from Alternative 2a in that the containment wall would be expanded to include the entire site and contaminated soil would not be removed to any significant degree. Specifically, Alternative 2b would:

- provide a vertical cutoff wall to the top of bedrock along the site perimeter; the design would determine the material of construction for the wall, such as soil-cement, bentonite slurry, or steel sheetpile for example.

- A low permeability cap consisting of a high density polyethylene membrane and a two-foot thick barrier protection layer capable of supporting vegetation would be placed over the entire site to reduce infiltration.

- Long-term extraction and treatment of groundwater within the wall would occur.

- A NAPL recovery system similar to that described under Alternative 2a would be installed.

- Purifier waste remaining in or near the North Central Avenue embankment and not within the contained area would be removed and disposed off-site. The delineation of the limits of removal would be visual, based upon the presence of wood chips or soils exhibiting a prussian blue coloration.

- An institutional control in form of an environmental easement would be required for the remedy as described under Alternative 2a.

- A site management plan (SMP) similar to the SMP described under Alternative 2a would be developed and implemented.

This remedy would take approximately one year to design and two years to construct.

Alternative 3a - Removal of Contaminated Soil above SCGs and Off-Site Disposal/Treatment, NAPL Recovery

Present Worth: *$8,927,000*
Capital Cost: *$8,124,000*
Annual OM&M: *$64,000*

This alternative would provide the most extensive removal of any of the Alternative 3 group proposals. Alternative 3a would:

- Remove soil containing contaminant concentrations greater than TAGM 4046 recommended soil cleanup objectives for individual BTEX and PAH compounds (approximately 15,400 cy). Where necessary, dewatering of the excavation would occur, with water being appropriately treated or disposed of. For estimating purposes, a temporary wall for much of the site was anticipated. Excavated areas would be backfilled to restore the existing contour.

- The excavated soil would be transported to an appropriate permitted facility for treatment or disposal.

- Purifier waste remaining in or near the North Central Avenue embankment would be removed and disposed off-site. The delineation of the limits of removal would be visual, based upon the presence of wood chips or soils exhibiting a prussian blue coloration.

- A NAPL recovery system similar to that described under Alternative 2a would be installed.
- An institutional control in form of an environmental easement would be required for the remedy as described under Alternative 2a.
- A site management plan (SMP) similar to the SMP described under Alternative 2a would be developed and implemented.

The conceptual plan for remedial alternative 3a is shown on Figure 8. This remedy would take approximately one year to design and one year to construct.

Alternative 3b - Excavation and Off-Site Disposal or Treatment of Contaminated Soil Greater Than 1,000 ppm PAHs, NAPL Recovery

Present Worth: *$5,004,000*
Capital Cost: *$4,200,000*
Annual OM&M: *$64,000*

This alternative would remove all hot-spot pockets of contamination in the site overburden (see Figure 9). The greater than 1,000 ppm PAHs concentration in soil is used in this alternative as it has an estimated volume which provides a basis for comparison to the estimated volume of soil exceeding TAGM 4046 recommended soil cleanup objectives for the contaminants of concern.

Specifically, Alternative 3b would excavate to the top of bedrock soil containing PAHs in concentrations greater than 1,000 ppm (approximately 5,400 cy). Where necessary, dewatering of the excavation would occur, with water being appropriately treated or disposed of. For estimating purposes, a temporary wall for the deeper excavation was anticipated. The excavated soil would be transported to an appropriate permitted facility for treatment or disposal. Excavated areas would be backfilled to restore the existing contour.

In addition, purifier waste remaining in or near the North Central Avenue embankment would be removed and disposed off-site as described under Alternative 3a.

Further, under Alternative 3b a NAPL recovery system would be installed, an environmental easement would be established and a site management plan would be developed consistent with Alternative 2a.

This remedy would take approximately one year to design and one year to construct. The remedial goals of the elimination of exposure to the extent practicable would be achieved after implementation.

Alternative 3c - Excavation and Off-Site Disposal or Treatment of Contaminated Soil Greater Than 500 ppm PAHs, NAPL Recovery

Present Worth: *$5,274,000*
Capital Cost: *$4,471,000*
Annual OM&M: *$64,000*

This Alternative is similar to Alternative 3b but provides for additional contaminated soil removal of soil containing greater than 500ppm PAHs (see Figure 10).

Specifically, Alternative 3c would excavate to the top of bedrock all soil containing PAH concentrations greater than 500 ppm or soil containing visual tar or NAPL (approximately 6,200 cubic yards). The remedy envisions a wall, (temporary or permanent) at the deep excavation, specifically at the former relief holder, to limit lateral inflow which would otherwise increase the amount of dewatering required. The excavated soil would be transported to an appropriate permitted facility for treatment or disposal. Excavated areas would be backfilled to restore the existing contour.

In addition, purifier waste remaining in or near the North Central Avenue embankment would be removed and disposed off-site as described under Alternative 3a.

Further, under Alternative 3c a NAPL recovery system would be installed, an environmental easement would be established and a site management plan would be developed consistent with Alternative 2a.

This remedy would take approximately one year to design and one year to construct.

Alternative 4 - Removal of Relief Holder Contents, Stabilization of Soil Exceeding SCGs NAPL Recovery

Present Worth: *$5,223,000*
Capital Cost: *$4,420,000*
Annual OM&M: *$64,000*

Under alternative 4, in the area of the former gas relief holder an estimated 4,000 cy of soil up to a depth of 25 feet would be excavated for off site disposal. Dewatering would be conducted as necessary to complete the excavation. Excavated soil would be transported off site for disposal or thermal treatment at a permitted facility. The site would be restored to approximately the existing contour.

This alternative would then immobilize the remaining contaminated soils in-situ by mixing the soil with a binding agent such as portland cement. The conceptual design would provide for the treatment of approximately 11,400 cubic yards of soil exceeding SCGs across the site, with the exception of the area of the former gas relief holder. A two-foot thick soil cover would be provided over the entire site.

Further, under Alternative 4 a NAPL recovery system would be installed, an environmental easement would be established and a site management plan would be developed consistent with Alternative 2a.

This remedy would take approximately one to two years to design and one year to construct.

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 State. 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 Public 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 NYSDEC 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, and institutional controls.

7. Cost-Effectivness. Capital costs and 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 NYSDEC addressed the concerns raised In general, the public comments received were supportive of the selected remedy.

SECTION 8: SUMMARY OF THE SELECTED REMEDY

NYSDEC has selected Alternative **Alternative 3c - Excavation and Off-Site Disposal or Treatment of Contaminated Soil Greater Than 500 ppm PAHs, NAPL Recovery** 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 3c was selected because, as described below, it satisfies the threshold criteria to the extent practicable and cost effective and provides the best balance of the primary balancing criteria described in Section 7.2. Alternative 3c will achieve the remediation goals for the site by removing the contaminated soils and NAPL that contribute most to the significant threat to public health and the environment, by reducing the source of contamination to groundwater, and by creating the conditions needed to restore groundwater quality to the extent practicable. In addition, Alternative 3c will be expected to reduce NAPL discharges to the Anthony Kill.

As previously mentioned, Alternative 1 would not be protective to public health or the environment. Thus, Alternative 1 would not satisfy the threshold criteria and is rejected.

Neither Alternative 2a nor 2b would remove coal tar from the gas relief holder. Thus, NAPL would remain in the relief holder area, serving as a reservoir which would drive NAPL deeper into bedrock and also into the Anthony Kill. Thus, the environmental quality goals of attaining groundwater standards, attaining soil TAGM 4046 values for individual contaminants of concern, and preventing the discharge of NAPL to the Anthony Kill would likely not be achieved.

Likely some, but not all, TAGM 4046 values for the individual contaminants of concern would be achieved in Alternative 3b. The removal of hot-spot pockets of contamination would be expected to improve groundwater quality and reduce NAPL discharges to the Anthony Kill over time.

Under Alternative 4, stabilization/solidification would create a low-strength monolith across the site; there would no longer be an overburden groundwater of sustainable yield. In this respect, off-site migration of contaminants in the overburden would be eliminated, but at the expense of no useable overburden aquifer. Also, stabilization/solidification with bedrock recovery would be expected to reduce NAPL discharges to the Anthony Kill over time.

Because Alternatives 2a, 2b, 3a, 3b, and 4 satisfy the threshold criteria, the five balancing criteria were particularly important in selecting the final remedy for the site.

In general, removal of contaminants from a site, where practicable and cost effective, is preferred to containment or stabilization of those same contaminants on-site. Through removal, there is an immediate reduction of the volume of contaminants, thus a reduction in the amount of PAHs, including carcinogenic PAHs. Where contaminants are removed, there is less contaminants available for migration. In addition, the removal of NAPL from the upper portion of a downwardly migrating NAPL column reduces the migrating driving force. Because contaminants are permanently removed from the site, removal has greater long-term effectiveness, as compared to remedies which leave those same contaminants in-place.

Specific to the site, containment would be very difficult to achieve given the highly fractured bedrock under the site, and the NAPL-containing soils which contact the bedrock in certain areas. A containment remedy would be unable to keep NAPL in the overburden from moving downward into the rock, and then laterally off site, including the Anthony Kill. Thus, Alternatives 2a and 2b would unlikely be protective of the environment.

Thus, the Alternative 3 group: 3a, 3b, 3c, where, contaminants of concern in the overburden are removed to varying degrees (values greater than individual TAGM in Alternative 3a,values greater than 1,000 ppm PAHs in Alternative 3b,values greater than 500 ppm PAHs in Alternative 3c) would provide a greater reduction in volume, mobility and toxicity as compared to Alternative 2b, which would only provide for containment of the contaminants to the site itself. The Alternative 3 group would also provide a greater reduction in volume as compared to Alternative 4, which would stabilize/solidify contaminants in-place. By removing NAPL and the majority of the mass of contaminants in the overburden, the Alternative 3 group would be expected to significantly reduce the leaching and mobility of contaminants both on- site and off-site. Alternative 2b would eliminate overburden migration of contaminants to off-site areas, but not within the site. Alternative 2a would only reduce mobility within the hot-spot relief holder area of the site. The stabilization/solidification component offered in Alternative 4 would be expected to provide equivalent or greater reduction of mobility as compared to the Alternative 3 group. Within the Alternative 3 group, removal of approximately 15,000 cubic yards of contaminated soil exceeding individual TAGM values (Alternative 3a) would provide the greatest reduction of volume and toxicity, followed by the removal of 6,200 cubic yards of soil containing PAHs greater than 500 ppm (Alternative 3c), followed by the removal of 5,400 cubic yards of soil containing PAHs greater than 1,000 ppm. The ranking would be the same (Alternative 3a, Alternative 3c, Alternative 3b) from the highest reduction of contaminant mobility to the lowest reduction of contaminant mobility within Alternative group 3. There would be diminishing returns, however, on the reduction of mobility from Alternative 3c to Alternative 3a, since much of contaminant mobility is driven by the presence of NAPL and soil with higher PAH concentrations.

The Alternative 3 group would provide the greatest long-term effectiveness. While containment remedies, such as that offered by Alternative 2b, have been implemented with success, containment remedies require monitoring to ensure integrity. Removal, on the other hand would result in a permanent absence of the removed contaminants from the site. In addition, containment of the overburden at or near the site perimeter (Alternative 2b) would provide only

marginal benefit because, as identified in Section 5, groundwater exceeding SCGs in the overburden off-site occurs only in a limited area. Much of the off-site groundwater exceeding SCGs occurs in the bedrock, which would not be mitigated through the use of overburden containment. The ability of stabilization/solidification (Alternative 4) to continue its cementitious properties to reduce contaminant migration in the long term has not been well documented. The long-term effectiveness of providing a containment system at the former relief holder (Alternative 2a) would be questionable. The RI and IRM data support the conclusion of migration pathways from the bottom of the holder to deeper and more lateral bedrock zones in an area of high groundwater conductivity. A containment system for the relief holder source area would therefore require a means to prevent migration through the bottom as well as the sides, and control groundwater movement. Within the Alternative 3 group, long term effectiveness would be provided best by Alternative 3a, followed by Alternative 3c, followed by Alternative 3b. By removal of the contaminants of concern to individual SCGs, Alternative 3a would leave the least amount of contaminants remaining at the site (residual contamination). This would result in achieving the remedial goals sooner and would have the least attendant risk associated with residual contamination.

The removal and stabilization/solidification components included in the Alternative 3 group and Alternative 4, respectively, would provide greater short-term effectiveness than the containment component included by Alternatives 2a and 2b. Over time, the on-site overburden groundwater quality would be expected to improve with the removal of contaminants. The greater the removal (that is, Alternative 3a > Alternative 3c > Alternative 3b), the more quickly groundwater quality would be expected to improve. On the other hand, both partial site containment (Alternative 2a) and site containment (Alternative 2b) would leave hot-spot sources of groundwater contamination within the site overburden which would call into question whether a substantial improvement in groundwater quality could be achieved. Alternative 4 would create a low permeability monolith essentially rendering the site devoid of a sustainable quantity of groundwater. A potential negative impact of the monolith created under Alternative 4 would be the redirection of groundwater and surface water. This could cause flooding of up-gradient areas if hydraulic control is not appropriately addressed.

Potential adverse impacts during the remedial construction were also evaluated as part of the short-term effectiveness. Potential adverse impacts would likely be greater with increasing contaminated soil movement and disturbance, where the soil could be airborne as fugitive dust or could become suspended in run-off and transported to water bodies. The adverse impacts would be considered potential, as remedial construction requires measures to prevent fugitive emissions and run-off. Thus, the potential for short-term construction related impacts would be greatest with Alternative 3a. The containment alternatives (Alternatives 2a and 2b) and stabilization/solidification alternative (Alternative 4) also would require soil disturbance of approximately the same magnitude as Alternatives 3b and 3c. The Alternative 3 group would generate an increased volume of truck traffic during the shipment of contaminated overburden to off-site disposal or treatment locations, but this increase would be expected to be minimal (less than 50 trucks per day for approximately 3 months for Alternative 3a, North Central Avenue carries approximately 14,000 vehicles per day (2003 count)).

All the alternatives for consideration have been implemented with success at other MGP sites. The barrier wall component of Alternatives 2a and 2b, the excavation component of the

Alternative 3 group, and the stabilization/solidification component of Alternative 4 would all use established remedial technologies. Barrier wall and stabilization/solidification construction would require more specialized expertise and techniques as compared to overburden excavation, but all alternatives would be considered technically achievable. The IRM demonstrated that removal is viable and the IRM provided site-specific experience which would assist in implementing the Alternative 3 group and the removal component of Alternative 2a. Equipment, supplies and manpower would be considered available for all alternatives. Administrative implementability, such as permitting for construction and obtaining the institutional controls, would also be approximately equivalent for all alternatives. There would be no anticipated legal barriers for any of the alternatives. In summary, the Alternative 3 group would be slightly more implementable than the other alternatives, because the major remedial component - excavation - would be less specialized and experience in site excavation was gained during the IRM.

A remedy is considered cost-effective if its costs are proportional to its overall effectiveness. In evaluating alternatives, consideration is given to the proportional benefit gained in comparison to the cost, not just the cost alone. With two exceptions, the alternatives would be approximately the same cost. The two exceptions are the complete site containment alternative (Alternative 2b) and the removal of overburden to individual SCGs for the contaminants of concern (Alternative 3a). Both of these alternatives are estimated at nearly nine million dollars, as compared to the remaining active alternatives estimated at approximately five million dollars. The additional cost would not provide proportional benefit for either alternative. Since impacted off-site overburden groundwater quality is limited, the perimeter barrier wall offered by Alternative 2b would not significantly improve off-site groundwater quality. Similarly, while Alternative 3a would remove almost three times more contaminated soil as Alternative 3c (Removal to 500 ppm PAHs), the additional soil would be less contaminated and thus its removal would contribute only marginally to restoring overburden groundwater quality. Even if groundwater SCGs could be achieved in the overburden, a groundwater use restriction would still be required due to the presence of the NAPL contaminant source in the bedrock that cannot be fully removed, even through NAPL recovery. Although the containment alternatives (Alternatives 2a and 2b), would be less expensive to construct, in comparison to the other alternatives it would have the highest operations and maintenance cost. The stabilization/solidification alternative (Alternative 4) and removal Alternatives 3b and 3c would be nearly equivalent in cost-effectiveness.

The estimated present worth cost to implement the remedy is $5,095,000. The cost to construct the remedy is estimated to be $4,471,000 and the estimated average annual operation, maintenance, and monitoring costs for 30 years is $ 50,000.

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. Removal to the top of bedrock of all soil containing PAH concentrations greater than 500 ppm or soil containing visual tar or NAPL. Dewatering will be implemented as required to achieve the removal. The remedy envisions a wall, (temporary or permanent) at the deep excavation, specifically at the former relief holder, to limit lateral inflow which would otherwise increase the amount of dewatering required. Soils exhibiting odors,

staining or sheens will not be considered for removal as visual tar or NAPL. Soils exhibiting odors, staining or sheens will however be removed if found to exceed the 500 ppm PAH criteria. Soil with no visual indication of tar or NAPL and containing less than 500 ppm PAHs, located above or between areas meeting the removal criteria, may be stockpiled and reused as backfill within the excavations resulting from the removal. The top 12 inches of soil in all backfilled areas will satisfy TAGM 4046 recommended soil cleanup objectives for individual compounds.

3. Excavated soil will be treated or disposed off-site. Treated soil which achieved TAGM 4046 recommended soil cleanup objectives for individual compounds can be reused on-site. Imported soil used for contouring will also satisfy TAGM 4046 recommended soil cleanup objectives for individual compounds.

4. Purifier waste remaining in or near the North Central Avenue embankment will be removed and disposed off-site. The delineation of the limits of removal will be visual, based upon the presence of wood chips or soils exhibiting a prussian blue coloration.

5. A NAPL recovery system will be installed for the bedrock. A minimum of ten new extraction wells will be provided, with additional wells as needed until determined that any further wells would only marginally increase NAPL recovery. The design will determine the type of extraction wells.

6. Since the remedy will result in contamination above unrestricted levels remaining at the site an institutional control in form of an environmental easement will be required for the remedy. The environmental easement will:
   (a) restrict the use of the site to commercial or industrial uses consistent with local zoning.
   (b) restrict the use of groundwater on the site; and
   (c) require management of the site in accordance with the provisions of the site management plan to be approved for the site by the NYSDEC.

7. A site management plan (SMP) will be developed and implemented. The SMP will identify the institutional controls and engineering controls (IC/ECs) required for the remedy and details their implementation. The SMP for this remedy will include:
   (a) An IC/EC control plan to establish the controls and procedures necessary to (i) manage residual contaminated soils that may be excavated from the site during future activities, including the procedures for soil characterization, handling, health and safety of the workers and the community as well as, disposal/reuse in accordance with applicable NYSDEC regulations and procedures, (ii) evaluate the potential for vapor intrusion for any buildings developed on the site, including mitigation of any impacts identified, (iii) maintain use restrictions regarding site development or groundwater use identified in the environmental easement and (iv) require the property owner to provide an Institutional Control/Engineering Control (IC/EC) certification, as required by regulations, on a periodic basis.
   (b) A monitoring plan to monitor the overburden and bedrock aquifers;
   (c) An operation and maintenance plan to provide the detailed procedures necessary to operate and maintain the NAPL collection system; and,
   (d) A monitoring plan to monitor sediment deposition in the Anthony Kill.

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:

- A citizen participation plan specific to the Mechanicville Former MGP Site was created in June 1992. The plan established a repository for documents pertaining to the site. In addition, a public contact list, which included nearby property owners, elected officials, local media and other interested parties, was established.

- A fact sheet was issued in June 1992 announcing the start of the remedial investigation.

- A fact sheet was issued in October 1999 announcing the start of the interim remedial measure.

- The citizen participation plan was revised in March 2001. Two document repositories were added to the existing repository.

- A fact sheet was issued in March 2001 announcing the start of the supplemental remedial investigation.

- A fact sheet announcing the availability of the PRAP for public comment was issued to the public contact list on February 14, 2006.

- A public meeting was held on February 27, 2006 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. In general, the public comments received were supportive of the selected remedy.

TABLE 1
Nature and Extent of Contamination

SURFACE SOIL (Pre-SRI)	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]	Frequency of Exceeding SCG
Semivolatile Organic Compounds (SVOCs)	Total PAHs	9.06-191	500	0 of 8
Inorganic Compounds	Cyanide (total)	ND-0.002	NA	NA

SUBSURFACE SOIL (Pre-SRI)	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)	Benzene	ND-2,800	0.06	22 of 40
	Toluene	ND-840	1.5	4 of 17
	Ethyl benzene	ND-440	5.5	5 of 17
	Xylenes (total)	ND-1,400	1.2	8 of 17
SVOCs	Total PAHs	0.188-29,930	500	21 of 42
Inorganic Compounds	Cyanide (total)	ND-3.2	NA	NA

GROUNDWATER (Overburden) (Pre-SRI)	Contaminants of Concern	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)[a]	Frequency of Exceeding SCG
VOCs	Benzene	ND	1	0 of 12
	Toluene	ND	5	0 of 12
	Ethyl benzene	ND	5	0 of 12
	Xylenes (total)	ND-12	5	1 of 12
SVOCs	Total PAHs	ND-128	various	NA
Inorganic Compounds	Cyanide (total)	ND-135,000	200	1 of 13

TABLE 1 (continued)

GROUNDWATER (Bedrock) (Pre-SRI)	Contaminants of Concern	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)[a]	Frequency of Exceeding SCG
VOCs	Benzene	ND-120,000	1	60 of 94
	Toluene	ND-6,400	5	49 of 93
	Ethyl benzene	ND-3,100	5	51 of 94
	Xylenes (total)	ND-3,500	5	57 of 94
SVOCs	Total PAHs	ND-1,812,200	various	NA
Inorganic Compounds	Cyanide (total)	ND-166,000	200	11 of 94

SURFACE SOIL (SRI)	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]	Frequency of Exceeding SCG
SVOCs	Total PAHs	ND-320	500	0 of 17
Inorganic	Cyanide (total)	ND	NA	NA
Compounds				

SUBSURFACE SOIL (SRI)	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]	Frequency of Exceeding SCG
VOCs	Benzene	ND-90.2	0.06	8 of 57
	Toluene	ND-352	1.5	3 of 57
	Ethyl benzene	ND-165	5.5	8 of 57
	Xylenes (total)	ND-417	1.2	8 of 57
SVOCs	Total PAHs	ND-18,022	500	5 of 42
Inorganic	Cyanide (total)	ND-19	NA	NA
Compounds				

TABLE 1 (continued)

GROUNDWATER (Overburden) (SRI)	Contaminants of Concern	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)[a]	Frequency of Exceeding SCG
VOCs	Benzene	ND-220	1	5 of 10
	Toluene	ND-5	5	1 of 10
	Ethyl benzene	ND-17	5	1 of 10
	Xylenes (total)	ND-29	5	3 of 10
SVOCs	Total PAHs	ND-266	various	NA
Inorganic Compounds	Cyanide (total)	ND-170	200	0 of 7

GROUNDWATER (Bedrock) (SRI)	Contaminants of Concern	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)[a]	Frequency of Exceeding SCG
VOCs	Benzene	ND-1,100	1	9 of 78
	Toluene	ND-550	5	3 of 78
	Ethyl benzene	ND-900	5	4 of 78
	Xylenes (total)	ND-900	5	4 of 78
SVOCs	Total PAHs	ND-31	various	NA
Inorganic Compounds	Cyanide (total)	ND-20	200	0 of 44

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

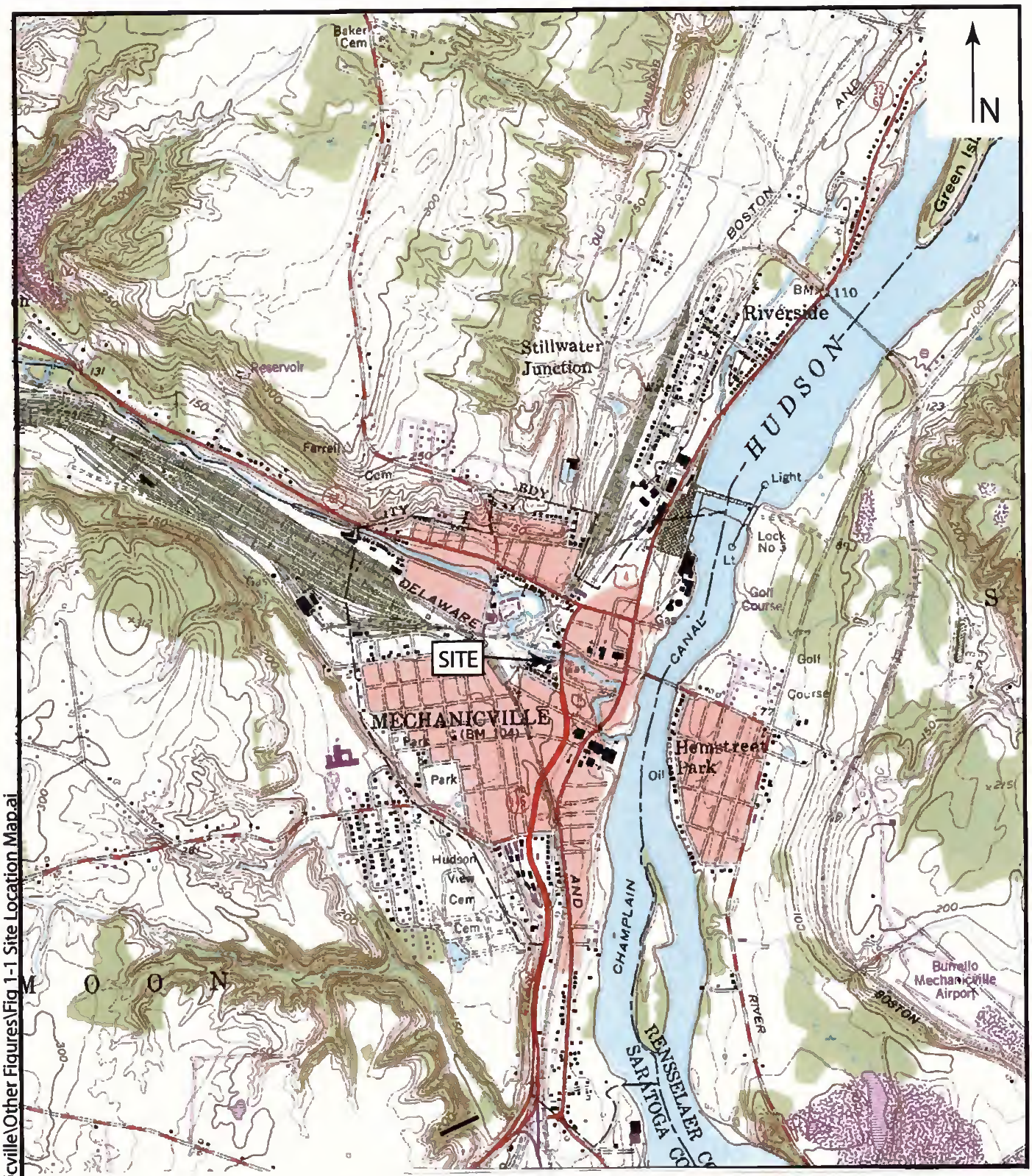
[b]SCG = standards, criteria, and guidance values; (note the SCG of 500ppm for PAHs is actually the SCG for total SVOCs.
ND - Not detected.
NA - Not applicable (e.g., no SCG)

TABLE 2

Cost Estimate Summary for Remedial Alternatives
Mechanicville Former MGP Site

Cost Component	Alternative 1	Alternative 2a	Alternative 2b	Alternative 3a	Alternative 3b	Alternative 3c	Alternative 4
Capital Costs	$15,000	$2,522,700	$4,143,600	$8,124,100	$4,200,800	$4,471,000	$4,419,300
Annual O&M Costs	$45,600	$230,700	$386,080	$64,770	$64,770	$64,770	$64,770
Present Worth of O&M (1)	$565,850	$2,862,400	$4,790,900	$803,700	$803,700	$803,700	$803,700
Total Present Worth	$580,850	$5,385,100	$8,934,500	$8,927,800	$5,004,500	$5,274,700	$5,223,000

Note:
(1) 7% discount rate used to determine Present Worth.
Alternative 1 – No Further Action
Alternative 2a – Containment of Source Area, Excavation of Contaminated Soil TPAHs > 1,000 ppm, Outside Source Area, NAPL Recovery
Alternative 2b – Containment, Entire Site NAPL Recovery
Alternative 3a - Excavation of Contaminated Soil Above Individual SCGs and Off-Site Disposal/Treatment, NAPL Recovery
Alternative 3b – Excavation of Contaminated Soil TPAHs > 1,000 ppm and Off-Site Disposal/Treatment, NAPL Recovery
Alternative 3c - Excavation of Contaminated Soil TPAHs > 500 ppm and Off-Site Disposal/Treatment, NAPL Recovery
Alternative 4 – Excavation and Off-Site Disposal/Treatment of Holder Area, In-Situ Stabilization/Solidification of Remaining Site Area, NAPL Recovery



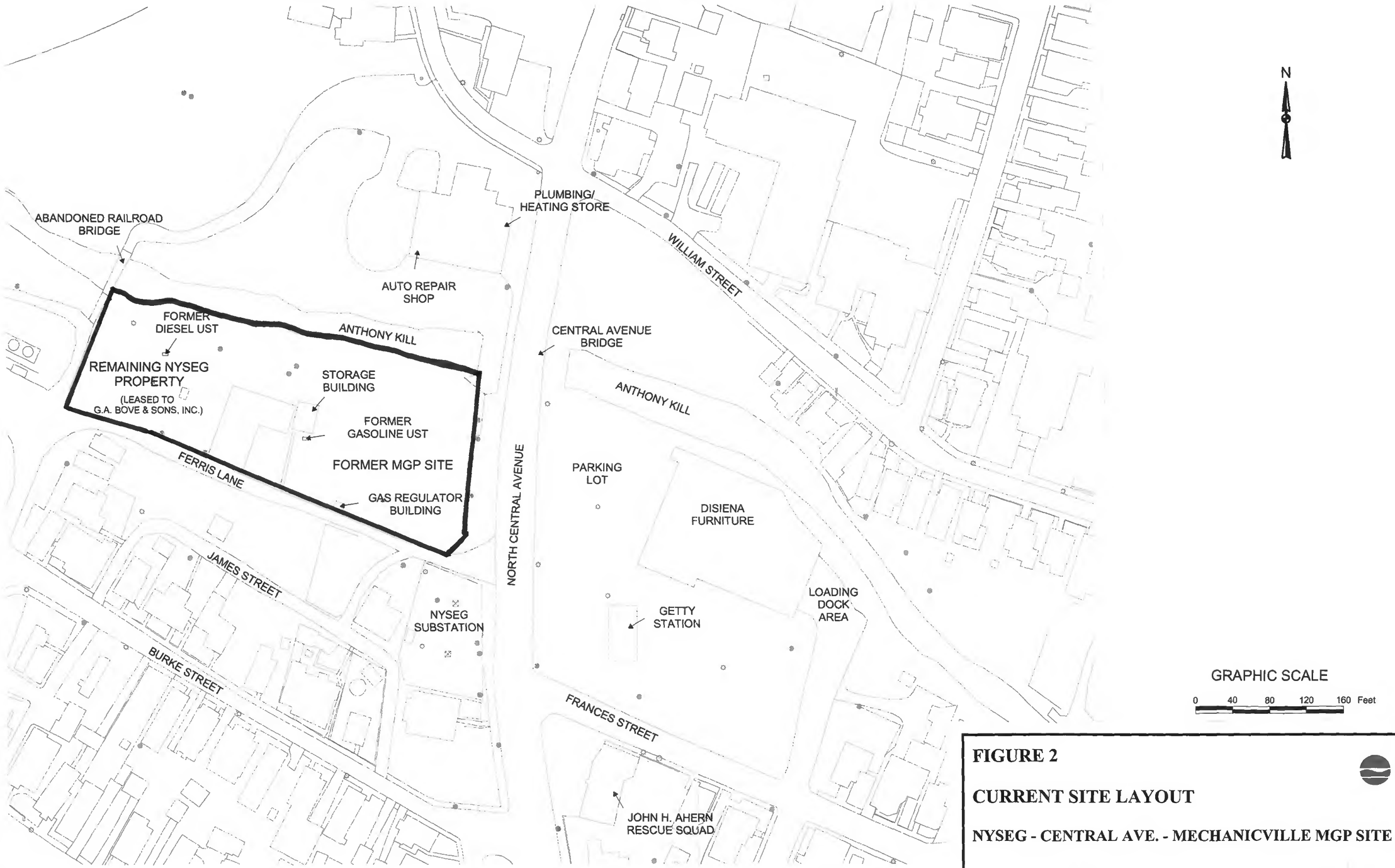
Source: USGS Mechanicville 7.5' Quadrangle, 1954

P:\Database\NYSEG\Mechanicville\Other Figures\Fig 1-1 Site Location Map.ai

FIGURE 1

SITE LOCATION

NYSEG - CENTRAL AVE. - MECHANICVILLE MGP SITE



BASE MAP PROVIDED BY NYSEG ENGINEERING SERVICES, BINGHAMTON, NEW YORK

P:\Database\NYSEG\Mechanicville\New Figures...\Figures.apr\Fig 1-3 Current Site Map

FIGURE 2

CURRENT SITE LAYOUT

NYSEG - CENTRAL AVE. - MECHANICVILLE MGP SITE

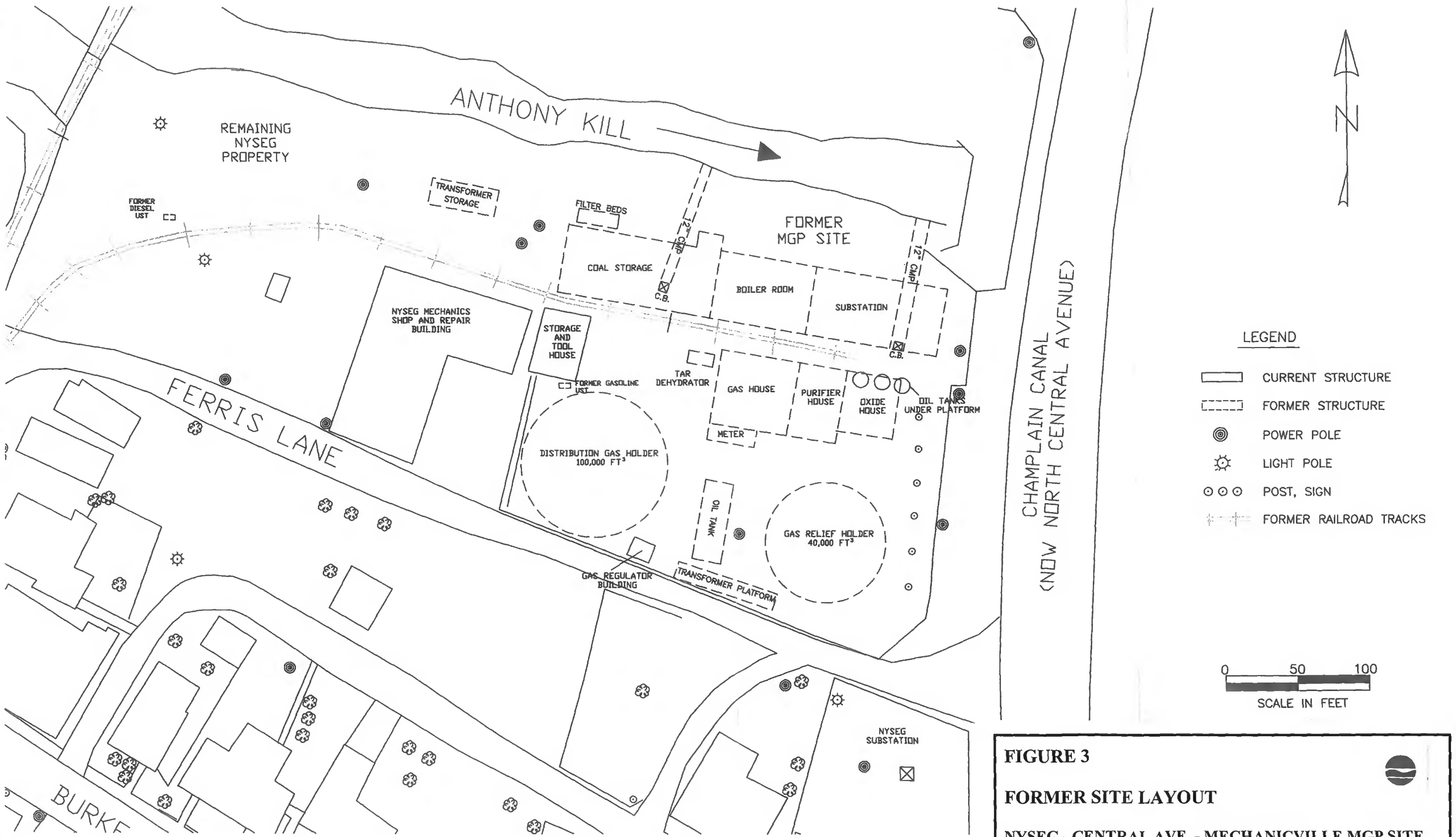
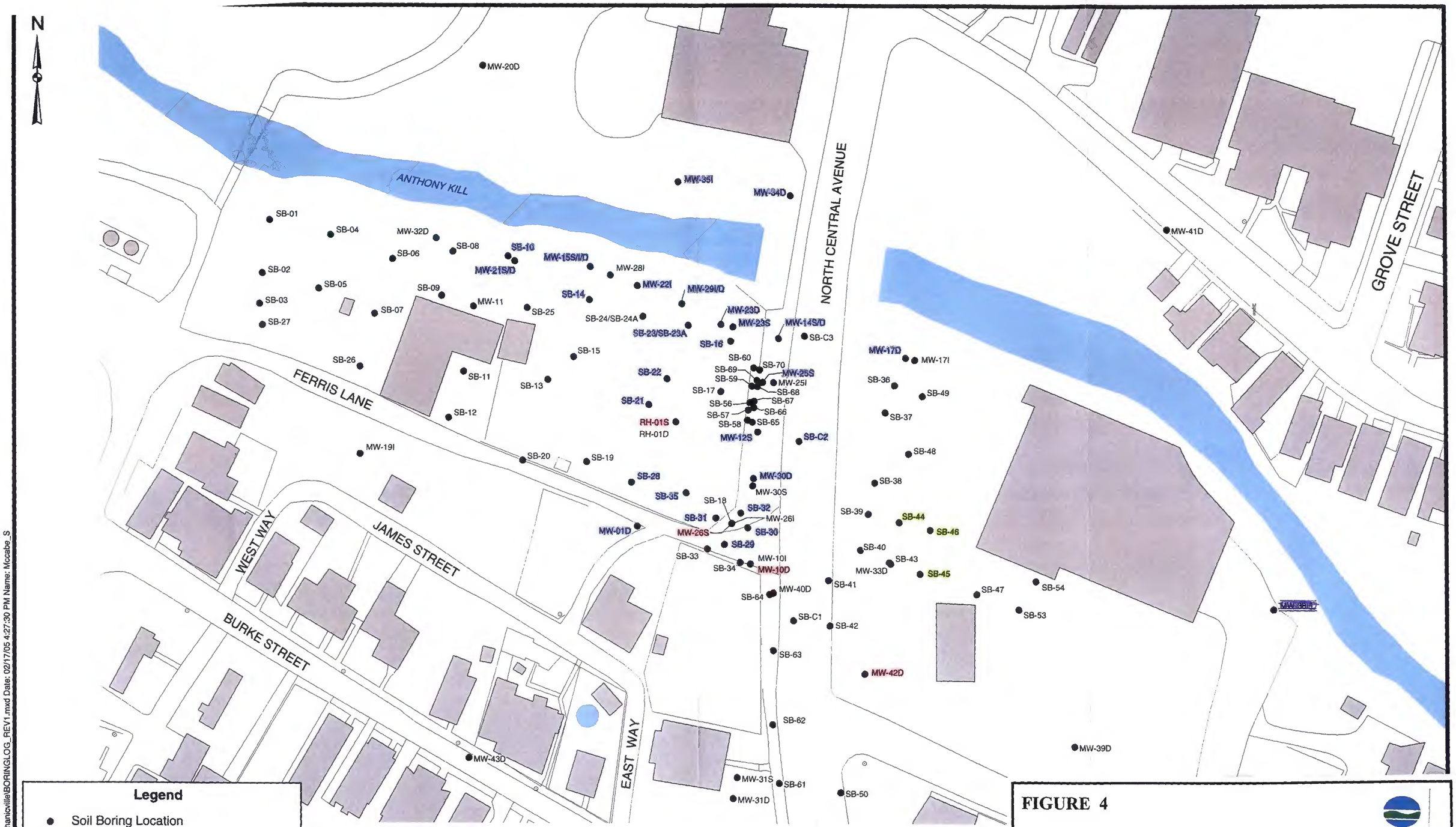


FIGURE 3

FORMER SITE LAYOUT

NYSEG - CENTRAL AVE. - MECHANICVILLE MGP SITE

P:/Databas SEG/Mechanicville\Other Figures\2003 SRI Figures\Fig 3-1 ner Site Layout.dwg



SOURCE: SRI Appendix E Boring Logs

NOTES:
1) See Table 2-1 for depth specific NALP/Odor observations.

FIGURE 4

NAPL OBSERVATIONS

NYSEG - CENTRAL AVE. - MECHANICVILLE MGP SITE

N:\3839614.00000\DB\Mechanicville\BORING\LOG_REV1.mxd Date: 02/17/05 4:27:30 PM Name: Mccabe_S

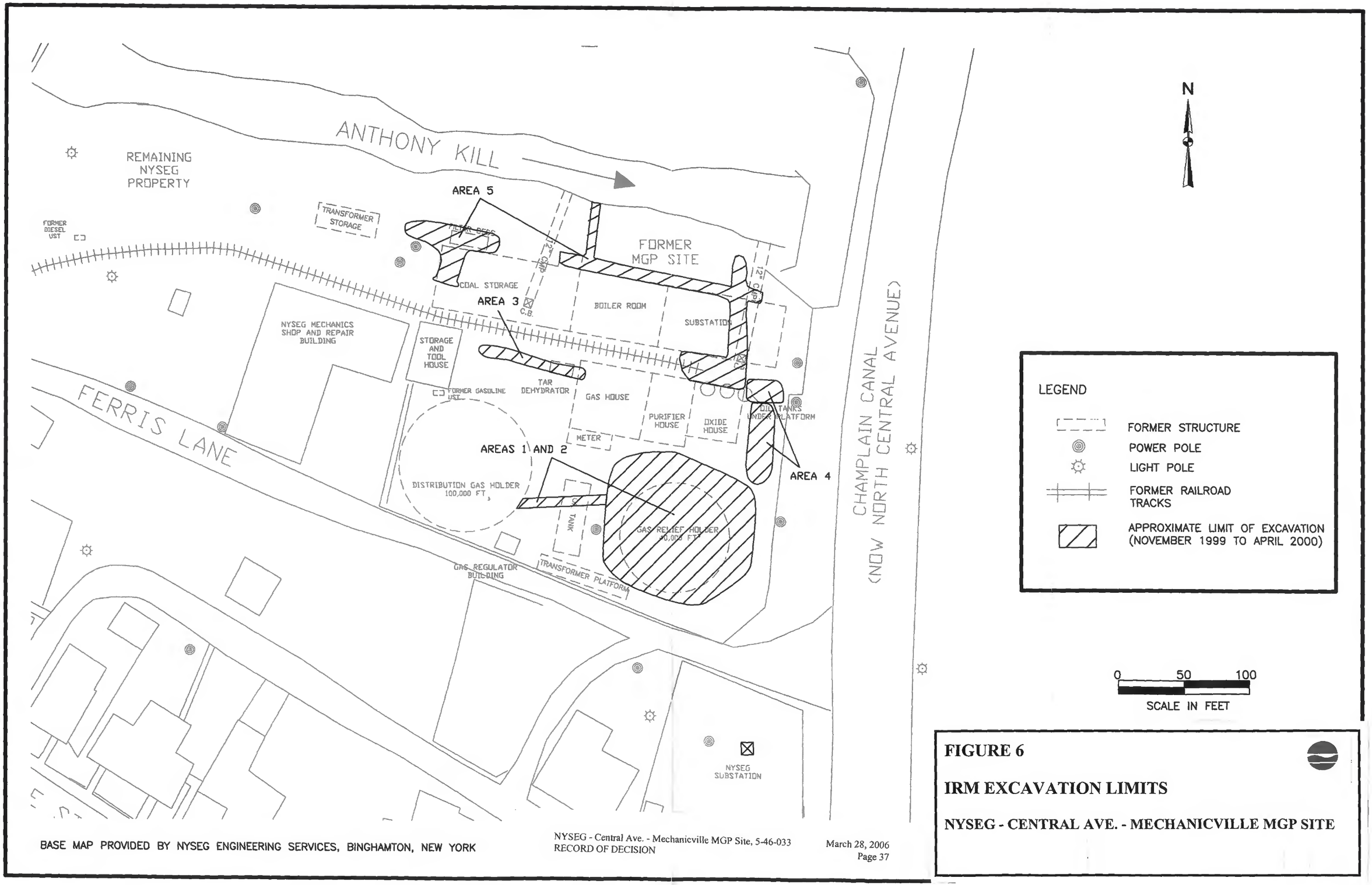
NOTES:
1) Includes data from both Pre-SRI and SRI.
2) See Plate 1 for full site drawing with all soil sampling locations identified.
3) Volume = 144,397 cu ft; Volume = 5,348 cu yd

FIGURE 5

SOIL CONTAINING GREATER THAN 1,000 PPM PAHS

NYSEG - CENTRAL AVE. - MECHANICVILLE MGP SITE

N:\3839614.00000\DB\Mechanicville\MAXDEPTH_TOTAL.mxd Date: 11/23/04 3:20:56 PM Name: Mccabe_S



BASE MAP PROVIDED BY NYSEG ENGINEERING SERVICES, BINGHAMTON, NEW YORK

FIGURE 6

IRM EXCAVATION LIMITS

NYSEG - CENTRAL AVE. - MECHANICVILLE MGP SITE

P:\Database\NYSEG\Mechanicville\New Figures...\Fig 1-4 Interim Remedial Measure.dwg

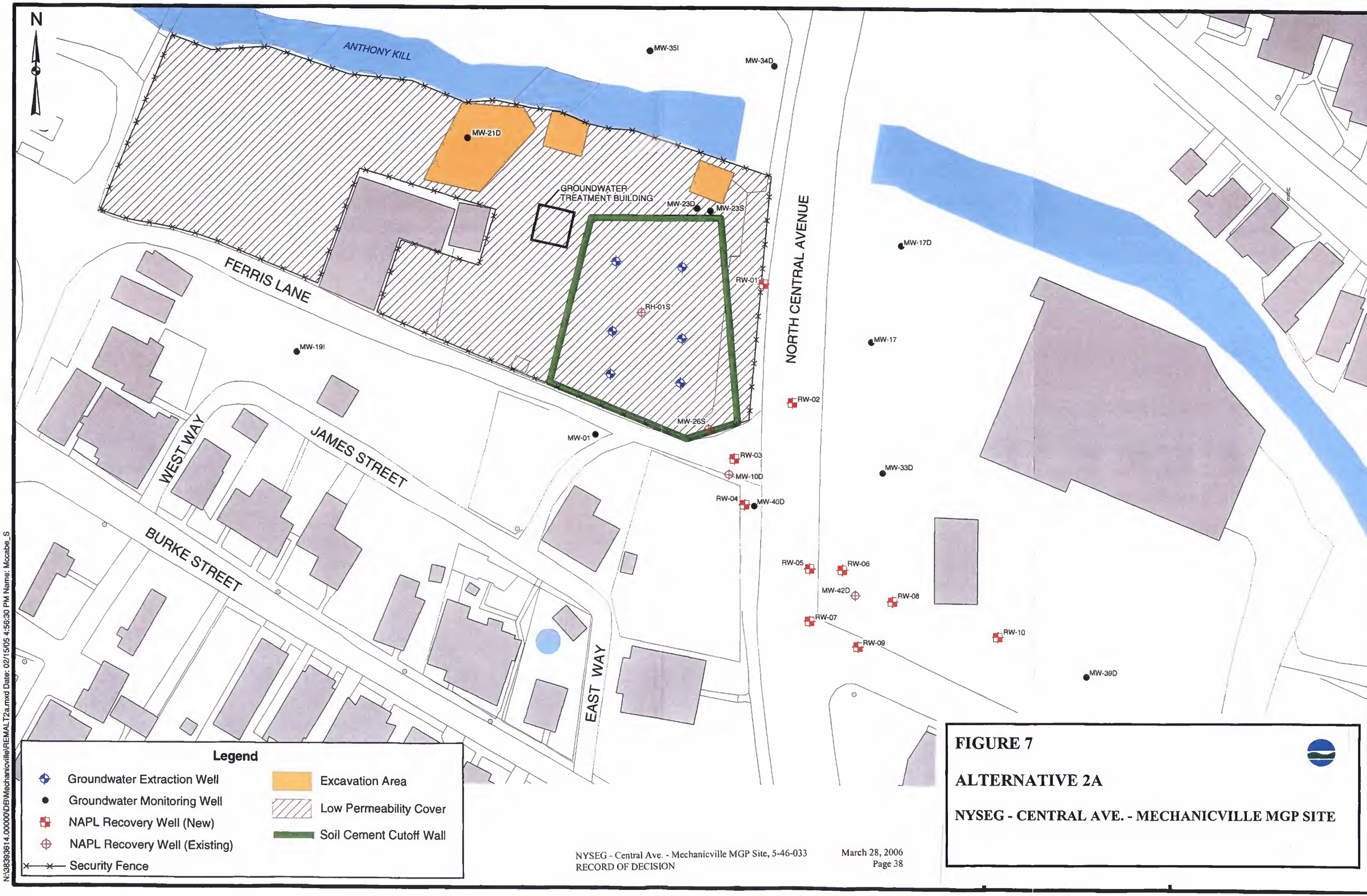
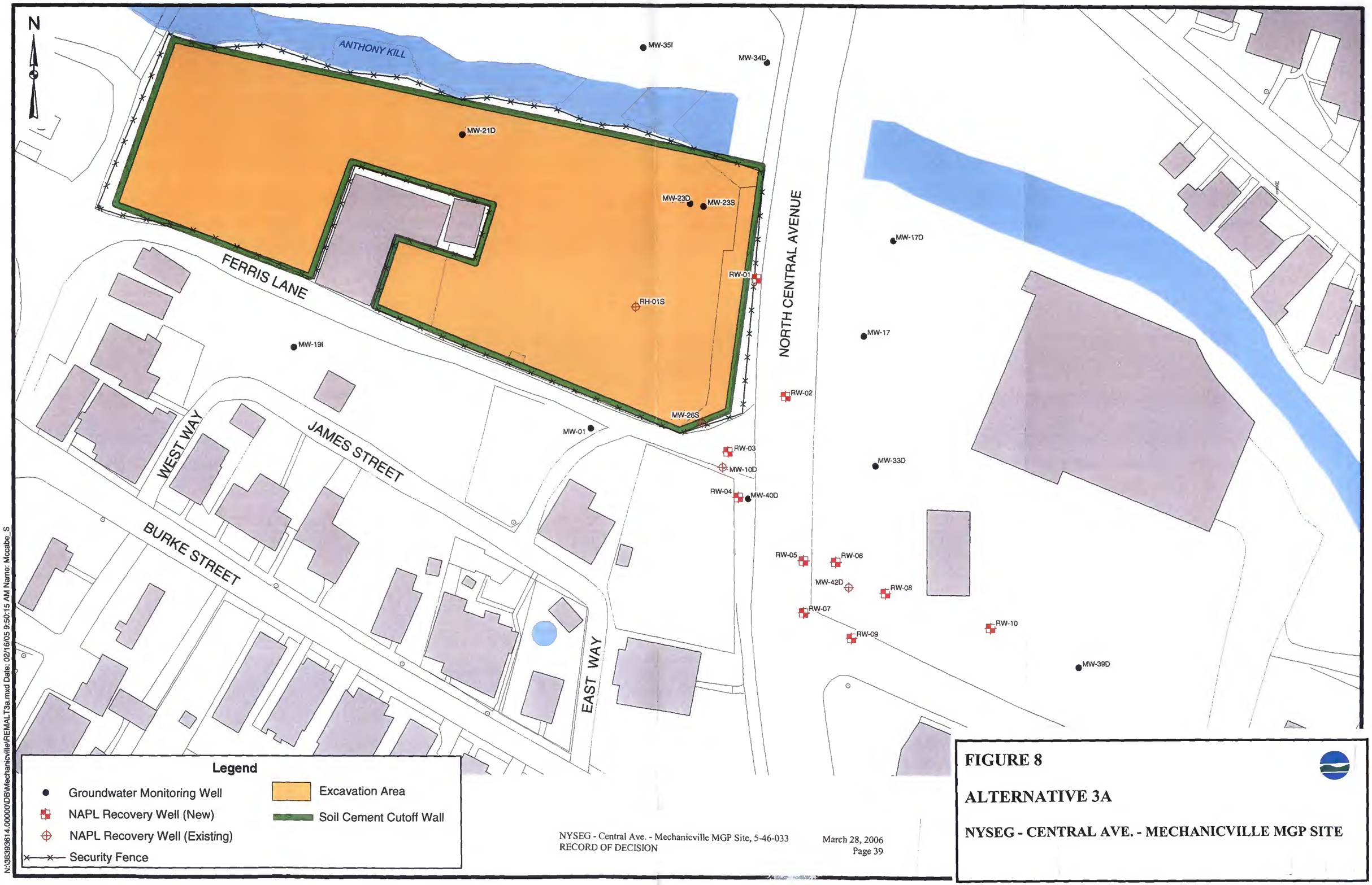


FIGURE 7

ALTERNATIVE 2A

NYSEG - CENTRAL AVE. - MECHANICVILLE MGP SITE

N:\3839614.00000\DB\Mechanicville\REMALT2a.mxd Date: 02/15/05 4:56:30 PM Name: Mccabe_S

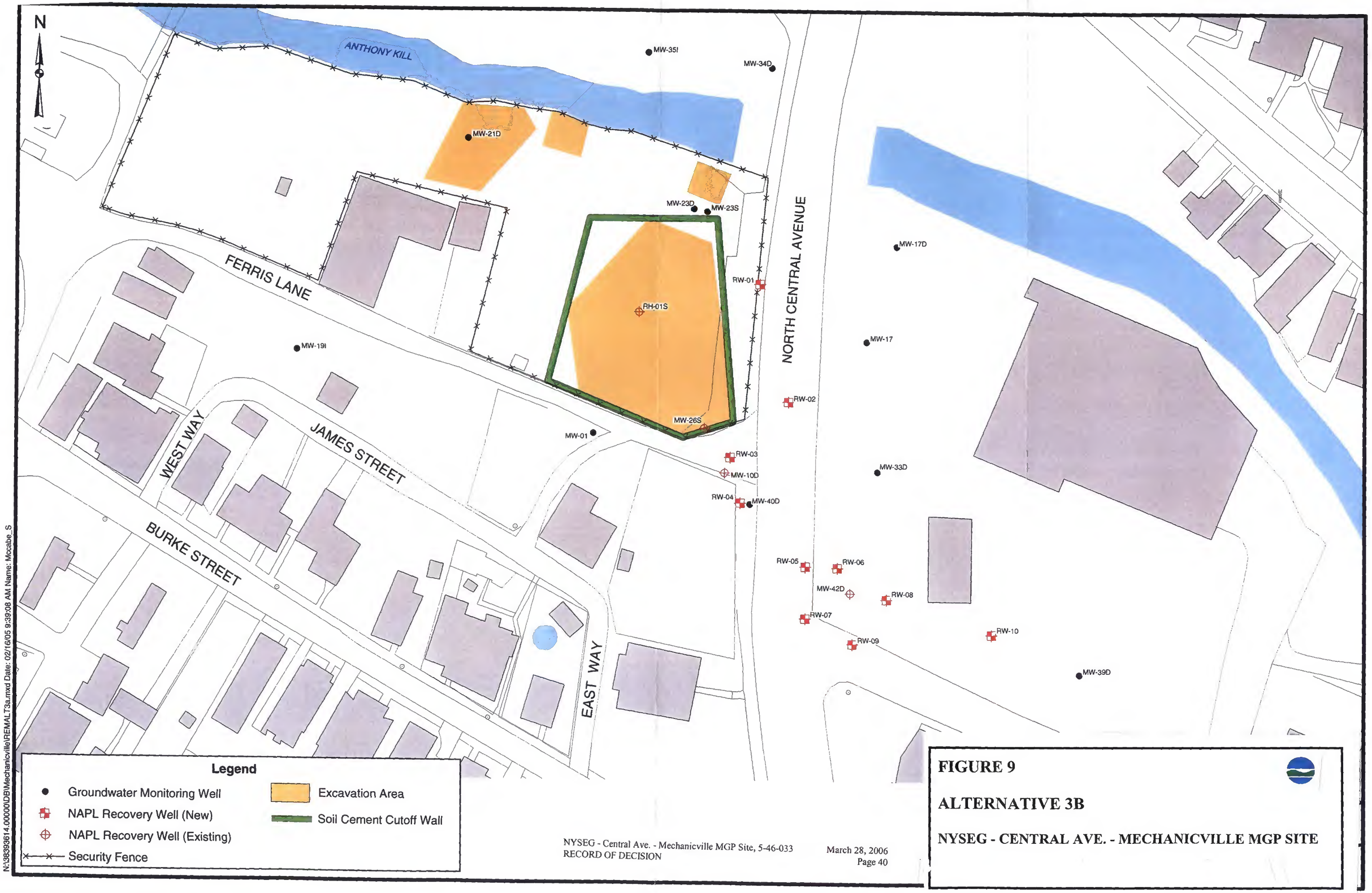


N:\3839614.00000\DB\Mechanicville\REMALT3a.mxd Date: 02/16/05 9:50:15 AM Name: Mccabe_S

FIGURE 8

ALTERNATIVE 3A

NYSEG - CENTRAL AVE. - MECHANICVILLE MGP SITE



N:\38393614.00000\DB\Mechanicville\REMALT3a.mxd Date: 02/16/05 9:39:08 AM Name: Mccabe_S

FIGURE 9

ALTERNATIVE 3B

NYSEG - CENTRAL AVE. - MECHANICVILLE MGP SITE

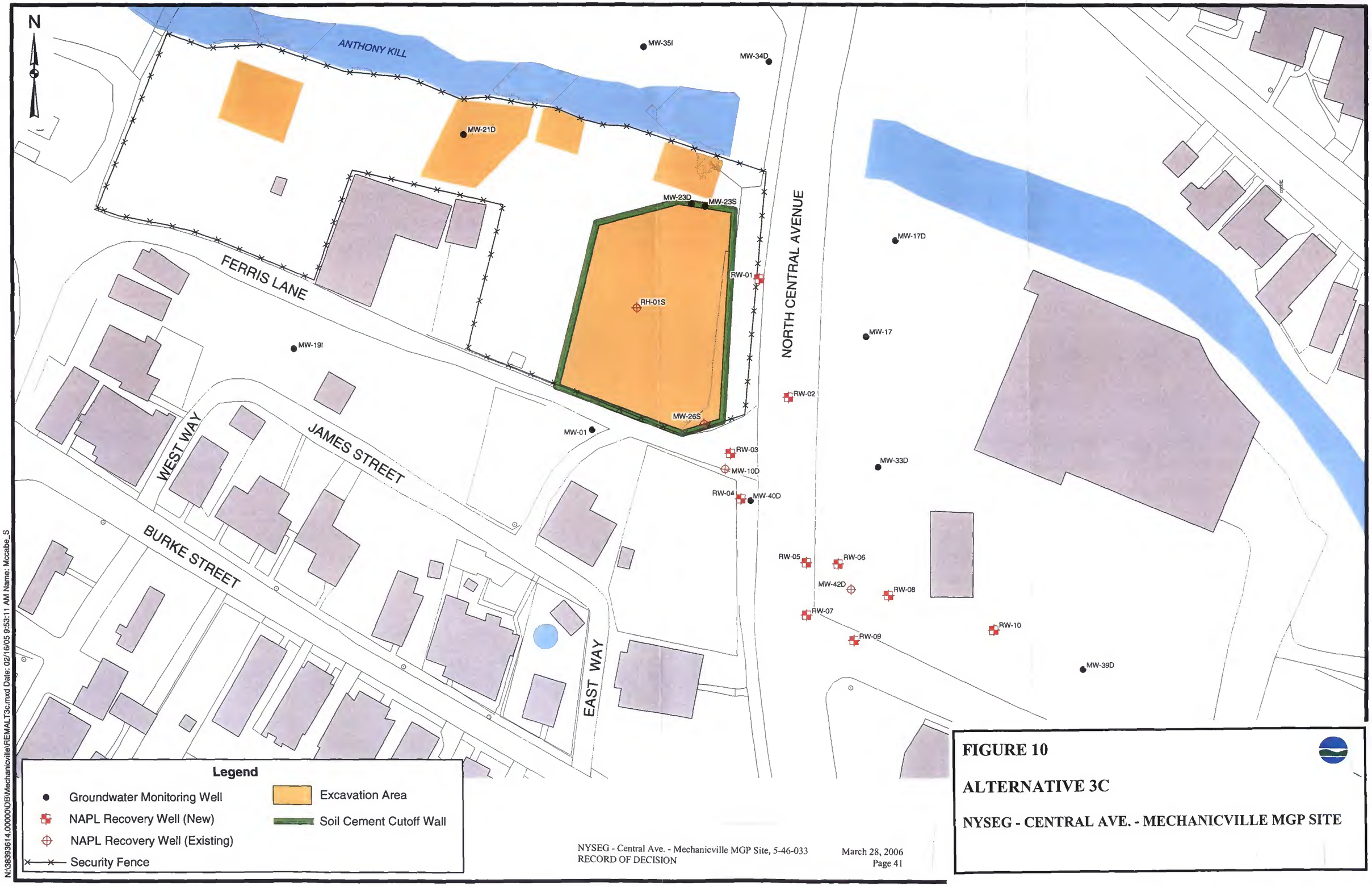


FIGURE 10

ALTERNATIVE 3C

NYSEG - CENTRAL AVE. - MECHANICVILLE MGP SITE

N:\3839361 4.00000\DB\Mechanicville\REMALT3c.mxd Date: 02/16/05 9:53:11 AM Name: Mccabe_S

APPENDIX A

Responsiveness Summary

RESPONSIVENESS SUMMARY

NYSEG - Central Ave. - Mechanicville MGP Site
Mechanicville, Saratoga County, New York
Site No. 5-46-033

The Proposed Remedial Action Plan (PRAP) for the NYSEG - Central Ave. Mechanicville MGP Site, was prepared by the New York State Department of Environmental Conservation (NYSDEC) in consultation with the New York State Department of Health (NYSDOH) and was issued to the document repositories on February 14, 2006. The PRAP outlined the remedial measure proposed for the contaminated soil, bedrock, sediment, groundwater and surface water at the NYSEG - Central Ave. Mechanicville MGP 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 February 27, 2006, 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 March 20, 2006.

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

The following comments were received during the public meeting:

COMMENT 1: Who retained URS as the consultants?

RESPONSE 1: NYSEG retained URS Corporation.

COMMENT 2: Were other properties surrounding the site tested, and if so did you find contamination?

RESPONSE 2: Samples were collected and analyzed from selected properties proximate to the site. Contamination was found on certain off-site properties. Please refer to Section 5.1.3 and the figures for identifying impacted locations.

COMMENT 3: Do you know how far down the coal tar extends, and are you planning on digging it all up?

RESPONSE 3: The NYSDEC believes that the coal tar observed in a bedrock fracture 148 feet below the ground surface in MW-42D likely represents the furthest vertical advancement of the coal tar. As explained in Section 8, removal of the bedrock was not selected as a remedy.

COMMENT 4: Have you delineated the extent of contamination around the test borings?

RESPONSE 4: The remedial investigations used a step-out procedure which incorporated additional borings at locations where contamination was found. The additional borings are used to find the limits of that contamination. While it is possible narrow bands of MGP-impacted material may exist undetected between the borings, the NYSDEC believes that the borings and other remedial investigation field work have sufficiently delineated the bounds of the contamination.

COMMENT 5: Can you explain how the coal tar moves south?

RESPONSE 5: Coal tar, which typically has a specific gravity greater than water, will "sink", migrating downwards through breaks in the rock regardless of the groundwater flow direction. The coal tar will continue to sink until it reaches the surface of a less fractured bedrock and then migrate to the side with the slope of the less permeable rock. Major faults lie under the site which give rise to certain zones of rock having more extensive breaks, creating preferential zones for coal tar movement.

COMMENT 6: Did you do test borings to determine the southern extent of contamination?

RESPONSE 6: Yes, as shown on Figure 4, borings were drilled south of the site to determine the southern extent of contamination.

COMMENT 7: Would vibrations from the construction equipment move NAPL at the site?

RESPONSE 7: It is not known whether vibrations from construction equipment will cause NAPL to migrate faster or farther than current conditions. However, the construction equipment will be operating on the soil that is present above the bedrock. NAPL at the site that will remain at the site following implementation of the remedy is located within the bedrock. Vibrations in the rock are not expected to be severe as they will be dampened by both soil and distance.

As described in Section 5.1.3, NAPL was observed discharging into the Anthony Kill during certain drilling times at certain drilling locations. Since it is known that drilling may stimulate the discharge of NAPL, different drilling techniques will be reviewed to minimize the potential for discharge. In addition, preventive measures, such as sorbent booms and sandbagging, will be undertaken during the drilling to prevent any NAPL that is released from moving downstream.

Also, existing recovery wells will be in use when construction equipment is used and drilling operations are conducted.

COMMENT 8: Would vibrations from the construction equipment affect housing?

RESPONSE 8: Vibrations from remedial construction are not expected to affect housing or other structures. Much of the heavy equipment to be used will be limited to the site itself. Large equipment is expected to consist of excavators, dump trailers and possibly a crane. Similar equipment travels by the site daily, considering the adjacent fuel oil distributer and an average 14,000 vehicles per day on North Central Avenue. Also, the NYSDEC is not aware of any houses being affected from the IRM work.

COMMENT 9: What if you find any artifacts during the excavation? This site was used by other entities well before the gas plant.

RESPONSE 9: The bulk of the removal will be in the area of the holder where previous excavation and backfill took place in 2000. As this area was already disturbed, artifacts are not expected and thus not anticipated to be an issue.

COMMENT 10: If this remedy were accepted, how usable would the land be post remediation?

RESPONSE 10: The actual use of the site is a local zoning issue. However, this remedy will allow commercial or industrial uses to occur at the site.

COMMENT 11: Would slab-on-grade commercial buildings be acceptable?

RESPONSE 11 : Yes.

COMMENT 12: The site is located on a major route in town, what type of proposals can be made to beautify the site once remediation is complete?

RESPONSE 12: The Record of Decision establishes a level of clean-up required in order to comply with Environmental Conservation Law and be protective of public health and the environment. Aesthetic actions however, while encouraged by the NYSDEC, are not a requirement of the ROD.

COMMENT 13: How long will it take to complete construction, and what will it look like during construction?

RESPONSE 13: The NYSDEC anticipates the construction would take approximately nine to twelve months. The most visible components of the construction will be the establishment of a subsurface wall to reduce infiltration and the subsequent soil removal and backfill. Larger equipment will likely include dump trucks and excavators, perhaps comparable to a highway project. Additionally, the installation of NAPL recovery wells will likely include a drill rig.

COMMENT 14: Will construction occur during business hours and will there be noise limits during construction?

RESPONSE 14 : Construction is expected to occur during daylight hours, with latitude given to the contractor's schedule. The noise is anticipated to be typical for a construction project. No site-specific noise limits will be set.

COMMENT 15: Will it [construction] comply with OSHA?

RESPONSE 15: Yes.

COMMENT 16: The use of PPE during construction - white gowns, respirators - may intimidate the public perception. Will the construction be protective of nearby receptors?

RESPONSE 16: The use of personal protective equipment, PPE, is dictated by the conditions at the point of work. Chemically resistant coveralls and respirators may be required at certain times at a specific work location within the site. It is the NYSDEC's experience that coveralls and respirators are generally not required for typical former manufactured gas plant remedial work activities.

The remedial construction will be protective of public health and environmental receptors. The construction must be done in accordance with written plans which have been reviewed and approved by the NYSDEC and the New York State Department of Health (NYSDOH).

Any work activity which disturbs the soil will be conducted in conformance with a site specific Health and Safety Plan and the New York State Department of Health's Community Air Monitoring Plan. Site activities will be continuously monitored and engineering controls, such as a water mist or vapor suppressing foam, will be employed to control any potential emissions. If any activities generate odors or emissions not in compliance with these plans the activities will be corrected or stopped. Erosion and sedimentation controls will be in place prior to any intrusive work to prevent off-site movement of contaminated soil and surface water.

COMMENT 17: Who will pay to monitor the effectiveness of the remedy at the site?

RESPONSE 17: NYSEG will fund the clean-up of the site include long-term monitoring and other controls, with oversight by the NYSDEC.

COMMENT 18: Is there a plan to place a recovery well near the Getty Station - the southern limit of contamination?

RESPONSE 18: NAPL is being recovered currently from existing monitoring well MW-42D on the Getty Station property. The NYSDEC therefore considers this area to be a good candidate for recovery well(s) as shown on Figure 10. A plan will be developed following the ROD which will more closely examine where to place recovery wells.

COMMENT 19: What will the recovery wells placed on the DiSiena property do to the property value?

RESPONSE 19: There are currently no plans to place recovery wells on this property. The effect, if any, of recovery wells on any property value would require further information and assessment beyond the scope of the remedial decision presented in this ROD. Note, recovery wells are inconspicuously installed flush to the ground surface.

COMMENT 20: Will airborne contaminants be released to the community during excavation, and will it impact people on the street?

RESPONSE 20: The air will be monitored continuously both at the location of the work within the site and along the perimeter of the site to make sure that air levels are protective of public health. If airborne contaminants exceed a conservative threshold set by the NYSDOH, then steps will be taken to reduce the emissions or stop the excavation. See also RESPONSE 16.

COMMENT 21: When will construction begin at the site?

RESPONSE 21: Remedial construction is planned for 2008.

COMMENT 22: Is there a NYSEG site currently under construction?

RESPONSE 22: Not at the time of this public comment period. However, construction is expected later in 2006 at a former MGP site in Binghamton.

COMMENT 23: Has contamination been found on the DeSiena property?

RESPONSE 23: Certain borings found NAPL in the bedrock on the DeSiena property.

COMMENT 24: Land use after the remedy?

RESPONSE 24: NYSEG has stated it has no plans to change the site's current use. See also RESPONSE 10.

COMMENT 25: A landowner wants to build stores along Ferris Lane and some wells are there - can this area be developed?

RESPONSE 25: Monitoring and recovery wells can be relocated to accommodate construction. The selected remedy does not affect construction beyond the site.

COMMENT 26: How many sites has NYSEG cleaned up?

RESPONSE 26: NYSEG has completed remediation at three sites as of March 2006 with 16 sites active in remedial investigation or construction.

New York State Electric and Gas Corporation submitted the following comments by letter dated March 10, 2006:

COMMENT 27: Page 22, item 2 [of PRAP]: The last sentence of this item states that the top 12 inches of back fill must satisfy TAGM 4046 recommended soil cleanup criteria. NYSEG objects to this requirement because it is overly burdensome for the following reason:

> NYSEG commits to using back fill material obtained from a local DOT approved source which therefore should not require chemical testing. It should be noted that material from

such sources is often commercially available to the general public for use on lawns, gardens or playgrounds and is unregulated with regard to those uses.

RESPONSE 27: NYSDEC believes it is reasonable to require sufficient analysis of the backfill material to support the ROD's requirement of imported material satisfying TAGM 4046 recommended soil cleanup objectives. Chemical analysis of backfill, for remediation purposes, to support satisfying the TAGM for individual compounds was required at a number of former MGP sites having undergone remediation or interim remediation, including Amsterdam, Troy (Water Street), Saratoga Springs, Utica (New York Tar Emulsion Products), Oneida (Cedar Street) and Ithaca. In addition, chemical analysis of backfill for remediation purposes to support imported material satisfying the TAGM for individual compounds will be required at Glens Falls, Plattsburgh (Saranac Street), and Utica (Harbor Point). A borrow source of native material will likely satisfy TAGM requirements; however, this must be confirmed through analysis for certification of the remedy.

COMMENT 28: Page 23, item 6(a) [of PRAP]: States that the use of the site would be limited to "restricted-commercial use". NYSEG believes that industrial use of the site would also be appropriate and requests that any language in the Record of Decision specifically state that commercial or industrial uses are acceptable.

RESPONSE 28: See RESPONSE 10.

A letter dated March 20, 2006 was received by Eric M. Holt, P.E., with the following two comments:

COMMENT 29: I have reviewed the NYSEG Final Feasibility Study dated December 2005 and supporting investigations that document measurable levels of NAPL and coal tar on Bull's property. According to the Feasibility Study, based on low contaminant levels, there is no remediation plans recommended by NYSEG or based on conversations with you on this topic, no plans required by NYSDEC for remediation.

Monitoring wells MW-351 and MW-34D contain compounds that would preclude the extraction of groundwater for any use, which in itself, impedes full use of the parcel by Mr. Bull.

Section 4.1.1 Monitoring states that "Naturally-occurring biodegradation processes would continue to degrade the contaminants present at the site into non-toxic compounds". While degradation may occur with the NAPL's, little to no degradation is likely with coal tar embedded in the bedrock. Even if biodegradation were to take place under ideal conditions, full use of the property would not be available in the foreseeable future. Due to contaminants embedded in the bedrock along the fracture line, these levels may increase in time possibly further restricting use of the parcel.

As an alternative means of remediation, Section 4.1.2 "Deed Restrictions" states "Deed restrictions would preclude the use of the site for inappropriate future development or extraction of groundwater for use both from an on site and any other affected off-site properties. In the absence of remediation more stringent deed restrictions would have to be implemented".

Since contaminant levels are low, you have indicated to me that the NYSDEC does not propose a deed restriction on the Bull parcel. The items discussed in the study imply that since contaminations are at low levels, use of the Bull parcel will be available as if it weren't contaminated, except of course use of the groundwater.

RESPONSE 29: The selected remedy is the result of a deliberate process that took into account all MGP contamination, both on-site and off-site including the Bull parcel. The goal of New York's Inactive Hazardous Waste Site Disposal Program for a specific site is to restore that site to pre-disposal conditions, to the extent feasible and authorized by law. The remedy selection process in regulation requires the remedy to be, among other criteria, feasible and cost-effective. The selected remedy is protective of public health and the environment. In this instance, the presence of NAPL in the bedrock starting at a depth of approximately 13 feet and extending to a depth of approximately 38 feet below the ground surface precludes a cost effective remedy enabling use of the parcel's groundwater. Note, the contamination, because of its depth below the ground surface when first encountered, does not impede full use of the parcel.

There is no potential for exposure within the overburden soils to contaminants of MGP origin, both at the surface and to a depth with which reasonable excavation could be expected. Also, the Area is supplied with municipal water.

COMMENT 30: While the ability to develop or build on site may exist, there is no indication as to the diminished value of the parcel due to the fact that banks or other lenders are very reluctant to loan funds for either owner improvements of the site or in issuing funds to a potential purchaser. NYSEG should be required to perform a property appraisal of the affected lands and reimburse the landowner based on the diminished value.

RESPONSE 30: The requested relief is beyond the jurisdiction of the NYSDEC.

The NYSDEC received an e-letter from Paul Loatman, City Historian, on March 21, 2006, with the following comments:

COMMENT 31: Pp.1-5,1-6:Presumed PCBs were removed in 1984, "but the soil was not tested for contamination." Similarly, same action repeated in 1991, with removed material sent to Utah. Is there a presumption that all PCBs have been removed from the site and that there is no need to test anywhere on-site or in adjacent areas for such materials?

RESPONSE 31: The investigation involved an analysis for PCBs; subsequently, the NYSDEC determined that PCBs were not a contaminant of concern at the site.

COMMENT 32: P.1-11 "Localized groundwater mounding may be occurring at ... former gasholders." Is this a typical pattern that will persist over time? If so, how long?

RESPONSE 32: Groundwater mounding is not expected at the site. However, should mounding occur, it will not affect the implementation of the remedy.

COMMENT 33: "Visual inspections" of Anthony Kill are alluded to throughout the Report. With what regularity will they continue? Conducted by whom? Criteria applied?

RESPONSE 33: The ROD calls for the Site Management Plan to include a monitoring plan to monitor sediment deposition in the Anthony Kill. The monitoring plan will be submitted to the NYSDEC for approval following the issuance of the ROD and will detail the frequency of monitoring and reporting requirements. NYSEG will implement the Site Management Plan with NYSDEC oversight.

COMMENT 34: "Automated NAPL specimen system" will be employed on the site. Briefly-how does such system work? When will additional sampling of creek take place? How will results be reported to public? By whom?

RESPONSE 34: The ROD provides for a NAPL recovery system. Such systems consist of wells, sometimes set at an angle (not plumb), with sumps. NAPL in the vicinity of the well becomes captured in the sump where it is periodically withdrawn. See RESPONSE 33 regarding creek sampling. All final results are made available by NYSDEC upon request.

COMMENT 35: P.1-17-While wind is described as a pathway of exposure of contamination to the Anthony Kill, it appears to be dismissed similarly as a pathway of contamination to above-ground area across street at Central Avenue. Is this consistent with testing parameters?

RESPONSE 35: Wind has not been identified as a pathway of exposure, since the contamination is limited to the subsurface. Wind could become a concern, however, if the subsurface soils are disturbed (e.g. during excavation). The SMP will include continuous monitoring of the air when the subsurface soils are disturbed. Monitoring will continue until the NYSDEC determines that the contaminants and particulates (dust) no longer have the potential to be in the air at unacceptable levels. This is usually once the site has been backfilled or covered with clean soil or asphalt.

COMMENT 36: Is any air quality testing on site and at adjacent areas to be conducted as part of remediation on regularly scheduled basis, before, during, and after remediation?

RESPONSE 36: See RESPONSE 35 and RESPONSE 20.

COMMENT 37: Has all possibility of migration of coal tar south of Mabbett St. been ruled out entirely?

RESPONSE 37: Please see RESPONSE 4

COMMENT 38: Clarify and expand on environmental easements and deed restrictions that are anticipated to be applied at different stages of remediation, and upon its completion, both as to site itself and the adjacent areas.

RESPONSE 38: Since 2003, the NYSDEC has employed environmental easements as the institutional control to restrict uses of the site. Such easement applies only to the site. The easement must be approved by NYSDEC prior to approval of the final engineering report.

APPENDIX B

Administrative Record

ADMINISTRATIVE RECORD

NYSEG - Central Ave. - Mechanicville MGP
Mechanicville, Saratoga County, New York
Site No. 5-46-033

1. Investigation of the Former Coal Gasification Site at Mechanicville, New York, Task 1 Report Preliminary Site Evaluation, E.C. Jordan Co., August 1986

2. NYSDEC Spill Report Form, Spill Number 8603241, Spill Date 08/13/1986

3. Investigation of the Former Coal Gasification Site at Mechanicville, New York, Task 2 Report Initial Field Investigation Program, E.C. Jordan Co., December 1987

4. NYSDEC Spill Report Form, Spill Number 8805979, Spill Date 01/01/1988

5. Letter, Robert Marino, NYSDEC to NYSEG, August 9, 1989

6. Investigation of the Former Coal Gasification Site at Mechanicville, New York, Task 3 Report, E.C. Jordan Co., September 1989

7. Letter, Thomas O'Meara, NYSEG to Daniel Steenberge, NYSDEC, September 26, 1991

8. Order on Consent, Index No. A5-0276-91-10, between NYSDEC and New York State Electric and Gas Corporation, executed on February 23, 1993

9. Phase IIA Supplemental Remedial Investigation and Feasibility Study Report, Former Coal Gasification Site, Mechanicville, ABB Environmental Services, Inc., December 1993

10. Order on Consent, Index No. D0-0002-9309 between NYSDEC and New York State Electric and Gas Corporation, executed on March 30, 1994

11. Final Engineering Report for (Interim Remedial Measure) Activities at Mechanicville Central Avenue Former Manufactured Gas Plant, NYSEG, October 2000

12. DVDfile, Anthony Kill, 3/20/2002

13. Supplemental Remedial Investigation Report, New York State Electric and Gas Corporation, Mechanicville Central Avenue Former Manufactured Gas Plant, URS Corporation, September 2004

14. Memorandum, Eric Lovenduski, URS Corporation to Blazicek - NYSEG, Gutmann - URS, Spellman - NYSDEC, September 29, 2005

15. Final Feasibility Study, New York State Electric and Gas Corporation, Mechanicville Central Avenue Former Manufactured Gas Plant, URS Corporation, December 2005.

16. Letter, Steven Bates NYSDOH, to Dale Desnoyers, NYSDEC, January 31, 2006

17. Proposed Remedial Action Plan for the NYSEG - Central Ave. - Mechanicville MGP Site, February 2006, prepared by the NYSDEC

18. E-mail, Melissa Menetti, NYSDOH, to John Spellman, February 28, 2006

19. E-mail, Mike Gutmann, URS Corporation, to Melissa Menetti, NYSDOH, March 7, 2006 11:19am

20. Letter, Tracy L. Blazicek, NYSEG to John Spellman, NYSDEC, 10 March 2006

21. Letter, Eric M. Holt, P.E. to John Spellman, NYSDEC, March 20, 2006

22. E-mail, Paul Loatman, City Historian to John Spellman, NYSDEC, 3/21/2006

23. Letter, Steven M. Bates, NYSDOH, to Dale Desnoyers, NYSDEC, March 28, 2006