NYSEG

New York State Electric & Gas Corporation

Mechanicville Central Avenue
Former Manufactured Gas Plant
Mechanicville, New York

FINAL FEASIBILITY STUDY

DECEMBER 2005



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FEASIBILITY STUDY REPORT

NYSEG MECHANICVILLE CENTRAL AVENUE

FORMER MGP

MECHANICVILLE, NEW YORK

Prepared for:

NYSEG

(NEW YORK STATE ELECTRIC AND GAS)

Prepared by:

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77 GOODELL STREET

BUFFALO, NEW YORK

DECEMBER 2005

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LIST OF ACRONYMS AND ABBREVIATIONS

ARAR	applicable or relevant and appropriate requirement
ASP	Analytical Services Protocol
avg.	average
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and total xylenes
C&D	construction and demolition
COPC	contaminants of potential concern
cPAH	carcinogenic polycyclic aromatic hydrocarbon
cy	cubic yard
DAR	Division of Air Resources
DER	Division of Environmental Remediation
DFW	Division of Fish and Wildlife
DNAPL	dense non-aqueous phase liquid
DOW	Division of Water
DSHM	Division of Solid and Hazardous Materials
EP	Extraction Procedure
FS	Feasibility Study
ft^3	cubic feet
FWIA	Fish and Wildlife Impact Analysis for Hazardous Waste Sites
GHF	gas relief holder foundation
gpm	gallons per minute
HASP	health and safety plan
HDPE	high density polyethylene
HWR	Hazardous Waste Remediation
IRM	interim remedial measure
kg	kilogram
L/day	liters/day
LNAPL	light non-aqueous phase liquid
MDL	minimum detection limit
mg/kg	milligrams per kilogram

LIST OF ACRONYMS AND ABBREVIATIONS (continued)

mg_{oc}/kg	milligrams of organic carbon per kilogram
mg/L	milligrams per liter
MGP	manufactured gas plant
MNR	monitored natural recovery
msl	mean sea level
MW	monitoring well
NA	not applicable
NAPL	non-aqueous phase liquid
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
ND	not detected
NPDES	National Pollution Discharge Elimination System
NYCRR	New York State Codes, Rules, and Regulations
NYSDEC	New York State Department of Environmental Conservation
NYSEG	New York State Electric and Gas Corporation
O&M	operation and maintenance
OSHA	Occupational Safety and Health Administration
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PESH	New York State Department of Labor's Public Employee Safety and Health
POTW	publicly owned treatment works
ppb	parts per billion
ppm	parts per million
PRAP	proposed remedial action plan
PVC	polyvinyl chloride
RAO	remedial action objective
RCRA	Resource Conservation and Recovery Act
RSCO	recommended soil cleanup objective
SB	soil boring
SCGs	standards, criteria, and guidance values
SPDES	State Pollution Discharge Elimination System

LIST OF ACRONYMS AND ABBREVIATIONS (continued)

SRI	Supplemental Remedial Investigation
SVE	soil vapor extraction
SVOC	semi-volatile organic compound
SWMU	Solid Waste Management Unit
TAGM	technical and administrative guidance memorandum
TMV	toxicity, mobility or volume
TOC	total organic carbon
TOGS	Technical and Operational Guidance Series
TPAH	total polycyclic aromatic hydrocarbon
USEPA	United Stated Environmental Protection Agency
UST	underground storage tank
VOC	volatile organic compound

1.0 INTRODUCTION

1.1 General

This Feasibility Study (FS) report was prepared for the New York State Electric and Gas Corporation (NYSEG) former manufactured gas plant (MGP) site in Mechanicville, New York. The report presents an evaluation of technologies and alternatives for site remediation. The FS was completed under NYSEG's Order on Consent (#A5-0276-91-10) with the New York State Department of Environmental Conservation (NYSDEC).

The FS was prepared by URS Corporation and is based on information and data presented in the following reports:

- Supplemental Remedial Investigation (SRI), NYSEG Mechanicville Former MGP Site, Mechanicville, New York, prepared by URS Corporation for NYSEG, September 2004.
- Phase IIA Supplemental Remedial Investigation and Feasibility Study Report, prepared by ABB Environmental Services, December 1993.
- Investigation of the Former Coal Gasification Site at Mechanicville, New York; Phase II Remedial Investigation Report and Work Plan for Phase IIA Supplemental Remedial Investigation and Feasibility Study, prepared by ABB Environmental Services, June 1992.
- Fish and Wildlife Impact Analysis, Former Manufactured Gas Plant Site, Mechanicville, New York, prepared by EcoLogic, LLC, October 2002.
- Interim Remedial Measures Final Engineering Report for Activities at Mechanicville Central Avenue Former Manufactured Gas Plant (MGP) Site, City of Mechanicville, Saratoga County, New York, prepared by NYSEG, October 2000.

1.2 Site Description

The site is located in the City of Mechanicville, Saratoga County, New York (Figure 1-1). The approximately 1.8-acre parcel is currently unoccupied. The site is bordered on the north by the southern bank of the Anthony Kill; on the east by North Central Avenue (formerly the Champlain Canal); on the south by Ferris Lane; and on the west by abandoned railroad property.

As shown on Figure 1-2, structures that were associated with coal gasification were concentrated on the eastern part of the site. The eastern and western parts of the site have been annotated in Figure 1-3 as the "Former MGP Site" and the "Remaining NYSEG Property," respectively. The northern portion of the site was acquired by NYSEG in 1952, and the southern portion (south of the former railroad spur) was acquired in 1987. NYSEG did not own the "Remaining NYSEG Property" portion of the site during the operations of the MGP, which closed in 1955.

The nearest surface water body, the Anthony Kill, is a small tributary that flows eastward into the Hudson River. The site is approximately ¼ mile upstream from the Hudson River. The site lies in a glacial outwash plain, and is approximately 95 feet above mean sea level (msl). The topography of the area is characterized by the Hudson River and its tributaries, which lie in pre- and post-glacial valleys carved into the bedrock. The elevation of topographic terraces to the north and south of Mechanicville is over 300 feet above msl.

The Champlain Canal once bordered the site to the east along what is now North Central Avenue. Completed in 1823, this former canal connected the Hudson River at Waterford (south of Mechanicville) to Lake Champlain. Like the present roadway, the canal which was elevated and the water surface was approximately ten feet above the gas plant. The canal, which was approximately 12 feet deep and 30 feet wide, was abandoned in 1916 when the Barge Canal opened. The Champlain Canal became a receptacle for garbage and debris before it was completely filled with soil by the City of Mechanicville in 1917. Later, the canal was demolished, the garbage and debris were removed, and the roadbed for Central Avenue was prepared by New York State.

1.3 Site History

The site housed a coal gasification plant near the intersection of North Central Avenue and Ferris Lane. The plant was operated by NYSEG and its predecessor companies from 1901 until 1955, at which time coal gas production ended because of the availability of natural gas. At the Mechanicville plant, the gas reportedly flowed from the gas house to the purifier house; it then went to the 40,000 cubic foot (ft^3) gas relief holder and from there to the 100,000 ft^3 distribution gas holder. All piping was reportedly underground. The distribution gas holder was constructed above grade and contained cooled gas. Therefore, significant residual tar condensation was not likely to be associated with cooled gas storage in the distribution gas holder. However, coal tar would settle out of the purified gas in the relief holder and mix with water in the bottom of the holder. This coal tar and water mixture was reportedly periodically pumped into a truck and hauled off site. Based on information gathered during the recent interim remedial measure (IRM) completed at the site, the bedrock was partially exposed at the bottom of the gas relief holder. Some of the coal tar, which settled out of the tar/water mixture, appears to have entered the bedrock through the bottom of the gas relief holder.

Wood chips, which were treated with iron oxide, were used to remove hydrogen sulfide from the gas in the purifier house. As the iron oxide absorbed the sulfur from the hydrogen sulfide gas and formed iron sulfides, the wood chips became inactive and required regeneration. This was accomplished by exposing the spent wood chips to air. The oxygen in the air converted the sulfide to free sulfur and restored the iron to active iron oxide. The iron also reacted with cyanide to produce ferrocyanides (iron cyanides), which could not be regenerated and did not react with hydrogen sulfide. Eventually, as free sulfur accumulated to about 50 percent of the mass and much of the iron was tied up in the ferrocyanides, the spent wood chips were replaced by fresh ones.

By-products of the coal gasification process included coal ash, condensate material from the gas house, spent wood chips, coal tar, and oil sludge. No information was found concerning the methods employed to handle these materials in the early days of gas production at Mechanicville. However, it was common practice to dispose of ashes and spent oxide material on

site. Also, the tars produced in gas plants were an important raw material for the flourishing tar distillation industry in the early 1900s. During the latter days of gas production at the site, the ash and clinkers were reportedly picked up by anyone who had a use for them. In addition, spent wood chips were reportedly incinerated by the City of Mechanicville from 1951 to 1955; piled along the road until someone came and hauled them away; or spread on the lot just west of the active plant. Most of the plant's aboveground structures (located on Figure 1-2) were demolished and removed at the time of closure, including the coal storage shed, gas house, purifier and oxide houses, gas holders, oil tanks, and tar dehydrator.

The Mechanicville site and the neighboring properties as they appear today are shown in Figure 1-3. The neighborhood around the site is mixed commercial/industrial and residential. Across North Central Avenue to the southeast is a Getty service/gasoline station. After closure of the Mechanicville gas plant in 1955, NYSEG converted the site to a natural gas and electric service center. A natural gas regulator house was constructed over a portion of the former distribution gas holder foundation. The former boiler room/substation building was converted to offices, a garage, and a supply storage/maintenance shop, and subsequently razed in the early 1990s. The only structures that currently remain within the former MGP portion of the property are the storage and tool house building (former office) and the gas regulator building. Currently, NYSEG leases the area west of the former MGP site, which includes a mechanics shop and repair building, to G.A. Bove and Sons, a fuel distributor.

1.4 Summary of Previous Removal and Spill Response Actions

Over the history of the site, a number of removals and spill response actions have been undertaken and are discussed in detail in the SRI report (URS Corp., September 2004) and the Interim Remedial Measures Final Engineering Report (NYSEG, October 2000). In summary, these removals have included the following:

- Absorbent pads and an oil boom in Anthony Kill. In August 1986, in response to the report of an oily discharge associated with nearby construction that disturbed sediments in the Anthony Kill near the Central Avenue Bridge, NYSDEC installed

absorbent pads and an oil boom. NYSDEC's sampling during the response action found fuel oil in the sediments on the northern bank of the Anthony Kill and low levels (10 parts per million [ppm]) of polycyclic aromatic hydrocarbons (PAHs) on the southern bank, adjacent to the site. NYSDEC assigned the event spill #86-3241.

- Oil boom in Anthony Kill. In September 1986, in response to the report of an oily sheen, NYSDEC again installed an oil boom across from the site. The oily sheen was determined to be not related to the site. A surface water sample taken 200 feet upstream from the sheen contained 11 milligrams per liter (mg/L) of oil. A similar event occurred in December 1986.

- Absorbent pads and an oil boom in Anthony Kill. In September 1988, during construction activities related to Central Avenue Bridge repairs, an organic sheen was observed on sediments of the Anthony Kill. NYSEG installed an oil boom and absorbent pads. Construction–related debris and sediments were stockpiled on the property to the north of Anthony Kill, and then transported to the site. In June 1989, 22 tons of coal tar-contaminated material (United States Environmental Protection Agency [USEPA] hazardous waste number D003), was disposed of off site. In August 1989, NYSEG disposed of an additional 22 tons.

- A 3,000-gallon underground storage tank (UST) containing unleaded gasoline. This tank near the southeast corner of the former office was removed in July 1991 in accordance with New York State underground storage tank regulations under supervision of the NYSDEC. According to the NYSEG's *UST Closure and Removal* record sheet, there was no evidence of a release of product into the excavation.

- A 3,000-gallon UST containing diesel fuel. In March 1991, the contents of the tank were removed, the tank was filled with sand, and the tank was closed under the supervision of the NYSDEC. According to NYSEG's *UST Closure and Removal* record sheet, based on a test trench dug along the east side of the tank, there was no evidence of release of product from the tank.

- Approximately eight to twelve inches of oil-stained soil near the banks of Anthony Kill beneath a transformer storage area. In August 1984, twelve drums of excavated

soil were removed by NYSEG and drummed prior to transportation to an approved disposal facility in Ohio. The soil was not tested for contamination prior to disposal, but was assumed to contain polychlorinated biphenyls (PCBs).

- An area of potentially oil-contaminated soil approximately 12 feet by 24 feet to a depth of about two feet proximate to where transformers were stored. In October 1991, 29 tons of excavated soil were disposed of at a secure landfill in Utah. One of the five soil samples taken indicated the presence of the PCB Aroclor-1248 at a concentration of 1 milligram per kilogram (mg/kg).

1.5 Interim Remedial Measure

Between October 18, 1999 and April 14, 2000, NYSEG completed an IRM to excavate contaminated soil and remnants of underground former MGP structures at the Mechanicville site. Details of the IRM are provided in NYSEG's *Final Engineering Report*, dated October 2000, and URS Corporation's SRI report. A summary is provided below.

The overall goal of the IRM was to eliminate any source of non-aqueous phase liquid (NAPL) that was accessible by excavation and remove any preferential migration pathways for site contaminants to reach the Anthony Kill. Figure 1-4 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 had circular concrete walls and appeared to have a bedrock and concrete bottom that was shaped like an inverted cone. The diameter was approximately 60 feet. Approximately seven feet of the circular gas relief holder foundation wall below the ground surface was removed during the IRM. Removed portions of the concrete wall were cleaned using a power washer and then placed back inside the excavation. The IRM activities generated approximately 2,625 tons of non-hazardous wastes and 3,920 tons of hazardous waste. Hazardous waste materials were thermally treated, chemically treated as cold batch asphalt, or disposed of off site at a landfill. Non-hazardous materials were thermally treated and returned to the site as backfill to fill in and around the gas relief holder foundation. Imported clean gravel and 4-to-6-inch cobblestones were then used to fill the remaining excavations to bring the site back to grade.

A substantial quantity of water was found to be present in the area of the gas relief holder. During excavation, groundwater was encountered at about 8.5 feet below the ground surface (bgs). NYSEG attempted to dewater the gas relief holder by pumping out 9,100 gallons of water. However, the next day it was discovered that the water level in the gas relief holder had returned to the same elevation as the groundwater outside of the gas relief holder. In total, approximately 68,000 gallons of water removed from the gas relief holder foundation and wastewater from equipment decontamination was transported off site for treatment and/or fuel blending.

Purifier waste was removed from the road embankment along North Central Avenue in two stages from Area 4 shown on Figure 1-4. Initially, purifier waste was removed in accordance with an approved Work Plan. During a following site visit, blue staining, indicative of cyanide-containing purifier waste, was observed at an eroded area on the road embankment next to the former boiler house foundation. This purifier waste was also removed and disposed of off site.

A test trench parallel to the Anthony Kill was excavated to locate and remove piping that was suspected to be a preferential pathway for contaminants. The trench was excavated along the top of the 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. The depth of the horizontal pipe is approximately five feet bgs at the northwest vertical stand pipe and approximately seven feet bgs at the northeast vertical stand pipe.

1.6 Summary of Remedial Investigations Prior to the SRI

This section briefly discusses investigations performed between 1981 and 1993 at the Mechanicville site. A summary of data collected as part of the most recent Remedial Investigation is included in Section 1.9.

In November 1981, NYSEG collected soil samples from the filter beds area and the gas relief holder foundation. Petroleum odors and tar residues were encountered at depths of three to

five feet bgs at both locations. The samples did not exhibit the characteristics of hazardous waste, with the exception of the sample from the filter beds, which had a high level of sulfides (1,300 mg/kg) and failed the reactivity test. A soil sample from the gas relief holder that was analyzed for total phenols using the Extraction Procedure (EP) Toxicity analytical method contained 40 mg/L.

From 1986 through 1993, three investigative phases and one risk assessment phase were completed. Field investigation programs included sampling and analysis of: surface soil, subsurface soil, surface water and seeps in the Anthony Kill, sediment, and groundwater. Details of these investigations are provided in the Appendices of the SRI. A summary is provided below.

- Task 1 – A *Preliminary Site Evaluation* was conducted by E.C. Jordan in 1986 to develop an understanding of the site's history, environmental setting, and current conditions.

- Task 2 – The *Initial Field Investigation Program* was conducted by E.C. Jordan during 1986 and 1987 and resulted in the report entitled *Investigation of the Former Coal Gasification Site at Mechanicville, New York – Task 2 Report.* The report identified the problems at the site, contained a preliminary assessment of potential health and environmental risks, and included an engineering evaluation of remedial alternatives.

- Task 3 –The *Expanded Problem Definition Program* was conducted by E.C. Jordan between 1987 through 1989 and resulted in a report entitled *Investigation of the Former Coal Gasification Site at Mechanicville, New York – Task 3 Report – Expanded Problem Definition Program.* Analytical results from this task were presented in ABB Environmental Service's report entitled *Phase II Remedial Investigation Report*, dated June 1992.

- Task 4 – A risk assessment was performed to identify and assess the potential risk associated with exposure to the chemicals present on site, and evaluate the need for (and develop, if necessary) a conceptual design for a remedial program. The Baseline Risk Assessment was contained within ABB Environmental Service's

Phase IIA Supplemental Remedial Investigation and Feasibility Report, dated December 1993.

Data from the previous investigations indicate that the on-site soils have been impacted by MGP-related contaminants. PAHs, volatile organic compounds (VOCs), phenols, and cyanides were detected near the former MGP area. Although PCBs were detected in surface soils near the former transformer storage areas and filter beds, these areas were addressed during the previous IRM activities.

Surface water quality does not appear to be significantly impacted by MGP-related contaminants as only phenols and iron were detected at concentrations above standards, criteria, and guidance values (SCGs). Therefore, further evaluation of the surface water quality was not conducted during the SRI.

Groundwater at, and downgradient of, the site has been impacted by MGP-related contaminants. The previous groundwater quality data suggest that the concentrations of benzene, toluene, ethylbenzene, and total xylenes (BTEX) and PAHs appear stable. The concentrations of BTEX and PAHs in wells along the eastern and northern perimeters of the former MGP site have either decreased or fluctuated, but remained within the same order of magnitude. These data suggest that natural attenuation of some of the dissolved organics in groundwater may be occurring.

NAPL (both light [LNAPL] and dense [DNAPL]) has been detected in the overburden and bedrock beneath the site. It is believed that the DNAPL originated within the former gas plant area and appears to have entered the bedrock at the bottom of the gas relief holder. The DNAPL appears to have migrated vertically, primarily under the influence of gravity, through the overburden, weathered bedrock, and bedrock fractures/faults. Once in the bedrock, the nature and orientation of fractures primarily control DNAPL migration.

1.7 Geology and Hydrogeology

Overburden material at the site is 4 to 27 feet thick and consists primarily of fill, probably placed to develop the property. The fill material is underlain by a discontinuous layer of native material, which is probably alluvial in nature. The top of bedrock map is shown on Figure 1-5. The bedrock surface was disturbed by excavation of the former distribution holder and former gas relief holder. As shown on Figure 1-5, a north-northeast striking trough that generally parallels the axis of the regional Taconic thrust belt is coincidental with North Central Avenue. There are also two nearly parallel tear faults that dip to the south that are situated along the Anthony Kill and southern edge of the site. The Anthony Kill is the surface expression of the northern tear fault.

- ***Fill material*** consists primarily of sand and gravel, with lesser amounts of silt, clay, and pebbles. Materials related to the former MGP site observed at the site include concrete foundations and fragments, coal, brick fragments, ash-like material, clinkers, slag, and wood chips (purifier waste). MGP-related wastes were observed in the overburden materials west of the former MGP. Other materials encountered include asphalt, organics, roots, loam, and shale fragments.

- ***Bedrock*** beneath the site is composed of gray shale interbedded with calcite. Bedrock cores exhibit steeply dipping bedding at depth, and thrust faults. High- and low-angle open and closed fractures are present in the bedrock. The fractures are filled with calcite and pyrite in some cases. Some fractures show evidence of slickenside or brecciation. The shale bedrock exhibits “pencil”-shaped breaks in the bedrock. Pencil cleavage occurs throughout most of the bedrock at an average strike of approximately 23 degrees, roughly parallel to the axis of Taconic thrusts. Based on the bedrock core sample collected at the site, there are zones of intense pencil cleavage beneath the site separated by zones of less intense cleavage.

Groundwater is present in the fill material under unconfined (i.e., water table) conditions at approximately 1 to 18 feet bgs. The saturated thickness of the overburden beneath the site ranges from zero to 12 feet as shown on Figure 1-6. Groundwater flow beneath the site within

the overburden and bedrock is generally from southwest to northeast towards the Anthony Kill as shown on Figure 1-7. There is a hydraulic connection between the bedrock at the site and the Anthony Kill, as observed during the SRI. Localized groundwater mounding may be occurring at the locations of the former gas holders.

1.8 Applicable Standards, Criteria, and Guidance

SCGs are cleanup standards, standards of control, and other substantive environmental protection requirements, criteria or limitations promulgated under federal or state law that specifically address a hazardous substance, pollutant, contaminant, remedial action, or location. Guidance values include non-promulgated criteria and guidelines that are not legal requirements but should be considered if determined to be applicable to the site.

SCGs are categorized as chemical-specific, location-specific, or action-specific as defined below.

Chemical-specific:	Health- or risk-based numerical values or methodologies which, when applied to site-specific conditions, result in the establishment of numerical values for the chemicals of interest. These values establish the acceptable amount or concentration of a chemical, or combinations of chemicals, that may be found in or discharged to the environment.
Location-specific:	Restrictions placed on the concentrations of hazardous substances or the conduct of activities solely because they occur in a specific location (e.g., wetland, floodplain, historic area, etc.).
Action-specific:	Technology- or activity-based requirements or limitations on actions taken with respect to hazardous waste management, site cleanup, or discharge limitations.

The following paragraphs present chemical-specific SCGs that have been identified for the Mechanicville Former MGP Site, and are used the discussions on the nature and extent of contamination at the site (Section 1.9). A comprehensive list of all site SCGs is presented in Table 1-1.

Chemical-specific SCGs pertaining to this site for soil include the recommended soil cleanup objectives (RSCOs) presented in NYSDEC Division of Hazardous Waste Remediation Technical and Administrative Guidance Memorandum (TAGM) 4046 – Determination of Soil Cleanup Objectives and Cleanup Levels. In addition to listing chemical-specific RSCOs, TAGM 4046 also identifies RSCOs for total VOCs, which must be less than 10 mg/kg, and total semi-volatile organic compounds (SVOCs), which must be less than 500 mg/kg.

Chemical-specific SCGs pertaining to this site for groundwater include the New York State Codes, Rules, and Regulations (NYCRR) 6 NYCRR Part 700-705, Water Quality Regulations for Surface Water and Groundwater, and NYSDEC Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 – Ambient Water Quality Standards and Groundwater Effluent Limitations. While Class GA standards were utilized, information presented in the SRI report indicates that the residents of Mechanicville do not use groundwater for potable water.

Chemical-specific SCGs pertaining to this site for surface water include the 6 NYCRR Part 700-705, Water Quality Regulations for Surface Water and Groundwater, and NYSDEC Division of Water TOGS 1.1.1 – Ambient Water Quality Standards and Groundwater Effluent Limitations for Class C and C(t) streams. The best usage of Class C waters is fishing, suitable for fish propagation and survival, and recreation, although other factors may limit the use for these purposes. A standard of (t) indicates it may support a trout population.

Chemical-specific SCGs pertaining to this site for sediments include those determined by the NYSDEC Division of Fish and Wildlife – Technical Guidance for Screening of Contaminated Sediments. Site-specific screening criteria are calculated using sample-specific total organic carbon (TOC) values.

1.9 Nature and Extent of Contamination

This section provides a summary of the analytical data collected as part of previous investigations and during the SRI, and a comparison of those data with SCGs as presented in the tables in Appendix A. Contaminants of potential concern (COPCs) are presented for each

medium of interest with consideration of both pre-SRI and SRI data. Table 1-2 provides a comparison of COPCs versus SCGs.

1.9.1 Soil Contamination

Over the history of the site, a number of removals and spill response actions, including an IRM, have been undertaken, as discussed in Sections 1.4 and 1.5 of this report. During the IRM alone, approximately 2,625 tons of non-hazardous wastes, 3,920 tons of hazardous waste, and 68,000 gallons of contaminated water were removed from the site. Solid wastes were thermally treated and replaced on site as subsurface fill, chemically treated and subsequently landfilled, or directly landfilled. Given these actions, site conditions have changed over time, and analytical data from investigations prior to the SRI may no longer be relevant and/or indicative of the locations of contamination. This is especially relevant in the area along North Central Avenue where, as shown on Figure 1-4, extensive excavation has already occurred. Plate 1 identifies the locations of pre-SRI and SRI soil samples. Analytical soil data were compared against NYSDEC's RSCOs. A comparison of contaminants detected in soil versus SCGs for both pre-2001 and SRI surface soil data is included in Appendix A. Figure 1-8 identifies the locations of soil contaminants detected at concentrations above RSCOs. Figure 1-9 identifies the locations where total cyanide was detected, as well as those locations where it was not detected. Three of the five cyanide detection locations are within previously-excavated areas.

VOCs were detected below RSCOs in surface soil at the site. Metals were generally co-located with PAHs and detected within one order of magnitude of their respective RSCOs. Therefore, only PAHs including carcinogenic PAHs (cPAHs) are considered to be COPCs for surface soil.

BTEX concentrations in subsurface soil found in SB-45 are from former leaks from gasoline tanks at the off-site Getty Station. BTEX in concentrations greater than 10 ppm and PAHs (including cPAHs) were found near the former gas relief holder. BTEX are considered contaminants of concern in subsurface soil. Total PAHs (TPAHs) were found at concentrations greater than 500 ppm and are considered as COPCs in subsurface soil. Metals were generally co-

located with PAHs and within one order or magnitude of their respective RSCOs and are not considered contaminants of concern for subsurface soil.

1.9.2 Groundwater Contamination

Analytical data indicate that VOCs, PAHs (including cPAHs), and metals exceed SCGs in groundwater. A comparison of contaminants detected in soil versus SCGs for both pre-2001 and SRI groundwater data is included in Appendix A. Figure 1-10 identifies the locations of groundwater contaminants detected at concentrations above SCGs. Some of the metals exceedances are located off site, upgradient, or in locations where neither BTEX nor PAHs were found in groundwater samples. Metals, therefore, are not included in the list of contaminants of concern for the site. BTEX and PAHs are considered COPCs for groundwater.

1.9.3 NAPL Observation and Recovery

Prior to 2001, DNAPL was detected in three deep bedrock wells near the site (MW-6, MW-13, and MW-14), and LNAPL was detected in MW-3. NAPL was observed leaking into the former gas relief holder excavation from the weathered bedrock during IRM work. As indicated on Table 5-6 of the SRI, some monitoring wells exhibited either traces or recoverable quantities of NAPL. Figure 1-10 identifies the locations of monitoring well samples where product was encountered. Passive recovery of NAPL from monitoring wells is ongoing in overburden wells MW-26S and RH-01S, and in bedrock wells MW-10D and MW-42D. Well MW-30D, which had shown traces of NAPL since 2001, yielded recoverable product in June, 2005. Passive recovery includes lowering bailers or actively pumping NAPL from the monitoring wells on a periodic basis as NAPL is recharged within the well. Appendix B provides NAPL information updated from the SRI. Through August 26, 2005, the cumulative volume of NAPL recovered from the wells is 749 liters. Currently, recovered NAPL is temporarily stored in 55-gallon drums at the site prior to being transported off site for disposal.

The following table identifies NAPL recovery results at the site. As shown on the table, NAPL is being recovered from four wells: MW-26S, RH-01S, MW-10D, and MW-42D. These four wells are considered to be the existing NAPL recovery wells.

Well Number	Screen Interval (ft bgs)	Total NAPL Recovered (L) through 7/03	Total NAPL Recovered (L) through 1/05	Total NAPL Recovered (L) through 8/05	Comments
MW-26S	7.5 to 22.5	20.2	20.7	20.7	Ongoing recovery. Avg. recharge rate less than 0.01 liters per day (L/day).
RH-01S	1.8 to 17.3	32.6	51	56.3	Ongoing recovery. Avg. recharge rate approx. 0.05 L/day.
MW-1I	45 to 75	2.3	2.3	2.3	No longer recoverable.
MW-35I	12.5 to 38	3.51	3.51	3.51	No longer recoverable.
MW-10D	82 to 114	316	392	408	Ongoing recovery. Intercepts southern tear fault. Avg. recharge rate approx. 0.6 L/day.
MW-1D	121 to 155	2.0	2.0	2.0	No longer recoverable.
MW-30D	90 to 121	0	0	1.7	Amount recovered in 6/05. Only trace amounts recovered prior to 6/05 and during 8/05 sampling.
MW-40D	140 to 170	23.8	23.8	23.8	Recovery when the open hole interval intersected southern tear fault. Interval is now below fault and is free of NAPL.
MW-42D	140 to 175	112	207	231	Ongoing recovery. Intercepts southern tear fault. Avg. recharge rate approx. 0.6 L/day.
Total NAPL Recovered		512.41	702.31	749.31	

Visual observations of NAPL as identified in the SRI borings for soil, bedrock, and monitoring wells are presented on Figure 1-11. The logs identified the presence of NAPL as an odor, sheen, stain, viscous NAPL, or tar. Table 1-3 identifies the depths within each boring at which NAPL was observed.

1.9.4 Surface Water and Sediment Contamination

Over the history of the site, a number of removals and spill response actions have been undertaken in the Anthony Kill following visual observation of NAPL discharges and/or floating substances. These include: August 1986 associated with nearby construction; in September 1986 determined to be not related to the site; in September 1988 during construction activities related to the Central Avenue Bridge repairs; and during the 2001 – 2002 SRI observed to be related to on-site drilling activities. Based on information and analytical data from pre-SRI investigations, it was determined that surface water quality does not appear to be significantly impacted by MGP-related contaminants. Therefore, with the concurrence of the NYSDEC, further evaluation of surface water was not conducted during the SRI. A comparison of contaminants detected in surface water versus SCGs for pre-2001 surface water data is included in Appendix A. There are no contaminants of concern associated with surface water.

A summary of contaminants detected in sediments for both pre-2001 and SRI sediment data is included in Appendix A. In sediment samples contaminants exceeded NYSDEC cleanup criteria for human health and wildlife infrequently, therefore, there are no contaminants of concern for sediments at the site. Anthony Kill is a class C stream, with portions of the stream being subject to C(t) standards. The best usage of Class C waters is fishing, suitable for fish propagation and survival, and recreation, although other factors may limit the use for these purposes. A standard of (t) indicates it may support a trout population. The potential route of exposure identified by the human health exposure pathway assessment is through dermal contact with contaminated sediments during recreational use of Anthony Kill. This potential pathway is not expected to produce a significant risk. PAHs detected in two of the seven sediment samples from Anthony Kill during the SRI were at concentrations within one order of magnitude above the calculated sediment screening criteria. Given the reduced potential for exposure to relatively

low levels of PAHs in Anthony Kill sediments, and the fact that the Anthony Kill is a high-energy stream with a fast flow condition adjacent to the site resulting in potential depositional areas downstream but little sediment deposition expected adjacent to the site, no COPCs are identified for sediments in the Anthony Kill.

1.9.5 Human Health and Wildlife Impacts

Results of a qualitative human health exposure pathway assessment and a fish and wildlife impact analysis conducted during the SRI are summarized below:

- Exposures to contaminants from on-site soil, groundwater, surface water and sediments are considered potential exposure pathways for receptors.
- These pathways include wind and water transport of contaminated soil particles to the Anthony Kill, ingestion and absorption of sediment in the Anthony Kill by resident macroinvertebrates, and discharge of site groundwater to the Anthony Kill.
- There is a limited effect of contamination on aquatic organisms in the Anthony Kill or terrestrial organisms at the site.
- The regions of the Anthony Kill most affected by the site and characterized by poor macroinvertebrate habitat are in the locations of NAPL seeps.
- Potential pathways for human exposure include dermal contact with contaminated surface water and sediment in the Anthony Kill and ingestion of contaminated surface water. Therefore, recreational users of the Anthony Kill could be exposed to the surface water and sediment in the Kill. However, due to the trace levels of contamination detected in surface water, site-related impacts in the Kill, and limited extent of contamination in sediments, the pathways were determined to be complete but unlikely to be important.
- Currently, the residences and businesses in the City of Mechanicville do not rely on groundwater for drinking water. Overburden groundwater flow is to the north toward the Anthony Kill and the nearest residents are south (upgradient) of the site.

However, potential future use scenarios include groundwater use and/or excavation of site soils. Therefore, potential future exposure pathways for human exposure include: ingestion of groundwater; ingestion of, and dermal contact with, contaminated on-site surface soil; and dermal contact with contaminated subsurface soil or groundwater.

1.10 Conceptual Site Model

URS has developed a conceptual model for the site based on the results of the SRI, the IRM, and previous investigations. The conceptual model is shown on Figure 1-12. Migration of bedrock groundwater and coal tar from the source area is influenced by both small-scale and large-scale structures in the shale bedrock beneath the site. The large-scale structures in the bedrock are tear and thrust faults along which vertical and lateral movement of bedrock blocks occurred. The small-scale structures are zones within the bedrock that are more fractured than other portions of the bedrock. These zones of higher fracture densities, known as pencil-cleavage zones, were produced by stresses associated with the movement of bedrock blocks along the tear and thrust faults.

Coal tar, which typically has a specific gravity greater than water, will "sink" and migrate downwards within either the small-scale or large-scale breaks in the bedrock regardless of groundwater flow direction. The coal tar will continue to sink until it reaches the surface of a less fractured bedrock block and then migrate laterally with the slope of the less permeable surface. At this site, coal tar has also been observed as floating product.

Significant components of the Conceptual Site Model shown in Figure 1-12 include the former gas relief holder, which is believed to be the primary source of contamination; two near-vertical tear faults that roughly parallel the northern and southern property boundaries; thrust faults that strike approximately north-south and dip to the northeast; and zones of bedrock that exhibit less pencil cleavage than other portions of the bedrock.

Both LNAPL and DNAPL are believed to have been present in the former gas relief holder. LNAPL migrated from the former relief holder and, to a lesser extent, the other former MGP structures, along the slope of the water table toward the Anthony Kill. DNAPL migrated generally eastward along the slope of the bedrock surface to a bedrock trough that underlies North Central Avenue. DNAPL in the bedrock trough has migrated downward through the pencil cleavage zone, and has also migrated preferentially into the southerly-dipping tear fault that is south of the source area.

DNAPL migrating along the path of the southern tear fault intersects the thrust fault that dips to the northeast and is transported to the northern tear fault. The surface expression of the northern tear fault is the Anthony Kill. Similar to the southern tear fault, the northern tear fault dips to the south. The tear faults are generally parallel to each other.

Most of the DNAPL observed during the SRI was present at the top of bedrock and along the tear and thrust faults. DNAPL is also migrating downwards through smaller fractures in the pencil cleavage zones. The southern extent of DNAPL in the bedrock is limited due to the preferential migration of DNAPL along the steeply dipping southern tear fault and the northeast-dipping thrust faults. Similarly, the northern extent of the DNAPL is limited by the northern tear fault. DNAPL has not migrated west of the source area due to the slope of the bedrock to the east.

2.0 REMEDIAL ACTION GOAL AND OBJECTIVES

2.1 Goal and Objectives

The remedial action goal for the Mechanicville Central Avenue Former MGP Site is to eliminate or mitigate all significant threats to human health and/or the environment, to the extent practicable, caused by contaminants present due to former MGP activities. In order to meet this goal, remedial action objectives (RAOs) were established to protect human health and the environment, and provide the basis for selecting appropriate technologies and developing remedial alternatives for the site. RAOs were established on the basis of contaminated media identified at the site, SCGs identified for the site, and results of the qualitative human exposure pathway assessment and fish and wildlife impact analysis.

To address the remedial action goal, the feasibility study evaluated technologies and alternatives for: contaminated soil, contaminated groundwater, NAPL (which consists of free tar or tar-saturated soils), and surface water and sediments in the Anthony Kill, with respect to the following cleanup levels:

1. *Attainment of SCGs,* which requires remediation to levels identified in Section 1.8 as SCGs for the site for contaminants of concern.

2. *Source and Exposure Pathway Elimination,* which involves remediation to levels that exceed SCGs, but still create conditions that are protective of human health and the environment by reducing or eliminating the source of NAPL or eliminating exposure pathways. This approach recognizes that it may not be feasible or desirable to implement remedies that attain SCGs in cases where alternative approaches have been implemented that are also protective of human health and the environment.

Media-specific remedial action objectives for the site are identified below.

Soil

1. Eliminate source of NAPL and eliminate exposure pathways to the extent practicable by removal or containment of source material, which consists of:

   - Tar or oil in any form.
   - Sheen present and TPAHs > 1,000 ppm.
   - MGP-related odor present and TPAHs > 1,000 ppm.
   - Purifier waste present or reactive cyanide > 250 ppm.
   - Purifier waste present or reactive sulfide > 500 ppm.

2. Attain the SCG for soil, which consists of NYSDEC TAGM 4046 criteria for total VOCs < 10 ppm and total SVOCs < 500 ppm.

3. Attain the SCG for soil, which consists of NYSDEC TAGM 4046 criteria for individual VOCs and individual SVOCs.

Groundwater/NAPL

1. Eliminate source and exposure pathways through NAPL removal.

2. Eliminate or reduce the potential for ingestion of groundwater with contaminant levels exceeding drinking water standards.

3. Attain the SCG for groundwater, which consists of 6 NYCRR Part 700-705, Water Quality Regulations for Surface Water and Groundwater and NYSDEC TOGS 1.1.1 for BTEX and PAHs.

Surface Water/Sediments

1. Eliminate MGP-related oil and floating substances to the extent practical in Anthony Kill.

2. Attain, to the extent practical, the surface water standard in Anthony Kill which consists of 6 NYCRR Part 700-705, Water Quality Regulations for Surface Water and Groundwater, and NYSDEC Division of Water TOGS 1.1.1 – Ambient Water Quality Standards and Groundwater Effluent Limitations for Class C and C(t) streams.

2.2 Remediation Areas

2.2.1 Soil

Source and Exposure Pathway Elimination

In general, areas of BTEX and TPAH contamination are co-located. Therefore, remediation estimates for source removal are based on the locations of TPAHs. Sample locations where TPAHs > 1,000 ppm are shown on Figure 2-1. Source removal of soils with TPAHs > 1,000 ppm would include the areas shown on Figure 2-2. Site soils containing source material, as evidenced by the presence of tar or oil in any form, sheen, or purifier waste, would also be removed. Purifier wastes may be evidenced by the presence of wood chips and/or blue staining, or by analytical testing for reactive cyanide or sulfide. Soil within the gas relief holder would be excavated to the top of bedrock, a depth of approximately 25 feet. The corresponding volume of soils is approximately 5,350 cubic yards (cy) based on the contours presented on Figure 2-2.

Attain SCGs

Sample locations where concentrations exceed individual SCGs are shown on Figure 1-8. In order to attain SCGs (based on individual VOC and SVOC concentrations) for site soils, all

soil within the areas identified on Figure 2-3 would be remediated to the greatest depth that exceeded SCGs at each sample location. Site soils containing source material, as evidenced by the presence of tar or oil in any form, sheen, or purifier waste, would also be removed. Soil within the gas relief holder would be excavated to the top of bedrock, a depth of approximately 25 feet. The corresponding volume of soils is approximately 15,400 cy based on the contours presented on Figure 2-3.

Sample locations where TPAHs > 500 ppm are shown on Figure 2-4. Source removal of soils with TPAHs > 500 ppm would include the areas shown on Figure 2-5. Site soils containing source material, as evidenced by the presence of tar or oil in any form, sheen, or purifier waste, would also be removed. The corresponding volume of soils is approximately 6,250 cy based on the contours presented on Figure 2-5.

2.2.2 Groundwater/NAPL

Source and Exposure Pathway Elimination

Continuing sources of groundwater contamination are NAPL (consisting of free tar or tar-saturated soils) and contaminated source area soil. NAPL recovery is ongoing within the monitoring wells listed in Section 1.9.3. Figure 2-6 identifies the locations of monitoring wells where recoverable NAPL was found and potential locations for additional recovery wells where recoverable NAPL is anticipated based on the hydrogeology of the site.

Soil from the source area and the adjoining contaminated area immediately to the north, within the shaded contour of TPAHs > 500 ppm shown on Figure 2-5, is a continuing source of groundwater contamination.

Attain SCGs

In order to attain groundwater SCGs, groundwater would have to be collected along the downgradient edges of the entire site to address the groundwater SCG exceedances across the site shown on Figure 1-10. Given the hydrogeology of the area and the interconnection between the overburden and the bedrock, groundwater remediation could include both overburden and bedrock. Preventing contaminant flow to the bedrock and migration through bedrock fractures will be difficult to attain. However, with continued NAPL recovery, and after source soils are remediated, the dissolved phase contamination in bedrock groundwater will reach SCGs over time due to natural processes that include dispersion, dilution, sorption, volatilization, chemical attenuation, and biological attenuation. Since bedrock groundwater does not pose a health risk unless it is pumped for potable use, remediation of groundwater from the bedrock is not included in the quantity estimates. (Deed restrictions limiting the use of groundwater both from on site and any affected off site properties will be included in all of the alternatives.) Initial estimates of groundwater extraction rates are provided in Appendix C and summarized below.

GROUNDWATER EXTRACTION RATES

AREA	WITHOUT VERTICAL CUTOFF WALLS	WITH VERTICAL CUTOFF WALLS
Long-term collection from entire site	70 – 420 gpm	10 – 120 gpm
Long-term collection from source area	10 – 90 gpm	2 – 8 gpm
Short-term dewatering of source area to a depth of 25 ft.	730 gpm	430 gpm

Long-term groundwater collection will lower the water table and promote upward flow from the bedrock capturing it along with groundwater from the overburden. Short-term dewatering of the source area (such as for excavation purposes) will lower the water table to the

top of the bedrock. Substantial quantities of water flowing upward from the bedrock would be collected during such dewatering.

2.2.3 Surface Water/Sediments

Source and Exposure Pathway Elimination

Sources of surface water and sediment contamination are NAPL and contaminated source area soil. While removal of the source and a continuing NAPL recovery program would remove the majority of the contamination, occasional discharges of NAPL to the Anthony Kill may occur providing a potential exposure to human health and wildlife. Observations and inspections of the Anthony Kill have shown evidence of such discharges (i.e., the presence of sheens, floating product and tar blebs), resulting in spill responses and removal actions.

Attain SCGs

Based on information and analytical data from pre-SRI investigations, it was determined that surface water quality does not appear to be significantly impacted by MGP-related contaminants as only iron and total phenols exceeded SCGs. Therefore, with the concurrence of the NYSDEC, further evaluation of surface water was not conducted during the SRI. There are no contaminants of concern associated with surface water. However, NAPL may potentially be discharged to the Anthony Kill following remediation. Such discharge would be in violation of Part 703.2. A visual observation of MGP-related oil and/or floating substances in the Anthony Kill adjacent to the site may indicate an SCG exceedance. Sampling and analysis of the affected surface water and sediments along with remediation (spill response and/or sediment removal) of the impacted surface water and/or sediments would be performed.

3.0 IDENTIFICATION AND INITIAL SCREENING OF REMEDIAL TECHNOLOGIES

This section consists of: identifying general response actions to satisfy the RAOs; identifying specific remedial technologies that fall within the general response categories; and screening those technologies with respect to their technical implementability in meeting the objectives for the site. The most promising technologies were retained and carried forward into the development of alternatives for the site as a whole.

3.1 General Response Actions

General response actions are broad categories of remediation capable of satisfying the RAOs for the site. Some response actions may be sufficiently broad to be able to satisfy all RAOs to cleanup levels for the site as a whole. Other response actions must be combined to satisfy RAOs for soil, groundwater, NAPL, surface water and sediments. Remedial technologies were evaluated according to the general response actions of no further action, containment, collection with disposal/ treatment for groundwater and NAPL, of no further action, containment, excavation, and disposal/treatment for soil, and of no further action for surface water and sediments. A brief description of the general response actions shown on Table 3-1 follows.

- **No Further Action** - The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) requires that a no action alternative be evaluated as part of the Feasibility Study process. Since monitoring and NAPL recovery are ongoing activities at this site, incorporation of sampling and analysis of groundwater, surface water and sediments, along with a visual inspection of the Anthony Kill, and passive NAPL recovery with no further remediation will be considered as the "No Further Action" alternative and used as the baseline during comparison of other alternatives.

- **Containment** - Containment measures are those remedial actions whose purpose is to contain and/or isolate contaminants on site. These measures provide protection to

human health and the environment by reducing exposure or migration of contaminants, but they do not treat or remove the contamination.

- **Excavation** - Excavation of contaminated soil is a remedial action whose purpose is to remove contaminants from the site. Combined with either on-site or off-site treatment or off-site disposal, excavation provides protection to human health and the environment by reducing exposure or migration of contaminants.

- **Collection** - Groundwater collection and NAPL recovery technologies provide protection to human health and the environment by removing contamination from the groundwater system and limiting the migration of contaminants. Once collected, groundwater would be treated on site prior to discharge to the Anthony Kill, or disposed of off site at a permitted facility. NAPL would be transported off site for disposal.

- **Disposal/Treatment** - Treatment and disposal measures include technologies whose purpose is to reduce the toxicity, mobility or volume of contaminants in groundwater and soil. Off-site disposal/treatment following excavation reduces the mobility and/or toxicity of the contaminants by placing/treating them in an appropriate and permitted facility. On-site treatment technologies utilize either chemical, biological, stabilization/solidification, or thermal processes to alter, isolate, or destroy contaminants. Treatment may be performed above ground (ex-situ) following excavation, or in place (in-situ).

3.2 Identification and Initial Screening of Remedial Technologies for Groundwater

This section identifies and provides an initial screening of remedial technologies for groundwater at the Mechanicville Central Avenue Former MGP site in a two-step approach. In the first step, potentially applicable remedial technologies which meet the remedial action objectives are identified. In the second step, technologies are initially screened with respect to their technical implementability for this site. This evaluation is based on site characterization which takes into account the types and concentrations of contaminants, and geology and

hydrogeology of the area. Table 3-1 provides a summary of the technology identification and initial screening process.

3.2.1 Vertical Cutoff Walls

Containment methods such as vertical cutoff walls and pressure grouting of the bedrock are used to prevent or significantly reduce the migration of contaminants in groundwater. Additionally, vertical cutoff walls extended to the bedrock should reduce the amount of inflow from off-site areas and backflow from the Anthony Kill and could potentially provide a degree of excavation sidewall stability if necessary. Potentially applicable vertical cutoff walls include: sheet piling, low permeability walls, grout curtain, and geomembrane.

- **Sheet Piling** - Sheet pile cutoff walls are constructed by driving interlocking steel or high-density polyethylene (HDPE) into the ground. The joints between individual sheets are typically plugged with clay slurry (when using steel sheets) or an expanding gasket (for HDPE sheets). Steel sheet piles are driven directly into the ground while the synthetic piles are driven with steel backing that is removed once the sheets are in place. Sealable joint steel sheet piling and HDPE sheeting are commercially available for groundwater control and remediation applications. This technology is retained for the overburden.

- **Low Permeability Walls** – Low permeability walls include slurry walls and soil cement walls. A slurry wall consists of a mixture of bentonite, water, and soil constructed in a vertical trench. A soil cement wall consists of a mixture of cement and soil. The cement is introduced into the subsurface by augering to an appropriate depth (to the top of bedrock). This technology is retained for the overburden. However, trenching or augering through the bedrock would create additional fractures and transport pathways. Therefore, this technology is not retained for bedrock.

- **Grout Curtain** – A grout curtain is constructed by injecting fluids under pressure into the ground. The grout moves away from the zone of injection, fills the pores of

the formation, and solidifies, reducing the hydraulic conductivity of the formation. Typical grouting compounds include cement, bentonite and silicate. Given the relatively high permeability of fill material which comprises the majority of the overburden, it is anticipated that significant quantities of grout would be required to fill the void spaces. Compared to similar cutoff walls, this technology is not considered to be as cost effective for this site. This technology is not retained.

- **Geomembrane** - Geomembranes are synthetic sheets installed in open or slurry-supported trenches. The sheets generally are constructed of either HDPE or polyvinyl chloride (PVC). This technology is still in the development stage and there are concerns regarding its long-term performance. This technology is not retained.

- **Pressure Grouting of the Bedrock** - Pressure grouting of the bedrock is performed by injecting fluids under pressure into the areas of anticipated bedrock fractures. The grout moves away from the zone of injection, fills the bedrock fractures, and solidifies, eliminating the migration pathway of groundwater and/or NAPL. It is anticipated that it would be difficult to precisely locate the subsurface fractures, some of which are at a substantial depth, and control the injection process to effectively fill the fractures to eliminate migration pathways. This technology is not retained.

The benefits of using vertical cutoff walls at the site are:

- They are equally effective for the complete range of contaminants at the site.

- Vertical cutoff walls are a proven technology to reduce the lateral migration of contaminated groundwater and/or NAPL.

- They would reduce the amount of groundwater collected, especially inflow from off site and backflow from the Anthony Kill.

Factors that limit the applicability and effectiveness of vertical cutoff walls are:

- Due to the interconnection between the bedrock and the overburden, contaminant migration to the bedrock would continue to exist.

- Installation of a cutoff wall may severely limit access to utilities, which may need to be permanently re-routed.

3.2.2 Groundwater Collection

Shallow groundwater flow within the overburden is generally from the southwest to northeast across the site, towards the Anthony Kill. There is a hydraulic connection between the bedrock and the Anthony Kill. Groundwater flow near the southern boundary is toward the east. Groundwater collection along the northern and eastern downgradient edges of the site would reduce the migration of contaminants off site.

Given the interconnection between the overburden and the bedrock, it is anticipated that substantial quantities of groundwater would have to be collected to capture the contaminated groundwater. Potential groundwater collection technologies include an interceptor trench, vertical extraction wells, and horizontal extraction wells.

- **Interceptor Trench** - A trench, excavated to the top of the bedrock along the eastern edge of the site to a depth of approximately 25 feet, and along the northern edge of the site to a depth of approximately 8 feet, could be constructed. The trench would be backfilled with stone; excavated materials would be disposed of off site. Unless the potentiometric head level in the trench were reduced to below that of the bedrock, however, downward flow to the bedrock would continue to occur. This technology is retained.

- **Vertical Extraction Wells** - Vertical extraction wells are widely used to collect groundwater, require less construction equipment than interceptor trenches, and result in less excavated material requiring off-site disposal. The spacing of the extraction wells would be optimized by determining the capture zone for the wells. This technology is retained.

- **Horizontal Extraction Wells** - Horizontal extraction wells may be advantageous over vertical extraction wells at certain locations for this site. A potential horizontal extraction well location is within the roadway of North Central Avenue in a bedrock trough area where NAPL may pool. While it may be technically feasible to construct a vertical extraction well within the roadway of North Central Avenue, continued access to the well for future sampling, groundwater collection, and/or NAPL recovery may be difficult due to traffic restrictions. A horizontal extraction well, drilled on site to the appropriate depth below North Central Avenue, would be beneficial in the long-term for access purposes. A second situation would involve determining how to more readily transect a potential contaminant migration pathway such as the thrust fault along the southern edge of the site. It may be difficult to locate the specific contaminated area utilizing vertical wells. Construction of a horizontal well would increase the probability of drilling the extraction well through an advantageous location. This technology is retained.

The benefits of groundwater collection are:

- Groundwater collection would be equally effective for the complete range of contaminants at the site.
- The technology is well proven and can be readily implemented.
- This technology (when combined with groundwater treatment) meets the regulatory preference for treatment of contaminants.

Factors that limit the applicability and effectiveness of groundwater collection are:

- Given the interconnection between the overburden and the bedrock, it is likely that even with substantial quantities of groundwater extraction off-site migration of contaminated groundwater would still occur.
- Hydraulic conductivity testing and groundwater modeling would be required to properly design the components of an extraction system. Considering the variability

of site geology there would be great uncertainties regarding the groundwater model. Significant over-design would be required.

3.2.3 Groundwater Treatment

Contaminants present in groundwater could be treated in place (in-situ), or collected through extraction wells and treated either on site or off site prior to discharge.

- **In-Situ Groundwater Treatment** – In-situ treatment technologies for groundwater are considered similar to those considered for in-situ soil treatment (see Section 3.4.4) as soil is the source of the groundwater contaminants.

- **Groundwater Treatment On Site** – An on-site water treatment facility could be constructed to treat collected groundwater. A site-specific process train would have to be developed to remove contaminants to appropriate standards and meet permit requirements for effluent to be discharged to the Anthony Kill. Resulting sludge would be disposed of off site at an appropriate facility. Construction of an on-site treatment facility may be more cost effective than off-site water treatment and disposal, especially if large quantities of water require treatment. This technology is retained.

- **Groundwater Treatment Off Site** – Collected groundwater could be transported off site, with or without onsite treatment, in tanker trucks to an appropriate treatment/disposal facility such as a publicly owned treatment works (POTW) or a commercial facility. This option may be less costly than constructing an on-site facility, especially if only a short-term solution is required or if relatively small quantities of water require treatment. This technology is retained.

The benefits of aboveground groundwater treatment are:

- Groundwater treatment would be equally effective for the complete range of contaminants at the site.

- The technology is well proven and can be readily implemented.
- This technology (when combined with groundwater collection) meets the regulatory preference for treatment for contaminants.

Factors that limit the applicability and effectiveness of aboveground groundwater treatment are:

- Due to the hydrogeology of the site, large quantities of groundwater may be collected and require treatment at this site.
- Treatability studies would be required to determine an appropriate on-site treatment process for contaminants present in collected groundwater.
- Permitting and effluent standards for an on-site treatment system may be difficult to obtain and meet.
- A commercial facility or POTW able and willing to accept collected groundwater may not be available.

3.3 Identification and Initial Screening of Remedial Technologies for NAPL

This section identifies and provides an initial screening of remedial technologies for NAPL at the Mechanicville Central Avenue Former MGP site in a two-step approach. In the first step, potentially applicable remedial technologies which meet the remedial action objectives are identified. In the second step, technologies are initially screened with respect to their technical implementability for this site. This evaluation is based on the observations of and experiences with NAPL recovery at the site to date. Table 3-1 provides a summary of the technology identification and screening process.

Most of the DNAPL observed during the SRI was present at the top of bedrock and along the tear and thrust faults. The southern extent of DNAPL in the bedrock was limited due to the preferential migration of DNAPL along the steeply dipping southern tear fault and the northeast-

dipping thrust faults. Similarly, the northern extent of the DNAPL was limited by the northern tear fault. Since DNAPL has not migrated west of the source area due to the slope of the bedrock to the east, additional NAPL recovery wells would be located along the southern tear fault line. DNAPL is also migrating downward through smaller fractures in the pencil cleavage zones. Therefore, additional potential NAPL recovery wells would be located in non-fault areas such as along the western edge of North Central Avenue and within the bedrock trough beneath North Central Avenue. Preliminary locations of the additional NAPL recovery wells, as well as the four existing recovery wells, are shown on Figure 2-6.

- **Passive Recovery** – Passive recovery of NAPL from the four existing recovery wells is ongoing. Through August 26, 2005, the cumulative volume of NAPL recovered from the wells was approximately 749 liters. Passive recovery includes lowering bailers into the monitoring wells on a periodic basis. Currently, recovered NAPL is temporarily stored in 55-gallon drums at the site prior to being transported off site for disposal/treatment. An automated NAPL recovery system may also be feasible for use at the site and is under consideration. This technology is retained.

- **Active Recovery -** Active NAPL recovery from the four existing recovery wells as well as the additional potential recovery wells would include continuously extracting groundwater in the hopes of more quickly drawing NAPL to the wells. Experience with NAPL recovery at the site, however, has shown that the recharge rates are relatively low and the viscosity of the product is medium to high. This technology is not retained.

- **NAPL Disposal/Treatment** – Once collected, NAPL would continue to be transported off site for disposal/treatment. This technology is retained.

3.4 Identification and Initial Screening of Remedial Technologies for Soil

This section identifies and provides an initial screening of remedial technologies for contaminated soil at the Mechanicville Central Avenue Former MGP site in a two-step approach. In the first step, potentially applicable remedial technologies which meet the remedial action

objectives are identified. In the second step, technologies are initially screened with respect to their technical implementability for this site. This evaluation is based on the site characterization, which includes the types and concentrations of contaminants, and geology and hydrogeology of the area. Table 3-1 provides a summary of the technology identification and screening process.

3.4.1 Containment

Containment methods such as capping and vertical cutoff walls with groundwater collection and treatment are used to prevent or significantly reduce the migration of contaminants in soil and groundwater, and prevent human and wildlife exposure to the contaminants.

3.4.1.1 Capping

A cover over the entire site, suitable to the end use of the property, eliminates the exposure pathway for direct contact with contaminated surface soil. When a low permeability layer is included, it limits infiltration of rainwater and reduces contaminant leaching and subsequent migration. Two possible covers for the site are a soil cover and a low permeability cover, both of which would include proper surface water controls for proper site drainage.

- **Soil Cover** – A two-foot-thick soil cover consisting of compacted soil could be constructed over the site and graded to existing grade along the perimeter. Such a cover would prevent direct exposure to contaminated soil or provide protection for residuals on site. A soil cover may be used in conjunction with other remedial technologies at the site such as stabilization/solidification. This technology is retained.

- **Low Permeability Cover** - A low permeability cover could be constructed over the surface of the site to eliminate potential exposure to contaminated surface soil. The low permeability layer would limit infiltration across the site, and reduce the leaching of contaminants from soil. When combined with groundwater containment, capping reduces the amount of groundwater collected and subsequently requiring treatment.

The design of the low permeability cover would be suitable to the end use of the property. This technology is retained.

The benefits of capping the site are:

- Capping would be equally effective for the complete range of contaminants at the site.
- The technology is well proven and can be readily implemented with or without additional remedial measures.
- Given the non-homogeneous nature of materials in and around the former gas relief holder, which include concrete blocks and the concrete foundation of the holder itself, a technology without intrusive subsurface activities would be easier to implement.
- A low permeability cover would reduce the amount of groundwater collected.

Factors that limit the applicability and effectiveness of capping are:

- Statutory preference is given for treatment of contaminants.
- As a standalone technology, capping results in the highest degree of long-term monitoring required.

3.4.1.2 Vertical Cutoff Walls, Groundwater Collection and Treatment

The purpose of vertical cutoff walls for soil would be to contain contaminants on site, reducing potential exposure pathways and, if necessary, to provide a degree of excavation sidewall stability. This technology, when used in combination with capping, contains the soil and contaminated groundwater and reduces the quantity of groundwater which would then have to be collected and treated. Applicable cutoff walls for soil are the same as those for groundwater (as discussed in Section 3.2.1). In addition, groundwater collection and treatment technologies

applicable for soil are similar to those used for groundwater as discussed in Sections 3.2.2 and 3.2.3. This combination of technologies is retained.

The benefits of containing the site with vertical cutoff walls, groundwater collection and treatment at the site are:

- Vertical cutoff walls, caps, groundwater collection and treatment are proven technologies.
- These technologies are equally effective for the complete range of contaminants at the site.
- Containing the site reduces and/or eliminates most exposure pathways presented by the contaminants at the site for both groundwater and soil.

Factors that limit the applicability and effectiveness of containing the site are:

- Containment does not meet the statutory preference of treatment of contaminants.
- Due to the hydrogeology of the site, the overburden has a small saturated zone, yet large quantities of groundwater (upward flow from the bedrock) may be collected and require treatment.
- Due to the large quantity of residual waste, this method results in a higher level of long-term monitoring and maintenance costs as compared to other remedial technologies.

3.4.2 Excavation and Off-site Disposal/Treatment

Contaminated soil is excavated by conventional equipment, dewatered, and transported off site either to an appropriate treatment facility, or to a permitted disposal facility. Some pretreatment of the soil (i.e., thermal treatment) may be required to meet disposal requirements. This technology is retained.

The benefits of excavation and off-site disposal/treatment are:

- This is the preferred remedial technology for purifier wastes.
- The technology meets NYSDEC's preference for source removal.
- Excavation and off-site disposal/treatment is applicable to the complete range of contaminant groups at the site.
- The technology is well proven and can be readily implemented.
- The method provides direct verification of contaminated soil removal.
- Given the non-homogeneous nature of materials in and around the former gas relief holder, which include concrete blocks and the concrete foundation of the holder itself, off-site disposal/treatment may be preferred to on-site treatment.
- The method results in lower long-term monitoring and maintenance costs for soil as compared with containment and in-situ treatment technologies.

Factors limiting the applicability and effectiveness of excavation and off-site disposal/treatment are:

- Statutory preference is given for treatment of contaminants as opposed to simply disposal.
- Prior to off-site disposal pretreatment of the soil may be required to meet landfill disposal requirements, especially those regarding the presence of heavily contaminated soil or tar.
- Exposure to contaminated soil and organic vapors during excavation may increase health risks to construction workers and the local population.
- Engineering controls will be required to mitigate fugitive dust emissions during remediation.

- Substantial dewatering, with subsequent water treatment, will be required when excavating soil located below the water table, as evidenced during IRM activities, unless vertical cutoff walls are employed. Additional drying may be necessary to achieve acceptable soil moisture content levels prior to transportation off site.

- Transportation of contaminated soil through populated areas may affect community acceptability of the remediation method.

- The distance from the contaminated site to the nearest permitted disposal/treatment facility will affect cost.

3.4.3 Excavation and Ex-Situ Treatment

Utilizing this method, contaminated soil is excavated by conventional equipment, treated on site above ground, and then replaced on site. Potential treatment processes include biological, chemical/physical, stabilization/solidification, and off-site thermal treatment technologies.

3.4.3.1 Biological Treatment

Naturally occurring microorganisms in soil promote the breakdown and detoxification of organic contaminants. Biological treatment processes enhance that biodegradation. Ex-situ biological treatment processes for soil include: biopiles, composting, and slurry-phase biotreatment.

- **Biopiles** - Excavated soils are first mixed with soil amendments such as nutrients to stimulate biodegradation, and then placed on a covered treatment area. Daily mixing promotes degradation but increases handling. Any resulting runoff is collected for treatment. Non-homogeneous soils and large particles create handling problems.

- **Composting** – Excavated soils are mixed with bulking agents and organic amendments such as wood chips and hay to ensure porosity and provide a balance of carbon and nitrogen to promote microbial activity. PAHs are converted to innocuous

and stabilized by-products by the microorganisms. Daily mixing maintains the oxygenation necessary, but (like biopiles) increases handling. Non-homogeneous soils and large particles create handling problems.

- **Slurry-phase Biotreatment** – Controlled biological treatment is performed in a bioreactor. Excavated soils are pre-screened for size as larger particles are unsuitable for treatment. Screened soil is fed into the bioreactor as slurry and mixed with nutrients, oxygen, and additional microbes as necessary. The slurry is mixed to keep solids suspended and microorganisms in contact with contaminants. Upon completion of the process, the slurry is dewatered. The resulting water is sent for treatment, and residual solids are properly disposed of off site.

The benefits of excavation and ex-situ biological treatment are:

- The technology meets NYSDEC's preference for source treatment.
- Excavation and ex-situ biological treatment is applicable to the range of contaminants of concern at the site.
- The method provides direct verification of contaminated soil removal.

Factors that limit the applicability and effectiveness of ex-situ biological treatment are:

- The non-homogeneous nature of materials in and around the former gas relief holder, which include concrete blocks and the concrete foundation of the holder itself, create handling problems. Therefore, this technology is not considered applicable for the source area.
- The method, which requires a longer term for remediation, also requires longer-term monitoring and maintenance costs for soil as compared with other treatment technologies.
- Biopiles and composting require significant space requirements for screening, drying, and mixing.

- Daily mixing required to promote oxygenation and contaminant degradation increases handling.

- Exposure to contaminated soil and organic vapors may increase health risks to construction workers and the local population.

- Engineering controls are required to collect runoff and mitigate fugitive dust emissions during remediation.

- Substantial dewatering, and subsequent water treatment, are required when excavating soil located below the water table surface, as evidenced during IRM activities, unless vertical cutoff walls are employed. Additional drying may be necessary to achieve acceptable soil moisture content levels prior to treatment.

Ex-situ biological treatment technologies are not retained.

3.4.3.2 Chemical/Physical Treatment

Chemical processes for excavated soil include: solvent extraction, reduction/oxidation, and soil washing.

- **Solvent Extraction** - Solvent extraction involves mixing soil with an extractor to dissolve contaminants. The mixture is placed in a separator where the extracted contaminants are then separated from the soil and transported off site for treatment/disposal. This technology has not been proven to be effective on PAHs. This technology is not retained.

- **Reduction/Oxidation** - Reduction/oxidation (redox) converts the hazardous contaminants into non-hazardous or less toxic compounds that are more stable, less mobile, and/or inert. Redox reactions involve the transfer of electrons from one compound to another. Oxidizing agents generally utilized include ozone, hydrogen peroxide and chlorine. This process has not been proven to be effective on PAHs, and is inhibited by the presence of NAPL. This technology is not retained.

- **Soil Washing** - In the process of soil washing, contaminants sorbed onto soil particles are separated by dissolving or suspending them from soil in an aqueous-based solution. The solution may be amended with leaching agents and surfactants. While this technology has been previously used for hazardous contaminants, the presence of multiple contaminants (such as are present at this site) would make it difficult to formulate a single suitable washing solution that reliably removes all contaminants in a timely fashion. This technology is not retained.

The benefits of ex-situ chemical/physical treatment of soil are:

- This method satisfies NYSDEC's preference for treatment.
- The required equipment is available.
- The method provides direct verification of contaminated soil removal.
- Chemical and physical treatment processes generally require a shorter time frame than biological treatment processes.

Factors that limit the applicability and effectiveness of ex-situ chemical/physical treatment are:

- Chemical/physical treatment processes have not been proven to be effective on soil contaminated with multiple contaminants, PAHs, and oil.
- The non-homogeneous nature of materials in and around the former gas relief holder, which include concrete blocks and the concrete foundation of the holder itself, create handling problems. This technology is not considered applicable for the source area.
- Ex-situ chemical/physical treatment involves double handling of contaminated soil.
- The method, which requires a longer timeframe for remediation, also requires longer-term monitoring and maintenance costs for soil as compared with other technologies. It does, however, require a shorter time period than biological treatment.

- Exposure to contaminated soil and organic vapors may increase health risks to construction workers and the local population.

- Engineering controls are required to mitigate fugitive dust emissions during remediation.

- Substantial dewatering, and subsequent water treatment, are required when excavating soil located below the water table surface, as evidenced during IRM activities, unless vertical cutoff walls are employed.

3.4.3.3 Stabilization/Solidification

Ex-situ stabilization/solidification involves excavating the contaminated soil, separating the excavated material by size, processing it to appropriate particle size, and mixing it with stabilization or solidifying agents such as cement, bentonite, additives, or other chemicals. Stabilized soils would then be replaced and compacted on site for use as fill material.

The benefits of using ex-situ stabilization/solidification at the site are:

- This method immobilizes contaminants.

- The process improves the soil bearing capacity.

- The required equipment is available.

- The method provides direct verification of contaminated soil removal.

Factors that limit the applicability and effectiveness of ex-situ stabilization/solidification are:

- Ex-situ treatment involves double handling of contaminated soil and on-site space to construct the treatment area, feed and treated stockpiles, and access roads.

- The process is less effective on VOCs which are present in the subsurface.

- Contaminants are not destroyed. Unless combined with a site cap, erosion and infiltration may hinder the long-term effectiveness of the stabilization/solidifying agents in the future, allowing leaching of contaminants.

- A significant increase (e.g., approximately 20%) in the volume of the excavated soils as a result of mixture with the stabilization/solidifying agents may occur.

- The non-homogeneous and often large nature of the materials in and around the former gas relief holder, which include concrete blocks and the concrete foundation of the holder itself, create handling and treatment problems. This technology is not considered applicable for the gas relief holder area.

- Exposure to contaminated soil and organic vapors may increase health risks to construction workers and the local population.

- Engineering controls are required to mitigate fugitive dust emissions during remediation.

- Substantial dewatering and subsequent water treatment are required when excavating soil located below the water table surface, as evidenced during IRM activities, unless vertical cutoff walls are employed. Additional drying may be necessary to achieve acceptable soil moisture content levels prior to treatment.

- Creation of a concrete-like material in the subsurface may severely limit access to utilities, which may need to be permanently rerouted.

- Long-term operation and maintenance is required to monitor the effectiveness of the method.

- The method typically requires institutional controls (e.g., deed restrictions).

Ex-situ stabilization/solidification is retained for areas outside the gas relief holder area.

3.4.3.4 Off-site Thermal Treatment

Off-site ex-situ thermal treatment such as thermal desorption utilizes high temperatures to volatilize and combust organics in the excavated material in a controlled environment. Off-gasses are treated prior to discharge to the air, and residuals are disposed of off site in an appropriate facility. This technology is considered to be similar to excavation and off-site disposal/treatment; therefore, it will not be retained as a separate technology.

The benefits of off-site ex-situ thermal treatment are:

- This method meets NYSDEC's preference for treatment.
- Thermal treatment is applicable for all organic contaminants present at the site.
- The required equipment is available.
- The method provides direct verification of contaminated soil removal.

Factors that limit the applicability and effectiveness of off-site ex-situ thermal treatment are:

- Off-site ex-situ treatment involves double handling of contaminated soil.
- Exposure to contaminated soil and organic vapors during excavation needs to be monitored and controlled to avoid increased health risks to construction workers and the local population.
- Engineering controls are required to mitigate fugitive dust emissions during remediation.

3.4.4 In-Situ Treatment

In-situ treatment eliminates the limiting factors associated with excavating contaminated soil. In-situ methods include chemical/physical processes designed to increase the mobilization of contaminants, stabilization/solidification processes that reduce the mobility of the contaminants, or biological and thermal processes designed to destroy the contaminants. These technologies are typically combined with recovery technologies and containment systems and generally take a longer time period than excavation and ex-situ treatment or off-site disposal/treatment.

3.4.4.1 Biological Treatment

Naturally occurring microorganisms in the soil promote the breakdown and detoxification of organic contaminants. In-situ biological treatment methods (such as bioventing and bioremediation) enhance that process.

- **Bioventing** – Oxygen is introduced into unsaturated soils by forced air movement to stimulate biodegradation. While this technology has been proven to be effective on BTEX and PAHs, it is applicable to the unsaturated zone only and would not be effective on the saturated soils at the site. This technology is not retained.

- **Bioremediation** – Water, supplemented with nutrients, oxygen, and other amendments, is circulated through contaminated soil to enhance biological degradation of organics. An infiltration gallery is utilized for shallow, unsaturated soils, and injection wells are utilized for the saturated zone. Extraction wells help to promote migration pathways and re-circulation of amended water. This technology has been proven to be effective on BTEX and PAHs. This technology is retained.

The benefits of in-situ biological treatment are:

- This method satisfies NYSDEC's preference for treatment.

- The required equipment is available.
- The process does not require dewatering during remediation.
- Residual contamination is less toxic over the long term.

Factors that limit the applicability and effectiveness of in-situ biological treatment are:

- Subsurface heterogeneity and anisotropy, especially in the source area, may impede the subsurface flow of fluids and reduce the effectiveness of treatment.
- Bench-scale testing, pilot-scale testing and modeling are required to select the appropriate water amendments, design the well field, and establish system flow rates.
- By injecting water into the subsurface, especially given the hydrogeology of this site, the potential to wash the contaminants beyond the capture zone is increased.
- Biological treatment generally requires a long-term period of operation and maintenance to achieve remedial objectives.
- Biological treatment is generally effective for "fringe areas" of contamination only, as highly concentrated wastes may be toxic to the microorganisms.
- Biological treatment is generally not effective on higher molecular weight compounds.

3.4.4.2 Chemical/Physical Treatment

In-situ chemical/physical treatment processes applicable to organics are soil vapor extraction (SVE), soil flushing and surfactant enhanced recovery. The processes generally involve increasing the mobility of contaminants, and collecting groundwater and transporting it off site for treatment.

- **Soil Vapor Extraction** - SVE uses a contaminant's volatility to separate it from the soil. In general, without the addition of heat, SVE is applicable only to VOCs. This technology is not retained.

- **Soil Flushing** - Soil flushing involves injecting water containing additives into the subsurface to enhance contaminant solubility. Contaminants are then leached and extracted for treatment. An irrigation system is required to inject water over the vadose zone. Soil flushing has been proven to have only limited use for SVOCs. This technology is not retained.

- **Surfactant Enhanced Recovery** - Surfactant enhanced recovery is an alternative process to standard pump and treat methods. The process involves preparation of low viscosity surfactant solutions that are pumped through a DNAPL contaminated zone. Polymer amendments can be used to increase the viscosity of the surfactant for higher viscosity contaminants (e.g., coal tar). The process is a saturated zone technology and does not remove contaminants in the vadose zone. This technology is not retained.

The benefits of in-situ chemical/physical treatment of soil are:

- This method satisfies NYSDEC's preference for treatment.

- Construction worker and local population exposure to contaminated soil is minimized.

- The required equipment is available.

- The process does not require dewatering during remediation.

- Due to the relatively porous nature of the fill material, chemical treatment requires a shorter time frame than biological treatment.

Factors that limit the applicability and effectiveness of in-situ chemical/physical treatment are:

- This technology is not effective in the vadose zone.
- Subsurface heterogeneity and anisotropy, especially in the source area, may impede the subsurface flow of fluids.
- Bench-scale testing, pilot-scale testing and modeling are required to select the appropriate surfactant delivery system, design the well field, and establish system flow rates.
- By injecting water into the subsurface, especially given the hydrogeology of this site, the potential to wash the contaminants beyond the capture zone is increased.

3.4.4.3 Stabilization/Solidification

In-situ stabilization/solidification involves using an auger system to introduce stabilization or solidifying agents, such as cement, bentonite, additives, or other chemicals that immobilize the contaminants, into the subsurface.

The benefits of using in-situ stabilization/solidification at the site are:

- Exposure to contaminated soil for construction workers and the local population is minimized.
- Contaminants are immobilized in a relatively short time frame.
- The process improves the soil bearing capacity.
- The process does not require dewatering during remediation.

The following factors may limit the applicability and effectiveness of in-situ stabilization/solidification:

- VOCs may be released to the atmosphere during treatment.

- Contaminants are not destroyed.
- A significant increase in the volume of the contaminated soil as a result of mixture with stabilization/solidifying agents may occur.
- The non-homogeneous nature of large materials in and around the former gas relief holder, which include concrete blocks and the concrete foundation of the holder itself, is not amenable to augering.
- Long-term operation and maintenance is required to monitor the effectiveness.
- Creation of a concrete-like material in the subsurface may severely limit access to subsurface utilities, which may need to be permanently rerouted.
- Overhead utilities may preclude or limit the use of this technology in certain site areas.
- The method typically requires institutional controls (e.g., deed restrictions).

This technology is retained for use outside the former gas relief holder.

3.4.4.4 Thermal Treatment

In-situ thermal treatment methods employ heat to increase the mobilization of contaminants via volatilization and viscosity reduction. Available methods include heating by the addition of steam and/or hot water, electrical resistance, and radio frequency.

- **Steam Injection and Vacuum Extraction** – Steam (or hot water) is injected into the subsurface, reducing the viscosity of the contaminants and mobilizing them. Groundwater is extracted through a series of wells along the downgradient edges of the site. Vapors are collected by applying a vacuum to the extraction wells.
- **Electrical Resistance Heating** - Electrical resistance heating employs an electrical current to heat contaminated soil. The method is typically used on less permeable

soils so that trapped contaminants are vaporized and available for vacuum extraction. The technology is implemented by placing electrodes in the ground and applying sufficient voltage to produce an electric current. Heating occurs when electric current flows through the soil. Moisture in the soil is the main conduction path for the electricity.

- **Radiofrequency Heating** - Radiofrequency heating is accomplished by use of electromagnetic energy in the radiofrequency band. Energy is introduced into the soil by electrodes inserted into drilled holes. The mechanism of heat generation is similar to that of a microwave oven. A modified radio transmitter serves as the power source, the operational frequency of which is determined from an evaluation of the dielectric properties of the soil and the extent of contamination.

The benefits of using in-situ thermal treatment processes are:

- This method satisfies NYSDEC's preference for treatment.
- Construction worker and local population exposure to contaminated soil is minimized due to the limited excavation activities.
- The required equipment is available.
- Thermal treatment requires a shorter time frame than biological and chemical/physical treatment.
- This process does not require dewatering during remediation.

The following factors may limit the applicability and effectiveness of in-situ thermal treatment:

- In-situ thermal treatment processes have limited effectiveness on SVOCs unless high temperatures are generated. Increased energy and cost are required to create such high heat conditions, especially in the saturated zone.

- In order to be protective of human health and the environment, vaporized contaminants have to be collected through a vapor extraction system to reduce air emissions during remediation.

- Debris or large buried objects, such as underground piping and especially the materials found in the source area, may cause operating difficulties.

In-situ thermal treatment is not retained.

3.5 Identification and Screening of Remedial Technologies for Surface Water/Sediments

This section identifies the remedial technologies for surface water and sediments in the Anthony Kill adjacent to the Mechanicville Central Avenue Former MGP site. While removal of the source and continuing NAPL recovery program would remove the majority of the contamination, occasional discharges of NAPL to the Anthony Kill may occur. Remedial action objectives for surface water and sediments could be met utilizing a monitoring program of visually inspecting the Anthony Kill for MGP-related oil and/or floating substances and tar blebs, along with surface water and sediment sampling. Further spill responses and/or removal actions in the Anthony Kill could be performed if determined to be necessary and practical.

4.0 SCREENING OF REMEDIAL TECHNOLOGIES AND DEVELOPMENT OF ALTERNATIVES

The purpose of this section is to screen remedial technologies and formulate alternatives that will satisfy the established remedial action objectives for the site as a whole. The technologies surviving the initial technical implementability screening in Section 3.0 are compared with site-specific conditions to determine whether they should be retained for use in the development of remedial action alternatives. In addition, traditional remedial methods such as deed restrictions and monitoring are discussed.

4.1 Screening of Remedial Technologies

4.1.1 Monitoring

Naturally-occurring biodegradation processes would continue to degrade the contaminants present at the site into non-toxic compounds. Groundwater, surface water and sediment monitoring along with periodic visual inspections of the Anthony Kill would assess the degree to which natural biodegradation processes were having an effect on the concentrations of contaminants and the effect of the site's contamination on the groundwater system and the environment either following or in the absence of remediation.

4.1.2 Deed Restrictions

Deed restrictions would preclude the use of the site for inappropriate future development or extraction of groundwater for use both from on site and any affected off site properties. In the absence of remediation more stringent deed restrictions would have to be implemented.

4.1.3 Capping

The two covers considered to be technically implementable for the site are a soil cover and a low permeability cover. A two-foot-thick soil cover over the surface of the site would eliminate the exposure pathway for direct contact with contaminated surface soil. It will be retained for use in the development of alternatives in conjunction with stabilization/solidification. The capital and operation and maintenance (O&M) costs for a soil cover over the entire site are presented in Appendix D.

A low permeability cover would limit rainwater infiltration and reduce leaching of contaminants from soil. The design of the low permeability cover would be suitable to the end use of the property. It will be retained for use in the development of alternatives when reduced infiltration is of primary concern. The capital and O&M costs for a low permeability cover over the entire site are presented in Appendix D.

4.1.4 Vertical Cutoff Walls

Vertical cutoff walls are used to prevent or significantly reduce the migration of contaminants in groundwater, and can be constructed to surround either the entire site or smaller contaminated areas. Additionally, vertical cutoff walls when extended to the bedrock may reduce the amount of groundwater collected from off-site areas including backflow from the Anthony Kill, and as necessary, vertical cutoff walls could provide a degree of stability for excavation sidewalls. The two vertical cutoff walls considered to be technically implementable for the site are sheet piling and low permeability walls. As both types of cutoff walls are considered to be implementable and effective, the cost of constructing each type of wall was considered. A review of costs at similar MGP sites indicated that soil cement low permeability walls are less costly than slurry walls and sheet piling. Therefore, for FS-level purposes, soil cement cutoff walls are retained for use in the development of alternatives. Should an alternative incorporating vertical cutoff walls be selected for remediation at this site, this issue may be re-visited during the design stage. The capital and O&M costs for soil cement cutoff walls are presented in Appendix D.

4.1.5 NAPL Recovery

Both vertical and horizontal extraction wells are considered technically implementable at this site. While vertical extraction wells would be less costly to construct, two situations exist at this site wherein horizontal extraction wells would be advantageous. The first situation is under an existing structure, such as the roadway of North Central Avenue, within which there is a bedrock trough area where NAPL may pool. While it may be feasible and less costly to construct a vertical well in this area, continued access to the well for future sampling, groundwater collection, and/or NAPL recovery may be difficult. Instead, drilling a horizontal extraction well, starting on site and continuing to the appropriate depth below North Central Avenue, would be preferential for long-term access purposes. A second situation would involve more readily transecting a potential contaminant migration pathway such as the thrust fault along the southern edge of the site. Construction of a horizontal well would increase the probability of drilling an extraction well that will intercept significant fractures.

Both extraction well technologies are retained for use in the development of alternatives. For cost estimating purposes, it is assumed that half of the proposed NAPL recovery wells would be horizontal wells drilled at a 70˚ angle from horizontal.

The feasibility of utilizing an automated NAPL recovery system instead of the current method of hand bailing was evaluated. The Blackhawk anchor piston pump has been used to recover coal tar at other MGP sites and may be applicable to this site. Automated Blackhawk pumps for NAPL recovery and their associated piping and controls are included in the cost estimate for the purposes of this FS, but this issue may be re-visited during the design phase.

The capital and O&M costs for both vertical and horizontal NAPL extraction wells with Blackhawk pumps are presented in Appendix D.

4.1.6 Groundwater Collection and Treatment

Interceptor trenches and extraction wells are both implementable at the site. A trench may be advantageous in areas where the thickness of the overburden is less; however, unless the potentiometric surface in the trench is reduced to below the hydraulic head of the bedrock, downward flow to the bedrock would continue. It is anticipated that better hydraulic control could be attained through extraction wells (or a wellpoint system), especially along the eastern edge of the site. Therefore, for cost estimating purposes, extraction wells are included in the development of alternatives.

Both on-site and off-site groundwater treatment would be effective and implementable at the site. The cost-effectiveness of one over the other depends on the quality and quantity of water to be treated, and the availability and willingness of an appropriate off-site treatment facility to accept the collected water. Construction of an on-site treatment facility may be more cost effective than off-site water treatment and disposal when long-term treatment is necessary and/or large quantities of collected water require treatment. Transportation to an appropriate off-site treatment facility such as a commercial facility or a POTW may be more cost effective for shorter term operations and/or relatively small quantities of water. Extracted water may require treatment prior to discharge in accordance with a State Pollutant Discharge Elimination system (SPDES) permit, to a POTW, or transported off site for further treatment/disposal. The capital and O&M costs for groundwater collection and disposal/treatment are presented in Appendix D. Should an alternative incorporating groundwater collection and disposal/treatment be selected for this site, this issue may be re-visited during the design phase.

4.1.7 Excavation and Disposal/Treatment

Excavation is a widely used and proven method of removing soil contamination applicable to the complete range of contaminants and particle sizes (including concrete slabs and backfilled material within the gas relief holder) at the site. The technology is technically feasible for the size of any area requiring remediation. The capital costs of excavating contaminated soils for the cleanup levels under consideration (i.e., [1] to attain individual SCGs, [2] TPAHs > 500

ppm; and [3] TPAHs > 1,000 ppm) are presented in Appendix D. Dewatering would have to be included with any alternative incorporating excavation.

Following excavation, soils may either be transported off site for disposal or treatment, or treated on site ex-situ by stabilization/solidification. The primary limiting factors for stabilization/solidification are: the significant increase in the volume of the material that would have to be replaced on site as a result of the treatment process, the space requirements needed to mix the excavated soils and stabilizing agents, and most importantly, the non-homogeneous nature of materials found in and around the former gas relief holder which would create handling and treatment problems. These limiting factors preclude the selection of on-site ex-situ stabilization/solidification for excavated soil. Therefore, only off-site disposal/treatment of excavated soil is retained for the development of alternatives. The capital costs for off-site soil disposal/treatment for the cleanup levels under consideration are presented in Appendix D.

4.1.8 In-Situ Treatment

Both bioremediation and stabilization/solidification are technically implementable as in-situ treatment technologies at the site as discussed in Section 3.0; however, neither technology would be effective in the area of the former gas relief holder given the non-homogeneous nature of the material found there and the highly concentrated contaminants. Therefore, in-situ treatment only applies to the remainder of the site. Designing a bioremediation system to avoid the gas holder area would be complex. Further, a limiting factor for bioremediation is the long time frame required for biological processes to effectively degrade contaminants to acceptable levels. In-situ stabilization/solidification, on the other hand, could be readily implemented and avoid the source area. Remediation could be performed in a relatively short time frame. For these reasons, in-situ stabilization/solidification is selected over bioremediation as an in-situ treatment technology for the portions of the site other than the holder area. The capital cost for in-situ stabilization/solidification for the non-holder area is presented in Appendix D.

4.2 Summary of Technologies Surviving Screening

The following remedial technologies survived the screening process and will be combined into remedial alternatives for the site as a whole as described in Section 4.3:

- Monitoring.
- Deed restrictions.
- Low permeability cover.
- Soil cover for use with stabilization/solidification.
- Vertical cutoff wall.
- Vertical and horizontal groundwater extraction wells.
- Passive NAPL recovery such as an automated Blackhawk recovery system.
- Soil excavation with off-site disposal/treatment.
- Off-site NAPL disposal/treatment.
- In-situ stabilization/solidification of non-holder areas.
- Treated water would be discharged in accordance with the SPDES permit or transported off site for further treatment/disposal.

4.3 Development of Alternatives

Alternatives developed for the Mechanicville MGP site are based on meeting the remedial action objectives. For soil, three cleanup levels are considered: eliminating the source and exposure pathways (TPAHs > 1,000 ppm); attaining SCGs for total VOCs and TPAHs < 500 ppm; and attaining SCGs for individual VOCs and SVOCs. Figures 2-2, 2-3 and 2-5 identify the areas of contamination requiring remediation for each cleanup level.

Alternatives involving excavation of the former holder area with off-site disposal/treatment of excavated material and in-situ stabilization/solidification of the remaining areas are feasible. However, since the former holder area comprises the majority of the area identified for the cleanup levels of TPAHs > 1,000 ppm (4,000 of 5,340 cy) and TPAHs > 500 ppm (4,000 of 6,250 cy), it would not be cost effective to first mobilize equipment appropriate for excavation and off-site disposal/treatment the former holder area and then mobilize an onsite treatment unit to perform in-situ stabilization/solidification in the remaining areas with TPAHs > 1,000 ppm or TPAHs > 500 ppm. Therefore, only in-situ stabilization/solidification to attain SCGs outside the holder area, combined with excavation and off-site disposal/treatment of soil from the holder area, is retained for the development of alternatives.

Groundwater collection and treatment, with vertical cutoff walls for the entire site, are an effective and implementable combination of remedial technologies. Groundwater collection and treatment, with vertical cutoff walls for the source area, are also effective and implementable technologies. However, groundwater collection and treatment and vertical cutoff walls for the pockets of contamination identified to the northwest of the source area (TPAHs > 1,000 ppm and TPAHs > 500 ppm) would not be cost effective to construct and maintain. Therefore, groundwater collection and treatment, with vertical cutoff walls for the entire site and the source area, are retained for use in the development of alternatives. Pockets of source material with TPAHs > 1,000 ppm outside the source area would be excavated and disposed/treated off site.

Due to the large variation in potential groundwater collection rates, and the fact that limited hydraulic testing data are available for this site, vertical cutoff walls are included with all alternatives that include groundwater collection and treatment, including dewatering.

In addition to remediation to cleanup levels, inherent in all alternatives involving remediation of source material in the overburden (with the exception of the No Further Action Alternative) is removal of tar or oil in any form, and purifier wastes as evidenced by the presence of reactive cyanide > 500 ppm, reactive sulfide > 250 ppm, wood chips or blue staining. Previous removals at the site have removed areas of visible purifier waste. However, Figure 1-11 identifies additional areas of potential source material present at depth. As the potential

quantities of such source material requiring removal are unknown, they have not been included as a separate line item in the cost estimates, but are assumed to be included in all alternatives involving remediation.

4.3.1 Alternative 1 – No Further Action

No further action at the site excludes remedial activities other than those which have been undertaken or are currently ongoing. Previous removals at the site, including the IRM, involved excavating contaminated soil and purifier waste and transporting it, along with groundwater collected during dewatering, off site for disposal and/or treatment. Ongoing activities at the site include monitoring and NAPL recovery. As shown on Figure 4-1, the No Further Action Alternative would include:

- NAPL recovery from the four existing NAPL recovery wells - continued passive recovery through hand bailing is included.
- Monitoring - naturally-occurring biodegradation processes would continue to degrade the contaminants into less toxic compounds. Groundwater monitoring from existing monitoring wells would assess the degree to which natural biodegradation processes are having an affect on the concentrations of contaminants. Surface water and sediment monitoring along with periodic visual inspections of the Anthony Kill would be performed.
- Deed restrictions - in the absence of additional remedial measures, deed restrictions are implemented to limit site access and development and prohibit groundwater use.

4.3.2 Alternative 2a – Containment of Source Area, Excavation of Contaminated Soil TPAHs > 1,000 ppm Outside Source Area, NAPL Recovery

As shown on Figure 4-2, this alternative includes:

- Installation of a vertical cutoff wall extended to the top of bedrock around the source area, which approximately follows the contours of TPAHs greater than 1,000 ppm in the vicinity of the source area, to isolate contamination and limit lateral inflow of groundwater and migration through the overburden.

- Long-term extraction of groundwater from within the cutoff wall, over a 30-year period, promoting upward flow from the bedrock in order to limit downward migration.

- Treatment of collected groundwater.

- Excavation and off-site disposal/treatment of the pockets of TPAHs > 1,000 ppm outside the containment area (approximate 445 cy), and backfilling of these pocket areas.

- Following installation of ten new NAPL recovery wells, NAPL recovery from the existing four and ten new recovery wells. Half of the new wells are vertical extraction wells, and half are horizontal extraction wells for use where recovery is desired beneath a roadway or other structure. An automated NAPL recovery system is included.

- Construction of a low permeability cover over the entire site with proper drainage so as to limit the amount of infiltration to the subsurface and provide protection from residual soil contamination. The cover is graded to be congruent with the surrounding area.

- Monitoring of groundwater, surface water and sediments along with annual visual inspection of the Anthony Kill to assess the effectiveness of the remediation and the degree to which natural biodegradation processes are having an affect on the concentrations of contaminants.

- Deed restrictions to limit access to, and use of, the site during the operation and maintenance period of remediation. Restrictions would also prohibit groundwater use. Deed restrictions would continue in perpetuity in non-remediated areas.

4.3.3 Alternative 2b – Containment - Entire Site, NAPL Recovery

As shown on Figure 4-3, this alternative includes:

- Installation of a vertical cutoff wall extended to the top of bedrock around the entire site to isolate contamination and limit lateral inflow and migration through the overburden.
- Long-term extraction of groundwater from within the cutoff wall across the entire site, over a 30-year period, promoting upward flow from the bedrock in order to limit downward migration.
- Treatment of collected groundwater.
- Following installation of ten new NAPL recovery wells, NAPL recovery from the existing four and ten new recovery wells. Half of the new wells are vertical extraction wells, and half are horizontal extraction wells for use where recovery is desired beneath a roadway or other structure. An automated NAPL recovery system is included.
- Construction of a low permeability cover over the entire site with proper drainage so as to limit the amount of infiltration to the subsurface and provide protection from residual soil contamination. The cover is graded to be congruent with the surrounding area.
- Monitoring of groundwater, surface water and sediments along with annual visual inspection of the Anthony Kill to assess the effectiveness of the remediation and the degree to which natural biodegradation processes are having an affect on the concentrations of contaminants.
- Deed restrictions to limit access to, and use of, the site during the operation and maintenance period of remediation. Deed restrictions would also prohibit groundwater use.

4.3.4 Alternative 3a – Excavation of Contaminated Soil Above SCGs and Off-Site Disposal/Treatment, NAPL Recovery

As shown on Figure 4-4, this alternative includes:

- Excavation of approximately 15,400 cy of contaminated soil exceeding SCGs from across the site.
- Transportation and off-site disposal/treatment of excavated soil at an appropriate permitted facility.
- Installation of a vertical cutoff wall extended to the top of bedrock surrounding the area of soil contaminated above SCGs to isolate contamination and limit lateral inflow which would otherwise increase the amount of dewatering required.
- Short-term dewatering of the areas to be excavated through collection of groundwater during the construction period.
- Treatment of groundwater collected during dewatering.
- Following installation of ten new NAPL recovery wells, NAPL recovery from the existing four and ten new recovery wells. Half of the new wells are vertical extraction wells, and half are horizontal extraction wells for use where recovery is desired beneath a roadway or other structure. An automated NAPL recovery system is included.
- Monitoring of groundwater, surface water and sediments along with annual visual inspection of the Anthony Kill to assess the effectiveness of the remediation and the degree to which natural biodegradation processes are having an affect on the concentrations of contaminants.
- Deed restrictions to limit access to, and use of, the site during the operation and maintenance period of remediation. Deed restrictions would also prohibit groundwater use.

4.3.5 Alternative 3b – Excavation of Contaminated Soil TPAHs > 1,000 ppm and Off-Site Disposal/Treatment, NAPL Recovery

As shown on Figure 4-5, this alternative includes:

- Excavation of approximately 5,350 cy of contaminated soil with TPAHs greater than 1,000 ppm from areas across the site.
- Transportation and off-site disposal/treatment of excavated soil at an appropriate permitted facility.
- Installation of a vertical cutoff wall extended into the top of bedrock in the area of deep excavation (around the source area) to isolate contamination and limit lateral inflow which would otherwise increase the amount of dewatering required.
- Short-term dewatering of the areas to be excavated through collection of groundwater during the construction period.
- Treatment of collected groundwater.
- Following installation of ten new NAPL recovery wells, NAPL recovery from the existing four and ten new recovery wells. Half of the new wells are vertical extraction wells, and half are horizontal extraction wells for use where recovery is desired beneath a roadway or other structure. An automated NAPL recovery system is included.
- Monitoring of groundwater, surface water and sediments along with annual visual inspection of the Anthony Kill to assess the effectiveness of the remediation and the degree to which natural biodegradation processes are having an affect on the concentrations of contaminants.
- Deed restrictions to limit access to, and use of, the site during the operation and maintenance period of remediation. Deed restrictions would also prohibit groundwater use.

4.3.6 Alternative 3c – Excavation of Contaminated Soil TPAHs > 500 ppm and Off-Site Disposal/Treatment, NAPL Recovery

As shown on Figure 4-6, this alternative includes:

- Excavation of approximately 6,250 cy of contaminated soil with TPAHs greater than 500 ppm from areas across the site.
- Transportation and off-site disposal/treatment of excavated soil at an appropriate permitted facility.
- Installation of a vertical cutoff wall extended into the top of bedrock in the area of deep excavation (around the source area) to isolate contamination and limit lateral inflow which would otherwise increase the amount of dewatering required.
- Short-term dewatering of the areas to be excavated through collection of groundwater during the construction period.
- Treatment of collected groundwater.
- Following installation of ten new NAPL recovery wells, NAPL recovery from the existing four and ten new recovery wells. Half of the new wells are vertical extraction wells, and half are horizontal extraction wells for use where recovery is desired beneath a roadway or other structure. An automated NAPL recovery system is included.
- Monitoring of groundwater, surface water and sediments along with annual visual inspection of the Anthony Kill to assess the effectiveness of the remediation and the degree to which natural biodegradation processes are having an affect on the concentrations of contaminants.
- Deed restrictions to limit access to, and use of, the site during the operation and maintenance period of remediation. Deed restrictions would also prohibit groundwater use.

4.3.7 Alternative 4 – Excavation and Off-Site Disposal/Treatment of Holder Area, In-Situ Stabilization/Solidification of Remaining Site Area, NAPL Recovery

As shown on Figure 4-7, this alternative includes:

- Excavation of the area of the gas relief holder, approximately 75 feet in diameter and up to 25 feet deep, with an approximate volume of approximately 4,000 cy.
- Transportation and off-site disposal/treatment of excavated soil at an appropriate permitted facility.
- Installation of a vertical cutoff wall extended into the top of bedrock in the areas of deep excavation to isolate contamination and limit lateral inflow which would otherwise increase the amount of dewatering required.
- Short-term dewatering of the areas to be excavated through collection of groundwater during the construction period.
- Treatment of collected groundwater.
- In-situ stabilization/solidification of the site outside the holder area where soil exceeds SCGs (approximately 11,400 cy) through an augering system whereby cement is added to the soil to immobilize contaminants.
- Construction of a two-foot soil cover over the site to protect treated residuals from surface water and wind erosion.
- Following installation of ten new NAPL recovery wells, NAPL recovery from the existing four and ten new recovery wells. Half of the new wells are vertical extraction wells, and half are horizontal extraction wells for use where recovery is desired beneath a roadway or other structure. An automated NAPL recovery system is included.

- Monitoring of groundwater, surface water and sediments along with annual visual inspection of the Anthony Kill to assess the effectiveness of the remediation and the degree to which natural biodegradation processes are having an affect on the concentrations of contaminants.

- Deed restrictions to limit access to, and use of, the site during the operation and maintenance period of remediation. Deed restrictions would also prohibit groundwater use.

5.0 DETAILED ANALYSIS OF ALTERNATIVES

5.1 Description of Evaluation Criteria

Each of the alternatives is subjected to a detailed evaluation with respect to the criteria outlined in 6 NYCRR Part 375 and described below. This evaluation aids in the selection process for remedial actions at inactive waste sites in New York State.

Overall Protection of Human Health and the Environment

This criterion is a check to assess whether the alternative meets requirements that are protective of human health and the environment. The overall assessment is based on a composite of factors assessed under other evaluation criteria, particularly long-term effectiveness and performance, short-term effectiveness, and compliance with SCGs. This evaluation focuses on how a specific alternative achieves protection over time and how site risks are reduced. The analysis includes an assessment of how the source of contamination is to be eliminated, reduced, or controlled.

Compliance with SCGs

This criterion determines how each alternative complies with applicable or relevant and appropriate requirements (ARARs) or relevant and appropriate SCGs.

Short-term Impacts and Effectiveness

This criterion assesses the effects of the alternative during the construction and implementation phase with respect to its effect on human health and the environment. The factors that are assessed include protection of the community during remedial action,

environmental impacts that result from the remedial action, time required until the remedial action objectives are achieved, and protection of workers during the remedial action.

Long-term Effectiveness and Permanence

This criterion addresses the results of a remedial action in terms of its permanence and the quantity/nature of waste or residuals remaining at the site after remedial action objectives have been met. The primary focus of this evaluation is the extent and effectiveness of the controls that may be required to manage the residuals remaining at the site and the operation and maintenance systems necessary for the remedy to remain effective. The factors that are evaluated include permanence of the remedial alternative, magnitude of the remaining risk, adequacy of controls used to manage residual contamination, and the reliability of controls used to manage residual contamination.

Reduction of Toxicity, Mobility and Volume

This criterion assesses the remedial alternative's use of technologies that permanently and significantly reduce toxicity, mobility, or volume (TMV) of the contamination as their principal element. The NYSDEC gives preference to alternatives that eliminate any significant threats at the site through destruction of toxic contaminants, reduction of the total mass of toxic contaminants, irreversible reduction of the contaminant mobility, or reduction of the total volume of contaminated media. The criterion includes the amount of hazardous material that would be destroyed or treated, the degree of expected reduction in toxicity, mobility, or volume, the degree in which the treatment is irreversible, and the type and quantity of treatment residuals that would remain following treatment.

Implementability

This criterion addresses the technical and administrative feasibility of implementing the alternative and the availability of various services and materials required during implementation.

The evaluation includes the feasibility of construction and operation, the reliability of the technology, the ease of undertaking additional remedial action, monitoring considerations, activities needed to coordinate with regulatory agencies, availability of adequate equipment, services and materials, off-site treatment, and storage and disposal services.

Cost

Cost estimates for each remedial alternative are presented on Table 5-1.

Community Acceptance

Concerns of the State and the community are addressed after completion of a Proposed Remedial Action Plan (PRAP) that would be prepared and released to the public.

5.1.1 Alternative 1 – No Further Action

The IRM and previous removal actions included excavation of contaminated material from the site. Alternative 1 would leave residual contamination in its present condition, with no further removal and/or treatment following NAPL recovery. Ongoing NAPL recovery efforts would continue. Naturally-occurring biodegradation processes in soil and groundwater would continue to degrade the contaminants into non-toxic compounds. Groundwater monitoring in existing monitoring wells as well as surface water and sediment monitoring along with annual visual inspection of the Anthony Kill would assess the degree to which natural biodegradation processes were having an effect on the concentrations of contaminants. Deed restrictions would be implemented to limit site access, and development, and groundwater use both from on site and any affected off site properties.

Overall Protection of Human Health and the Environment

Although this alternative poses few short-term risks, it does not comply with chemical-specific SCGs, and is not effective in the long term. This alternative would not be protective of human health or the environment.

Compliance with SCGs

Since contamination would remain on site, this alternative would not meet the cleanup goals of either attaining SCGs or eliminating the source and exposure pathways in a reasonable time frame. No location-specific SCGs have been identified.

Action-specific SCGs for this alternative apply to the handling of extracted NAPL, monitoring requirements, and Occupational Safety and Health Administration (OSHA) health and safety requirements. Compliance with these SCGs would be achieved by following a site-specific health and safety plan (HASP).

Short-term Impacts and Effectiveness

As there is no construction associated with this alternative, there would be minimal impact on workers or the community. Remedial action objectives would not be met with this alternative.

Long-term Effectiveness and Permanence

Contaminant migration from soil to groundwater and potential exposure to contaminants would continue. Only NAPL migration would be reduced. The potential for risk to human health caused by contaminated soil and groundwater is addressed through deed restrictions limiting site access and use, and prohibiting extraction of groundwater for potable purposes. This alternative is not considered effective or permanent in the long term.

Reduction of Toxicity, Mobility and Volume

This alternative would only slightly reduce the mobility and volume of contaminants through NAPL recovery. Further reduction of the toxicity, mobility, and volume of contamination would occur slowly through natural processes.

Implementability

Continued NAPL recovery, monitoring, and deed restrictions would be readily implemented. There are no anticipated administrative or legal barriers for implementation of this alternative.

Cost

Estimated capital and O&M costs for Alternative 1 are presented on Table 5-1.

5.1.2 Alternative 2a – Containment of Source Area, Excavation of Contaminated Soil TPAHs > 1,000 ppm Outside Source Area, NAPL Recovery

This alternative would provide containment of contaminated soil within the source area through the installation of a vertical cutoff wall. A wellpoint system or extraction wells would be installed within the containment area to collect contaminated groundwater over a 30-year period. Collected water would be treated on site and discharged via SPDES permit or transported off site for further treatment/disposal. Source material outside the contained area, including soil with TPAHs > 1,000 ppm, would be excavated and disposed of off site. Outside the remediation area, naturally-occurring biodegradation processes in soil and groundwater would continue to degrade contaminants to reduced concentrations and non-toxic compounds. Groundwater, surface water and sediment monitoring along with annual visual inspection of the Anthony Kill would assess the degree to which natural biodegradation processes were having an effect on the concentrations of contaminants.

A low permeability cover would be constructed over the entire site to limit infiltration and reduce not only the amount of water collected, but the leaching of contaminants from the soil within the vadose zone as well. A cover would eliminate the direct exposure pathway posed by contaminated soil.

Ongoing NAPL recovery efforts would continue and expand following the installation of new NAPL recovery wells and automated pumps. Deed restrictions would be implemented to limit site access and development, and groundwater use both from on site and any affected off site properties.

Overall Protection of Human Health and the Environment

This alternative is protective of human health and the environment through the use of hydraulic containment in the source area, removal of source material outside the contained area, institutional controls, construction of a low permeability cover, and NAPL recovery. Increased short-term risks to workers and the local community could be mitigated by administering a site-specific HASP. A long time period (e.g., 30 years) would be required for remediation of the source area to meet soil and groundwater SCGs. SCGs would not be met for the remainder of the site.

Compliance with SCGs

NAPL and contaminants leaching from soil in the source area would be collected as groundwater is extracted. SCGs would be met immediately in excavated areas and in the source area over the long term for groundwater and soils through pump and treat methods. NAPL recovery and naturally occurring biodegradation processes would improve the quality of the groundwater, surface water and sediments over the long term.

No location-specific SCGs have been identified. Action-specific SCGs for this alternative apply to the handling of extracted NAPL and contaminated groundwater, monitoring

requirements, and OSHA health and safety requirements. Compliance with the remaining action-specific SCGs would be achieved by following a site-specific HASP.

Short-term Impacts and Effectiveness

There would be a potential for worker and community exposure to fugitive emissions, NAPL, and contaminated soil during soil excavation; construction of the cutoff wall and low permeability cover; installation of the groundwater extraction and NAPL recovery wells; and off-site transportation of collected groundwater. Construction of this alternative could be implemented in approximately one year. Remedial action objectives for soil and groundwater would be substantially met over the long term through pump and treat methods. Surface water and sediment quality would be improved following remediation. The cover would eliminate exposure to residual contaminated soil.

Long-term Effectiveness and Permanence

Soil excavation and groundwater collection and treatment would be effective in the long term and permanent. Concentrations of contaminants in soil and groundwater in the source area would remain above the SCGs for the long period of time required for remediation. Hydraulic containment, institutional controls, a low permeability cover, and monitoring would be used to manage the contaminated materials. The cover would eliminate the direct exposure pathways posed by residual contaminated soil.

Reduction of Toxicity, Mobility and Volume

This alternative would reduce the volume and mobility of contaminants. The mobility of contaminants in the source area would be reduced through the presence of vertical cutoff walls. Groundwater extraction would promote upward flow from the bedrock and eliminate lateral migration through the overburden from the source area. The mobility and volume of contaminated soil would be reduced following excavation and off-site disposal. A low

permeability cover over the entire site would limit infiltration and reduce the leaching and thus the mobility of contaminants from soil within the vadose zone.

Implementability

This alternative would rely on widely used and proven construction and treatment methods using available equipment and materials. There are no anticipated administrative or legal barriers to implementation of this alternative.

Cost

Estimated capital and O&M costs are provided in Table 5-1.

5.1.3 Alternative 2b – Containment of Entire Site, NAPL Recovery

This alternative would provide containment of contaminated soil and overburden groundwater with the installation of a vertical cutoff wall surrounding the entire site. Extraction wells would be installed within the containment area to collect contaminated groundwater over a 30-year period. Collected water would be treated on site and discharged via SPDES permit or transported off site for further treatment/disposal. Groundwater, surface water and sediment monitoring along with annual visual inspection of the Anthony Kill would assess the degree to which natural biodegradation processes were having an effect on the concentrations of contaminants.

A low permeability cover would be constructed over the entire site to limit infiltration and reduce not only the amount of water collected, but the leaching of contaminants from the soil within the vadose zone as well. A cover would eliminate the direct exposure pathways posed by contaminated soil.

Ongoing NAPL recovery efforts would continue and expand with the installation of new NAPL recovery wells and automated pumps. Deed restrictions would be implemented to limit site access, and development, and groundwater use both from on site and any affected off site properties.

Overall Protection of Human Health and the Environment

This alternative would be protective of human health and the environment through the use of hydraulic containment across the entire site area, institutional controls, construction of a low permeability cover, and NAPL recovery. Increased short-term risks to workers and the local community could be mitigated by administering a site-specific HASP. A long time period (e.g., 30 years) would be required for remediation of the entire site to meet individual SCGs for soil and groundwater.

Compliance with SCGs

NAPL and contaminants leaching from soil would be collected as groundwater is extracted. Individual SCGs for soil and groundwater in the overburden would be met over the long term through pump and treat methods. NAPL recovery and naturally occurring biodegradation processes would improve the quality of the bedrock aquifer, surface water and sediments over the long term.

No location-specific SCGs have been identified. Action-specific SCGs for this alternative apply to the handling of extracted NAPL and contaminated groundwater, monitoring requirements, and OSHA health and safety requirements. Compliance with the remaining action-specific SCGs would be achieved by following a site-specific HASP.

Short-term Impacts and Effectiveness

There would be a potential for worker and community exposure to fugitive emissions, NAPL, and contaminated soil during construction of the cutoff wall and low permeability cover; installation of the groundwater extraction and NAPL recovery wells; and off-site transportation of collected groundwater. Impacts to workers and the community would be mitigated through a site-specific HASP. Construction of this alternative could be implemented in less than two years. Remedial action objectives for soil and groundwater would be met over the long term. Surface water and sediment quality would be improved following remediation.

Long-term Effectiveness and Permanence

Groundwater collection and treatment would be effective in the long term and permanent. Concentrations of contaminants in soil and groundwater would remain above individual SCGs for the long period of time required for remediation. Hydraulic containment, institutional controls, a low permeability cover, and monitoring would be used to manage the contaminated materials. The cover would eliminate the direct exposure pathways posed by contaminated soil.

Reduction of Toxicity, Mobility and Volume

This alternative would reduce the volume and mobility of contaminants. The mobility of contaminants across the site would be reduced through the presence of vertical cutoff walls. Groundwater extraction would promote upward flow from the bedrock and eliminate lateral migration through the overburden within the source area. A low permeability cover over the entire site would limit infiltration and reduce the leaching and thus the mobility of contaminants from soil within the vadose zone.

Implementability

This alternative would rely on widely used and proven construction and treatment methods using available equipment and materials. There are no anticipated administrative or legal barriers to implementation of this alternative.

Cost

Estimated capital and O&M costs are provided in Table 5-1.

5.1.4 Alternative 3a – Excavation of Contaminated Soil Above Individual SCGs and Off-Site Disposal/Treatment, NAPL Recovery

This alternative would remove contaminated soil in order to attain individual SCGs for soil. The conceptual plan estimates excavation of approximately 15,400 cy of soil. Excavated soil would be transported off site for disposal or thermal treatment at a permitted facility. The excavation would be backfilled with clean fill and graded, and the ground surface would be prepared to meet future land use requirements. Short-term dewatering at an estimated rate of up to 430 gallons per minute (gpm) would be performed during excavation activities; collected groundwater would be treated on site and discharged via SPDES permit or transported off site for further treatment/disposal. Vertical cutoff walls would be employed during the excavation process to reduce lateral inflow from off site and the Anthony Kill.

Ongoing NAPL recovery efforts would continue and expand with the installation of new NAPL recovery wells and automated pumps. Naturally-occurring biodegradation processes would continue to degrade the contaminants into less toxic compounds in non-remediated areas. Groundwater, surface water and sediment monitoring would assess the degree to which natural biodegradation processes were having an effect on the concentrations of contaminants. Deed restrictions would be implemented to limit site access, and development, and groundwater use both from on site and any affected off site properties.

Overall Protection of Human Health and the Environment

This alternative would be protective of human health and the environment. The short-term risks associated with this alternative would create an increased potential for exposure to workers and the community. However, this alternative would significantly eliminate potential future exposure to contaminants at the site and, in the long term, would significantly reduce the contaminant concentrations in groundwater, surface water and sediment by eliminating the source of contamination. The estimated time to implement this alternative is approximately one year.

Compliance with SCGs

This alternative would meet the remedial action objective for attaining individual SCGs for soil by eliminating site-related contamination at concentrations exceeding SCGs for soil. Groundwater contaminant concentrations would be significantly reduced following excavation, treatment of collected water during dewatering activities and NAPL recovery. No location-specific SCGs have been identified. Action-specific SCGs for this alternative apply to the excavation and handling of contaminated soil and NAPL, monitoring requirements, and OSHA health and safety requirements. Compliance with these SCGs would be achieved by following a site-specific HASP.

Short-term Impacts and Effectiveness

There would be an increased potential for worker and community exposure to fugitive emissions during excavation and transportation of contaminated soil. A risk to the public would also be present during the handling of groundwater and materials for off-site treatment and/or disposal. Exposure would be significantly reduced through the use of dust and odor suppression measures, proper covering of trucks, and personal protective equipment. The use of traffic control measures and planned traffic flow patterns would minimize any impacts caused by heavy truck traffic during implementation of the remedy. This alternative could be implemented in approximately one year. Remedial action objectives for soil to attain SCGs would be met following excavation. Groundwater, surface water and sediment quality would be improved over

the long term following source removal, treatment of collected water during dewatering activities, and NAPL recovery.

Long-term Effectiveness and Permanence

Removing soil contamination above SCGs would be both effective and permanent in the long term. Once the contaminated soil above SCGs was removed and the groundwater collected during the dewatering was treated, groundwater, surface water and sediment quality would be improved. Groundwater, surface water and sediment monitoring would assess the degree to which NAPL recovery and natural biodegradation processes were having an effect on the concentrations of contaminants in the bedrock and the Anthony Kill.

Reduction of Toxicity, Mobility and Volume

The volume of contaminated soil and groundwater across the site would be permanently reduced. Off-site soil and NAPL treatment would reduce the volume and toxicity of contaminants. Off-site soil and NAPL disposal at a permitted facility would reduce the mobility of the contaminants. Treatment of groundwater collected during construction would reduce the volume and toxicity of groundwater contamination present at the site.

Implementability

The alternative would rely on widely used and proven methods of removing contamination. Construction and treatment would be performed using available equipment. There are no anticipated administrative or legal barriers to implementation of this alternative.

Cost

Estimated capital and O&M costs are provided in Table 5-1.

5.1.5 Alternative 3b – Excavation of Contaminated Soil TPAHs > 1,000 ppm and Off-Site Disposal/Treatment, NAPL Recovery

This alternative would remove contaminated soil from areas where TPAHs are greater than 1,000 ppm in soil. The conceptual plan estimates excavation of approximately 5,350 cy of soil. Excavated soil would be transported off site for disposal or thermal treatment at a permitted facility. The excavations would be backfilled with clean fill and graded, and the ground surface would be prepared to meet future land use requirements. Short-term dewatering at an estimated rate of up to 430 gpm would be performed during excavation activities; collected groundwater would be treated on site and discharged via SPDES permit or transported off site for further treatment/disposal. Vertical cutoff walls would be employed during the excavation process to reduce lateral inflow.

Ongoing NAPL recovery efforts would continue and expand with the installation of new NAPL recovery wells. Naturally-occurring biodegradation processes would continue to degrade the contaminants into less toxic compounds in non-remediated areas. Groundwater, surface water and sediment monitoring would assess the degree to which natural biodegradation processes were having an effect on the concentrations of contaminants. Deed restrictions would be implemented to limit site access, and development, and groundwater use both from on site and any affected off site properties.

Overall Protection of Human Health and the Environment

This alternative would be protective of human health and the environment. The short-term risks associated with this alternative would create an increased potential for exposure to workers and the community. However, this alternative would reduce potential future exposure to contaminants at the site through source removal and, in the long term, would reduce the contaminant concentrations in groundwater, surface water and sediments by removing the source of contamination. The estimated time to implement this alternative is less than one year.

Compliance with SCGs

This alternative would meet the remedial action objective for source removal and pathway exposure elimination for soil by excavating soil with TPAHs > 1,000 ppm. Groundwater contaminant concentrations would be reduced over the long term following excavation and treatment of collected water during dewatering activities and NAPL recovery. No location-specific SCGs have been identified. Action-specific SCGs for this alternative apply to the excavation and handling of contaminated soil and NAPL, monitoring requirements, and OSHA health and safety requirements. Compliance with these SCGs would be achieved by following a site-specific HASP.

Short-term Impacts and Effectiveness

There would be a potential for worker and community exposure to fugitive emissions during excavation and transportation of contaminated soil. A risk to the public would also be present during the handling of groundwater and materials for off-site treatment and/or disposal. Exposure would be significantly reduced through the use of dust and odor suppression measures, proper covering of trucks, and personal protective equipment. The use of traffic control measures and planned traffic flow patterns would minimize any impacts caused by heavy truck traffic during implementation of the remedy. This alternative could be implemented in less than one year. Remedial action objectives for soil for source and exposure pathway elimination would be met following excavation and dewatering. Groundwater, surface water and sediment quality would be improved following source removal, treatment of collected water during dewatering activities, and NAPL recovery.

Long-term Effectiveness and Permanence

Removing soil contamination with TPAHs > 1,000 ppm would be both effective and permanent in the long term. Once the contaminated soil with TPAHs > 1,000 ppm was removed and groundwater collected during the dewatering process was treated, groundwater, surface water and sediment quality would be improved. Groundwater, surface water and sediment monitoring

would assess the degree to which natural biodegradation processes were having an effect on the concentrations of contaminants in the bedrock and the Anthony Kill.

Reduction of Toxicity, Mobility and Volume

The volume of contaminated soil and groundwater in the remediated area would be permanently reduced. Off-site soil and NAPL treatment would reduce the volume and toxicity of contaminants. Off-site soil and NAPL disposal in a permitted facility would reduce the mobility of the contaminants. Treatment of groundwater collected during construction would reduce the volume and toxicity of groundwater contamination present at the site.

Implementability

The alternative would rely on widely used and proven methods of removing contamination. Construction and treatment would be performed using available equipment. There are no anticipated administrative or legal barriers to implementation of this alternative.

Cost

Estimated capital and O&M costs are provided in Table 5-1.

5.1.6 Alternative 3c – Excavation of Contaminated Soil TPAHs > 500 ppm and Off-Site Disposal/Treatment, NAPL Recovery

This alternative would remove contaminated soil from areas where TPAHs are greater than 500 ppm in soil. The conceptual plan estimates excavation of approximately 6,250 cy of soil. Excavated soil would be transported off site for disposal or thermal treatment at a permitted facility. The excavations would be backfilled with clean fill and graded, and the ground surface would be prepared to meet future land use requirements. Short-term dewatering at an estimated rate of up to 430 gpm would be performed during excavation activities; collected groundwater

would be treated on site and discharged via SPDES permit or transported off site for further treatment/disposal. Vertical cutoff walls would be employed during the excavation process to reduce lateral inflow.

Ongoing NAPL recovery efforts would continue and expand with the installation of new NAPL recovery wells. Naturally-occurring biodegradation processes would continue to degrade the contaminants into less toxic compounds in non-remediated areas. Groundwater, surface water and sediment monitoring would assess the degree to which NAPL recovery and natural biodegradation processes were having an effect on the concentrations of contaminants. Deed restrictions would be implemented to limit site access, and development, and groundwater use both from on site and any affected off site properties.

Overall Protection of Human Health and the Environment

This alternative would be protective of human health and the environment. The short-term risks associated with this alternative would create an increased potential for exposure to workers and the community. However, this alternative would reduce possible future exposures to contaminants at the site through source removal and, in the long term, would reduce the contaminant concentrations in groundwater, surface water and sediment by removing the source of contamination. The estimated time to implement this alternative is less than one year.

Compliance with SCGs

This alternative would meet the remedial action objective of attaining the TPAH SCGs for soil as well as the remedial action objective for source removal and pathway exposure elimination for soil by excavating soil with TPAHs > 500 ppm. Groundwater contaminant concentrations would be reduced over the longer term following excavation and treatment of collected water during dewatering activities and NAPL recovery. No location-specific SCGs have been identified. Action-specific SCGs for this alternative apply to the excavation and handling of contaminated soil and NAPL, monitoring requirements, and OSHA health and safety

requirements. Compliance with these SCGs would be achieved by following a site-specific HASP.

Short-term Impacts and Effectiveness

There would be a potential for worker and community exposure to fugitive emissions during excavation and transportation of contaminated soil. A risk to the public would also be present during the handling of groundwater and materials for off-site treatment and/or disposal. Exposure would be significantly reduced through the use of dust and odor suppression measures, proper covering of trucks, and personal protective equipment. The use of traffic control measures and planned traffic flow patterns would minimize any impacts caused by heavy truck traffic during implementation of the remedy. This alternative could be implemented in less than one year. Remedial action objectives for soil for source and exposure pathway elimination would be met following excavation and dewatering. RAOs to attain the TPAH < 500 ppm SCG for soil would be met following source removal, treatment of collected water during dewatering activities, and NAPL recovery. Groundwater, surface water and sediment quality would be improved.

Long-term Effectiveness and Permanence

Removing soil contamination with TPAHs > 500 ppm would be both effective and permanent in the long term. Once contaminated soil with TPAHs > 500 ppm was removed and groundwater collected during the dewatering process was treated, groundwater, surface water and sediment quality would be improved. Groundwater, surface water and sediment monitoring would assess the degree to which natural biodegradation processes were having an effect on the concentrations of contaminants in the bedrock and the Anthony Kill.

Reduction of Toxicity, Mobility and Volume

The volume of contaminated soil and groundwater in the remediated area would be permanently reduced. Off-site soil and NAPL treatment would reduce the volume and toxicity of contaminants. Off-site soil and NAPL disposal in a permitted facility would reduce the mobility of the contaminants. Treatment of groundwater collected during construction would reduce the volume and toxicity of groundwater contamination present at the site.

Implementability

The alternative would rely on widely used and proven methods of removing contamination. Construction and treatment would be performed using available equipment. There are no anticipated administrative or legal barriers to implementation of this alternative.

Cost

Estimated capital and O&M costs are provided in Table 5-1.

5.1.7 Alternative 4 – Excavation and Off-Site Disposal/Treatment of Holder Area, In-Situ Stabilization/Solidification of Remaining Site Area, NAPL Recovery

This alternative would immobilize contaminated soil in-situ by mixing with grout, bentonite, and/or proprietary additives. The conceptual design provides for treatment of approximately 11,400 cy of soil exceeding SCGs across the site, with the exception of the area of the former gas relief holder. In this area, an estimated 4,000 cy of soil up to a depth of 25 feet bgs would be excavated. Excavated soil would be transported off site for disposal or thermal treatment at a permitted facility. The excavation would be backfilled with clean fill and graded to be congruent with the remainder of the site. Short-term dewatering at an estimated rate of up to 430 gpm would be performed during excavation activities; collected groundwater would be treated on site and discharged via SPDES permit or transported off site for further

treatment/disposal. The area surrounding the former gas relief area could be stabilized, or vertical cutoff walls could be constructed before excavating the holder area to limit inflow to the excavation. A soil cover would be installed over the entire site to protect the stabilized areas.

Ongoing NAPL recovery efforts would continue and expand with the installation of new NAPL recovery wells. Groundwater, surface water and sediment monitoring would assess the effectiveness of stabilization/solidification over the long term. Deed restrictions would be implemented to limit site access, and development, and groundwater use both from on site and any affected off site properties.

Overall Protection of Human Health and the Environment

While this alternative would not attain individual SCGs or the TPAH < 500 ppm SCG, it would provide human health and environmental protection by removing the source of contamination and immobilizing contaminated soil across the remainder of the site in situ. This alternative would result in increased short-term risks to workers and the community during remediation, which could be mitigated by administering a site-specific HASP.

Compliance with SCGs

This alternative would not meet chemical-specific SCGs for soil outside the holder area. No location-specific SCGs have been identified. Action-specific SCGs for this alternative apply to the excavation and handling of contaminated soil and NAPL, the augering process, monitoring requirements, and OSHA health and safety requirements. Compliance with these SCGs would be achieved by following a site-specific HASP.

Short-term Impacts and Effectiveness

There would be a potential for worker and community exposure to fugitive emissions during excavation of contaminated soil, the stabilization/solidification process, and cover

construction. A risk to the public would also be possible during the handling of groundwater and materials for off-site treatment and/or disposal. Exposure would be significantly reduced through the use of dust and odor suppression measures, proper covering of trucks, and personal protective equipment. The use of traffic control measures and planned traffic flow patterns would minimize any impacts caused by heavy truck traffic during implementation of the remedy. This alternative could be implemented in less than two years. Remedial action objectives for soil for source and exposure pathway elimination would be met following excavation and dewatering. RAOs for groundwater for source and exposure pathway elimination would be met following excavation, treatment of collected water during dewatering activities, NAPL recovery, and stabilization/solidification. Surface water and sediment quality would be improved.

Long-term Effectiveness and Permanence

Removing soil contamination from the holder area would be both effective and permanent in the long term. Once the soil within the holder area was removed, groundwater collected during the dewatering process was treated, and contaminants were immobilized across the remainder of the site, groundwater, surface water and sediment quality would be significantly improved. Groundwater, surface water and sediment monitoring would assess the degree to which treatment and NAPL recovery was having an effect on the concentrations of contaminants in groundwater and the Anthony Kill. A soil cover would be constructed over the site to eliminate the direct exposure pathways posed by residual contaminated soil.

Reduction of Toxicity, Mobility and Volume

The volume of contaminated soil and groundwater in the source area would be permanently reduced. Off-site soil and NAPL treatment would reduce the volume and toxicity of contaminants. Off-site soil and NAPL disposal in a permitted facility would reduce the mobility of the contaminants. Treatment of groundwater collected during construction would reduce the volume and toxicity of groundwater contamination present at the site. The mobility of contaminants across the site outside the source area would be significantly reduced through the process of stabilization/solidification.

Implementability

The alternative would rely on widely used and proven methods of removing contamination. Construction and treatment would be performed using available equipment. In-situ stabilization processes using the auger/caisson and reagent/injector head system are well demonstrated, require conventional materials handling equipment, and are available competitively from a number of vendors. Most reagents and additives are also widely available and relatively inexpensive industrial commodities. There are no anticipated administrative or legal barriers to implementation of this alternative.

Cost

Estimated capital and O&M costs are provided in Table 5-1.

5.2 Comparative Analysis of Alternatives

Table 5-2 presents a comparative analysis of remedial alternatives. A comparison of the alternatives and a discussion of how each meet the evaluation criteria follow.

Overall Protection of Human Health and the Environment

All alternatives except Alternative 1 - No Further Action would actively address the contamination and would be protective of human health and the environment through NAPL recovery, disposal/treatment, or institutional controls.

Compliance with SCGs

Alternative 1 would not meet SCGs. With the exception of NAPL recovery, it would leave contamination in place and rely on naturally occurring processes to degrade contaminants. Alternative 3a, which includes excavation of soil exceeding individual SCGs, is the only

alternative that would meet individual SCGs for soil. Groundwater, surface water and sediment contaminant concentrations would be significantly reduced under this alternative over the long term following excavation and treatment of collected groundwater during dewatering activities. Alternatives 3b, 3c, and 4 would reduce groundwater, surface water and sediment contaminant concentrations over the long term through excavation and treatment of collected water during dewatering activities, NAPL recovery, and natural processes. Alternatives 3b and 3c would not meet individual SCGs; however, Alternative 3c would meet the SCG for TPAHs < 500 ppm. Alternative 4 includes less excavation of contaminated soil than Alternatives 3a, 3b, and 3c, but it would only meet soil SCGs within the holder area. SCGs for soil and groundwater would be met and surface water and sediment quality improved over the long term by Alternatives 2a and 2b following pump and treat, NAPL recovery, and natural processes.

Short-term Impacts and Effectiveness

Alternative 1, which involves no construction, would have the fewest short-term impacts. Alternatives 3a and 4, which involve disturbing soil across greater areas of the site, would have the greatest short-term impacts to workers and the local community. Alternatives 3b and 3c would disturb less on-site soil than other alternatives, and Alternative 3b would have fewer impacts than Alternative 3c due to its smaller remediation area. Alternatives 2a and 2b, which involve the least amount of intrusive activity, would have the fewest short-term impacts except for Alternative 1.

Long-term Effectiveness and Permanence

Over the long term, Alternative 1 would not be effective against the potential risks posed by site contamination. Only Alternative 3a, which included removal of soil above SCGs, would meet the remedial action objective of removing the source, attaining individual SCGs, and providing the most protection to human health and the environment posed by contaminated soil. Groundwater, surface water and sediment quality would be improved following remediation.. Alternatives 2a and 2b would be effective in meeting the remedial action objectives for source

removal and exposure pathway elimination for both soil and groundwater at the site. Alternatives 3b, 3c and 4 would be effective in meeting remedial action objectives for soil.

Reduction of Toxicity, Mobility and Volume

Alternatives with off-site treatment of soil and/or groundwater, which include all alternatives except Alternative 1, would reduce the toxicity of contaminants. Alternatives 3a, 3b, 3c, and 4, which include excavation of contaminated soil, would reduce the volume of contaminants, with Alternative 3a reducing the volume the most and Alternative 4 the least. Alternative 2b would reduce the mobility of contaminants through containment as would Alternative 4 through stabilization/solidification. Alternative 2a would further reduce the volume through limited excavation.

Implementability

Alternative 1, which involves no construction, is the most implementable. Alternatives 3b and 3c, which concentrate on source removal, are more implementable than Alternatives 3a and 4 which encompass more area across the site. Alternative 4 requires a specialized vendor to perform stabilization/solidification. Alternatives 2a and 2b involve less construction, but longer operation and maintenance associated with collecting and treating groundwater.

Cost

Estimated capital and O&M costs are provided in Table 5-1.

6.0 RECOMMENDED REMEDIAL ALTERNATIVE

Alternatives were developed and evaluated for remediation at the Mechanicville Central Avenue Former MGP site. The evaluation of alternatives was conducted using remedial action objectives identified for cleanup levels to attain SCGs, or provide source and exposure pathways elimination. Remediation areas and soil volumes were calculated for the following cleanup levels: eliminating the source and exposure pathways (TPAHs > 1,000 ppm); attaining SCGs for total VOCs < 10 ppm and TPAHs < 500 ppm; and attaining SCGs for individual VOCs and SVOCs. Based on the analysis of the alternatives presented in Section 5.0, Alternative 3c, which includes excavation and disposal/treatment of contaminated soil with TPAHs > 500 ppm and NAPL recovery and disposal/treatment, is recommended to remediate the site. The alternative includes:

- Deed restrictions to limit access to, and use of, the site during the O&M period of remediation. Long-term deed restrictions would also prohibit groundwater use from both on site and any affected off site properties.

- Groundwater, surface water and sediment monitoring to assess the effectiveness of remediation and the degree to which natural biodegradation processes are having an affect on the concentrations of contaminants. A visual inspection of the Anthony Kill will be conducted during sampling.

- Excavation of approximately 6,250 cy of contaminated soil with TPAHs greater than 500 ppm from the areas across the site shown on Figure 2-5.

- Transportation and off-site disposal/treatment of excavated soil at a permitted facility.

- Installation of a vertical cutoff wall extended into the top of the bedrock in the area of deep excavation (around the source area) to isolate contamination and limit lateral inflow which would increase the amount of dewatering required, and to provide a degree of stability for excavation sidewalls.

- Dewatering of the areas to be excavated through collection of groundwater.

- Collected groundwater would be treated on site and discharged via SPDES permit or transported off site for further treatment/disposal.

- Following installation of 10 new NAPL recovery wells, NAPL recovery from the existing four and ten new recovery wells. Half of the new wells are vertical extraction wells, and half are horizontal extraction wells for use where recovery is desired beneath a roadway or other structure. An automated NAPL recovery system is included.

6.1 Basis for Recommendation

Alternative 3c is recommended because it is protective of human health and the environment; it complies with soil SCGs to attain TPAHs < 500 ppm; it is expected to improve groundwater, surface water and sediment quality over the long term; its short-term impacts can be readily managed via a HASP; it is effective and permanent; it reduces contaminant toxicity, mobility, and volume; and its remedial technologies are available. A comparison of Alternative 3c with the individual remedial action objectives for the site shows that this alternative:

- Eliminates the source and exposure pathways for soil by removal of source material through soil excavation and off-site disposal/treatment.

- Attains the SCG for soil consisting of NYSDEC TAGM 4046 criteria for total VOCs < 10 ppm and TPAHs < 500 ppm through soil excavation and off-site disposal/treatment.

- Eliminates the source and exposure pathways for groundwater/NAPL through NAPL recovery and disposal/treatment.

- Eliminates the potential for ingestion of groundwater with contaminant levels exceeding drinking water standards through deed restrictions both from on site and any affected off site properties.

- Improves groundwater, surface water and sediment quality following remediation.

6.2 Additional Investigations

- Soil sampling in the area north of the Anthony Kill has identified the presence of petroleum-based contamination. Additional sampling of soil in this area to determine the extent and origin of the soil contamination should be conducted.

- Groundwater extraction estimates are based on the generalized geologic descriptions of soil found at the site. Groundwater slug tests and/or pump tests should be conducted to provide site-specific information in order to better estimate groundwater extraction rates during dewatering.

- Site-specific groundwater flow and analytical data would be used to evaluate on-site versus off-site groundwater treatment and to design a groundwater treatment plant, if on-site treatment is selected, or to identify a commercial facility or POTW willing and able to accept groundwater for treatment, if off-site treatment is chosen.

- The feasibility of a Blackhawk active NAPL recovery system (or other recovery system) for the depths of NAPL recovery identified for this site should continue to be investigated.

7.0 REFERENCES

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TABLES

TABLE 1-1
STANDARDS, CRITERIA AND GUIDANCE

Division/ Agency	Title	Standard or Guidance	Requirements
DAR/ NYSDEC	Air Guide 1 – Guidelines for the Control of Toxic Ambient Air Contaminants	G	▪ Control of toxic air contaminants ▪ Screening analysis for ambient air impacts ▪ Toxicity classifications ▪ Ambient standards – short term/annual
DAR/ NYSDEC	6 NYCRR Part 200 (200.6) – General Provisions; 1/29/93	S	▪ Prohibits contravention of Ambient Air Quality Standards or causes of air pollution
DAR/ NYSDEC	6 NYCRR Part 201 - Permits & Certificates; 3/31/93	S	▪ Prohibits construction/operation without a permit/certificate
DAR/ NYSDEC	6 NYCRR Part 211 (211.1) – General Prohibitions	S	▪ Prohibits emissions which are injurious to human, plant, or animal life, or causes a nuisance
DAR/ NYSDEC	6 NYCRR Part 212 – General Process Emission Sources	S	▪ Establishes control requirements
DAR/ NYSDEC	6 NYCRR Part 257 – Air Quality Standards	S	▪ Applicable air quality standards
DER/ NYSDEC	TAGM HWR-89-4031 Fugitive Dust Suppression and Particulate Monitoring Program at Inactive Hazardous Waste Sites; 10/27/89	G	▪ Dust suppression during Interim Remedial Measures/Remedial Actions
DER/ NYSDEC	TAGM HWR-92-4030 Selection of Remedial Actions at Inactive Hazardous Waste Sites; 5/90	G	▪ Remedy selection criteria/evaluations
DER/ NYSDEC	TAGM HWR-92-4042 Interim Remedial Measures; 6/1/92	G	▪ Define and track Interim Remedial Measures (IRMs)
DER/ NYSDEC	TAGM HWR-92-4046 Determination of Soil Cleanup Objectives and Cleanup Levels; 1/24/94	G	▪ Soil cleanup goals
DER/ NYSDEC	TAGM HWR-92-4048 Interim Remedial Measures – Procedures; 12/9/92	G	▪ Identifying and implementing IRMs

TABLE 1-1
STANDARDS, CRITERIA AND GUIDANCE

Division/ Agency	Title	Standard or Guidance	Requirements
DER/ NYSDEC	TAGM 4061 – Management of Coal Tar Waste and Coal Tar Contaminated Sediment From Former Manufactured Gas Plants (MGPs); 12/03/01	G	▪ Coal tar waste and coal tar contaminated soils and sediment that exhibit the toxicity characteristic for Benzene (D018) may be conditionally exempt from 6 NYCRR Parts 370 – 374 and 376 when they are destined for permanent thermal treatment
DER/ NYSDEC	6 NYCRR Part 375 – Inactive Hazardous Waste Disposal Site Remediation Program; 5/92	S	▪ Remedial program requirements ▪ Private party programs; state funded programs; state assistance to municipalities
DFW/ NYSDEC	Fish and Wildlife Impact Analysis for Inactive Hazardous Waste Sites (FWIA); 10/94	G	▪ Habitat assessments ▪ Contaminant impact assessments ▪ Ecological effects of remedies ▪ Remedial requirements ▪ Monitoring ▪ Checklist
DFW/ NYSDEC	Technical Guidance for Screening of Contaminated Sediments; 7/94	G	▪ Sediments screening levels
DOW/ NYSDEC	Analytical Services Protocols (ASP); 11/91	G	▪ Analytical procedures
DOW/ NYSDEC	TOGS 1.1.2 – Groundwater Effluent Limitations; 8/94	G	▪ Guidance for developing effluent limitations
DOW/ NYSDEC	TOGS 1.1.1 – Ambient Water Quality Standards and Guidance Values	G	▪ Compilation of ambient water quality standards and guidance values
DOW/ NYSDEC	TOGS 1.2.1 – Industrial SPDES Permit Drafting Strategy for Surface Waters; 4/90	G	▪ Guidance for developing effluent and monitoring limits for point source releases to surface water
DOW/ NYSDEC	TOGS 1.3.8 – New Discharges to Publicly Owned Treatment Works; 10/26/94	G	▪ Limits on new or changed discharges to POTWs; strict requirements regarding bioaccumulative and persistent substances; plus other considerations
DOW/ NYSDEC	6 NYCRR Part 702-15(a), (b), (c), (d) & (e)	S	▪ Empowers NYSDEC to apply and enforce guidance where there is no promulgated standard

TABLE 1-1
STANDARDS, CRITERIA AND GUIDANCE

Division/ Agency	Title	Standard or Guidance	Requirements
DOW/ NYSDEC	6 NYCRR Part 700-705 – NYSDEC Water Quality Regulations for Surface Waters and Groundwater; 9/1/91	S	▪ 700 – Definitions, Samples and Tests; ▪ 701 – Classifications for Surface Waters and Groundwaters; ▪ 702 – Derivation and Use of Standards and Guidance Values; ▪ 703 – Surface Water and Groundwater Quality Standards and Groundwater Effluent Standards
DOW/ NYSDEC	6 NYCRR Part 750-757 – Implementation of NPDES Program in NYS	S	▪ Regulations regarding the SPDES program
DSHM/ NYSDEC	6 NYCRR Part 364 – Waste Transporter Permits; 3/10/03	S	▪ Regulates collection, transport, and delivery of regulated waste
DSHM/ NYSDEC	6 NYCRR Part 360 – Solid Waste Management Facilities; 10/9/93	S	▪ Solid waste management facility requirements; landfill closures; construction & demolition(C&D) landfill requirements; used oil; medical waste; etc.
DSHM/ NYSDEC	6 NYCRR Part 370 – Hazardous Waste Management System: General; 1/14/95	S	▪ Definitions and terms and general standards applicable to Parts 370-374 and 376
DSHM/ NYSDEC	6 NYCRR Part 371 – Identification and Listing of Hazardous Wastes; 1/14/95	S	▪ Hazardous waste determinations
DSHM/ NYSDEC	6 NYCRR Part 372 – Hazardous Waste Manifest System and Related Standards for Generators, Transporters and Facilities; 1/14/95	S	▪ Manifest system and record keeping; certain management standards
DSHM/ NYSDEC	6 NYCRR Part 376 – Land Disposal Restrictions; 1/14/95	S	▪ Identifies hazardous waste restricted from land disposal
DSHM/ NYSDEC	6 NYCRR Subpart 373-1 – Hazardous Waste Treatment, Storage and Disposal Facility Permitting Requirements; 1/14/95	S	▪ Hazardous waste permitting requirements; includes substantive requirements

TABLE 1-1
STANDARDS, CRITERIA AND GUIDANCE

Division/ Agency	Title	Standard or Guidance	Requirements
DSHM/ NYSDEC	6 NYCRR Subpart 373-2 – Final Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities; 1/14/95	S	▪ Hazardous waste management standards such as contingency plans; releases from SWMUs; closure/post closure; container management; tank management; surface impoundments; waste piles; landfills; incinerators; etc.
DSHM/ NYSDEC	6 NYCRR subpart 373-3 – Interim Status Standards for Owners and Operators of Hazardous Waste Facilities; 1/14/95	S	▪ Similar to 373-2
OSHA/ PESH	29 CFR Part 1910.120; Hazardous Waste Operations and Emergency Response	S	▪ Health and safety
USEPA	40 CFR Part 261 – Hazard-ous Waste Management System; Definition of Solid Waste; Toxicity Character-istic; Final Rule; Response to Court Order Vacating Regulatory Provisions; 3/13/02	S	▪ TCLP may not be used for determining whether MGP waste is hazardous under RCRA

NOTES:

DAR – Division of Air Resources
DER – Division of Environmental Remediation
DFW – Division of Fish and Wildlife
DOW – Division of Water
DSHM – Division of Solid and Hazardous Materials
HWR – Hazardous Waste Remediation
NPDES – National Pollution Discharge Elimination System
NYSDEC – New York State Department of Environmental Conservation
OSHA – Occupational Safety and Health Administration
POTW – Publicly-Owned Treatment Work
PESH - New York State Department of Labor's Public Employee Safety and Health
SWMUs – Solid Waste Management Units
USEPA – United Sates Environmental Protection Agency

TABLE 1-2
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 2
	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 1-2 (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 Compounds	Cyanide (total)	ND	NA	NA

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

TABLE 1-2 (Continued)

SUBSURFACE SOIL (SRI)	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]	Frequency of Exceeding SCG
Inorganic Compounds	Cyanide (total)	ND-19	NA	NA

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

TABLE 1-2 (Continued)

NOTES:

[a] ppb = parts per billion, which is equivalent to micrograms per liter, μg/l, in water.
ppm = parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil.
[b] SCG = standards, criteria, and guidance values (note the SCG of 500 ppm for TPAHs is actually the SCG for Total SVOCs).
ND - Not detected.
NA - Not applicable (e.g., no SCG).
MDL = Minimum detection limit.

TABLE 1-3
Qualitative NAPL Observations in Soil Borings and Monitoring Wells

#	Boring/Well #	ID	Boring/ Well Depth (ft)	Observations				
				0-4'	4-8'	8-12'	>12'	Comment
1	SB-1	2	12	NAPTHA Odor	NAPTHA Odor		NA	
2	SB-2	2	8			NA	NA	
3	SB-3	2	8			NA	NA	
4	SB-4	2	10	NAPTHA Odor			NA	
5	SB-4A	2	5	NAPTHA Odor		NA	NA	Refusal at 5’
6	SB-5	2	8			NA	NA	Refusal at 8’
7	SB-6	2	8			NA	NA	Refusal at 8’
8	SB-7	2	8	Few Wood Chips		NA	NA	
9	SB-8	2	7			NA	NA	Refusal at 7’
10	SB-9	2	8			NA	NA	
11	SB-10	2	10	Odor	Odor/NAPL	Slight Odor	NA	Refusal at 10’
12	SB-11	2	7		Petroleum Odor	NA	NA	Refusal at 7’
13	SB-12	2	9				NA	Refusal at 9’
14	SB-13	2	10				NA	Refusal at 10’
15	SB-14	2	9	Odor/NAPL	Odor/NAPL	Odor/NAPL	NA	Refusal at 9.3’
16	SB-15	2	8		Odor	NA	NA	
17	SB-16	2	14	Stain	Stain	Odor/NAPL	Odor/Sheen	Refusal at 14’
18	SB-17	2	11	Wood Chips/Purifier Odor	Purifier Odor/NAPL	Odor/NAPL	NA	Refusal at 11’
19	SB-18	2	16			NAPL	NAPL	
20	SB-19	2	9				NA	Refusal at 9’
21	SB-20	2	10				NA	Refusal at 10’
22	SB-21	2	11		Odor	Odor/NAPL	NA	Refusal at 11’
23	SB-22	2	8	Odor	Odor/NAPL	NA	NA	
24	SB-23	2	9		Odor	Odor	NA	Refusal at 9’
25	SB-23A	2	9		Odor/NAPL Sheen		NA	Refusal at 9’
26	SB-24	2	7		Wood Chips	NA	NA	Refusal at 7’
27	SB-24A	2	7		Odor	NA	NA	Refusal at 6.8’
28	SB-25	2	7		Petroleum Odor/Sheen	NA	NA	Refusal at 7.1’
29	SB-26	2	8	Wood Chips	Wood Chips	NA	NA	

TABLE 1-3
Qualitative NAPL Observations in Soil Borings and Monitoring Wells

#	Boring/Well #	ID	Boring/ Well Depth (ft)	Observations				
				0-4'	4-8'	8-12'	>12'	Comment
30	SB-27	2	10	Stain			NA	Refusal at 10’
31	SB-28	2	12	Odor	Odor/NAPL	Odor/NAPL	NAPL	Refusal at 12’
32	SB-29	2	15			NAPL	Odor/NAPL/Stain	Refusal at 12’
33	SB-30	2	25	Stain		Odor/NAPL	Odor/NAPL	NAPL Odor at 18’ Refusal at 25’
34	SB-31	2	20		NAPL	NAPL	Odor	MGP Odor/NAPL to 20.2’ Refusal at 20.2’
35	SB-32	2	25			NAPL/Stain	Odor/NAPL	MGP Odor at 25’ Refusal at 28’
36	SB-33	2	15	Stain				Refusal at 15’
37	SB-34	2	12				NA	Refusal at 11.9’
38	SB-35	2	15			MGP Odor	NAPL	NAPL to 15’ Refusal at 15’
39	SB-36	2	21					Refusal at 21.2’
40	SB-37	2	21					Refusal at 21’
41	SB-38	2	23					Refusal at 23’
42	SB-39	2	23					Refusal at 22.8’
43	SB-40	2	24					Swamp Odor 18-20’ Refusal at 23.9’
44	SB-41	2	18					Refusal at 17.8’
45	SB-42	2	10					Refusal at 10.2’
46	SB-43	2	18					Swamp Odor 12-16’ Refusal at 18.2’
47	SB-44	2	23				Gas Odor	Gas Odor 15.5-22.5’ Refusal at 22.5’
48	SB-45	2	24				Gas Odor 15.5-20’	Swamp Odor 20-23.8’ Refusal at 23.8’
49	SB-46	2	23				Gas Odor/Stain 15.5-20’	Refusal at 23’
50	SB-47	2	16					Refusal at 15.8’
51	SB-48	2	19					Swamp Odor at 19’ Refusal at 19’
52	SB-49	2	21					Swamp Odor at 17-20’ Refusal at 21.3’
53	SB-50	2	4		NA	NA	NA	
54	SB-53	2	17					Refusal at 17.3’
55	SB-54	2	30	NO SAMPLES COLLECTED				
56	SB-56	4	3	Purifier Odor/Wood Chips	NA	NA	NA	Refusal at 2.7’

TABLE 1-3
Qualitative NAPL Observations in Soil Borings and Monitoring Wells

#	Boring/Well #	ID	Boring/ Well Depth (ft)	Observations				
				0-4'	4-8'	8-12'	>12'	Comment
57	SB-57	4	2	Purifier Odor	NA	NA	NA	Refusal at 2’
58	SB-58	4	2	Purifier Odor	NA	NA	NA	Refusal at 2’
59	SB-59	4	4	Purifier Odor/Stain/ Wood Chips	NA	NA	NA	Refusal at 3.5’
60	SB-60	4	3	Purifier Odor/Wood Chips	NA	NA	NA	Refusal at 2.5’
61	SB-61	2	10				NA	Refusal at 10.2’
62	SB-62	2	8	Odor	Odor	NA	NA	Refusal at 7.5’
63	SB-63	2	23					Refusal at 23’
64	SB-64	2	23					Refusal at 23.1’
65	SB-65	2	8	Slight Odor	Slight Odor	NA	NA	Refusal at 7.5’
66	SB-66	2	8			NA	NA	
67	SB-67	2	8	Purifier Odor/Wood Chips	Purifier Odor/Wood Chips	NA	NA	
68	SB-68	2	8	Purifier Odor	Purifier Odor	NA	NA	
69	SB-69	2	8	Purifier Odor		NA	NA	
70	SB-70	2	8			NA	NA	
71	CC-1	2	28		Stain			Refusal at 27.5’
72	CC-2	2	30	Stain	Odor	Odor	Odor/NAPL 15-20’	Refusal at 29.5’
73	CC-3	2	23		Odor			Musty Odor at 4-8’ Refusal at 23.3’
74	MW-1I	8	75		Musty Odor 4-9’		NAPL/Tar at 45’	Bedrock at 9.5’
75	MW/SB-1D	8	155				LNAPL at 51’ LNAPL at 75-80’	Bedrock at 11’ LNAPL at 95-100’
76	MW/SB-21	8	32		MGP Odor			Bedrock at 9’
77	MW/SB-10I	8	43	Petroleum Odor	Odor	Odor	Odor/NAPL/Stain 12-18’	Bedrock at 20’
78	MW/SB-10D	14	114	See MW/SB-10I				NAPL Blebs at 67’
79	MW/SB-12S	5	28				NAPL at 14-23’ NAPL at 28’	Wood Chips at 25.9’ Bedrock at 26’
80	MW/SB-14S	5	25				MGP Odor at 20-24’	
81	MW-14D	8	122	See MW-14S			Sheen in Kill at 51’	NAPL in Tub at 71’
82	MW-15S	5	12		MGP Odor	MGP Odor	NA	Hollow-Stem Auger (HSA) to 12’
83	MW-15I	14	25	See MW-15S			Oil/MGP Odor at 16’	

TABLE 1-3
Qualitative NAPL Observations in Soil Borings and Monitoring Wells

#	Boring/Well #	ID	Boring/ Well Depth (ft)	Observations				
				0-4'	4-8'	8-12'	>12'	Comment
84	MW-15D	15	106	See MW-15S			NAPL/Sheen at 14-18’	Trace NAPL at 78’
85	MW-17I	8	45	Swamp Odor		Swamp Odor	Swamp Odor at 16-20’	Roller Bit to 45’
86	MW-17D	14	142	See MW-171			MGP Odor at 58’	NAPL at 96’ and 107’
87	MW-19I	18	39		Musty Odor			Refusal at 15.7’
88	MW-20D	5	110					Refusal at 20.4’
89	MW-21S	5	12	See SB-10				Sample Refusal at 10.3’ HSA to 12’
90	MW-21D	12	59	See MW-21S			NAPL/Sheen at 26’ and 29.6’	NAPL in Kill at 35’
91	MW-22I	12	36		NAPL Blebs 8-13’	NAPL Blebs 8-13’	MGP Odor/NAPL/Sheen at 23.5’ and 26-31’	
92	MW-23S	5	15		Musty Odor 4-6’	Petroleum Odor/Sheen	MGP Odor/Sheen	HSA to 14.5’
93	MW-23D	14	79	See MW-23S			Trace NAPL at 50’	
94	MW-25S	5	28				MGP Odor/NAPL 16-28’	
95	MW-25I	10	47	See MW-25S				No NAPL in Rock to 47’
96	MW-26S	7	25	See SB-18			MGP Odor/Stain 16-22.3’	No Odor at 24.5’
97	MW-26I	8	46	See SB-18 and MW-26S				No NAPL Odors in Rock to 46’
98	MW-28I	12	25	Odor	Odor	Musty Odor/Wood Chips 10-11.5’		No NAPL in Rock 11.5 –25’
99	MW-29I	8	26		MGP Odor		MGP Odor/NAPL Blebs at 16’	NAPL at 24’ and in Kill at 26’
100	MW-29D	14	110	See MW-29I				NAPL at 34’
101	MW-30S	7	27	See MW-30D				
102	MW-30D	8	101				NAPL 12-24’	Bedrock at 24’ NAPL at 28.5’ and 70.5’
103	MW-31S	5	20					HSA to 20’
104	MW-31D	10	150	See MW-31S				Bedrock at 26’ Roller Bit to 150’
105	MW-32D	14	112	Musty Odor		Odor		Bedrock at 9.75’ No NAPL to 111.5’
106	MW-33D	14	141	See SB-43				Bedrock at 26’ NAPL at 92’ and 102’
107	MW-34D	8	121				NAPL at 35.5’ and 38’	Bedrock at 23.5’
108	MW-35I	14	38				Odor/NAPL/Sheen 13-25’; 36-38’	Bedrock at 10.5’

TABLE 1-3
Qualitative NAPL Observations in Soil Borings and Monitoring Wells

#	Boring/Well #	ID	Boring/ Well Depth (ft)	Observations				
				0-4'	4-8'	8-12'	>12'	Comment
109	MW-36I	8	45					Bedrock at ~6' No NAPL to 45'
110	MW-36D	8	161	No Sampling; Air Hammer at 17.7'				Bedrock at 9' No NAPL to 161'
111	MW-37I	8	50	See MW-37D				Bedrock at 16' No NAPL to 50'
112	MW-37D	8	186				Petroleum Odor 12-16'	No NAPL to 186'
113	MW-38I	8	120				Tar at 102'	Refusal at 11.9'
114	MW-38D	8	170	No Sampling to 18.6'			Tar at 98-99.3'	Sheen 104-125'
115	MW-39D	8	150				No NAPL to 150'	Bedrock at 32'
116	MW-40D	8	170	No Sampling to 26'			MGP Odor 90.5-95.5'	Bedrock at 26' Sulfur Odor 30-35'
117	MW-41D	8	140					Bedrock at 7' No NAPL to 140'
118	MW-42D	8	175	No Sampling to 28'			Tar Odor/Sheen and Trace NAPL 147-149.5'	Bedrock at 28' Tar at 148'
119	MW-43D	6	150	No Sampling to 15'			No NAPL to 150'	Bedrock at 15'
120	RH-01S	5	18		MGP Odor	MGP Odor/Sheen	NAPL 12-17.8'	Bedrock at 16.3'
121	RH-1D	14	108	See RH-01S			Odor/NAPL/Sheen	Bedrock at 16.3' NAPL at 22'; 25.9-30.9'; 41.3-46.3' NAPL in Kill 41.3-46.3' NAPL and MGP Odors 51-54' Sheen 56.3-65.9' NAPL on Drill Tools 70.5' NAPL at 76.5'

TABLE 3-1
Summary of Remedial Technology Initial Screening
Mechanicville Former MGP

General Response Actions	Remedial Technologies	Description	Initial Screening Comments
No Further Action	Existing Technologies	Groundwater monitoring and NAPL recovery would continue; surface water/ sediment monitoring added.	Applicable, retained.
	Deed Restrictions	Restrict site use and prohibit groundwater use from on site and affected off site properties.	Applicable, retained.
Containment	Capping	Low permeability cover	Applicable, retained.
		Soil cover.	
	Vertical Cutoff Walls	Sheet pile driven to the top of bedrock.	Potentially applicable and retained for the overburden. Not constructible in the bedrock.
		Low permeability walls such as slurry walls and soil cement walls constructed into the subsurface.	Potentially applicable and retained for the overburden. Augering and/or trenching through the bedrock would create additional fractures and transport pathways; not retained for bedrock.
		Grout curtain construction by pressure injection.	Relatively high permeability of fill material makes this technology less cost effective for this site as compared to similar technologies. Not retained.
		Geomembrane – synthetic sheets in trenches.	Emerging technology. Not retained.
		Pressure grouting – grout is injected through wells to seal off fractures in the bedrock.	Difficult to locate subsurface fractures and control process. Ineffective unless fractures are correctly located and grouted. Not retained.
		A trench excavated to the required depth and filled with stone.	Applicable and proven technology. Retained.

TABLE 3-1 (Continued)

General Response Actions	Remedial Technologies	Description	Initial Screening Comments
Groundwater Collection and NAPL Recovery	Interceptor Trench	Vertical extraction wells drilled to the appropriate depth on site.	Applicable and proven technology. Retained.
	Vertical Extraction Wells	Horizontal wells drilled from on site to reach difficult locations such as beneath an existing roadway or to locate pockets of contamination.	While more difficult to implement, horizontal extraction wells will be retained for use in specific situations.
	Horizontal Extraction Wells	Recoverable quantities of NAPL are extracted through an automated extraction system.	Continued hand bailing and/or an automated pumping system are feasible for NAPL recovery. Retained.
	Passive NAPL recovery	Groundwater extraction is added to enhance NAPL recovery.	Due to the medium to high viscosity of NAPL and the low recharge rates observed within existing recovery wells, groundwater pumping to increase NAPL recovery is not considered to be effective. Not retained.
	Active NAPL recovery		
Excavation	Soil Excavation	Excavate contaminated soil and visible areas of purifier waste.	Applicable, retained.
Disposal	Off-site Soil Disposal/ Treatment	Excavated soil and purifier waste are transported offsite and disposed/treated at a permitted disposal or treatment facility.	Applicable, retained.
	NAPL Disposal/Treatment	NAPL currently transported off site for disposal/treatment.	Applicable, retained.
Ex-Situ Soil Treatment	Biological Treatment	Biopiles - excavated soils are treated with microorganisms and nutrients to degrade contaminants. Soils must be mixed and aerated almost daily. Composting - excavated soils are mixed with bulking agents and amendments to promote microbial activity. Slurry-phase biotreatment – soil and additives are fed into a bioreactor as slurry and mixed to keep solids suspended and microorganisms in contact with contaminants.	Ex-situ biological processes require a large treatment area, long time period, and additional material handling during mixing and aeration. Soils that are non-homogeneous create handling problems. Ex-situ biological treatment processes are not retained.

TABLE 3-1 (Continued)

General Response Actions	Remedial Technologies	Description	Initial Screening Comments
	Chemical/ Physical Treatment	Solvent extraction - excavated soils are mixed with extractors and placed in a separator to remove contaminants.	While potentially applicable, ex-situ chemical/physical treatment processes would be similar to in-situ chemical/physical treatment processes yet be more difficult to implement due to the added excavation and material handling. Therefore, ex-situ chemical/ physical treatment is not retained.
		Reduction/oxidation redox reactions occur following the addition of oxidizing agents to soil. Contaminants are converted to less toxic compounds.	
		Soil washing - contaminants are separated from the soil with wash water amended with leaching agents, surfactants, or chelating agents.	
	Stabilization/ Solidification	Excavated soils are processed and mixed with binders that immobilize contaminants.	Potentially applicable, retained for use outside the holder area.
	Off-Site Thermal Treatment	Excavated soils are thermally treated off-site and off-gases are treated.	Same as excavation and disposal/ treatment not retained.
In-Situ Treatment	Biological Treatment	Bioventing - Oxygen is introduced into the unsaturated zone to stimulate biogradation.	While effective on PAHs, this technology is effective only in the unsaturated zone and is not retained.
		Bioremediation - an infiltration gallery for the vadose zone and a series of injections and extraction wells supply microorganisms to the subsurface to degrade contaminants.	Potentially applicable for PAHs. Retained.
	Chemical/ Physical Treatment	Soil vapor extraction - SVE uses a contaminant's volatility to separate it from the soil.	Applicable for VOCs only. Not retained.
		Soil flushing - solutions are injected into the contaminated zone to mobilize contaminants which are removed along with groundwater from extraction wells.	Limited use in vadose zone. Processes have not been proven to be effective on PAHs. Site hydrogeology may facilitate washing contaminants beyond the capture zone. Not retained.
		Surfactant enhanced recovery –low viscosity surfactant solutions with polymer amendments are pumped through the DNAPL zone.	Depending on the oxidizing agents used, intermediate oxidation products, which may not be non-toxic, may migrate beyond the capture zone due to site hydrogeology. Not retained.

TABLE 3-1 (Continued)

General Response Actions	Remedial Technologies	Description	Initial Screening Comments
	Stabilization/Solidification	Using large augers, contaminated soil is mixed with binders such as cement, immobilizing contaminants.	Applicable in areas where there are no large rocks and/or concrete. A volume increase would result. Retained for use outside the source area.
	Thermal Treatment	Steam injection and vacuum extraction - steam is injected, mobilizing contaminants which are extracted through wells. Electrical resistance heating - surface electrodes heat soil-vaporizing contaminants; off-gases are collected and treated. Radio frequency heating - surface electrodes increase soil temperatures by use of electro-magnetic energy to vaporize contaminants which are collected by vapor extraction wells.	In-situ thermal treatment processes have limited effectiveness on SVOCs unless high heat is used. Substantially more energy would be required to create the high heat conditions necessary given the concentrations of PAHs present at the site, especially in the saturated zone. In-situ thermal treatment processes are therefore not retained.
Groundwater Treatment	Groundwater Treatment Onsite	Collected groundwater is treated on site in a constructed treatment plant prior to discharge to Anthony Kill.	The construction of a treatment plant may be more cost effective for large quantities of collected water such as may be required for attainment of groundwater SCGs. Potentially applicable. Retained.
	Groundwater Treatment Offsite	Collected groundwater is transported offsite for treatment/disposal at an appropriate facility such as a POTW or a commercial facility.	Off-site treatment/disposal may be more cost-effective for short term or smaller quantities of collected water. Potentially applicable. Retained.

TABLE 5-1

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

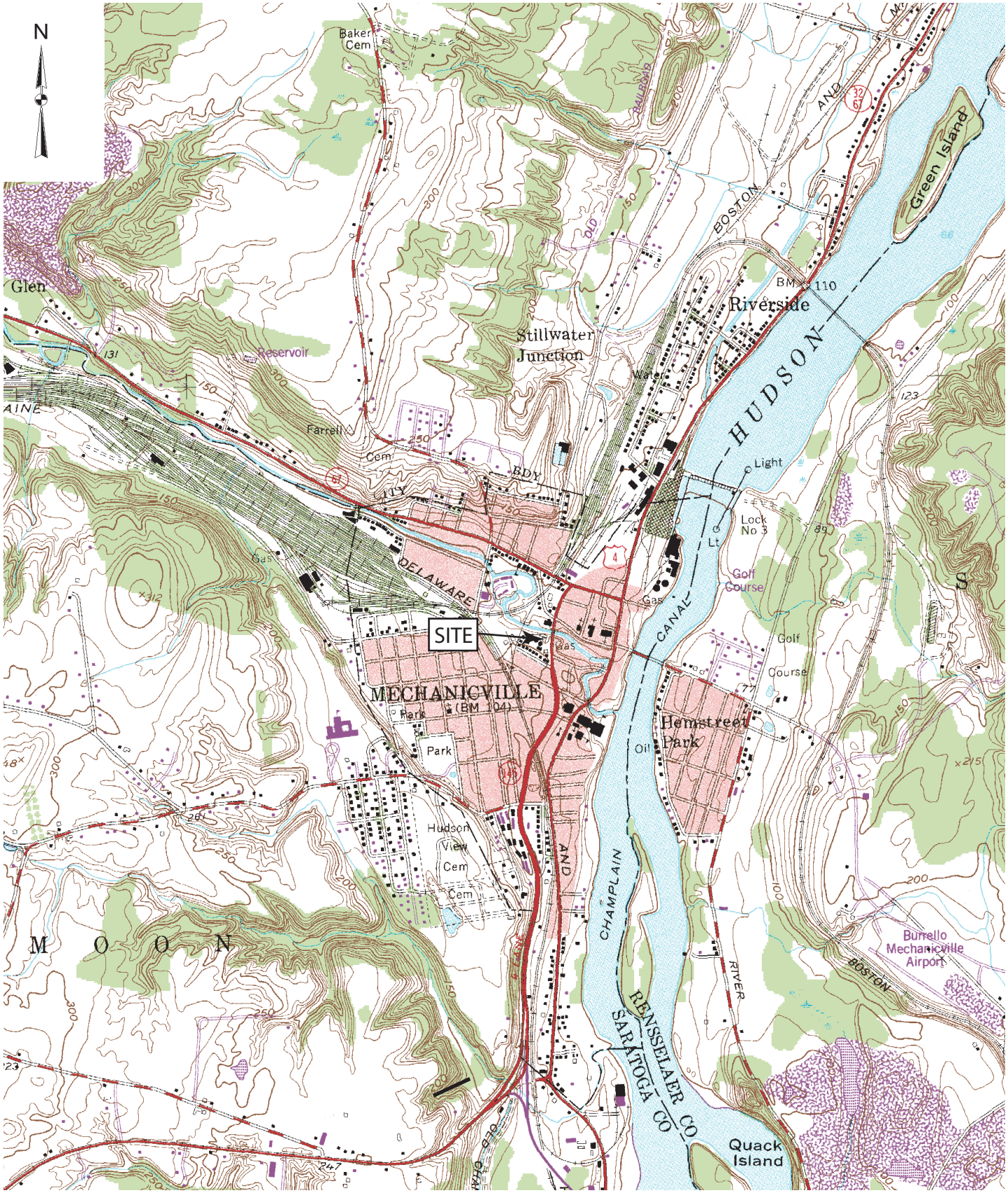
Note:
(1) 7% discount rate used to determine Present Worth.
Alternative 1 – No Further Action
Alternative 2a – Containment of Source Area, Excavation of Contaminated Soil TPAHs > 1,000 ppm, Outside Source Area, NAPL Recovery
Alternative 2b – Containment, Entire Site NAPL Recovery
Alternative 3a - Excavation 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

TABLE 5-2
Comparative Analysis of Remedial Alternatives
Mechanicville Former MGP Site

Evaluation Criteria	Alternative 1	Alternative 2a	Alternative 2b	Alternative 3a	Alternative 3b	Alternative 3c	Alternative 4
Overall Protection of Human Health and the Environment	Not protective.	Protective through containment of the source area, removal of source material outside source area, and deed restrictions. Long-term management required.	Protective through containment of site. Long-term management required.	Protective of human health and environment. Long-term management required.	Protective of human health and environment. Long-term management required.	Protective of human health and environment. Long-term management required.	Protective of human health and environment. Long-term management required.
Compliance with SCGs	Chemical-specific SCGs will not be met.	Chemical-specific SCGs for soil and groundwater will be met in the excavated areas and source area.	Chemical-specific SCGs for soil and groundwater will be met for the site.	Chemical-specific individual SCGs for soil will be met. Groundwater, surface water and sediment contaminant concentrations will be significantly reduced over the long term following source removal, water treatment, NAPL recovery, and natural processes.	Chemical-specific SCGs for soil will be met where excavated. Groundwater, surface water and sediment contaminant concentrations will be reduced over the long term following source removal, water treatment, NAPL recovery, and natural processes.	Chemical-specific SCG to attain TPAHs < 500 ppm for soil will be met. Groundwater, surface water and sediment contaminant concentrations will be reduced over the long term following source removal, water treatment, NAPL recovery, and natural processes.	Chemical-specific SCGs for soil will be met where excavated. Groundwater, surface water and sediment contaminant concentrations will be reduced over the long term following source removal, stabilization, NAPL recovery and natural processes.
Short-Term Impacts and Effectiveness	Minimal short-term impacts since few remedial actions will be performed. RAOs would not be met. Surface water and sediment quality would be improved.	Impacts managed via HASP. RAOs for soil and groundwater would be met over the long term. Surface water and sediment quality would be improved.	Impacts managed via HASP. RAOs for soil and groundwater to attain SCGs would be met over a long time period of remediation. Surface water and sediment quality would be improved.	Impacts managed via HASP. RAOs for soil to attain SCGs are met. Groundwater, surface water and sediment quality would be improved.	Impacts managed via HASP. RAOs for soil for source and pathway elimination for the TPAH > 1,000 ppm cleanup level would be met. Groundwater, surface water and sediment quality would be improved.	Impacts managed via HASP. RAOs for soil for source and pathway elimination for the TPAH < 500 ppm SCG would be met. Groundwater, surface water and sediment quality would be improved.	Impacts managed via HASP. RAOs for soil and groundwater source and pathway elimination would be met. Groundwater, surface water and sediment quality would be improved.
Long-Term Effectiveness and Permanence	Not effective or permanent. Contamination will remain in situ. The potential for human health risk is addressed through deed restrictions.	Effective and permanent. Hydraulic controls, soil excavation, and a cap would be effective. Controls will be in place to protect against groundwater use.	Effective and permanent. Hydraulic controls and a cap would be effective for residuals. Controls will be in place to protect against groundwater use.	Effective and permanent. No residual contamination above SCGs in soil. Controls will be in place to protect against groundwater use.	Effective and permanent. Controls will be in place to limit exposure and prohibit groundwater use.	Effective and permanent. Controls will be in place to limit exposure and prohibit groundwater use.	Effective and permanent. Controls will be in place to limit exposure and prohibit groundwater use.
Reduction of Toxicity, Mobility, and Volume	Reduction of TMV would occur slowly through natural processes. NAPL recovery would reduce the mobility and volume of contaminants.	Within the excavated area and source area mobility and volume of contaminants will be reduced. Cap will reduce mobility across the site.	Within the site area mobility and volume of contaminants will be reduced. Cap will reduce mobility across the site.	Contaminant mobility, toxicity and volume will be reduced for the entire site.	Contaminant mobility, toxicity and volume will be reduced for the area where TPAHs >1,000 ppm.	Contaminant mobility, toxicity and volume will be reduced for the area where TPAHs > 500 ppm.	Contaminant mobility will be reduced for the entire site. Toxicity and volume will be reduced for the source area and NAPL.
Implementability	Technologies are available, reliable and administratively feasible.	Technologies are available, reliable and administratively feasible.	Technologies are available, reliable and administratively feasible.	Technologies are available, reliable and administratively feasible.	Technologies are available, reliable and administratively feasible.	Technologies are available, reliable and administratively feasible.	Technologies should be available, reliable and administratively feasible.
Cost	$580,850	$5,385,100	$8,934,500	$8,927,800	$5,004,500	$5,274,700	$5,223,000

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 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

FIGURES



SOURCE: USGS 7.5 Minute Topographic Map
Mechanicville, New York, 1954
(Photorevised 1980)

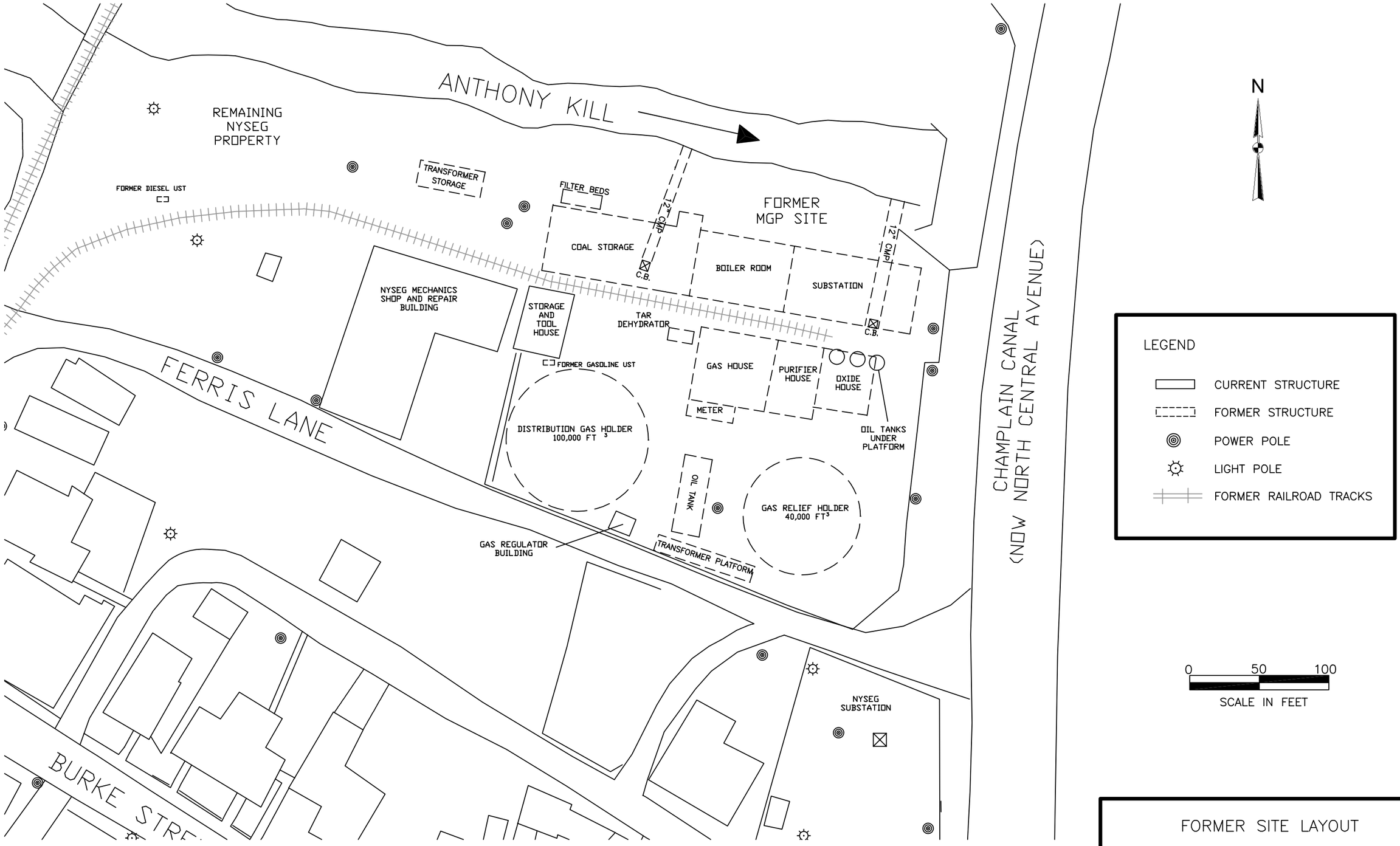
0 1,000 2,000
GRAPHIC SCALE IN FEET

URS

SITE LOCATION MAP

FIGURE 1 - 1

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



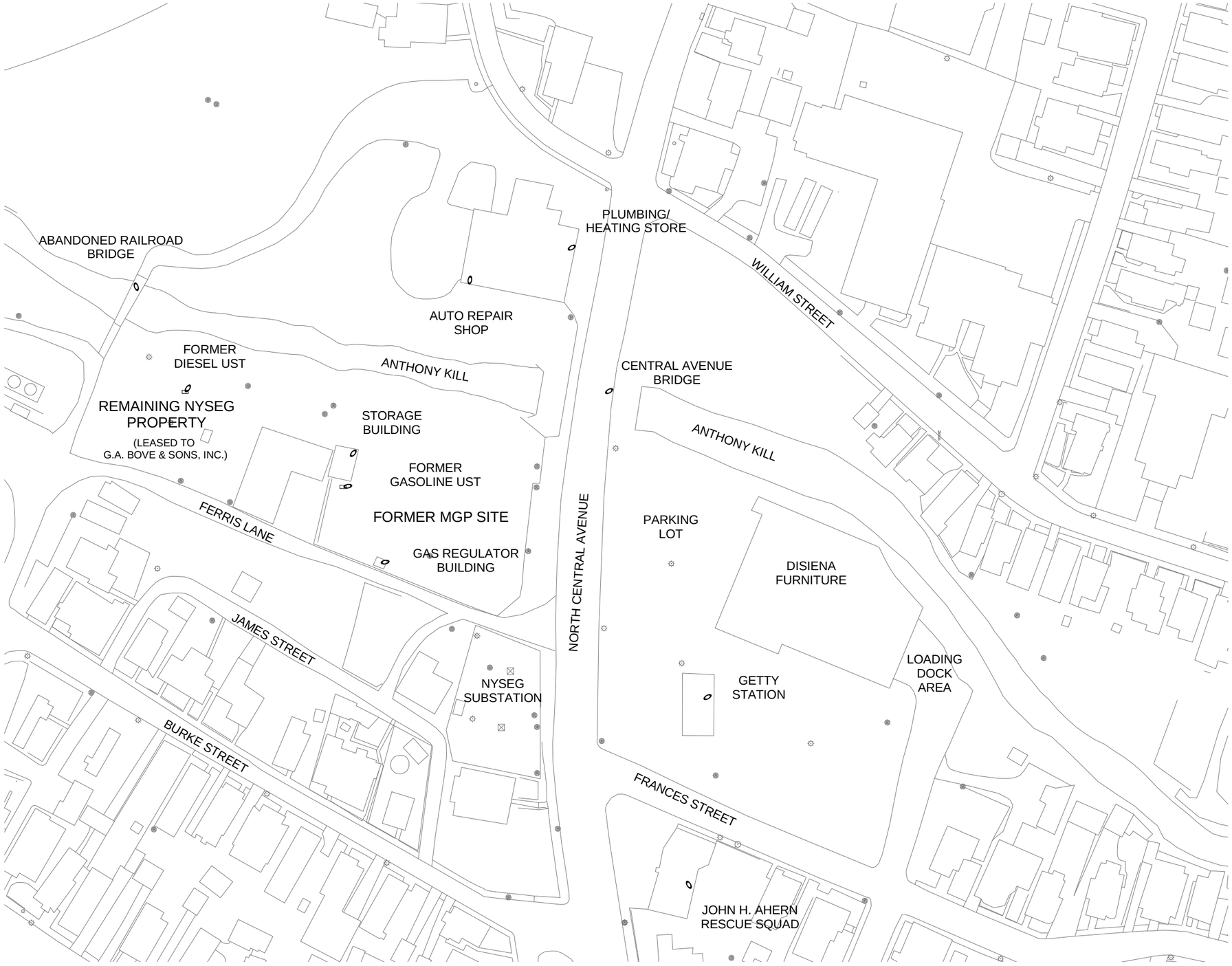
BASE MAP PROVIDED BY NYSEG ENGINEERING SERVICES, BINGHAMTON, NEW YORK

FORMER SITE LAYOUT

URS

FIGURE 1 – 2

P:\Database\NYSEG\Mechanicville\New Figures...\Fig 1-2 Former Site Layout.dwg



GRAPHIC SCALE

0 40 80 120 160 Feet

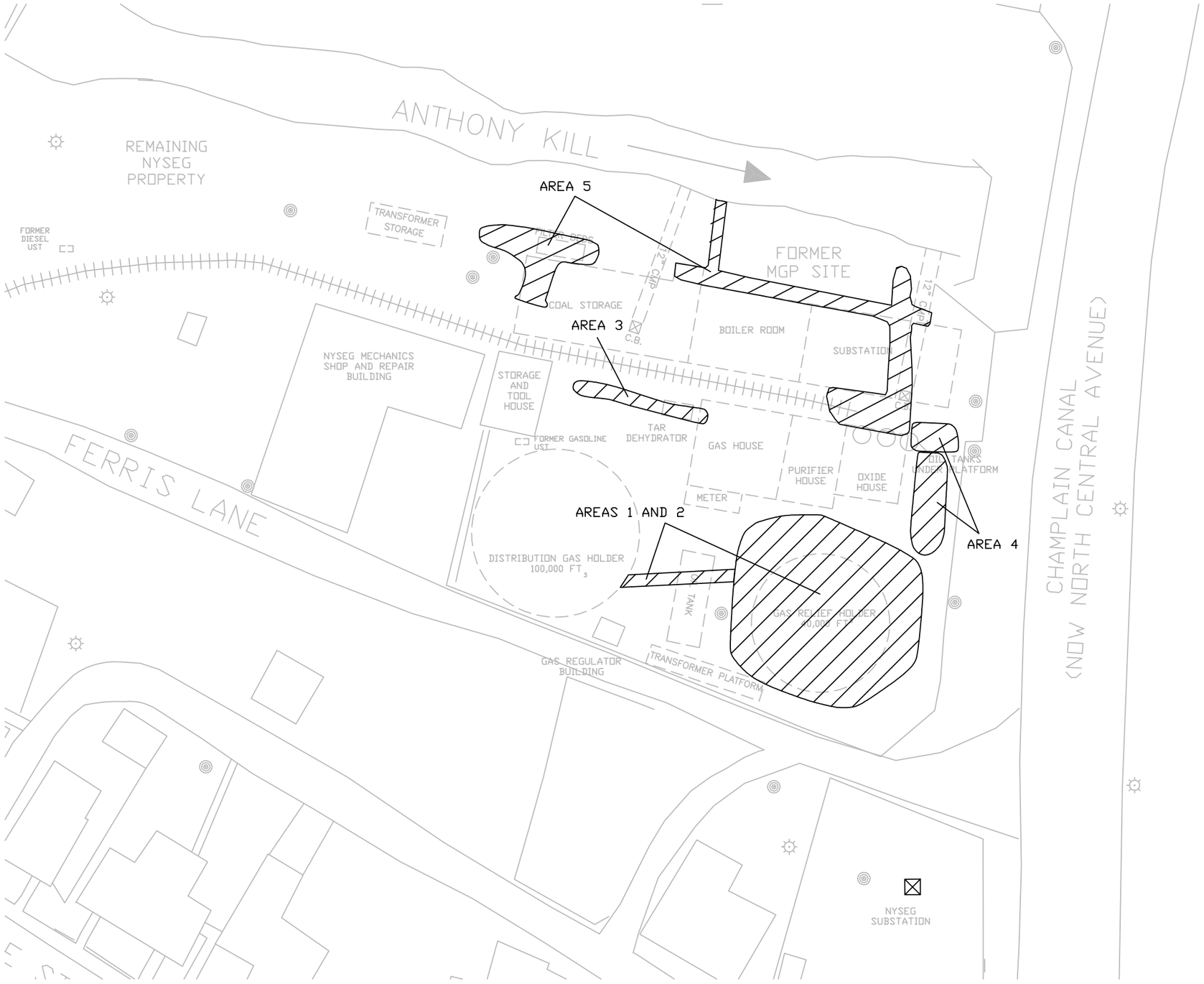
BASE MAP PROVIDED BY NYSEG ENGINEERING SERVICES, BINGHAMTON, NEW YORK

CURRENT SITE LAYOUT

URS

FIGURE 1 - 3

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



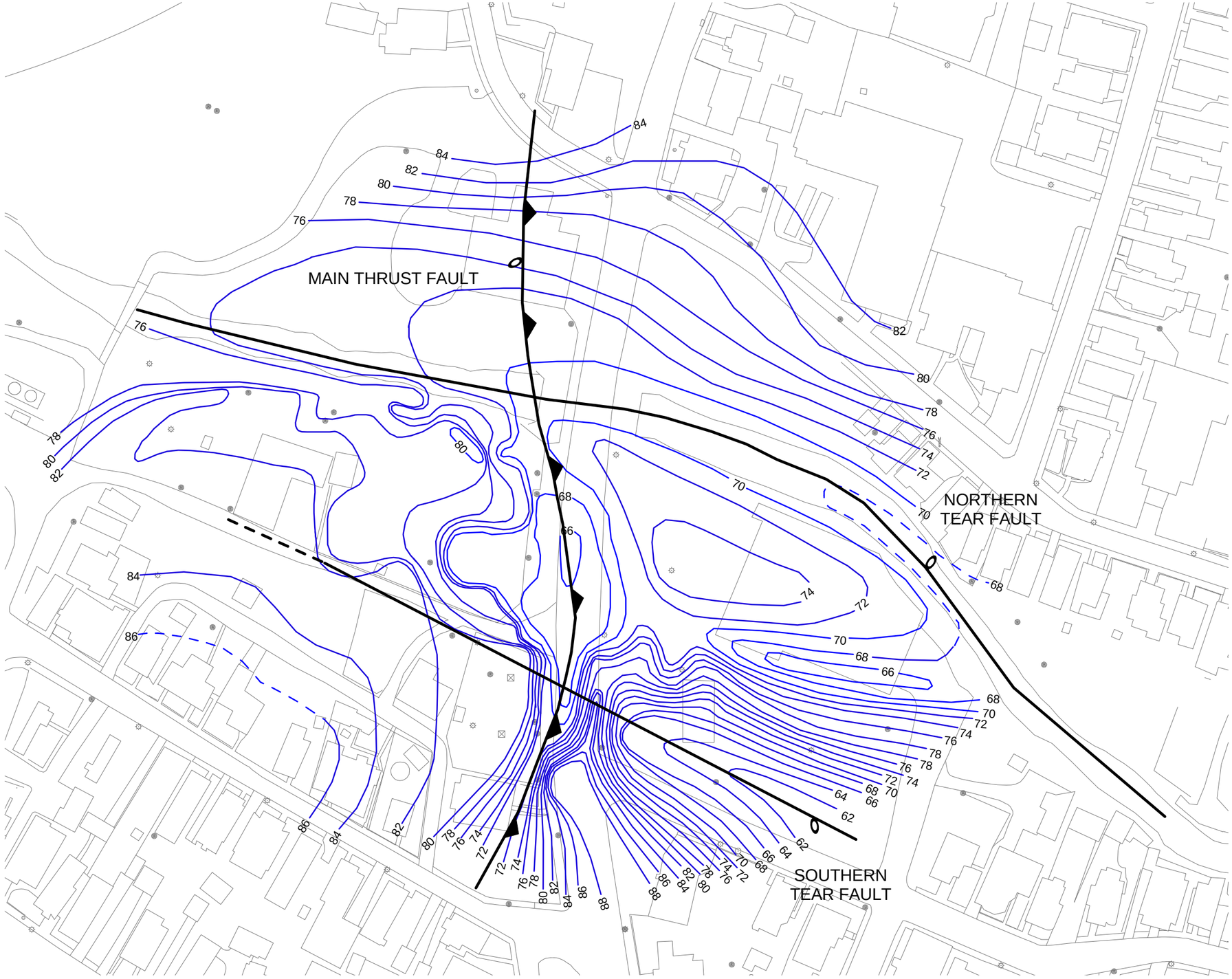
BASE MAP PROVIDED BY NYSEG ENGINEERING SERVICES, BINGHAMTON, NEW YORK

IRM EXCAVATION LIMITS

URS

FIGURE 1 – 4

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



N

LEGEND:

TOP OF BEDROCK (FEET MSL)

FAULT

GRAPHIC SCALE

0 40 80 120 160 Feet

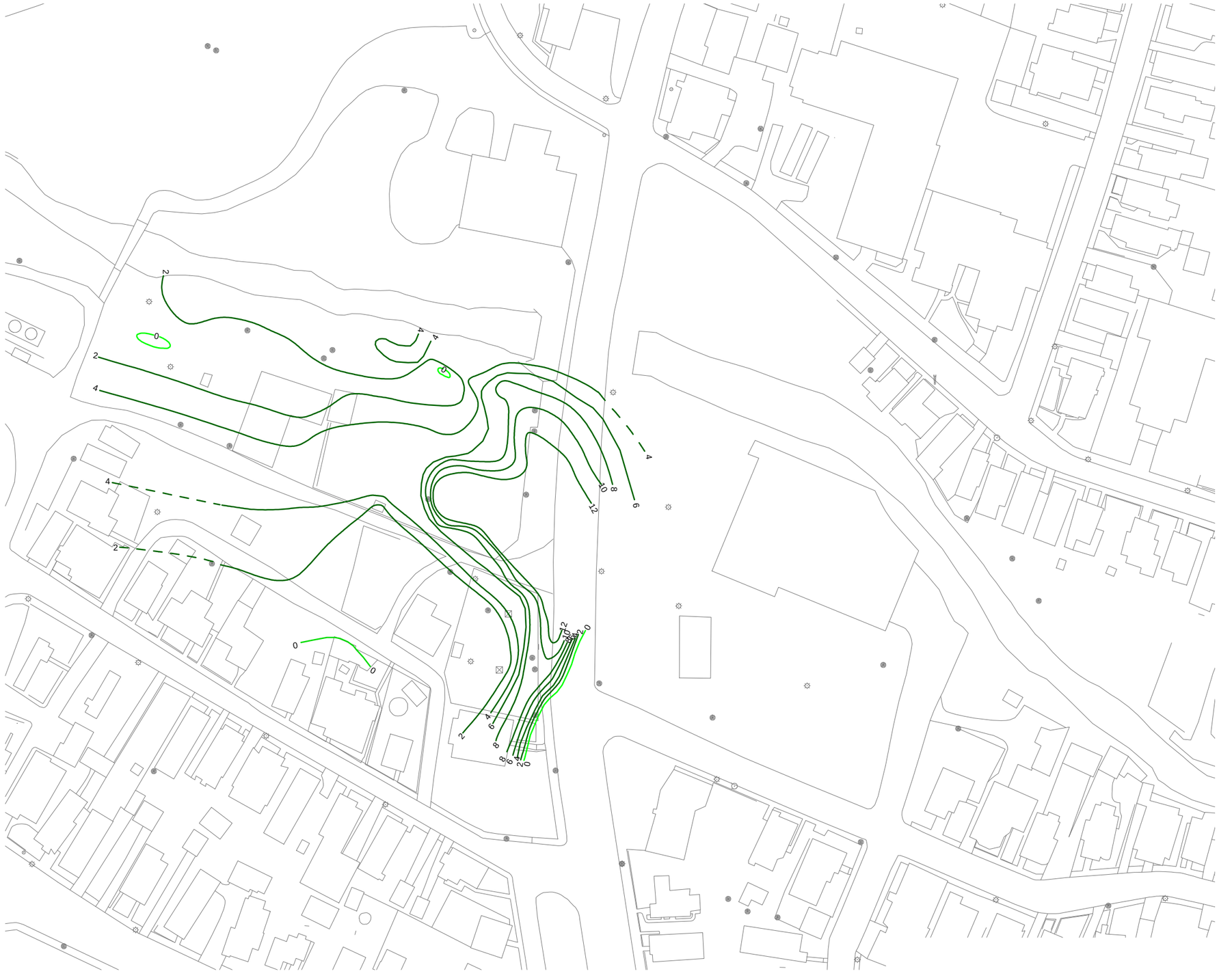
BASE MAP PROVIDED BY NYSEG ENGINEERING SERVICES, BINGHAMTON, NEW YORK

P:\Database\NYSEG\Mechanicville\New Figures...\Figures.apr\Fig 1-5 Top of Bedrock Map

TOP OF BEDROCK MAP

URS

FIGURE 1 - 5



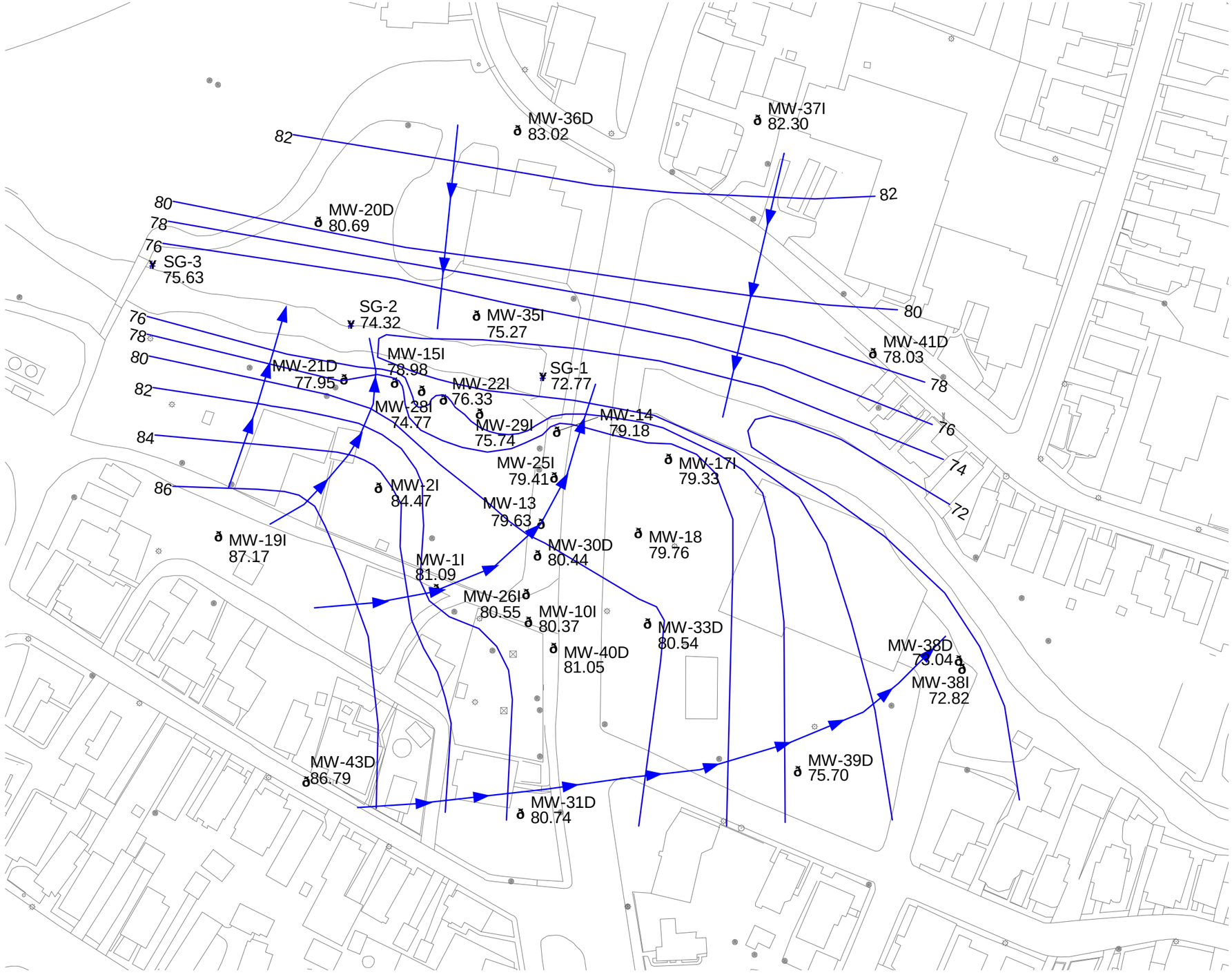
BASE MAP PROVIDED BY NYSEG ENGINEERING SERVICES, BINGHAMTON, NEW YORK

SATURATED THICKNESS OF OVERBURDEN

URS

FIGURE 1 - 6

P:\Database\NYSEG\Mechanicville\New Figures...\Figures.apr\Fig 1-6 Saturated Thickness of Overburden



N

LEGEND:

- ð BEDROCK MONITORING WELL LOCATION POTENTIOMETRIC SURFACE ELEVATION MAY 9, 2003
- ¥ STAFF GAUGE LOCATION
- POTENTIOMETRIC SURFACE ELEVATION CONTOURS (FEET MSL)
- FLOW LINES

NOTE:
BEDROCK WELLS AT WHICH WATER LEVELS HAVE NOT STABILIZED ARE NOT SHOWN.

GRAPHIC SCALE

0 40 80 120 160 Feet

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

POTENTIOMETRIC SURFACE ELEVATION MAP

URS

FIGURE 1 - 7

P:\Database\NYSEG\Mechanicville\New Figures...\Figures.apr\Fig 1-7 Potentiometric Surface Elevation Map

N

ANTHONY KILL

FERRIS LANE

WEST WAY

JAMES STREET

BURKE STREET

EAST WAY

NORTH CENTRAL AVENUE

FORMER 40,000 CU FT GAS RELIEF HOLDER

Legend

- Subsurface Soil Sample
- Surface Soil Sample
- , No Compounds Detected
- , At Least One VOC Exceeds SCGs
- , At Least One SVOC Exceeds SCGs
- , At Least One Metal Exceeds SCGs

NOTES:
1) Includes data from both Pre-SRI and SRI.
2) See Plate 1 for full site drawing with all soil sampling locations identified.

0 30 60 120 Feet

NYSEG - MECHANICVILLE
SOIL ANALYTICAL RESULTS EXCEEDING SCGs

URS

FIGURE 1-8

N:\38393614.00000\DB\Mechanicville\SCG_EXCEED.mxd Date: 11/16/04 12:31:35 PM Name: Mccabe_S

N

ANTHONY KILL

FERRIS LANE

JAMES STREET

WEST WAY

BURKE STREET

EAST WAY

NORTH CENTRAL AVENUE

SB-01, ND
SS-07, ND
SB-04, 9.5 MG/KG (2001)
TP-01, ND
MW-32D, ND
SS-08, ND
SB-08, ND
SB-10, ND
SB-06, ND
TP-05, ND
B-15, ND
MW-15S, ND
B-05, ND
SB-02, ND
SS-06, ND
SB-05, ND
SB-03, ND
SB-09, ND
SB-07, ND
SB-25, ND
SB-14, ND
MW-28I, ND
MW-22I, ND
MW-29I, ND
SB-24, ND
SB-27, ND
B-16, ND
B-09, ND
SB-23, ND
MW-23S, ND
B-14, ND
SB-16, ND
MW-14S, ND
SB-C3, ND
B-03, 3.2 MG/KG (1986)
SB-15, ND
TP-04, ND
SB-26, ND
SS-04, ND
SB-11, ND
SB-13, ND
SB-22, ND
MW-25S, ND
SS-05, ND
B-02, ND
MW-02I, ND
SB-17, 19 MG/KG (2001)
SB-21, ND
B-04, 1 MG/KG (1986)
SB-12, ND
RH-01S, ND
B-07, ND
MW-12S, ND
TP-02, 2 MG/KG (1986)
SB-C2, ND
MW-19I, ND
SS-03, ND
SB-20, ND
SB-19, ND
B-12, ND
B-08, ND
MW-30D, ND
SS-02, ND
SB-28, ND
SB-31, ND
SB-18, ND
SB-30, ND
MW-01D, ND
B-01, ND
SB-29, ND
B-10, ND
MW-10, ND
SB-C1, ND
MW-31S, ND
SS-01, ND
MW-34D, ND
MW-41D, ND
MW-17I, ND
B-17, ND
MW-38D, ND
MW-39D, ND

Legend

- Subsurface Soil Sample
- Surface Soil Sample
- , Cyanide Detected in Soil Sample Location

Location ID — SB-17, 19 MG/KG — Units
Year of Detection — (2001)
Concentration

NOTE: Includes data from both Pre-SRI and SRI.

0 30 60 120 Feet

NYSEG - MECHANICVILLE
TOTAL CYANIDE ANALYTICAL RESULTS IN SOIL

URS

FIGURE 1-9

N:\38393614.00000\DB\Mechanicville\cyanide_so.mxd Date: 11/17/04 4:26:48 PM Name: Mccabe_S

N

ANTHONY KILL

FERRIS LANE

WEST WAY

JAMES STREET

BURKE STREET

EAST WAY

NORTH CENTRAL AVENUE

GROVE STREET

MW-20D
MW-35I
MW-34D
MW-32D
MW-15
MW-21S
MW-15S
MW-05
MW-15I
MW-28I
MW-21D
MW-15D
MW-22I
MW-11
MW-29I
MW-29D
MW-23D
MW-14
MW-14S
MW-14D
MW-23S
MW-16
MW-03
MW-02
MW-02I
MW-25S
MW-25I
MW-04
MW-06
RH-01S
MW-19I
MW-12S
MW-13
MW-12
MW-30D
MW-30S
MW-01I
MW-01D
MW-01
MW-26S
MW-26I
MW-10
MW-10D
MW-40D
MW-43D
MW-31S
MW-31D
MW-41D
MW-17D
MW-17I
MW-17
MW-18
MW-33D
MW-38D
MW-38I
MW-42D
MW-39D

Legend

- No Compounds Detected
- At Least One VOC Exceeds SCGs
- At Least One SVOC Exceeds SCGs
- At Least One Metal Exceeds SCGs
- Product Encountered

NOTE: Includes data from both Pre-SRI and SRI.

0 35 70 140 Feet

NYSEG - MECHANICVILLE
GROUNDWATER ANALYTICAL RESULTS EXCEEDING SCGs
AND PRESENCE OF NAPL

URS

FIGURE 1-10

N:\38393614.00000\DB\Mechanicville\MAXWG_EXCEED.mxd Date: 01/04/05 1:01:51 PM Name: Mccabe_S

N

ANTHONY KILL

NORTH CENTRAL AVENUE

GROVE STREET

FERRIS LANE

WEST WAY

JAMES STREET

BURKE STREET

EAST WAY

MW-20D
MW-35I
MW-34D
MW-41D
SB-01
SB-04
MW-32D
SB-08
SB-10
MW-15S/I/D
SB-06
SB-02
MW-21S/D
MW-28I
SB-05
SB-09
MW-22I
MW-29I/D
SB-03
MW-11
SB-14
SB-07
SB-25
MW-23D
SB-27
SB-24/SB-24A
MW-23S
MW-14S/D
SB-23/SB-23A
SB-C3
SB-16
SB-15
MW-17D
MW-17I
SB-26
SB-60
SB-70
SB-69
MW-25S
SB-22
SB-59
MW-25I
SB-11
SB-13
SB-68
SB-17
SB-36
SB-49
SB-21
SB-56
SB-67
SB-12
SB-57
SB-66
SB-37
RH-01S
SB-58
SB-65
RH-01D
MW-12S
SB-C2
MW-19I
SB-20
SB-19
SB-48
SB-28
MW-30D
SB-38
SB-35
MW-30S
SB-18
SB-39
SB-32
SB-44
SB-31
MW-26I
SB-46
MW-01D
MW-26S
SB-30
SB-40
SB-29
SB-43
SB-33
MW-10I
MW-33D
SB-45
SB-34
MW-10D
SB-41
SB-47
SB-54
MW-40D
SB-64
SB-53
MW-38I/D
SB-C1
SB-42
SB-63
MW-42D
SB-62
MW-39D
MW-43D
MW-31S
SB-61
SB-50
MW-31D

Legend

- Soil Boring Location
- SB-21 - Location with NAPL Observation
- SB-44 - Location with Gasoline Observation
- RH-01S - Location with Recoverable NAPL/ Ongoing NAPL Recovery Occurring

SOURCE: SRI Appendix E Boring Logs

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

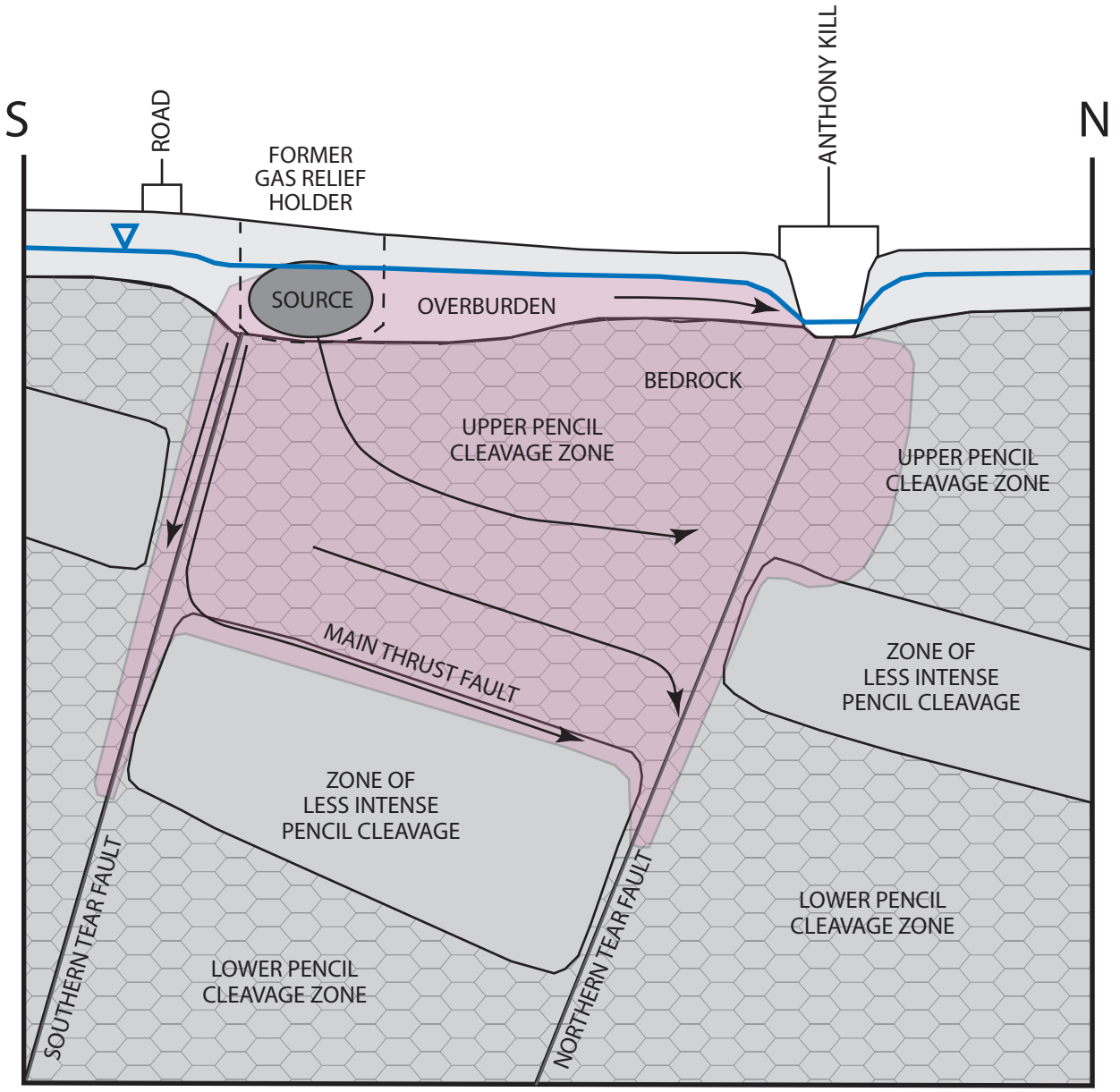
0 35 70 140 Feet

NYSEG - MECHANICVILLE
QUALITATIVE OBSERVATIONS AT SOIL BORING AND MONITORING WELL LOCATIONS

URS

FIGURE 1-11

N:\38393614.00000\DB\MechanicvilleBORINGLOG_REV1.mxd Date: 02/17/05 4:27:30 PM Name: Mccabe_S



LEGEND

- NAPL
- CONTAMINANT MIGRATION
- OVERBURDEN
- BEDROCK
- ZONE OF INTENSE PENCIL CLEAVAGE
- WATER TABLE

URS	CONCEPTUAL SITE MODEL	FIGURE 1 - 12

P:\Database\NYSEG\Mechanicville\New Figures...\Fig 1-9 Conceptual Site Model.ai

N

ANTHONY KILL

FERRIS LANE

WEST WAY

JAMES STREET

BURKE STREET

EAST WAY

NORTH CENTRAL AVENUE

Legend

- Subsurface Soil Sample
- Surface Soil Sample
- , Total Polycyclic Aromatic Hydrocarbons < 1000 MG/KG
- , Total Polycyclic Aromatic Hydrocarbons >= 1000 MG/KG

NOTES:
1) Includes data from both Pre-SRI and SRI.
2) See Plate 1 for full site drawing with all soil sampling locations identified.

0 30 60 120 Feet

NYSEG - MECHANICVILLE
TOTAL POLYCYCLIC AROMATIC HYDROCARBONS RESULTS
GREATER THAN 1,000 PPM

URS

FIGURE 2-1

N:\38393614.00000\DB\Mechanicville\TOTALPAH.mxd Date: 11/16/04 12:25:56 PM Name: Mccabe_S

N

ANTHONY KILL

FERRIS LANE

JAMES STREET

WEST WAY

BURKE STREET

EAST WAY

NORTH CENTRAL AVENUE

7 6 11 8 7 4 8 6 5 8 4 5 12 16 3 6

Legend

- Soil Sample Location
- 7 Soil Sample Location with Total Polycyclic Aromatic Hydrocarbons >= 1000 MG/KG with Depth Below Ground Surface in ft.

Maximum Depth of Soil Contamination

0 ft bgs	8 ft bgs	16 ft bgs
2 ft bgs	10 ft bgs	18 ft bgs
4 ft bgs	12 ft bgs	> 20 ft bgs
6 ft bgs	14 ft bgs	

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

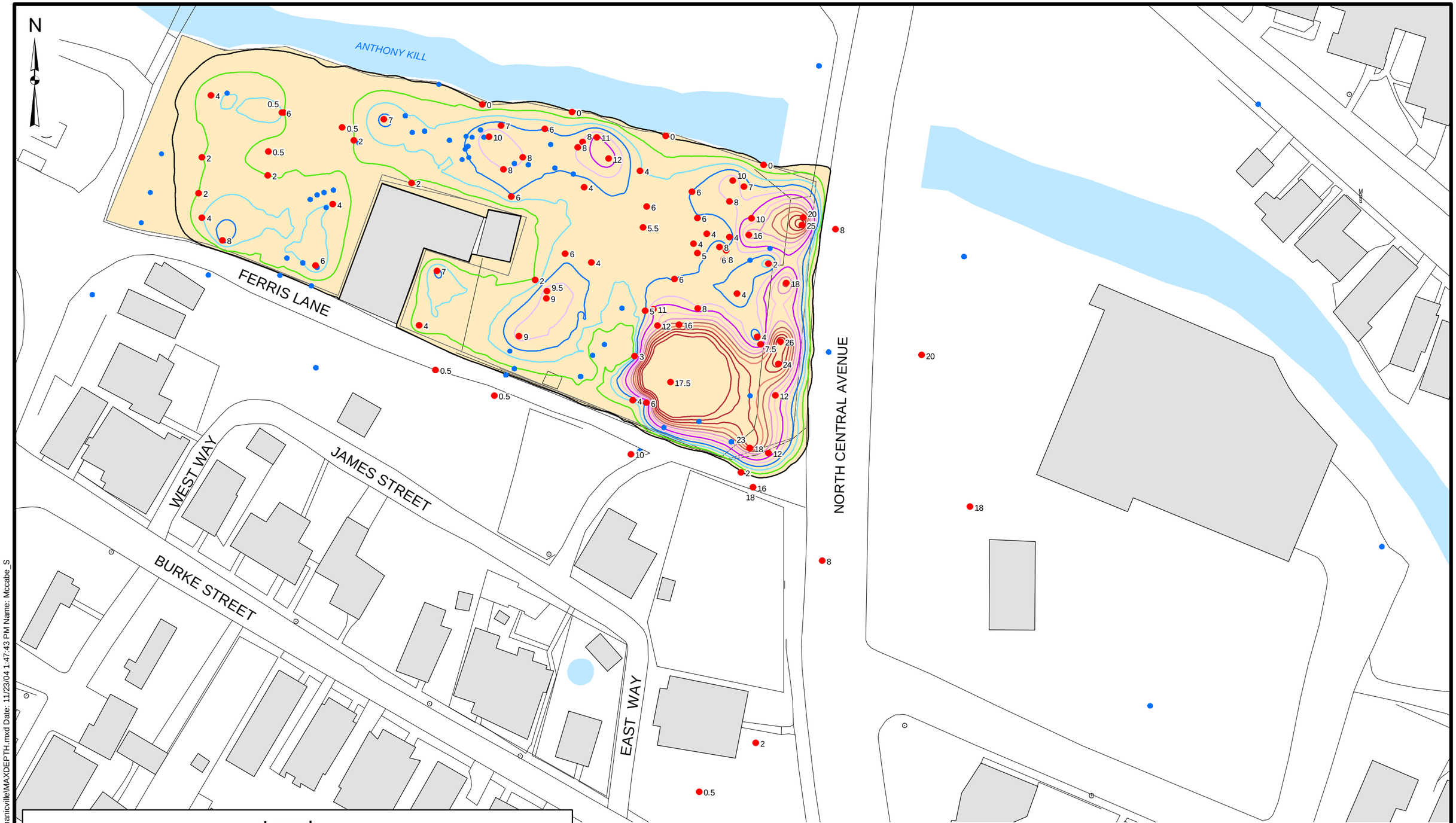
0 30 60 120 Feet

NYSEG - MECHANICVILLE
MAXIMUM DEPTH OF TOTAL POLYCYCLIC AROMATIC HYDROCARBONS RESULTS GREATER THAN 1,000 PPM

URS

FIGURE 2-2

N:\38393614.00000\DB\Mechanicville\MAXDEPTH_TOTAL.mxd Date: 11/23/04 3:20:56 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 = 416,119 cu ft; Volume = 15,411 cu yd

NYSEG - MECHANICVILLE FS
MAXIMUM DEPTH OF SOIL CONTAMINATION EXCEEDING SCGs

URS

FIGURE 2-3

N:\38393614.00000\DB\Mechanicville\MAXDEPTH.mxd Date: 11/23/04 1:47:43 PM Name: Mccabe_S

N

ANTHONY KILL

FERRIS LANE

WEST WAY

JAMES STREET

BURKE STREET

EAST WAY

NORTH CENTRAL AVENUE

Legend

- Subsurface Soil Sample
- Surface Soil Sample
- , Total Polycyclic Aromatic Hydrocarbons < 500 MG/KG
- , Total Polycyclic Aromatic Hydrocarbons >= 500 MG/KG

NOTES:
1) Includes data from both Pre-SRI and SRI.
2) See Plate 1 for full site drawing with all soil sampling locations identified.

0 30 60 120 Feet

NYSEG - MECHANICVILLE
TOTAL POLYCYCLIC AROMATIC HYDROCARBONS RESULTS GREATER THAN 500 PPM

URS

FIGURE 2-4

N:\38339614.00000\DB\Mechanicville\TOTALPAH_G500.mxd Date: 01/05/05 9:26:06 AM Name: Mccabe_S

N

ANTHONY KILL

FERRIS LANE

JAMES STREET

WEST WAY

BURKE STREET

EAST WAY

NORTH CENTRAL AVENUE

6
7
6
11
8
10
7
4
4
4
16
4
8
5
8
6
6
4
5
8
12
16
3
17.5
6

Legend

Soil Sample Location

7 Soil Sample Location with Total Polycyclic Aromatic Hydrocarbons >= 500 MG/KG with Depth Below Ground Surface in ft.

Maximum Depth of Soil Contamination

- 0 ft bgs
- 2 ft bgs
- 4 ft bgs
- 6 ft bgs
- 8 ft bgs
- 10 ft bgs
- 12 ft bgs
- 14 ft bgs
- 16 ft bgs
- 18 ft bgs
- > 20 ft bgs

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 = 168,764 cu ft; Volume = 6,250 cu yd

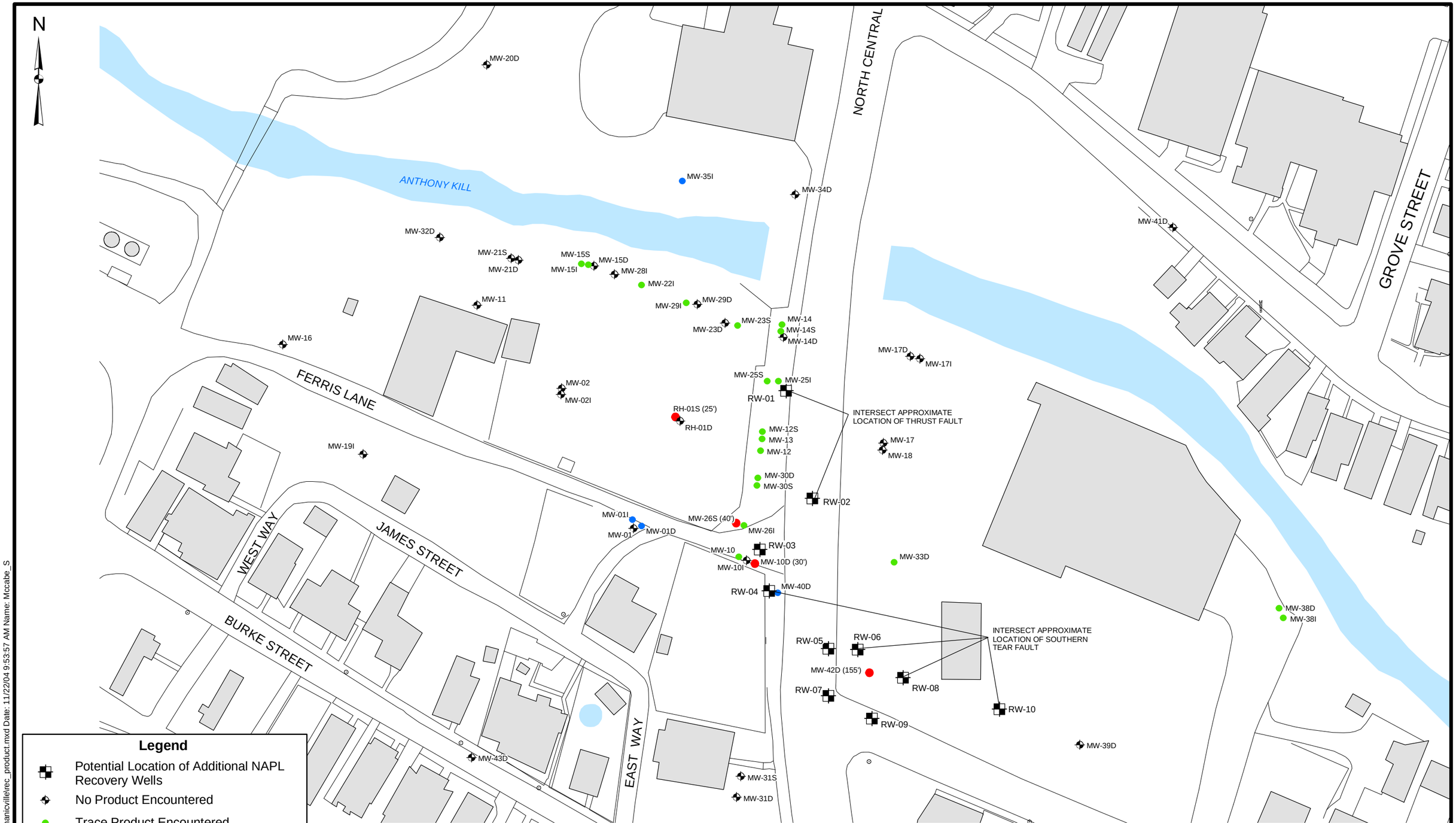
0 30 60 120 Feet

NYSEG - MECHANICVILLE
MAXIMUM DEPTH OF TOTAL POLYCYCLIC AROMATIC HYDROCARBONS RESULTS GREATER THAN 500 PPM

URS

FIGURE 2-5

N:\38393614.00000\DB\Mechanicville\MAXDEPTH_TOTAL_G500.mxd Date: 12/06/04 3:35:08 PM Name: Mccabe_S



Legend

- Potential Location of Additional NAPL Recovery Wells
- No Product Encountered
- Trace Product Encountered
- Non-Recoverable Product Encountered
- Recoverable Product Encountered

MW-42D (155') — Location ID — Depth at which NAPL is recovered

SOURCE: Table 5-6 from SRI.

NYSEG - MECHANICVILLE
EXTENT OF NAPL RECOVERY

URS

FIGURE 2-6

N:\38393614.00000\DB\Mechanicville\rec_product.mxd Date: 11/22/04 9:53:57 AM Name: Mccabe_S

N

ANTHONY KILL

NORTH CENTRAL

GROVE STREET

FERRIS LANE

WEST WAY

JAMES STREET

BURKE STREET

EAST WAY

MW-35I
MW-34D
MW-21D
MW-23D
MW-23S
RH-01S
MW-19I
MW-01
MW-26S
MW-10D
MW-40D
MW-17D
MW-17
MW-33D
MW-42D
MW-39D

Legend

NAPL Recovery Wells

Groundwater Monitoring Well

0 35 70 140 Feet

NYSEG - MECHANICVILLE
REMEDIATION ALTERNATIVE 1 - CONCEPTUAL PLAN

URS

FIGURE 4-1

N:\38393614.00000\DB\Mechanicville\REMALT1.mxd Date: 02/15/05 3:44:42 PM Name: Mccabe_S

N

ANTHONY KILL

MW-35I

MW-34D

MW-21D

GROUNDWATER
TREATMENT BUILDING

MW-23D

MW-23S

FERRIS LANE

RW-01

RH-01S

NORTH CENTRAL AVENUE

MW-17D

MW-17

MW-19I

RW-02

MW-26S

MW-01

RW-03

MW-10D

MW-33D

RW-04

MW-40D

WEST WAY

JAMES STREET

BURKE STREET

EAST WAY

RW-05

RW-06

MW-42D

RW-08

RW-07

RW-10

RW-09

MW-39D

Legend

- Groundwater Extraction Well
- Groundwater Monitoring Well
- NAPL Recovery Well (New)
- NAPL Recovery Well (Existing)
- Security Fence
- Excavation Area
- Low Permeability Cover
- Soil Cement Cutoff Wall

0 30 60 120 Feet

NYSEG - MECHANICVILLE
REMEDIATION ALTERNATIVE 2A - CONCEPTUAL PLAN

URS

FIGURE 4-2

N:\38393614.00000\DB\Mechanicville\REMALT2a.mxd Date: 02/15/05 4:56:30 PM Name: Mccabe_S

N

ANTHONY KILL

MW-35I

MW-34D

MW-21D

GROUNDWATER
TREATMENT BUILDING

MW-23D

MW-23S

FERRIS LANE

RW-01

RH-01S

MW-19I

NORTH CENTRAL AVENUE

MW-17D

MW-17

RW-02

MW-26S

MW-01

RW-03

MW-10D

MW-33D

RW-04

MW-40D

RW-05

RW-06

MW-42D

RW-08

RW-07

RW-10

RW-09

MW-39D

WEST WAY

JAMES STREET

BURKE STREET

EAST WAY

Legend

- Groundwater Extraction Well
- Groundwater Monitoring Well
- NAPL Recovery Well (New)
- NAPL Recovery Well (Existing)
- Security Fence
- Low Permeability Cover
- Soil Cement Cutoff Wall

0 30 60 120 Feet

NYSEG - MECHANICVILLE
REMEDIATION ALTERNATIVE 2B - CONCEPTUAL PLAN

URS

FIGURE 4-3

N:\38393614.00000\DB\Mechanicville\REMALT2b.mxd Date: 02/16/05 9:11:11 AM Name: Mccabe_S

N

ANTHONY KILL

MW-35I

MW-34D

MW-21D

MW-23D

MW-23S

FERRIS LANE

RW-01

RH-01S

NORTH CENTRAL AVENUE

MW-17D

MW-17

MW-19I

RW-02

MW-26S

MW-01

RW-03

JAMES STREET

WEST WAY

MW-10D

MW-33D

RW-04

MW-40D

RW-05

RW-06

MW-42D

RW-08

BURKE STREET

RW-07

RW-10

RW-09

EAST WAY

MW-39D

Legend

- Groundwater Monitoring Well
- NAPL Recovery Well (New)
- NAPL Recovery Well (Existing)
- Security Fence
- Excavation Area
- Soil Cement Cutoff Wall

0 30 60 120 Feet

NYSEG - MECHANICVILLE
REMEDIATION ALTERNATIVE 3A - CONCEPTUAL PLAN

URS

FIGURE 4-4

N:\38393614.00000\DB\Mechanicville\REMALT3a.mxd Date: 02/16/05 9:50:15 AM Name: Mccabe_S

N

ANTHONY KILL

MW-35I

MW-34D

MW-21D

MW-23D

MW-23S

FERRIS LANE

RH-01S

RW-01

NORTH CENTRAL AVENUE

MW-17D

MW-19I

MW-17

RW-02

MW-26S

MW-01

RW-03

MW-33D

WEST WAY

JAMES STREET

MW-10D

RW-04

MW-40D

RW-05

RW-06

MW-42D

RW-08

BURKE STREET

RW-07

RW-10

RW-09

EAST WAY

MW-39D

Legend

- Groundwater Monitoring Well
- NAPL Recovery Well (New)
- NAPL Recovery Well (Existing)
- Security Fence
- Excavation Area
- Soil Cement Cutoff Wall

0 30 60 120 Feet

NYSEG - MECHANICVILLE
REMEDIATION ALTERNATIVE 3B - CONCEPTUAL PLAN

URS

FIGURE 4-5

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

N

ANTHONY KILL

MW-35I

MW-34D

MW-21D

MW-23D

MW-23S

FERRIS LANE

RW-01

RH-01S

NORTH CENTRAL AVENUE

MW-17D

MW-19I

MW-17

RW-02

MW-26S

MW-01

RW-03

MW-33D

WEST WAY

JAMES STREET

MW-10D

RW-04

MW-40D

RW-05

RW-06

MW-42D

RW-08

BURKE STREET

RW-07

RW-10

RW-09

EAST WAY

MW-39D

Legend

- Groundwater Monitoring Well
- NAPL Recovery Well (New)
- NAPL Recovery Well (Existing)
- Security Fence
- Excavation Area
- Soil Cement Cutoff Wall

0 30 60 120 Feet

NYSEG - MECHANICVILLE
REMEDIATION ALTERNATIVE 3C - CONCEPTUAL PLAN

URS

FIGURE 4-6

N:\38393614.00000\DB\Mechanicville\REMALT3c.mxd Date: 02/16/05 9:53:11 AM Name: Mccabe_S

N

ANTHONY KILL

MW-35I

MW-34D

MW-21D

MW-23D

MW-23S

FERRIS LANE

RW-01

RH-01S

MW-19I

NORTH CENTRAL AVENUE

MW-17D

MW-17

RW-02

MW-26S

MW-01

RW-03

MW-10D

MW-33D

RW-04

MW-40D

RW-05

RW-06

MW-42D

RW-08

RW-07

RW-10

RW-09

MW-39D

WEST WAY

JAMES STREET

BURKE STREET

EAST WAY

Legend

- Groundwater Monitoring Well
- NAPL Recovery Well (New)
- NAPL Recovery Well (Existing)
- Security Fence
- Excavation Area
- In-Situ Stabilizaton/Solidification Area
- Soil Cement Cutoff Wall

0 30 60 120 Feet

NYSEG - MECHANICVILLE
REMEDIATION ALTERNATIVE 4 - CONCEPTUAL PLAN

URS

FIGURE 4-7

N:\38393614.00000\DB\MechanicvilleREMALT4.mxd Date: 02/16/05 10:05:35 AM Name: Mccabe_S

N

ANTHONY KILL

NORTH CENTRAL AVENUE

GROVE STREET

FERRIS LANE

WEST WAY

JAMES STREET

BURKE STREET

WILLIAM STREET

MW-36D
MW-37D
MW-20D
MW-34D
MW-41D
MW-17I
MW-19I
MW-01D
MW-02I
MW-10
MW-12S
MW-15S
MW-17S
MW-22I
MW-23S
MW-25S
MW-26S
MW-28I
MW-29I
MW-30D
MW-31S
MW-32D
MW-38D
MW-39D
SB-01
SB-02
SB-03
SB-04
SB-05
SB-06
SB-07
SB-08
SB-09
SB-10
SB-11
SB-12
SB-13
SB-14
SB-15
SB-16
SB-17
SB-18
SB-19
SB-20
SB-21
SB-22
SB-23
SB-24
SB-25
SB-26
SB-27
SB-28
SB-29
SB-30
SB-31
SB-45
SB-C1
SB-C2
SB-C3
B-01
B-02
B-03
B-04
B-05
B-07
B-08
B-09
B-10
B-12
B-14
B-15
B-16
B-17
TP-01
TP-02
TP-03
TP-04
TP-05
RH-01S
SS-1
SS-2
SS-3
SS-4
SS-5
SS-6
SS-7
SS-8
SS-9
SS-02
SS-03
SS-04
SS-05
SS-06
SS-07
SS-08
SS-09
SS-20
SS-21
SS-22
SS-23
SS-24
SS-25
SS-31
SS-32
SS-33
SS-34
SS-35
SS-36
SS-37
SS-38
SS-39
SS-40
SS-41
SS-45
SS-46
SS-47
SS-48
SS-M-1
SS-M-2
SS-M-3
SS-M-4
SS-M-5
PE-01
PE-02
PE-03
PE-04
PE-05
PE-06
PE-07
PE-08
PE-09
PE-10
PE-11
PE-12
PE-13
PE-14
PE-15
PE-16
PE-17
PE-18
PE-19
PE-20
PE-21
PE-22
PE-23
PE-24
PE-25
PE-26

Legend

- Monitoring Well
- Soil Boring Location
- Surface Soil Sample Location
- IRM Excavation Sample Location
- Test Pit Location

0 20 40 80 Feet

WARNING
IT IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON OTHER THAN WHOSE SEAL APPEARS ON THIS DRAWING, TO ALTER IN ANY WAY AN ITEM ON THIS DRAWING. IF AN ITEM IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE AND THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION

REVISIONS

DESIGNED BY SPM
DRAWN BY: SPM
CHECKED BY: XXX
PROJ. ENGR. MG

URS
Group Consultants
640 Ellicott Street, Buffalo, New York 14203
(716)856-5636 - (716)856-2545 fax

JOB No. 11173501

NYSEG - MECHANICVILLE

HISTORICAL AND SRI SOIL SAMPLE LOCATIONS

SOIL SAMPLING LOCATIONS

Scale:1" = 40' - 0' | Date: JAN. 2005 | PLATE 1

H:\1000\38\11500500\Mechanicville\Figures\Soil Locations and Base 010405 12:25:37 PM Valen Nicolai_S

APPENDIX A

STATISTICAL SUMMARIES OF ANALYTICAL DATA

TABLE A-1
STATISTICAL SUMMARY OF PRE-SRI SURFACE SOIL ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Volatile Organic Compounds													
1,1,1-Trichloroethane	MG/KG	0.8	5	-	-	-	-	-	-	0	-	-	
1,1,2,2-Tetrachloroethane	MG/KG	0.6	5	-	-	-	-	-	-	0	-	-	
1,1,2-Trichloroethane	MG/KG		5	-	-	-	-	-	-	0	-	-	
1,1-Dichloroethane	MG/KG	0.2	5	-	-	-	-	-	-	0	-	-	
1,1-Dichloroethene	MG/KG	0.4	5	-	-	-	-	-	-	0	-	-	
1,2-Dichlorobenzene	MG/KG	-	1	-	-	-	-	-	-	0	-	-	
1,2-Dichloroethane	MG/KG	0.1	5	-	-	-	-	-	-	0	-	-	
1,2-Dichloroethene (trans)	MG/KG	0.3	5	-	-	-	-	-	-	0	-	-	
1,2-Dichloropropane	MG/KG		5	-	-	-	-	-	-	0	-	-	
1,3-Dichlorobenzene	MG/KG	-	1	-	-	-	-	-	-	0	-	-	
1,3-Dichloropropene (cis)	MG/KG	-	5	-	-	-	-	-	-	0	-	-	
1,3-Dichloropropene (trans)	MG/KG	-	5	-	-	-	-	-	-	0	-	-	
1,4-Dichlorobenzene	MG/KG	-	1	-	-	-	-	-	-	0	-	-	
2-Chloroethyl vinyl ether	MG/KG	-	5	-	-	-	-	-	-	0	-	-	
2-Hexanone	MG/KG		5	-	-	-	-	-	-	0	-	-	
4-Methyl-2-Pentanone	MG/KG	1	5	-	-	-	-	-	-	0	-	-	
Acetone	MG/KG	0.2	5	-	-	-	-	-	-	0	-	-	

*Criteria- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).

Concentration Exceeds Criteria

TABLE A-1
STATISTICAL SUMMARY OF PRE-SRI SURFACE SOIL ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Volatile Organic Compounds													
Benzene	MG/KG	0.06	9	2	0.005	0.079	0.042	0.052	0.326	1	Normal	PE-25	2-2
Bromodichloromethane	MG/KG		5	-	-	-	-	-	-	0	-	-	
Bromoform	MG/KG		5	-	-	-	-	-	-	0	-	-	
Bromomethane	MG/KG		5	1	0.300	0.300	0.300	-	1.12	1	Log	SS-3	0-0
Carbon Disulfide	MG/KG	2.7	5	-	-	-	-	-	-	0	-	-	
Carbon Tetrachloride	MG/KG	0.6	5	-	-	-	-	-	-	0	-	-	
Chlorobenzene	MG/KG	1.7	6	-	-	-	-	-	-	0	-	-	
Chloroethane	MG/KG	1.9	5	-	-	-	-	-	-	0	-	-	
Chloroform	MG/KG	0.3	5	-	-	-	-	-	-	0	-	-	
Chloromethane	MG/KG		5	-	-	-	-	-	-	0	-	-	
Dibromochloromethane	MG/KG		5	-	-	-	-	-	-	0	-	-	
Ethylbenzene	MG/KG	5.5	6	-	-	-	-	-	-	0	-	-	
Methyl ethyl ketone (2-Butanone)	MG/KG	0.3	5	-	-	-	-	-	-	0	-	-	
Methylene Chloride	MG/KG	0.1	5	-	-	-	-	-	-	0	-	-	
Styrene	MG/KG		5	-	-	-	-	-	-	0	-	-	
Tetrachloroethene	MG/KG	1.4	5	-	-	-	-	-	-	0	-	-	
Toluene	MG/KG	1.5	6	-	-	-	-	-	-	0	-	-	

*Criteria- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).

Concentration Exceeds Criteria

TABLE A-1
STATISTICAL SUMMARY OF PRE-SRI SURFACE SOIL ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Volatile Organic Compounds													
Trichloroethene	MG/KG	0.7	5	-	-	-	-	-	-	0	-	-	
Vinyl Acetate	MG/KG		5	-	-	-	-	-	-	0	-	-	
Vinyl Chloride	MG/KG	0.2	5	-	-	-	-	-	-	0	-	-	
Xylene (total)	MG/KG	1.2	5	-	-	-	-	-	-	0	-	-	
Semivolatile Organic Compounds													
1,2,4-Trichlorobenzene	MG/KG	3.4	5	-	-	-	-	-	-	0	-	-	
1,2-Dichlorobenzene	MG/KG	7.9	5	-	-	-	-	-	-	0	-	-	
1,3-Dichlorobenzene	MG/KG	1.6	5	-	-	-	-	-	-	0	-	-	
1,4-Dichlorobenzene	MG/KG	8.5	5	-	-	-	-	-	-	0	-	-	
2,4,5-Trichlorophenol	MG/KG	0.1	5	-	-	-	-	-	-	0	-	-	
2,4,6-Trichlorophenol	MG/KG		5	-	-	-	-	-	-	0	-	-	
2,4-Dichlorophenol	MG/KG	0.4	5	-	-	-	-	-	-	0	-	-	
2,4-Dimethylphenol	MG/KG		5	-	-	-	-	-	-	0	-	-	
2,4-Dinitrophenol	MG/KG	0.2 or MDL	5	-	-	-	-	-	-	0	-	-	
2,4-Dinitrotoluene	MG/KG		5	-	-	-	-	-	-	0	-	-	
2,6-Dinitrotoluene	MG/KG	1	5	-	-	-	-	-	-	0	-	-	
2-Chloronaphthalene	MG/KG		5	-	-	-	-	-	-	0	-	-	

*Criteria- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).

Concentration Exceeds Criteria

TABLE A-1
STATISTICAL SUMMARY OF PRE-SRI SURFACE SOIL ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Semivolatile Organic Compounds													
2-Chlorophenol	MG/KG	0.8	5	-	-	-	-	-	-	0	-	-	
2-Methylnaphthalene	MG/KG	36.4	5	-	-	-	-	-	-	0	-	-	
2-Methylphenol (o-cresol)	MG/KG	0.1 or MDL	5	-	-	-	-	-	-	0	-	-	
2-Nitroaniline	MG/KG	0.43 or MDL	5	-	-	-	-	-	-	0	-	-	
2-Nitrophenol	MG/KG	0.33 or MDL	5	-	-	-	-	-	-	0	-	-	
3,3'-Dichlorobenzidine	MG/KG		5	-	-	-	-	-	-	0	-	-	
3-Nitroaniline	MG/KG	0.5 or MDL	5	-	-	-	-	-	-	0	-	-	
4,6-Dinitro-2-Methylphenol	MG/KG		5	-	-	-	-	-	-	0	-	-	
4-Bromophenyl-phenylether	MG/KG		5	-	-	-	-	-	-	0	-	-	
4-Chloroaniline	MG/KG	0.22 or MDL	5	-	-	-	-	-	-	0	-	-	
4-Chlorophenyl-phenylether	MG/KG		5	-	-	-	-	-	-	0	-	-	
4-Methylphenol (p-cresol)	MG/KG	0.9	5	-	-	-	-	-	-	0	-	-	
4-Nitroaniline	MG/KG		5	-	-	-	-	-	-	0	-	-	
4-Nitrophenol	MG/KG	0.1 or MDL	5	-	-	-	-	-	-	0	-	-	
Acenaphthene	MG/KG	50	5	1	1.50	1.50	1.50	-	1.89	0	Log	SS-3	0-0
Acenaphthylene	MG/KG	41	5	2	2.10	5.20	3.65	2.19	111.4	0	Log	SS-2	0-0
Anthracene	MG/KG	50	5	3	1.10	2.80	1.73	0.929	11.11	0	Log	SS-2	0-0

*Criteria- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).

Concentration Exceeds Criteria

TABLE A-1
STATISTICAL SUMMARY OF PRE-SRI SURFACE SOIL ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Semivolatile Organic Compounds													
Benzo(a)anthracene	MG/KG	0.224 or MDL	5	4	1.30	5.40	3.50	1.82	4.89	4	Normal	SS-2	0-0
Benzo(a)pyrene	MG/KG	0.061 or MDL	5	4	0.860	4.90	2.74	1.78	4.05	4	Normal	SS-2	0-0
Benzo(b)fluoranthene	MG/KG	1.1	5	4	1.40	8.70	3.77	3.33	115.8	4	Log	SS-2	0-0
Benzo(g,h,i)perylene	MG/KG	50	5	2	1.60	2.90	2.25	0.919	17.79	0	Log	SS-2	0-0
Benzo(k)fluoranthene	MG/KG	1.1	5	4	1.30	7.10	3.70	2.60	5.61	4	Normal	SS-2	0-0
Benzoic Acid	MG/KG	-	5	-	-	-	-	-	-	0	-	-	
Benzyl Alcohol	MG/KG		5	-	-	-	-	-	-	0	-	-	
bis(2-Chloroethoxy)methane	MG/KG		5	-	-	-	-	-	-	0	-	-	
bis(2-Chloroethyl)ether	MG/KG		5	-	-	-	-	-	-	0	-	-	
bis(2-Ethylhexyl)phthalate	MG/KG	50	5	2	1.10	3.70	2.40	1.84	20.87	0	Log	SS-1	0-0
Butylbenzylphthalate	MG/KG	50	5	-	-	-	-	-	-	0	-	-	
Chrysene	MG/KG	0.4	5	4	2.30	9.60	5.38	3.26	7.81	4	Normal	SS-2	0-0
Dibenz(a,h)anthracene	MG/KG	0.014 or MDL	5	-	-	-	-	-	-	0	-	-	
Dibenzofuran	MG/KG	6.2	5	-	-	-	-	-	-	0	-	-	
Diethylphthalate	MG/KG	7.1	5	-	-	-	-	-	-	0	-	-	
Dimethylphthalate	MG/KG	2	5	-	-	-	-	-	-	0	-	-	
Di-n-butylphthalate	MG/KG	8.1	5	4	0.670	1.10	0.907	0.184	1.08	0	Normal	SS-3	0-0

*Criteria- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).

Concentration Exceeds Criteria

TABLE A-1
STATISTICAL SUMMARY OF PRE-SRI SURFACE SOIL ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Semivolatile Organic Compounds													
Di-n-octylphthalate	MG/KG	50	5	1	11.00	11.00	11.00	-	774.9	0	Log	SS-4	0-0
Fluoranthene	MG/KG	50	5	4	0.700	7.40	4.85	2.90	7.02	0	Normal	SS-1	0-0
Fluorene	MG/KG	50	5	1	0.710	0.710	0.710	-	0.626	0	Log	SS-1	0-0
Hexachlorobenzene	MG/KG	0.41	5	-	-	-	-	-	-	0	-	-	
Hexachlorobutadiene	MG/KG		5	-	-	-	-	-	-	0	-	-	
Hexachlorocyclopentadiene	MG/KG		5	-	-	-	-	-	-	0	-	-	
Hexachloroethane	MG/KG		5	-	-	-	-	-	-	0	-	-	
Indeno(1,2,3-cd)pyrene	MG/KG	3.2	5	2	1.40	2.50	1.95	0.778	10.80	0	Log	SS-2	0-0
Isophorone	MG/KG	4.4	5	-	-	-	-	-	-	0	-	-	
Naphthalene	MG/KG	13	8	2	0.064	7.50	3.78	5.26	0.00E+00	0	Log	PE-24	1-1
Nitrobenzene	MG/KG	0.2 or MDL	5	-	-	-	-	-	-	0	-	-	
N-Nitroso-di-n-propylamine	MG/KG		5	-	-	-	-	-	-	0	-	-	
N-Nitrosodiphenylamine	MG/KG		5	-	-	-	-	-	-	0	-	-	
Pentachlorophenol	MG/KG	1 or MDL	5	-	-	-	-	-	-	0	-	-	
Phenanthrene	MG/KG	50	5	3	2.60	8.50	5.90	3.01	7.22	0	Normal	SS-1	0-0
Phenol	MG/KG	0.03 or MDL	5	-	-	-	-	-	-	0	-	-	
Pyrene	MG/KG	50	5	4	1.20	16.00	11.05	6.68	16.07	0	Normal	SS-1	0-0

*Criteria- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).

Concentration Exceeds Criteria

TABLE A-1
STATISTICAL SUMMARY OF PRE-SRI SURFACE SOIL ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Semivolatile Organic Compounds													
Total PAH	MG/KG	-	3	3	76.10	190.7	126.5	58.53	921.6	0	Log	PE-24	1-1
Total cPAH	MG/KG	-	3	3	6.31	93.00	50.07	43.35	123.2	0	Normal	PE-24	1-1
Polychlorinated Biphenyls													
Aroclor 1016	MG/KG	-	18	-	-	-	-	-	-	0	-	-	
Aroclor 1221	MG/KG	-	18	-	-	-	-	-	-	0	-	-	
Aroclor 1232	MG/KG	-	18	-	-	-	-	-	-	0	-	-	
Aroclor 1242	MG/KG	-	18	-	-	-	-	-	-	0	-	-	
Aroclor 1246	MG/KG	-	1	1	1.00	1.00	1.00	-	-	0	-	SS-M-2	0-0
Aroclor 1248	MG/KG	-	18	8	0.057	2.50	0.756	0.902	1.63	0	Log	SS-34	0-0
Aroclor 1254	MG/KG	-	18	-	-	-	-	-	-	0	-	-	
Aroclor 1260	MG/KG	-	18	10	0.047	2.60	0.414	0.779	0.851	0	Log	SS-37	0-0
Total PCBs	MG/KG	-	13	-	-	-	-	-	-	0	-	-	
Miscellaneous Parameters													
Cyanide, amenable	MG/KG	-	5	1	0.002	0.002	0.002	-	0.002	0	Log	SS-1	0-0
Cyanide, reactive	MG/KG	-	4	-	-	-	-	-	-	0	-	-	
Cyanide, total (distilled)	MG/KG	-	5	1	0.002	0.002	0.002	-	0.002	0	Log	SS-1	0-0
Cyanide, total (undistilled)	MG/KG	-	5	-	-	-	-	-	-	0	-	-	

*Criteria- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).

Concentration Exceeds Criteria

TABLE A-1
STATISTICAL SUMMARY OF PRE-SRI SURFACE SOIL ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Miscellaneous Parameters													
Sulfide, reactive	MG/KG	-	4	-	-	-	-	-	-	0	-	-	

*Criteria- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).

Concentration Exceeds Criteria

TABLE A-1
STATISTICAL SUMMARY OF TOTAL PAHs IN PRE-SRI SURFACE SOIL
NYSEG - MECHANICVILLE

LOCID	LOGDATE	MATRIX	SBD	SED	SACODE	SAMPNO	UNITS	PRCCODE	PARNAME	CONC
SS-1	01-Sep-89	SO	0	0	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	59.91
SS-2	01-Sep-89	SO	0	0	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	71
SS-3	01-Sep-89	SO	0	0	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	40.8
SS-3	01-Sep-89	SO	0	0	FD	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	35.09
SS-4	01-Sep-89	SO	0	0	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	9.06
PE-24	27-Sep-00	SO	1	1			MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	190.7
PE-25	27-Sep-00	SO	2	2			MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	76.1
PE-26	27-Sep-00	SO	2	2			MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	112.7

MINIMUM	9.06
MAXIMUM	190.7
AVERAGE	74.42

TABLE A-2
STATISTICAL SUMMARY OF SRI SURFACE SOIL ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Volatile Organic Compounds													
1,1,1-Trichloroethane	MG/KG	0.8	11	-	-	-	-	-	-	0	-	-	
1,1,2,2-Tetrachloroethane	MG/KG	0.6	11	-	-	-	-	-	-	0	-	-	
1,1,2-Trichloroethane	MG/KG		11	-	-	-	-	-	-	0	-	-	
1,1-Dichloroethane	MG/KG	0.2	11	-	-	-	-	-	-	0	-	-	
1,1-Dichloroethene	MG/KG	0.4	11	-	-	-	-	-	-	0	-	-	
1,2,4-Trimethylbenzene	MG/KG	-	1	-	-	-	-	-	-	0	-	-	
1,2-Dichloroethane	MG/KG	0.1	11	-	-	-	-	-	-	0	-	-	
1,2-Dichloroethene (total)	MG/KG	0.3	11	-	-	-	-	-	-	0	-	-	
1,2-Dichloropropane	MG/KG		11	-	-	-	-	-	-	0	-	-	
1,3-Dichloropropene (cis)	MG/KG	-	11	-	-	-	-	-	-	0	-	-	
1,3-Dichloropropene (trans)	MG/KG	-	11	-	-	-	-	-	-	0	-	-	
2-Chloroethyl vinyl ether	MG/KG	-	11	-	-	-	-	-	-	0	-	-	
2-Hexanone	MG/KG		11	-	-	-	-	-	-	0	-	-	
4-Methyl-2-Pentanone	MG/KG	1	11	-	-	-	-	-	-	0	-	-	
Acetone	MG/KG	0.2	11	-	-	-	-	-	-	0	-	-	
Benzene	MG/KG	0.06	12	-	-	-	-	-	-	0	-	-	
Bromodichloromethane	MG/KG		11	-	-	-	-	-	-	0	-	-	

*Criteria- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).


Concentration Exceeds Criteria

TABLE A-2
STATISTICAL SUMMARY OF SRI SURFACE SOIL ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Volatile Organic Compounds													
Bromoform	MG/KG		11	-	-	-	-	-	-	0	-	-	
Bromomethane	MG/KG		11	-	-	-	-	-	-	0	-	-	
Carbon Disulfide	MG/KG	2.7	11	-	-	-	-	-	-	0	-	-	
Carbon Tetrachloride	MG/KG	0.6	11	-	-	-	-	-	-	0	-	-	
Chlorobenzene	MG/KG	1.7	11	-	-	-	-	-	-	0	-	-	
Chloroethane	MG/KG	1.9	11	-	-	-	-	-	-	0	-	-	
Chloroform	MG/KG	0.3	11	-	-	-	-	-	-	0	-	-	
Chloromethane	MG/KG		11	-	-	-	-	-	-	0	-	-	
Dibromochloromethane	MG/KG		11	-	-	-	-	-	-	0	-	-	
Ethylbenzene	MG/KG	5.5	12	-	-	-	-	-	-	0	-	-	
Methyl ethyl ketone (2-Butanone)	MG/KG	0.3	11	-	-	-	-	-	-	0	-	-	
Methylene Chloride	MG/KG	0.1	11	-	-	-	-	-	-	0	-	-	
Styrene	MG/KG		12	1	0.400	0.400	0.400	-	0.061	1	Log	SB-16	0-2
Tetrachloroethene	MG/KG	1.4	11	-	-	-	-	-	-	0	-	-	
Toluene	MG/KG	1.5	12	3	0.001	0.070	0.024	0.040	0.013	0	Log	SB-16	0-2
Trichloroethene	MG/KG	0.7	11	-	-	-	-	-	-	0	-	-	
Vinyl Acetate	MG/KG		11	-	-	-	-	-	-	0	-	-	

*Criteria- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).

Concentration Exceeds Criteria

TABLE A-2
STATISTICAL SUMMARY OF SRI SURFACE SOIL ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Volatile Organic Compounds													
Vinyl Chloride	MG/KG	0.2	11	-	-	-	-	-	-	0	-	-	
Xylene (total)	MG/KG	1.2	12	3	0.002	0.003	0.002	0.0009	0.008	0	Log	SB-06	0-2
Semivolatile Organic Compounds													
1-Methylnaphthalene	MG/KG	-	1	1	0.060	0.060	0.060	-	-	0	-	SB-16	0-2
2-Methylnaphthalene	MG/KG	36.4	17	8	0.050	16.00	2.45	5.49	2.11	0	Log	SB-09	0-2
Acenaphthene	MG/KG	50	17	4	0.053	16.00	4.05	7.97	1.45	0	Log	SB-09	0-2
Acenaphthylene	MG/KG	41	17	5	0.073	5.30	1.61	2.31	0.860	0	Log	SB-09	0-2
Anthracene	MG/KG	50	17	9	0.047	14.00	1.84	4.59	1.55	0	Log	SB-09	0-2
Benzo(a)anthracene	MG/KG	0.224 or MDL	17	15	0.040	33.00	3.09	8.63	9.36	7	Log	SB-29	0-2
Benzo(a)pyrene	MG/KG	0.061 or MDL	17	15	0.033	18.00	1.75	4.67	4.51	12	Log	SB-29	0-2
Benzo(b)fluoranthene	MG/KG	1.1	17	14	0.053	53.00	4.97	14.05	17.74	5	Log	SB-29	0-2
Benzo(e)pyrene	MG/KG	-	1	1	0.090	0.090	0.090	-	-	0	-	SB-16	0-2
Benzo(g,h,i)perylene	MG/KG	50	17	14	0.033	27.00	2.35	7.12	4.92	0	Log	SB-29	0-2
Benzo(k)fluoranthene	MG/KG	1.1	17	6	0.053	0.730	0.174	0.273	0.634	0	Log	SB-13	0-2
Chrysene	MG/KG	0.4	17	15	0.043	41.00	3.54	10.56	9.82	6	Log	SB-29	0-2
Dibenz(a,h)anthracene	MG/KG	0.014 or MDL	17	8	0.067	13.00	1.88	4.51	1.20	8	Log	SB-29	0-2
Dibenzofuran	MG/KG	6.2	17	5	0.047	19.00	3.87	8.46	1.77	1	Log	SB-09	0-2

*Criteria- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).

Concentration Exceeds Criteria

TABLE A-2
STATISTICAL SUMMARY OF SRI SURFACE SOIL ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Semivolatile Organic Compounds													
Fluoranthene	MG/KG	50	17	16	0.047	27.00	3.69	9.11	16.44	0	Log	SB-29	0-2
Fluorene	MG/KG	50	17	4	0.047	25.00	6.32	12.45	1.85	0	Log	SB-09	0-2
Indeno(1,2,3-cd)pyrene	MG/KG	3.2	17	15	0.040	19.00	1.65	4.84	3.77	1	Log	SB-29	0-2
Naphthalene	MG/KG	13	17	8	0.093	19.00	3.09	6.47	3.00	1	Log	SB-09	0-2
Perylene	MG/KG	-	1	-	-	-	-	-	-	0	-	-	
Phenanthrene	MG/KG	50	17	14	0.037	51.00	4.62	13.54	16.25	1	Log	SB-09	0-2
Pyrene	MG/KG	50	17	17	0.037	73.00	6.19	18.00	54.48	1	Log	SB-29	0-2
Polychlorinated Biphenyls													
Aroclor 1016	MG/KG	-	3	-	-	-	-	-	-	0	-	-	
Aroclor 1221	MG/KG	-	3	-	-	-	-	-	-	0	-	-	
Aroclor 1232	MG/KG	-	3	-	-	-	-	-	-	0	-	-	
Aroclor 1242	MG/KG	-	3	-	-	-	-	-	-	0	-	-	
Aroclor 1248	MG/KG	-	3	-	-	-	-	-	-	0	-	-	
Aroclor 1254	MG/KG	-	3	-	-	-	-	-	-	0	-	-	
Aroclor 1260	MG/KG	-	3	-	-	-	-	-	-	0	-	-	
Metals													
Aluminum	MG/KG	SB	3	3	1,340	6,300	3,497	2,542	9.47E+05	0	Log	SS-06	0-0.5

*Criteria- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).

(oval) Concentration Exceeds Criteria

TABLE A-2
STATISTICAL SUMMARY OF SRI SURFACE SOIL ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Metals													
Antimony	MG/KG	SB	3	-	-	-	-	-	-	0	-	-	
Arsenic	MG/KG	7.5	3	3	0.750	5.70	3.67	2.59	4.48E+05	0	Log	SS-07	0-0.5
Barium	MG/KG	300	3	3	15.90	28.00	21.37	6.13	31.71	0	Normal	SS-06	0-0.5
Cadmium	MG/KG	1	3	2	0.760	0.980	0.870	0.156	0.00E+00	0	Log	SS-07	0-0.5
Chromium	MG/KG	10	3	3	3.96	11.50	7.39	3.82	13.82	1	Normal	SS-06	0-0.5
Copper	MG/KG	25	3	3	13.20	27.00	19.57	6.96	31.30	1	Normal	SS-06	0-0.5
Iron	MG/KG	2000	3	3	3,530	7,100	5,130	1,814	8,187	3	Normal	SS-06	0-0.5
Lead	MG/KG	SB	3	3	10.80	21.00	15.77	5.11	24.37	0	Normal	SS-07	0-0.5
Manganese	MG/KG	SB	3	3	166.0	308.0	235.0	71.08	354.8	0	Normal	SS-06	0-0.5
Mercury	MG/KG	0.1	3	3	0.020	0.050	0.033	0.015	0.059	0	Normal	SS-06	0-0.5
Nickel	MG/KG	13	3	3	4.52	14.00	8.56	4.89	177.8	1	Log	SS-06	0-0.5
Selenium	MG/KG	2	3	-	-	-	-	-	-	0	-	-	
Silver	MG/KG	SB	3	-	-	-	-	-	-	0	-	-	
Vanadium	MG/KG	150	3	3	4.25	237.0	83.58	132.9	3.19E+20	1	Log	SS-07	0-0.5
Zinc	MG/KG	20	3	3	50.00	63.50	58.33	7.29	76.44	3	Log	SS-08	0-0.5
Miscellaneous Parameters													
Cyanide, Free (weak & dissoc.)	MG/KG	-	16	-	-	-	-	-	-	0	-	-	

*Criteria- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).

Concentration Exceeds Criteria

N:\38393614.00000\DB\Program\Stat.mde
Printed: 01/11/05 9:43:21 AM
WHERE [SITEID] = '01' AND [MATRIX] = 'SO' AND VAL([SED]) <= 2.0 AND [LOGDATE] >= #04/01/01# AND [LOCID] NOT LIKE 'DS-*' AND [LOCID] <> 'RO-07' AND [LOCID] <> 'SANDBAG' AND [PRCCODE] <> 'ASVOC';

TABLE A-2
STATISTICAL SUMMARY OF SRI SURFACE SOIL ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Miscellaneous Parameters													
Cyanide, total	MG/KG	-	16	-	-	-	-	-	-	0	-	-	
Heat Value	btu/lb	-	2	-	-	-	-	-	-	0	-	-	
Phenolics, Total Recoverable	MG/KG	-	11	5	0.200	0.600	0.420	0.179	0.383	0	Normal	SB-02	0-2

*Criteria- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).

Concentration Exceeds Criteria

N:\38393614.00000\DB\Program\Stat.mde
Printed: 01/11/05 9:43:21 AM
WHERE [SITEID] = '01' AND [MATRIX] = 'SO' AND VAL([SED]) <= 2.0 AND [LOGDATE] >= #04/01/01# AND [LOCID] NOT LIKE 'DS-*' AND [LOCID] <> 'RO-07' AND [LOCID] <> 'SANDBAG' AND [PRCCODE] <> 'ASVOC';

TABLE A-2
STATISTICAL SUMMARY OF TOTAL PAHs IN SRI SURFACE SOIL
NYSEG - MECHANICVILLE

LOCID	LOGDATE	MATRIX	SBD	SED	SACODE	SAMPNO	UNITS	PRCCODE	PARNAME	CONC
SS-01	18-May-01	SO	0	0.5	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	1.557
SS-02	18-May-01	SO	0	0.5	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	1.123
SS-03	18-May-01	SO	0	0.5	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	1.156
SS-04	18-May-01	SO	0	0.5	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	0.103
SS-05	18-May-01	SO	0	0.5	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	0.037
SS-06	18-May-01	SO	0	0.5	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	0.64
SS-07	18-May-01	SO	0	0.5	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	0.486
SS-08	18-May-01	SO	0	0.5	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	0.326
MW-31S	30-May-01	SO	0	2	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	2.38
SB-02	02-Apr-01	SO	0	2	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	11.32
SB-03	02-Apr-01	SO	0	2	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	6.077
SB-05	02-Apr-01	SO	0	2	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	7.18
SB-06	02-Apr-01	SO	0	2	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	15.763
SB-09	02-Apr-01	SO	0	2	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	233.5
SB-13	04-Apr-01	SO	0	2	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	4.359
SB-16	03-Apr-01	SO	0	2	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	1.93
SB-29	05-Apr-01	SO	0	2	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	320.4

MINIMUM	0.037
MAXIMUM	320.4
AVERAGE	35.7845294

TABLE A-3
STATISTICAL SUMMARY OF PRE-SRI SUBSURFACE SOIL ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Volatile Organic Compounds													
1,1,1-Trichloroethane	MG/KG	0.8	4	-	-	-	-	-	-	0	-	-	
1,1,2,2-Tetrachloroethane	MG/KG	0.6	4	-	-	-	-	-	-	0	-	-	
1,1,2-Trichloroethane	MG/KG	-	4	-	-	-	-	-	-	0	-	-	
1,1-Dichloroethane	MG/KG	0.2	4	-	-	-	-	-	-	0	-	-	
1,1-Dichloroethene	MG/KG	0.4	4	-	-	-	-	-	-	0	-	-	
1,2-Dichloroethane	MG/KG	0.1	4	-	-	-	-	-	-	0	-	-	
1,2-Dichloroethene (total)	MG/KG	0.3	2	-	-	-	-	-	-	0	-	-	
1,2-Dichloroethene (trans)	MG/KG	0.3	2	-	-	-	-	-	-	0	-	-	
1,2-Dichloropropane	MG/KG	-	4	-	-	-	-	-	-	0	-	-	
1,3-Dichloropropene (cis)	MG/KG	-	4	-	-	-	-	-	-	0	-	-	
1,3-Dichloropropene (trans)	MG/KG	-	4	-	-	-	-	-	-	0	-	-	
2-Chloroethyl vinyl ether	MG/KG	-	2	-	-	-	-	-	-	0	-	-	
2-Hexanone	MG/KG	-	4	-	-	-	-	-	-	0	-	-	
4-Methyl-2-Pentanone	MG/KG	1	4	-	-	-	-	-	-	0	-	-	
Acetone	MG/KG	0.2	6	-	-	-	-	-	-	0	-	-	
Benzene	MG/KG	0.06	40	22	0.067	2,800	185.6	603.7	0.00E+00	22	Log	PE-15	5-5
Bromodichloromethane	MG/KG	-	4	-	-	-	-	-	-	0	-	-	

*Criteria- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).

(oval) Concentration Exceeds Criteria

TABLE A-3
STATISTICAL SUMMARY OF PRE-SRI SUBSURFACE SOIL ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Volatile Organic Compounds													
Bromoform	MG/KG	-	4	-	-	-	-	-	-	0	-	-	
Bromomethane	MG/KG	-	4	-	-	-	-	-	-	0	-	-	
Carbon Disulfide	MG/KG	2.7	6	1	0.110	0.110	0.110	-	5.86E+04	0	Log	TP-05	4-6
Carbon Tetrachloride	MG/KG	0.6	4	-	-	-	-	-	-	0	-	-	
Chlorobenzene	MG/KG	1.7	4	-	-	-	-	-	-	0	-	-	
Chloroethane	MG/KG	1.9	4	-	-	-	-	-	-	0	-	-	
Chloroform	MG/KG	0.3	4	-	-	-	-	-	-	0	-	-	
Chloromethane	MG/KG	-	4	-	-	-	-	-	-	0	-	-	
Dibromochloromethane	MG/KG	-	4	-	-	-	-	-	-	0	-	-	
Ethylbenzene	MG/KG	5.5	17	10	0.150	440.0	82.83	149.8	1.56E+06	5	Log	B-08	13.5-15.5
Methyl ethyl ketone (2-Butanone)	MG/KG	0.3	4	-	-	-	-	-	-	0	-	-	
Methylene Chloride	MG/KG	0.1	6	2	0.120	1.00	0.560	0.622	9.09E+07	2	Log	TP-05	4-6
n-Propylbenzene	MG/KG	-	11	2	0.083	2.10	1.09	1.43	26.88	0	Log	TP-05	3-4
Styrene	MG/KG	-	17	3	0.180	780.0	500.1	433.9	6.17E+04	0	Log	B-08	13.5-15.5
Tetrachloroethene	MG/KG	1.4	4	-	-	-	-	-	-	0	-	-	
Toluene	MG/KG	1.5	17	9	0.160	840.0	168.2	332.9	3.65E+05	4	Log	B-08	13.5-15.5
Trichloroethene	MG/KG	0.7	4	-	-	-	-	-	-	0	-	-	

*Criteria- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).

(oval) Concentration Exceeds Criteria

TABLE A-3
STATISTICAL SUMMARY OF PRE-SRI SUBSURFACE SOIL ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Volatile Organic Compounds													
Trimethylbenzene	MG/KG	-	11	5	3.80	170.0	43.52	71.95	6.52E+06	0	Log	B-08	13.5-15.5
Vinyl Acetate	MG/KG	-	2	-	-	-	-	-	-	0	-	-	
Vinyl Chloride	MG/KG	0.2	4	-	-	-	-	-	-	0	-	-	
Xylene (total)	MG/KG	1.2	17	10	0.255	1,400	245.5	497.9	2.85E+07	8	Log	B-08	15.5-17.5
Semivolatile Organic Compounds													
1,2,4-Trichlorobenzene	MG/KG	3.4	7	-	-	-	-	-	-	0	-	-	
1,2-Dichlorobenzene	MG/KG	7.9	7	-	-	-	-	-	-	0	-	-	
1,2-Diphenylhydrazine	MG/KG	-	2	-	-	-	-	-	-	0	-	-	
1,3-Dichlorobenzene	MG/KG	1.6	7	-	-	-	-	-	-	0	-	-	
1,4-Dichlorobenzene	MG/KG	8.5	7	-	-	-	-	-	-	0	-	-	
2,2'-oxybis(1-Chloropropane)	MG/KG	-	2	-	-	-	-	-	-	0	-	-	
2,4,5-Trichlorophenol	MG/KG	0.1	5	-	-	-	-	-	-	0	-	-	
2,4,6-Trichlorophenol	MG/KG	-	7	-	-	-	-	-	-	0	-	-	
2,4-Dichlorophenol	MG/KG	0.4	5	-	-	-	-	-	-	0	-	-	
2,4-Dimethylphenol	MG/KG	-	7	-	-	-	-	-	-	0	-	-	
2,4-Dinitrophenol	MG/KG	0.2 or MDL	7	-	-	-	-	-	-	0	-	-	
2,4-Dinitrotoluene	MG/KG	-	7	-	-	-	-	-	-	0	-	-	

*Criteria- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).

Concentration Exceeds Criteria

TABLE A-3
STATISTICAL SUMMARY OF PRE-SRI SUBSURFACE SOIL ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Semivolatile Organic Compounds													
2,6-Dinitrotoluene	MG/KG	1	7	-	-	-	-	-	-	0	-	-	
2-Chloronaphthalene	MG/KG	-	7	-	-	-	-	-	-	0	-	-	
2-Chlorophenol	MG/KG	0.8	7	-	-	-	-	-	-	0	-	-	
2-Methylnaphthalene	MG/KG	36.4	5	2	0.100	26.00	13.05	18.31	1.32E+06	0	Log	B-09	4-5.5
2-Methylphenol (o-cresol)	MG/KG	0.1 or MDL	5	-	-	-	-	-	-	0	-	-	
2-Nitroaniline	MG/KG	0.43 or MDL	5	-	-	-	-	-	-	0	-	-	
2-Nitrophenol	MG/KG	0.33 or MDL	7	-	-	-	-	-	-	0	-	-	
3,3'-Dichlorobenzidine	MG/KG	-	7	-	-	-	-	-	-	0	-	-	
3-Nitroaniline	MG/KG	0.5 or MDL	5	1	170.0	170.0	170.0	-	1.16E+07	1	Log	B-09	4-5.5
4,6-Dinitro-2-Methylphenol	MG/KG	-	7	-	-	-	-	-	-	0	-	-	
4-Bromophenyl-phenylether	MG/KG	-	7	-	-	-	-	-	-	0	-	-	
4-Chloro-3-Methylphenol	MG/KG	0.24 or MDL	5	-	-	-	-	-	-	0	-	-	
4-Chloroaniline	MG/KG	0.22 or MDL	5	-	-	-	-	-	-	0	-	-	
4-Chlorophenyl-phenylether	MG/KG	-	7	-	-	-	-	-	-	0	-	-	
4-Methylphenol (p-cresol)	MG/KG	0.9	7	-	-	-	-	-	-	0	-	-	
4-Nitroaniline	MG/KG	-	5	-	-	-	-	-	-	0	-	-	
4-Nitrophenol	MG/KG	0.1 or MDL	7	-	-	-	-	-	-	0	-	-	

*Criteria- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).

Concentration Exceeds Criteria

TABLE A-3
STATISTICAL SUMMARY OF PRE-SRI SUBSURFACE SOIL ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Semivolatile Organic Compounds													
Acenaphthene	MG/KG	50	20	9	0.360	600.0	190.4	208.0	6.76E+04	5	Log	B-08	13.5-15.5
Acenaphthylene	MG/KG	41	20	3	0.130	670.0	234.4	377.6	3,715	1	Log	B-08	15.5-17.5
Anthracene	MG/KG	50	20	12	0.220	670.0	216.8	251.4	3.18E+05	7	Log	B-03	4-6
Benzidine	MG/KG	-	2	-	-	-	-	-	-	0	-	-	
Benzo(a)anthracene	MG/KG	0.224 or MDL	20	4	0.066	35.00	10.70	16.57	1,158	2	Log	TP-05	4-6
Benzo(a)pyrene	MG/KG	0.061 or MDL	20	10	0.048	200.0	50.16	70.64	6,568	9	Log	B-03	4-6
Benzo(b)fluoranthene	MG/KG	1.1	20	7	0.220	200.0	53.42	76.70	4,031	6	Log	B-08	13.5-15.5
Benzo(g,h,i)perylene	MG/KG	50	20	5	1.40	140.0	35.38	58.86	1,404	1	Log	B-08	13.5-15.5
Benzo(k)fluoranthene	MG/KG	1.1	20	5	0.220	240.0	54.84	103.9	1,231	3	Log	B-03	4-6
Benzoic Acid	MG/KG	-	3	-	-	-	-	-	-	0	-	-	
Benzyl Alcohol	MG/KG	-	3	-	-	-	-	-	-	0	-	-	
bis(2-Chloroethoxy)methane	MG/KG	-	5	-	-	-	-	-	-	0	-	-	
bis(2-Chloroethyl)ether	MG/KG	-	7	-	-	-	-	-	-	0	-	-	
bis(2-Ethylhexyl)phthalate	MG/KG	50	6	1	0.065	0.065	0.065	-	4.73E+07	0	Log	B-14	18-20
Butylbenzylphthalate	MG/KG	50	7	-	-	-	-	-	-	0	-	-	
Carbazole	MG/KG	-	2	-	-	-	-	-	-	0	-	-	
Chrysene	MG/KG	0.4	20	12	0.060	780.0	133.0	245.5	7.93E+04	9	Log	B-03	4-6

*Criteria- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).


Concentration Exceeds Criteria

TABLE A-3
STATISTICAL SUMMARY OF PRE-SRI SUBSURFACE SOIL ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Semivolatile Organic Compounds													
Dibenz(a,h)anthracene	MG/KG	0.014 or MDL	20	3	1.30	13.00	6.87	5.87	899.5	3	Log	TP-04	3-4
Dibenzofuran	MG/KG	6.2	5	1	0.041	0.041	0.041	-	8.94E+05	0	Log	B-10	16-18
Diethylphthalate	MG/KG	7.1	7	1	0.330	0.330	0.330	-	64.53	0	Log	B-16	6-8
Dimethylphthalate	MG/KG	2	7	-	-	-	-	-	-	0	-	-	
Di-n-butylphthalate	MG/KG	8.1	7	-	-	-	-	-	-	0	-	-	
Di-n-octylphthalate	MG/KG	50	7	-	-	-	-	-	-	0	-	-	
Fluoranthene	MG/KG	50	20	16	0.089	1,100	267.0	387.1	2.39E+06	8	Log	B-03	4-6
Fluorene	MG/KG	50	20	14	0.210	2,100	380.8	620.7	1.94E+06	7	Log	B-08	13.5-15.5
Hexachlorobenzene	MG/KG	0.41	7	-	-	-	-	-	-	0	-	-	
Hexachlorobutadiene	MG/KG	-	7	-	-	-	-	-	-	0	-	-	
Hexachlorocyclopentadiene	MG/KG	-	7	-	-	-	-	-	-	0	-	-	
Hexachloroethane	MG/KG	-	7	-	-	-	-	-	-	0	-	-	
Indeno(1,2,3-cd)pyrene	MG/KG	3.2	20	1	4.20	4.20	4.20	-	560.1	1	Log	B-09	4-5.5
Isophorone	MG/KG	4.4	7	-	-	-	-	-	-	0	-	-	
Naphthalene	MG/KG	13	43	34	0.056	6,400	810.8	1,444	0.00E+00	24	Log	PE-12	4-4
Nitrobenzene	MG/KG	0.2 or MDL	7	-	-	-	-	-	-	0	-	-	
N-Nitrosodimethylamine	MG/KG	-	2	-	-	-	-	-	-	0	-	-	

*Criteria- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).

Concentration Exceeds Criteria

TABLE A-3
STATISTICAL SUMMARY OF PRE-SRI SUBSURFACE SOIL ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Semivolatile Organic Compounds													
N-Nitroso-di-n-propylamine	MG/KG	-	7	-	-	-	-	-	-	0	-	-	
N-Nitrosodiphenylamine	MG/KG	-	7	-	-	-	-	-	-	0	-	-	
Pentachlorophenol	MG/KG	1 or MDL	7	1	0.330	0.330	0.330	-	764.6	0	Log	B-16	6-8
Phenanthrene	MG/KG	50	20	14	0.200	940.0	316.8	385.0	1.58E+06	8	Log	B-03	4-6
Phenol	MG/KG	0.03 or MDL	7	-	-	-	-	-	-	0	-	-	
Pyrene	MG/KG	50	20	16	0.082	1,400	371.4	529.1	7.34E+06	8	Log	B-03	4-6
Total PAH	MG/KG	500	23	23	0.758	2.99E+04	5,014	8,279	7.35E+05	14	Log	PE-05	4-4
Total cPAH	MG/KG	500	23	22	0.260	6,220	613.8	1,309	0.00E+00	7	Log	PE-05	4-4
Metals													
Aluminum	MG/KG	SB	2	2	6,970	1.22E+04	9,585	3,698	-	0	-	B-16	6-8
Antimony	MG/KG	SB	2	1	0.550	0.550	0.550	-	-	0	-	B-17	18-20
Cadmium	MG/KG	1	2	1	0.730	0.730	0.730	-	-	0	-	B-16	6-8
Chromium	MG/KG	10	2	2	12.50	21.60	17.05	6.43	-	2	-	B-16	6-8
Cobalt	MG/KG	30	2	2	7.00	16.00	11.50	6.36	-	0	-	B-16	6-8
Copper	MG/KG	25	2	2	9.70	50.40	30.05	28.78	-	1	-	B-16	6-8
Iron	MG/KG	2000	18	18	1.50E+04	3.50E+04	2.67E+04	5,819	2.91E+04	18	Normal	B-04	6-8
Lead	MG/KG	SB	2	2	10.50	36.40	23.45	18.31	-	0	-	B-16	6-8

*Criteria- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).


Concentration Exceeds Criteria

TABLE A-3
STATISTICAL SUMMARY OF PRE-SRI SUBSURFACE SOIL ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Metals													
Manganese	MG/KG	SB	2	2	203.0	511.0	357.0	217.8	-	0	-	B-16	6-8
Nickel	MG/KG	13	2	2	11.00	37.80	24.40	18.95	-	1	-	B-16	6-8
Zinc	MG/KG	20	18	18	30.40	3,980	407.4	961.3	748.1	18	Log	B-15	4-8
Miscellaneous Parameters													
Cyanide, amenable	MG/KG	-	11	2	1.00	3.20	2.10	1.56	0.00E+00	0	Log	B-03	4-6
Cyanide, Ferro-ferric	MG/KG	-	11	1	2.00	2.00	2.00	-	0.00E+00	0	Log	TP-02	7-7.5
Cyanide, reactive	MG/KG	-	2	-	-	-	-	-	-	0	-	-	
Cyanide, total	MG/KG	-	18	3	1.00	3.20	2.07	1.10	0.00E+00	0	Log	B-03	4-6
Phenolics, Total Recoverable	MG/KG	-	16	4	0.0007	3.60	1.55	1.83	9,028	0	Log	B-03	4-6
Sulfide, reactive	MG/KG	-	2	-	-	-	-	-	-	0	-	-	
Total Organic Carbon (TOC)	MG/KG	-	16	16	1,400	1.90E+05	5.10E+04	5.22E+04	1.77E+05	0	Log	B-08	13.5-15.5

*Criteria- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).

Concentration Exceeds Criteria

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WHERE [SITEID] = '01' AND [MATRIX] = 'SO' AND VAL([SED]) > 2.0 AND [LOGDATE] <= #01/01/01#;

TABLE A-3
STATISTICAL SUMMARY OF TOTAL PAHs IN PRE-SRI SUBSURFACE SOIL
NYSEG - MECHANICVILLE

LOCID	LOGDATE	MATRIX	SBD	SED	SACODE	SAMPNO	UNITS	PRCCODE	PARNAME	CONC
B-01	23-Jul-86	SO	8	10	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	154.2
B-03	05-Aug-86	SO	4	6	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	9310
B-04	29-Jul-86	SO	6	8	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	796
B-05	04-Aug-96	SO	10	11	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	4654
B-07	31-Jul-86	SO	7	9	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	11.21
B-08	06-Aug-86	SO	13.5	15.5	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	8730
B-08	06-Aug-86	SO	15.5	17.5	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	5440
B-09	17-Nov-87	SO	4	5.5	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	274.4
B-10	17-Nov-87	SO	16	18	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	4.16
B-10	17-Nov-87	SO	16	18	FD	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	3.945
B-12	19-Nov-87	SO	22	24	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	7.6
B-16	17-May-93	SO	6	8	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	0.231
B-17	18-May-93	SO	18	20	FD	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	0.188
B-17	18-May-93	SO	18	20	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	0.729
PE-01	23-Nov-99	SO	8	8			MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	1603
PE-02	23-Nov-99	SO	4	4			MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	572.5
PE-03	23-Nov-99	SO	8	8			MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	24380
PE-04	23-Nov-99	SO	5	5			MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	2223
PE-05	23-Nov-99	SO	4	4			MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	29930
PE-06	23-Nov-99	SO	4	4			MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	993.1
PE-07	23-Nov-99	SO	10	10			MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	935.9
PE-08	23-Nov-99	SO	8	8			MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	9.688
PE-09	23-Nov-99	SO	7	7			MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	7891
PE-10	12-Jan-00	SO	7	7			MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	0.758
PE-11	12-Jan-00	SO	8	8			MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	48.42
PE-12	13-Jan-00	SO	4	4			MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	46.95
PE-13	14-Jan-00	SO	6	6			MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	2763
PE-14	19-Jan-00	SO	12	12			MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	11860
PE-15	19-Jan-00	SO	5	5			MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	3221
PE-16	19-Jan-00	SO	8	8			MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	189.1
PE-17	19-Jan-00	SO	8	8			MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	117.5
PE-18	25-Jan-00	SO	7	7			MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	17500
PE-19	25-Jan-00	SO	8	8			MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	6130
PE-20	08-Apr-00	SO	7	7			MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	88.7
PE-21	10-Apr-00	SO	3	3			MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	4627
PE-22	10-Apr-00	SO	3	3			MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	166.3
PE-23	10-Apr-00	SO	3	3			MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	20.79
TP-02	21-Jul-86	SO	7	7.5	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	108
TP-04	21-Jul-86	SO	3	4	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	412
TP-05	21-Jul-86	SO	3	4	FD	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	8500
TP-05	21-Jul-86	SO	3	4	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	4630
TP-05	21-Jul-86	SO	4	6	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	1137

MINUMUM	0.188
MAXIMUM	29930
AVERAGE	3797.414

TABLE A-4
STATISTICAL SUMMARY OF SRI SUBSURFACE SOIL ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Volatile Organic Compounds													
1,1,1-Trichloroethane	MG/KG	0.8	52	-	-	-	-	-	-	0	-	-	
1,1,2,2-Tetrachloroethane	MG/KG	0.6	52	-	-	-	-	-	-	0	-	-	
1,1,2-Trichloroethane	MG/KG	-	52	-	-	-	-	-	-	0	-	-	
1,1-Dichloroethane	MG/KG	0.2	52	-	-	-	-	-	-	0	-	-	
1,1-Dichloroethene	MG/KG	0.4	52	-	-	-	-	-	-	0	-	-	
1,2,4-Trimethylbenzene	MG/KG	-	4	4	0.950	72.90	19.89	35.37	5.83E+09	0	Log	RH-01S	16-16
1,2-Dichloroethane	MG/KG	0.1	52	-	-	-	-	-	-	0	-	-	
1,2-Dichloroethene (total)	MG/KG	0.3	52	-	-	-	-	-	-	0	-	-	
1,2-Dichloropropane	MG/KG	-	52	-	-	-	-	-	-	0	-	-	
1,3-Dichloropropene (cis)	MG/KG	-	52	-	-	-	-	-	-	0	-	-	
1,3-Dichloropropene (trans)	MG/KG	-	52	-	-	-	-	-	-	0	-	-	
2-Chloroethyl vinyl ether	MG/KG	-	52	-	-	-	-	-	-	0	-	-	
2-Hexanone	MG/KG	-	52	-	-	-	-	-	-	0	-	-	
4-Methyl-2-Pentanone	MG/KG	1	52	-	-	-	-	-	-	0	-	-	
Acetone	MG/KG	0.2	52	1	0.019	0.019	0.019	-	0.035	0	Log	MW-20D	14-16
Benzene	MG/KG	0.06	57	18	0.002	90.20	5.97	21.11	1.04	8	Log	RH-01S	16-16
Bromodichloromethane	MG/KG	-	52	-	-	-	-	-	-	0	-	-	

*Criteria- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).

Concentration Exceeds Criteria

TABLE A-4
STATISTICAL SUMMARY OF SRI SUBSURFACE SOIL ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Volatile Organic Compounds													
Bromoform	MG/KG	-	52	-	-	-	-	-	-	0	-	-	
Bromomethane	MG/KG	-	52	-	-	-	-	-	-	0	-	-	
Carbon Disulfide	MG/KG	2.7	52	-	-	-	-	-	-	0	-	-	
Carbon Tetrachloride	MG/KG	0.6	52	-	-	-	-	-	-	0	-	-	
Chlorobenzene	MG/KG	1.7	52	-	-	-	-	-	-	0	-	-	
Chloroethane	MG/KG	1.9	52	-	-	-	-	-	-	0	-	-	
Chloroform	MG/KG	0.3	52	-	-	-	-	-	-	0	-	-	
Chloromethane	MG/KG	-	52	-	-	-	-	-	-	0	-	-	
Dibromochloromethane	MG/KG	-	52	-	-	-	-	-	-	0	-	-	
Ethylbenzene	MG/KG	5.5	57	20	0.001	165.0	14.92	38.33	27.23	8	Log	RH-01S	16-16
Methyl ethyl ketone (2-Butanone)	MG/KG	0.3	52	-	-	-	-	-	-	0	-	-	
Methylene Chloride	MG/KG	0.1	52	2	0.009	0.940	0.474	0.658	0.026	1	Log	MW-10	14-16
Methyl-t-Butyl Ether	MG/KG	-	1	-	-	-	-	-	-	0	-	-	
Styrene	MG/KG	-	56	6	0.100	380.0	64.07	154.8	0.454	0	Log	RH-01S	16-16
Tetrachloroethene	MG/KG	1.4	52	1	0.084	0.084	0.084	-	0.020	0	Log	SB-04A	2-4
Toluene	MG/KG	1.5	57	22	0.0005	352.0	17.12	74.90	1.64	3	Log	RH-01S	16-16
Trichloroethene	MG/KG	0.7	52	-	-	-	-	-	-	0	-	-	

*Criteria- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).


Concentration Exceeds Criteria

TABLE A-4
STATISTICAL SUMMARY OF SRI SUBSURFACE SOIL ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Volatile Organic Compounds													
Vinyl Acetate	MG/KG	-	52	-	-	-	-	-	-	0	-	-	
Vinyl Chloride	MG/KG	0.2	52	-	-	-	-	-	-	0	-	-	
Xylene (total)	MG/KG	1.2	57	25	0.001	417.0	33.97	106.0	59.42	8	Log	RH-01S	16-16
TCLP Volatile Organic Compounds													
1,1-Dichloroethene	UG/L	-	1	-	-	-	-	-	-	0	-	-	
1,2-Dichloroethane	UG/L	-	1	-	-	-	-	-	-	0	-	-	
Benzene	UG/L	-	1	1	320.0	320.0	320.0	-	-	0	-	SB-17	2-4
Carbon tetrachloride	UG/L	-	1	-	-	-	-	-	-	0	-	-	
Chlorobenzene	UG/L	-	1	-	-	-	-	-	-	0	-	-	
Chloroform	UG/L	-	1	-	-	-	-	-	-	0	-	-	
Methyl ethyl ketone (2-Butanone)	UG/L	-	1	-	-	-	-	-	-	0	-	-	
Tetrachloroethene	UG/L	-	1	-	-	-	-	-	-	0	-	-	
Trichloroethene	UG/L	-	1	-	-	-	-	-	-	0	-	-	
Vinyl chloride	UG/L	-	1	-	-	-	-	-	-	0	-	-	
Semivolatile Organic Compounds													
1-Methylnaphthalene	MG/KG	-	4	4	38.70	1,630	454.9	783.6	1.09E+09	0	Log	RH-01S	16-16
2-Methylnaphthalene	MG/KG	36.4	56	36	0.037	2,740	123.1	480.5	65.92	5	Log	RH-01S	16-16

*Criteria- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).

Concentration Exceeds Criteria

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WHERE [SITEID] = '01' AND [MATRIX] = 'SO' AND VAL([SED]) > 2.0 AND [LOGDATE] >= #01/01/01# AND [PRCCODE] <> 'ASVOC' AND [PARNAME] <> 'Heat Value';

TABLE A-4
STATISTICAL SUMMARY OF SRI SUBSURFACE SOIL ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Semivolatile Organic Compounds													
Acenaphthene	MG/KG	50	56	26	0.053	206.0	19.40	44.06	18.72	4	Log	RH-01S	16-16
Acenaphthylene	MG/KG	41	56	30	0.033	1,190	41.69	216.9	4.06	1	Log	RH-01S	16-16
Anthracene	MG/KG	50	56	31	0.040	564.0	28.50	101.8	17.67	4	Log	RH-01S	16-16
Benzo(a)anthracene	MG/KG	0.224 or MDL	56	37	0.053	430.0	27.01	92.16	16.38	28	Log	SB-04A	2-4
Benzo(a)pyrene	MG/KG	0.061 or MDL	56	33	0.120	290.0	23.03	69.54	15.51	33	Log	SB-04A	2-4
Benzo(b)fluoranthene	MG/KG	1.1	56	33	0.040	1,600	55.71	278.4	12.19	16	Log	SB-04A	2-4
Benzo(e)pyrene	MG/KG	-	4	4	8.43	148.0	48.86	66.38	1.40E+05	0	Log	RH-01S	16-16
Benzo(g,h,i)perylene	MG/KG	50	56	33	0.090	900.0	34.05	156.9	12.37	2	Log	SB-04A	2-4
Benzo(k)fluoranthene	MG/KG	1.1	56	24	0.037	159.0	11.30	32.72	7.86	10	Log	RH-01S	16-16
Chrysene	MG/KG	0.4	56	37	0.060	670.0	31.81	119.4	16.91	24	Log	SB-04A	2-4
Dibenz(a,h)anthracene	MG/KG	0.014 or MDL	56	21	0.060	470.0	24.64	102.2	2.67	21	Log	SB-04A	2-4
Dibenzofuran	MG/KG	6.2	56	23	0.037	102.0	5.80	21.12	3.89	3	Log	RH-01S	16-16
Fluoranthene	MG/KG	50	56	39	0.047	800.0	38.41	134.6	37.69	5	Log	RH-01S	16-16
Fluorene	MG/KG	50	56	29	0.037	842.0	39.29	156.1	21.78	4	Log	RH-01S	16-16
Indeno(1,2,3-cd)pyrene	MG/KG	3.2	56	33	0.086	670.0	25.89	116.7	9.66	10	Log	SB-04A	2-4
Naphthalene	MG/KG	13	56	37	0.037	6,410	209.8	1,054	84.21	7	Log	RH-01S	16-16
Perylene	MG/KG	-	4	4	2.39	38.10	13.13	16.79	2.23E+04	0	Log	RH-01S	16-16

*Criteria- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).

Concentration Exceeds Criteria

N:\38393614.00000\DB\Program\Stat.mde
Printed: 12/30/04 8:37:03 AM
WHERE [SITEID] = '01' AND [MATRIX] = 'SO' AND VAL([SED]) > 2.0 AND [LOGDATE] >= #01/01/01# AND [PRCCODE] <> 'ASVOC' AND [PARNAME] <> 'Heat Value';

TABLE A-4
STATISTICAL SUMMARY OF SRI SUBSURFACE SOIL ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Semivolatile Organic Compounds													
Phenanthrene	MG/KG	50	56	39	0.047	2,630	97.63	422.4	134.6	7	Log	RH-01S	16-16
Pyrene	MG/KG	50	56	40	0.033	1,120	67.30	227.3	93.52	6	Log	RH-01S	16-16
TCLP Semivolatile Organic Compounds													
1,4-Dichlorobenzene	UG/L	-	1	-	-	-	-	-	-	0	-	-	
2,4,5-Trichlorophenol	UG/L	-	1	-	-	-	-	-	-	0	-	-	
2,4,6-Trichlorophenol	UG/L	-	1	-	-	-	-	-	-	0	-	-	
2,4-Dinitrotoluene	UG/L	-	1	-	-	-	-	-	-	0	-	-	
Cresols (Total)	UG/L	-	1	-	-	-	-	-	-	0	-	-	
Hexachlorobenzene	UG/L	-	1	-	-	-	-	-	-	0	-	-	
Hexachlorobutadiene	UG/L	-	1	-	-	-	-	-	-	0	-	-	
Hexachloroethane	UG/L	-	1	-	-	-	-	-	-	0	-	-	
Nitrobenzene	UG/L	-	1	-	-	-	-	-	-	0	-	-	
Pentachlorophenol	UG/L	-	1	-	-	-	-	-	-	0	-	-	
Pyridine	UG/L	-	1	-	-	-	-	-	-	0	-	-	
Metals													
Aluminum	MG/KG	SB	14	14	4,861	1.73E+04	1.05E+04	3,350	1.21E+04	0	Normal	SB-10	8-10
Antimony	MG/KG	SB	14	-	-	-	-	-	-	0	-	-	

*Criteria- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).

Concentration Exceeds Criteria

TABLE A-4
STATISTICAL SUMMARY OF SRI SUBSURFACE SOIL ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Metals													
Arsenic	MG/KG	7.5	14	-	-	-	-	-	-	0	-	-	
Barium	MG/KG	300	14	14	27.00	103.0	50.95	23.26	65.09	0	Log	SB-11	6-7
Cadmium	MG/KG	1	14	-	-	-	-	-	-	0	-	-	
Chromium	MG/KG	10	14	14	7.44	30.80	19.11	6.27	22.08	13	Normal	SB-17	2-4
Copper	MG/KG	25	14	14	15.00	49.20	31.01	11.25	36.33	9	Normal	SB-17	2-4
Iron	MG/KG	2000	14	14	5,815	3.32E+04	1.92E+04	8,853	2.34E+04	14	Normal	SB-10	8-10
Lead	MG/KG	SB	14	14	6.48	2,680	205.7	712.2	275.4	0	Log	SB-17	2-4
Manganese	MG/KG	SB	14	14	205.0	608.0	345.2	127.1	405.4	0	Normal	SB-11	6-7
Mercury	MG/KG	0.1	14	13	0.020	0.160	0.051	0.039	0.073	2	Log	MW-02I	7-9
Nickel	MG/KG	13	14	10	7.60	46.00	20.60	10.86	21.13	8	Normal	SB-11	6-7
Selenium	MG/KG	2	14	-	-	-	-	-	-	0	-	-	
Silver	MG/KG	SB	14	-	-	-	-	-	-	0	-	-	
Vanadium	MG/KG	150	14	14	4.00	20.10	10.99	4.03	12.89	0	Normal	SB-17	2-4
Zinc	MG/KG	20	14	14	29.00	96.00	62.17	20.75	71.99	14	Normal	SB-11	6-7
TCLP Metals													
Arsenic	UG/L	-	1	-	-	-	-	-	-	0	-	-	
Barium	UG/L	-	1	1	620.0	620.0	620.0	-	-	0	-	SB-17	2-4

*Criteria- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).

Concentration Exceeds Criteria

TABLE A-4
STATISTICAL SUMMARY OF SRI SUBSURFACE SOIL ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
TCLP Metals													
Cadmium	UG/L	-	1	-	-	-	-	-	-	0	-	-	
Chromium	UG/L	-	1	-	-	-	-	-	-	0	-	-	
Lead	UG/L	-	1	-	-	-	-	-	-	0	-	-	
Mercury	UG/L	-	1	-	-	-	-	-	-	0	-	-	
Selenium	UG/L	-	1	-	-	-	-	-	-	0	-	-	
Silver	UG/L	-	1	-	-	-	-	-	-	0	-	-	
Miscellaneous Parameters													
Cyanide, Free (weak & dissoc.)	MG/KG	-	52	2	2.20	2.20	2.20	0.00E+00	0.592	0	Log	SB-04	4-6
Cyanide, total	MG/KG	-	52	2	9.50	19.00	14.25	6.72	0.834	0	Log	SB-17	2-4
Phenolics, Total Recoverable	MG/KG	-	52	7	0.300	3.50	1.26	1.19	0.372	0	Log	SB-17	2-4
Total Petroleum Hydrocarbons	UG/KG	-	1	-	-	-	-	-	-	0	-	-	

*Criteria- NYSDEC TAGM: Determination of Soil Cleanup Objectives and Cleanup Levels; HWR-94-4046 January 24, 1994 (Revised).

Concentration Exceeds Criteria

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WHERE [SITEID] = '01' AND [MATRIX] = 'SO' AND VAL([SED]) > 2.0 AND [LOGDATE] >= #01/01/01# AND [PRCCODE] <> 'ASVOC' AND [PARNAME] <> 'Heat Value';

TABLE A-4
STATISTICAL SUMMARY OF TOTAL PAHs IN SRI SUBSURFACE SOIL
NYSEG - MECHANICVILLE

LOCID	LOGDATE	MATRIX	SBD	SED	SACODE	SAMPNO	UNITS	PRCCODE	PARNAME	CONC
MW-02I	17-Apr-01	SO	7	9	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	0.086
MW-10	12-Apr-01	SO	14	16	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	36.2
MW-12S	10-Apr-01	SO	24	26	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	12.93
MW-14S	09-Apr-01	SO	24	25	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	3.156
MW-15S	12-Apr-01	SO	6	8	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	3.65
MW-19I	24-Apr-01	SO	4	6	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	1.763
MW-20D	25-Jul-01	SO	14	16	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	1.27
MW-22I	13-Apr-01	SO	2	4	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	7.63
MW-23S	12-Apr-01	SO	8	10	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	18.65
MW-25S	09-Apr-01	SO	16	18	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	25.63
MW-26S	11-Apr-01	SO	22	23	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	0.987
MW-28I	20-Apr-01	SO	10	12	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	8.333
MW-29I	16-Apr-01	SO	4	6	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	4.563
RH-01S	13-Apr-01	SO	8	10	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	3.66
RH-01S	13-Apr-01	SO	16	16	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	18022.6
SB-01	02-Apr-01	SO	2	4	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	19.639
SB-04	02-Apr-01	SO	4	6	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	869.9
SB-07	02-Apr-01	SO	2	4	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	4
SB-10	04-Apr-01	SO	8	10	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	12.876
SB-14	03-Apr-01	SO	2	4	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	50.43
SB-15	03-Apr-01	SO	4	6	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	11.1
SB-16	03-Apr-01	SO	4	6	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	1.21
SB-16	03-Apr-01	SO	12	14	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	687.87
SB-16	03-Apr-01	SO	14	16	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	952.7
SB-17	04-Apr-01	SO	2	4	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	1933
SB-18	04-Apr-01	SO	8	10	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	24.07
SB-18	04-Apr-01	SO	16	18	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	447.83
SB-19	04-Apr-01	SO	6	8	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	0.34
SB-20	05-Apr-01	SO	8	10	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	0.614
SB-21	04-Apr-01	SO	8	11	FD	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	52.61
SB-21	04-Apr-01	SO	8	11	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	23.61
SB-22	04-Apr-01	SO	4	6	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	534.2
SB-23	03-Apr-01	SO	4	6	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	20.29
SB-24	03-Apr-01	SO	4	6	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	5.702
SB-25	03-Apr-01	SO	4	6	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	69.15
SB-26	02-Apr-01	SO	4	6	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	13.423
SB-27	02-Apr-01	SO	2	4	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	2.287
SB-28	05-Apr-01	SO	2	4	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	69.06
SB-30	05-Apr-01	SO	8	12	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	9.1
SB-31	05-Apr-01	SO	6	8	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	0.651
SB-C1	06-Apr-01	SO	4	8	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	4.603
SB-C3	06-Apr-01	SO	6	8	N	1	MG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	89.76

MINIMUM	0.086
MAXIMUM	18022.6
AVERAGE	572.8841

TABLE A-5
STATISTICAL SUMMARY OF PRE-SRI OVERBURDEN GROUNDWATER ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Volatile Organic Compounds													
1,1,1-Trichloroethane	UG/L	5	12	-	-	-	-	-	-	0	-	-	
1,1,2,2-Tetrachloroethane	UG/L	5	12	-	-	-	-	-	-	0	-	-	
1,1,2-Trichloroethane	UG/L	1	12	-	-	-	-	-	-	0	-	-	
1,1-Dichloroethane	UG/L	5	12	1	0.440	0.440	0.440	-	3.30	0	Normal	MW-17	0-0
1,1-Dichloroethene	UG/L	5	12	-	-	-	-	-	-	0	-	-	
1,2-Dichloroethane	UG/L	0.6	12	-	-	-	-	-	-	0	-	-	
1,2-Dichloroethene (total)	UG/L	-	11	-	-	-	-	-	-	0	-	-	
1,2-Dichloroethene (trans)	UG/L	5	3	-	-	-	-	-	-	0	-	-	
1,2-Dichloropropane	UG/L	1	12	-	-	-	-	-	-	0	-	-	
1,3-Dichloropropene (cis)	UG/L	0.4	12	-	-	-	-	-	-	0	-	-	
1,3-Dichloropropene (trans)	UG/L	0.4	12	-	-	-	-	-	-	0	-	-	
2-Chloroethyl vinyl ether	UG/L	-	3	-	-	-	-	-	-	0	-	-	
2-Hexanone	UG/L	50	12	-	-	-	-	-	-	0	-	-	
4-Methyl-2-Pentanone	UG/L	-	12	-	-	-	-	-	-	0	-	-	
Acetone	UG/L	50	12	-	-	-	-	-	-	0	-	-	
Benzene	UG/L	1	12	-	-	-	-	-	-	0	-	-	
Bromochloromethane	UG/L	-	2	-	-	-	-	-	-	0	-	-	

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class GA.

Concentration Exceeds Criteria

TABLE A-5
STATISTICAL SUMMARY OF PRE-SRI OVERBURDEN GROUNDWATER ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Volatile Organic Compounds													
Bromodichloromethane	UG/L	50	7	-	-	-	-	-	-	0	-	-	
Bromoform	UG/L	50	12	-	-	-	-	-	-	0	-	-	
Bromoethane	UG/L	-	7	-	-	-	-	-	-	0	-	-	
Bromomethane	UG/L	5	7	-	-	-	-	-	-	0	-	-	
Carbon Disulfide	UG/L	60	12	-	-	-	-	-	-	0	-	-	
Carbon Tetrachloride	UG/L	5	12	-	-	-	-	-	-	0	-	-	
Chlorobenzene	UG/L	5	12	-	-	-	-	-	-	0	-	-	
Chloroethane	UG/L	5	12	-	-	-	-	-	-	0	-	-	
Chloroform	UG/L	7	12	-	-	-	-	-	-	0	-	-	
Chloromethane	UG/L	5	12	-	-	-	-	-	-	0	-	-	
Dibromochloromethane	UG/L	50	12	-	-	-	-	-	-	0	-	-	
Dichlorobromomethane	UG/L	-	5	-	-	-	-	-	-	0	-	-	
Ethylbenzene	UG/L	5	12	-	-	-	-	-	-	0	-	-	
Methyl ethyl ketone (2-Butanone)	UG/L	50	12	-	-	-	-	-	-	0	-	-	
Methylene Chloride	UG/L	5	12	2	1.00	4.00	2.50	2.12	3.46	0	Log	MW-16	0-0
Styrene	UG/L	5	12	-	-	-	-	-	-	0	-	-	
Tetrachloroethene	UG/L	5	12	-	-	-	-	-	-	0	-	-	

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class GA.

Concentration Exceeds Criteria

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Printed: 01/12/05 12:06:19 PM
WHERE [SITEID] = '01' AND ([LOCID] = 'MW-10' or [LOCID] = 'MW-16' OR [LOCID] = 'MW-17' OR [LOCID] LIKE '*S') AND [MATRIX] = 'WG' AND [LOGDATE] <= #01/01/01#;

TABLE A-5
STATISTICAL SUMMARY OF PRE-SRI OVERBURDEN GROUNDWATER ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Volatile Organic Compounds													
Toluene	UG/L	5	12	-	-	-	-	-	-	0	-	-	
Trichloroethene	UG/L	5	12	-	-	-	-	-	-	0	-	-	
Vinyl Acetate	UG/L	-	9	-	-	-	-	-	-	0	-	-	
Vinyl Chloride	UG/L	2	12	-	-	-	-	-	-	0	-	-	
Xylene (total)	UG/L	5	12	1	12.00	12.00	12.00	-	5.06	1	Log	MW-10	0-0
Semivolatile Organic Compounds													
1,2,4-Trichlorobenzene	UG/L	5	13	-	-	-	-	-	-	0	-	-	
1,2-Dichlorobenzene	UG/L	3	13	-	-	-	-	-	-	0	-	-	
1,3-Dichlorobenzene	UG/L	3	13	-	-	-	-	-	-	0	-	-	
1,4-Dichlorobenzene	UG/L	3	13	-	-	-	-	-	-	0	-	-	
2,2'-oxybis(1-Chloropropane)	UG/L	5	2	-	-	-	-	-	-	0	-	-	
2,4,5-Trichlorophenol	UG/L	1	13	-	-	-	-	-	-	0	-	-	
2,4,6-Trichlorophenol	UG/L	1	13	-	-	-	-	-	-	0	-	-	
2,4-Dichlorophenol	UG/L	5	13	-	-	-	-	-	-	0	-	-	
2,4-Dimethylphenol	UG/L	50	13	-	-	-	-	-	-	0	-	-	
2,4-Dinitrophenol	UG/L	10	13	-	-	-	-	-	-	0	-	-	
2,4-Dinitrotoluene	UG/L	5	13	-	-	-	-	-	-	0	-	-	

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class GA.

(oval) Concentration Exceeds Criteria

TABLE A-5
STATISTICAL SUMMARY OF PRE-SRI OVERBURDEN GROUNDWATER ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Semivolatile Organic Compounds													
2,6-Dinitrotoluene	UG/L	5	13	1	14.00	14.00	14.00	-	7.38	1	Log	MW-10	0-0
2-Chloronaphthalene	UG/L	10	13	-	-	-	-	-	-	0	-	-	
2-Chlorophenol	UG/L	1	13	-	-	-	-	-	-	0	-	-	
2-Methylnaphthalene	UG/L	-	13	-	-	-	-	-	-	0	-	-	
2-Methylphenol (o-cresol)	UG/L	1	13	-	-	-	-	-	-	0	-	-	
2-Nitroaniline	UG/L	5	13	-	-	-	-	-	-	0	-	-	
2-Nitrophenol	UG/L	1	13	-	-	-	-	-	-	0	-	-	
3,3'-Dichlorobenzidine	UG/L	5	13	-	-	-	-	-	-	0	-	-	
3-Nitroaniline	UG/L	5	13	-	-	-	-	-	-	0	-	-	
4,6-Dinitro-2-Methylphenol	UG/L	1	13	1	15.00	15.00	15.00	-	19.05	1	Log	MW-10	0-0
4-Bromophenyl-phenylether	UG/L	50	13	-	-	-	-	-	-	0	-	-	
4-Chloro-3-Methylphenol	UG/L	1	13	-	-	-	-	-	-	0	-	-	
4-Chloroaniline	UG/L	5	13	-	-	-	-	-	-	0	-	-	
4-Chlorophenyl-phenylether	UG/L	50	13	-	-	-	-	-	-	0	-	-	
4-Methylphenol (p-cresol)	UG/L	1	13	-	-	-	-	-	-	0	-	-	
4-Nitroaniline	UG/L	5	13	-	-	-	-	-	-	0	-	-	
4-Nitrophenol	UG/L	1	13	1	28.00	28.00	28.00	-	22.82	1	Log	MW-10	0-0

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class GA.

(oval) Concentration Exceeds Criteria

TABLE A-5
STATISTICAL SUMMARY OF PRE-SRI OVERBURDEN GROUNDWATER ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Semivolatile Organic Compounds													
6-Nitroaniline	UG/L	-	2	-	-	-	-	-	-	0	-	-	
Acenaphthene	UG/L	20	13	2	14.00	100.0	57.00	60.81	18.92	1	Log	MW-10	0-0
Acenaphthylene	UG/L	50	13	-	-	-	-	-	-	0	-	-	
Anthracene	UG/L	50	13	-	-	-	-	-	-	0	-	-	
Benzo(a)anthracene	UG/L	0.002	13	1	35.00	35.00	35.00	-	10.26	1	Log	MW-10	0-0
Benzo(a)pyrene	UG/L	ND	13	-	-	-	-	-	-	0	-	-	
Benzo(b)fluoranthene	UG/L	0.002	13	1	30.00	30.00	30.00	-	9.66	1	Log	MW-10	0-0
Benzo(g,h,i)perylene	UG/L	50	13	-	-	-	-	-	-	0	-	-	
Benzo(k)fluoranthene	UG/L	0.002	13	-	-	-	-	-	-	0	-	-	
Benzoic Acid	UG/L	-	9	-	-	-	-	-	-	0	-	-	
Benzyl Alcohol	UG/L	50	9	-	-	-	-	-	-	0	-	-	
bis(2-Chloroethoxy)methane	UG/L	5	13	-	-	-	-	-	-	0	-	-	
bis(2-Chloroethyl)ether	UG/L	1	13	-	-	-	-	-	-	0	-	-	
bis(2-Ethylhexyl)phthalate	UG/L	5	13	7	1.00	410.0	76.14	150.4	205.2	4	Log	MW-10	0-0
Butylbenzylphthalate	UG/L	50	13	-	-	-	-	-	-	0	-	-	
Carbazole	UG/L	50	11	-	-	-	-	-	-	0	-	-	
Chrysene	UG/L	0.002	13	1	29.00	29.00	29.00	-	9.47	1	Log	MW-10	0-0

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class GA.

Concentration Exceeds Criteria

TABLE A-5
STATISTICAL SUMMARY OF PRE-SRI OVERBURDEN GROUNDWATER ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Semivolatile Organic Compounds													
Dibenz(a,h)anthracene	UG/L	50	13	-	-	-	-	-	-	0	-	-	
Dibenzofuran	UG/L	50	13	-	-	-	-	-	-	0	-	-	
Diethylphthalate	UG/L	50	13	-	-	-	-	-	-	0	-	-	
Dimethylphthalate	UG/L	50	13	-	-	-	-	-	-	0	-	-	
Di-n-butylphthalate	UG/L	50	13	-	-	-	-	-	-	0	-	-	
Di-n-octylphthalate	UG/L	50	13	-	-	-	-	-	-	0	-	-	
Fluoranthene	UG/L	50	13	-	-	-	-	-	-	0	-	-	
Fluorene	UG/L	50	13	2	16.00	28.00	22.00	8.49	10.40	0	Log	MW-10	0-0
Hexachlorobenzene	UG/L	0.04	13	-	-	-	-	-	-	0	-	-	
Hexachlorobutadiene	UG/L	0.5	13	-	-	-	-	-	-	0	-	-	
Hexachlorocyclopentadiene	UG/L	5	13	-	-	-	-	-	-	0	-	-	
Hexachloroethane	UG/L	5	13	1	16.00	16.00	16.00	-	7.69	1	Log	MW-10	0-0
Indeno(1,2,3-cd)pyrene	UG/L	0.002	13	-	-	-	-	-	-	0	-	-	
Isophorone	UG/L	50	13	-	-	-	-	-	-	0	-	-	
Naphthalene	UG/L	10	13	-	-	-	-	-	-	0	-	-	
Nitrobenzene	UG/L	0.4	13	-	-	-	-	-	-	0	-	-	
N-Nitrosodimethylamine	UG/L	-	2	-	-	-	-	-	-	0	-	-	

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class GA.

Concentration Exceeds Criteria

TABLE A-5
STATISTICAL SUMMARY OF PRE-SRI OVERBURDEN GROUNDWATER ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Semivolatile Organic Compounds													
N-Nitroso-di-n-propylamine	UG/L	50	13	-	-	-	-	-	-	0	-	-	
N-Nitrosodiphenylamine	UG/L	50	13	-	-	-	-	-	-	0	-	-	
Pentachlorophenol	UG/L	1	13	-	-	-	-	-	-	0	-	-	
Phenanthrene	UG/L	50	13	-	-	-	-	-	-	0	-	-	
Phenol	UG/L	1	13	-	-	-	-	-	-	0	-	-	
Pyrene	UG/L	50	13	-	-	-	-	-	-	0	-	-	
Pyridine	UG/L	-	2	-	-	-	-	-	-	0	-	-	
Metals													
Aluminum	UG/L	-	4	4	40.00	9.10E+04	2.78E+04	4.32E+04	5.07E+40	0	Log	MW-17	0-0
Antimony	UG/L	3	4	-	-	-	-	-	-	0	-	-	
Arsenic	UG/L	25	2	-	-	-	-	-	-	0	-	-	
Barium	UG/L	1000	2	2	74.00	421.0	247.5	245.4	-	0	-	MW-16	0-0
Beryllium	UG/L	3	2	-	-	-	-	-	-	0	-	-	
Cadmium	UG/L	5	4	-	-	-	-	-	-	0	-	-	
Calcium	UG/L	-	2	2	1.11E+05	1.61E+05	1.36E+05	3.54E+04	-	0	-	MW-17	0-0
Chromium	UG/L	50	4	2	33.00	272.0	152.5	169.0	1.19E+15	1	Log	MW-17	0-0
Cobalt	UG/L	-	4	2	13.00	117.0	65.00	73.54	2.31E+08	0	Log	MW-17	0-0

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class GA.

Concentration Exceeds Criteria

TABLE A-5
STATISTICAL SUMMARY OF PRE-SRI OVERBURDEN GROUNDWATER ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Metals													
Copper	UG/L	200	4	2	30.00	349.0	189.5	225.6	1.56E+16	1	Log	MW-17	0-0
Iron	UG/L	300	6	6	484.0	1.53E+05	2.76E+04	6.15E+04	3.36E+08	6	Log	MW-17	0-0
Lead	UG/L	25	4	2	22.20	142.0	82.10	84.71	1.84E+20	1	Log	MW-17	0-0
Magnesium	UG/L	35000	2	2	2.89E+04	4.66E+04	3.78E+04	1.25E+04	-	1	-	MW-17	0-0
Manganese	UG/L	300	4	4	397.0	4,035	1,562	1,668	2.26E+05	4	Log	MW-17	0-0
Mercury	UG/L	0.7	2	-	-	-	-	-	-	0	-	-	
Nickel	UG/L	100	4	3	19.00	284.0	187.3	146.3	318.7	2	Normal	MW-17	0-0
Potassium	UG/L	-	2	2	3,120	7,310	5,215	2,963	-	0	-	MW-17	0-0
Selenium	UG/L	10	2	-	-	-	-	-	-	0	-	-	
Silver	UG/L	50	2	2	7.33E+04	2.57E+05	1.65E+05	1.30E+05	-	2	-	MW-17	0-0
Thallium	UG/L	0.5	2	-	-	-	-	-	-	0	-	-	
Vanadium	UG/L	-	2	1	5.00	5.00	5.00	-	-	0	-	MW-17	0-0
Zinc	UG/L	2000	6	5	6.00	879.0	202.2	380.0	7.20E+05	0	Log	MW-17	0-0
Filtered Metals													
Aluminum	UG/L	-	2	2	55.00	86.00	70.50	21.92	-	0	-	MW-17	0-0
Antimony	UG/L	3	2	-	-	-	-	-	-	0	-	-	
Arsenic	UG/L	25	7	4	3.90	6,100	2,552	3,053	6.82E+12	2	Log	MW-17	0-0

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class GA.

Concentration Exceeds Criteria

TABLE A-5
STATISTICAL SUMMARY OF PRE-SRI OVERBURDEN GROUNDWATER ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Filtered Metals													
Cadmium	UG/L	5	7	-	-	-	-	-	-	0	-	-	
Chromium	UG/L	50	9	3	3.40	5,200	1,743	2,994	3.25E+08	1	Log	MW-17	0-0
Cobalt	UG/L	-	2	-	-	-	-	-	-	0	-	-	
Copper	UG/L	200	2	1	20.00	20.00	20.00	-	-	0	-	MW-17	0-0
Iron	UG/L	300	9	6	43.00	2.91E+05	4.87E+04	1.19E+05	2.59E+09	3	Log	MW-16	0-0
Lead	UG/L	25	9	-	-	-	-	-	-	0	-	-	
Manganese	UG/L	300	2	2	910.0	2,320	1,615	997.0	-	2	-	MW-17	0-0
Mercury	UG/L	0.7	7	-	-	-	-	-	-	0	-	-	
Nickel	UG/L	100	2	-	-	-	-	-	-	0	-	-	
Zinc	UG/L	2000	9	4	10.40	4.08E+04	1.23E+04	1.94E+04	1.42E+13	2	Log	MW-17	0-0
Miscellaneous Parameters													
Ammonia	UG/L	-	9	6	140.0	840.0	513.8	282.7	586.8	0	Normal	MW-16	0-0
Conductivity	UMHO/CM	-	9	9	870.0	3,190	1,915	929.1	2,491	0	Normal	MW-17	0-0
Cyanide, amenable	UG/L	-	7	-	-	-	-	-	-	0	-	-	
Cyanide, iron-cyanide	UG/L	-	2	-	-	-	-	-	-	0	-	-	
Cyanide, Total	UG/L	200	13	7	10.00	1.35E+05	1.93E+04	5.10E+04	3.17E+05	1	Log	MW-17	0-0
Cyanide, undistilled	UG/L	-	2	-	-	-	-	-	-	0	-	-	

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class GA.

Concentration Exceeds Criteria

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WHERE [SITEID] = '01' AND ([LOCID] = 'MW-10' or [LOCID] = 'MW-16' OR [LOCID] = 'MW-17' OR [LOCID] LIKE '*S') AND [MATRIX] = 'WG' AND [LOGDATE] <= #01/01/01#;

TABLE A-5
STATISTICAL SUMMARY OF PRE-SRI OVERBURDEN GROUNDWATER ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Miscellaneous Parameters													
pH	S.U.	-	10	10	0.00E+00	7.80	6.49	2.32	0.00E+00	0	Log	MW-16	0-0
Phenolics, Total Recoverable	UG/L	-	11	2	0.00E+00	29.00	14.50	20.51	0.00E+00	0	Log	MW-10	0-0
Sulfate	UG/L	-	9	9	1.81E+04	1.78E+05	1.02E+05	6.19E+04	1.41E+05	0	Normal	MW-17	0-0
Temperature	DEG C	-	9	9	6.00	12.50	10.11	2.01	11.89	0	Log	MW-17	0-0
Total Organic Carbon (TOC)	UG/L	-	9	7	1,100	6.10E+04	1.37E+04	2.12E+04	5.17E+05	0	Log	MW-10	0-0
Turbidity	NTU	-	10	10	8.33	4,600	705.1	1,431	8.83E+04	0	Log	MW-17	0-0
Filtered Miscellaneous Parameters													
Cyanide, amenable	UG/L	-	2	-	-	-	-	-	-	0	-	-	
Cyanide, iron-cyanide	UG/L	-	2	-	-	-	-	-	-	0	-	-	
Cyanide, total	UG/L	-	2	-	-	-	-	-	-	0	-	-	

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class GA.

Concentration Exceeds Criteria

TABLE A-5
STATISTICAL SUMMARY OF TOTAL PAHs IN PRE-SRI OVERBURDEN GROUNDWATER
NYSEG - MECHANICVILLE

LOCID	LOGDATE	SBD	SED	MATRIX	UNITS	PRCCODE	PARNAME	CONC
MW-10	22-Dec-87	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	128
MW-10	29-Mar-88	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	124

MINIMUM	124
MAXIMUM	128
AVERAGE	126

TABLE A-6
STATISTICAL SUMMARY OF SRI OVERBURDEN GROUNDWATER ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Volatile Organic Compounds													
1,1,1-Trichloroethane	UG/L	5	10	-	-	-	-	-	-	0	-	-	
1,1,2,2-Tetrachloroethane	UG/L	5	10	-	-	-	-	-	-	0	-	-	
1,1,2-Trichloroethane	UG/L	1	10	-	-	-	-	-	-	0	-	-	
1,1-Dichloroethane	UG/L	5	10	-	-	-	-	-	-	0	-	-	
1,1-Dichloroethene	UG/L	5	10	-	-	-	-	-	-	0	-	-	
1,2-Dichloroethane	UG/L	0.6	10	-	-	-	-	-	-	0	-	-	
1,2-Dichloroethene (cis)	UG/L	5	4	-	-	-	-	-	-	0	-	-	
1,2-Dichloroethene (total)	UG/L	-	6	-	-	-	-	-	-	0	-	-	
1,2-Dichloroethene (trans)	UG/L	5	4	-	-	-	-	-	-	0	-	-	
1,2-Dichloropropane	UG/L	1	10	-	-	-	-	-	-	0	-	-	
1,3-Dichloropropene (cis)	UG/L	0.4	10	-	-	-	-	-	-	0	-	-	
1,3-Dichloropropene (trans)	UG/L	0.4	10	-	-	-	-	-	-	0	-	-	
2-Chloroethyl vinyl ether	UG/L	-	6	-	-	-	-	-	-	0	-	-	
2-Hexanone	UG/L	50	10	-	-	-	-	-	-	0	-	-	
4-Methyl-2-Pentanone	UG/L	-	10	-	-	-	-	-	-	0	-	-	
Acetone	UG/L	50	10	-	-	-	-	-	-	0	-	-	
Benzene	UG/L	1	10	5	1.00	220.0	45.80	97.39	86.18	5	Log	MW-14S	0-0

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class GA.

Concentration Exceeds Criteria

N:\38393614.00000\DB\Program\Stat.mde
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WHERE [SITEID] = '01' AND ([LOCID] = 'MW-10' or [LOCID] = 'MW-16' OR [LOCID] = 'MW-17' OR [LOCID] = 'MW-12' OR [LOCID] LIKE "S') AND [MATRIX] = 'WG' AND [LOGDATE] > #01/01/01# AND [REMARK] IS NULL;

TABLE A-6
STATISTICAL SUMMARY OF SRI OVERBURDEN GROUNDWATER ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Volatile Organic Compounds													
Bromodichloromethane	UG/L	50	10	-	-	-	-	-	-	0	-	-	
Bromoform	UG/L	50	10	-	-	-	-	-	-	0	-	-	
Bromomethane	UG/L	5	10	-	-	-	-	-	-	0	-	-	
Carbon Disulfide	UG/L	60	10	-	-	-	-	-	-	0	-	-	
Carbon Tetrachloride	UG/L	5	10	-	-	-	-	-	-	0	-	-	
Chlorobenzene	UG/L	5	10	-	-	-	-	-	-	0	-	-	
Chloroethane	UG/L	5	10	-	-	-	-	-	-	0	-	-	
Chloroform	UG/L	7	10	1	11.00	11.00	11.00	-	4.55	1	Log	MW-21S	0-0
Chloromethane	UG/L	5	10	-	-	-	-	-	-	0	-	-	
Dibromochloromethane	UG/L	50	10	-	-	-	-	-	-	0	-	-	
Ethylbenzene	UG/L	5	10	4	2.00	17.00	6.25	7.18	6.02	1	Log	MW-14S	0-0
Methyl ethyl ketone (2-Butanone)	UG/L	50	10	-	-	-	-	-	-	0	-	-	
Methylene Chloride	UG/L	5	10	1	5.00	5.00	5.00	-	3.15	1	Log	MW-16	0-0
Styrene	UG/L	5	10	1	2.00	2.00	2.00	-	2.56	0	Log	MW-21S	0-0
Tetrachloroethene	UG/L	5	10	-	-	-	-	-	-	0	-	-	
Toluene	UG/L	5	10	3	2.00	5.00	3.33	1.53	3.20	1	Log	MW-21S	0-0
Trichloroethene	UG/L	5	10	-	-	-	-	-	-	0	-	-	

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class GA.

(oval) Concentration Exceeds Criteria

TABLE A-6
STATISTICAL SUMMARY OF SRI OVERBURDEN GROUNDWATER ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Volatile Organic Compounds													
Vinyl Acetate	UG/L	-	6	-	-	-	-	-	-	0	-	-	
Vinyl Chloride	UG/L	2	10	-	-	-	-	-	-	0	-	-	
Xylene (total)	UG/L	5	10	4	3.00	29.00	16.50	10.66	22.81	3	Log	MW-21S	0-0
Semivolatile Organic Compounds													
2-Methylnaphthalene	UG/L	-	10	3	20.00	50.00	31.33	16.29	37.76	3	Log	MW-21S	0-0
Acenaphthene	UG/L	20	10	3	4.00	41.00	19.00	19.47	17.37	1	Log	MW-14S	0-0
Acenaphthylene	UG/L	50	10	2	2.00	17.00	9.50	10.61	9.94	0	Log	MW-14S	0-0
Anthracene	UG/L	50	10	-	-	-	-	-	-	0	-	-	
Benzo(a)anthracene	UG/L	0.002	10	-	-	-	-	-	-	0	-	-	
Benzo(a)pyrene	UG/L	ND	10	-	-	-	-	-	-	0	-	-	
Benzo(b)fluoranthene	UG/L	0.002	10	-	-	-	-	-	-	0	-	-	
Benzo(g,h,i)perylene	UG/L	50	10	-	-	-	-	-	-	0	-	-	
Benzo(k)fluoranthene	UG/L	0.002	10	-	-	-	-	-	-	0	-	-	
Carbazole	UG/L	50	4	-	-	-	-	-	-	0	-	-	
Chrysene	UG/L	0.002	10	-	-	-	-	-	-	0	-	-	
Dibenz(a,h)anthracene	UG/L	50	10	-	-	-	-	-	-	0	-	-	
Dibenzofuran	UG/L	50	10	2	1.00	1.20	1.10	0.141	7.61	0	Log	MW-21S	0-0

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class GA.

Concentration Exceeds Criteria

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WHERE [SITEID] = '01' AND ([LOCID] = 'MW-10' or [LOCID] = 'MW-16' OR [LOCID] = 'MW-17' OR [LOCID] = 'MW-12' OR [LOCID] LIKE "*S") AND [MATRIX] = 'WG' AND [LOGDATE] > #01/01/01# AND [REMARK] IS NULL;

TABLE A-6
STATISTICAL SUMMARY OF SRI OVERBURDEN GROUNDWATER ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Semivolatile Organic Compounds													
Fluoranthene	UG/L	50	10	-	-	-	-	-	-	0	-	-	
Fluorene	UG/L	50	10	2	1.70	7.20	4.45	3.89	6.11	0	Normal	MW-14S	0-0
Indeno(1,2,3-cd)pyrene	UG/L	0.002	10	-	-	-	-	-	-	0	-	-	
Naphthalene	UG/L	10	10	4	3.00	200.0	103.3	101.1	590.1	3	Log	MW-21S	0-0
Phenanthrene	UG/L	50	10	-	-	-	-	-	-	0	-	-	
Pyrene	UG/L	50	10	-	-	-	-	-	-	0	-	-	
Metals													
Aluminum	UG/L	-	8	6	26.10	3.22E+05	5.70E+04	1.30E+05	4.96E+10	0	Log	MW-10	0-0
Antimony	UG/L	3	6	1	4.30	4.30	4.30	-	105.7	1	Log	MW-17	0-0
Arsenic	UG/L	25	5	-	-	-	-	-	-	0	-	-	
Barium	UG/L	1000	9	9	69.50	6,530	1,123	2,117	1.11E+04	2	Log	MW-10	0-0
Cadmium	UG/L	5	5	1	5.00	5.00	5.00	-	4.39	1	Log	MW-14S	0-0
Chromium	UG/L	50	9	5	6.00	782.0	288.6	344.2	1.45E+05	3	Log	MW-10	0-0
Copper	UG/L	200	9	4	2.30	1,010	265.9	496.6	2,919	1	Log	MW-10	0-0
Iron	UG/L	300	9	9	60.00	9.41E+05	1.15E+05	3.11E+05	2.59E+09	7	Log	MW-10	0-0
Lead	UG/L	25	9	3	10.70	44.30	32.00	18.52	190.4	2	Log	MW-10	0-0
Manganese	UG/L	300	9	9	71.60	1.40E+04	3,542	5,334	1.18E+05	7	Log	MW-14S	0-0

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class GA.

Concentration Exceeds Criteria

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WHERE [SITEID] = '01' AND ([LOCID] = 'MW-10' or [LOCID] = 'MW-16' OR [LOCID] = 'MW-17' OR [LOCID] = 'MW-12' OR [LOCID] LIKE "*S") AND [MATRIX] = 'WG' AND [LOGDATE] > #01/01/01# AND [REMARK] IS NULL;

TABLE A-6
STATISTICAL SUMMARY OF SRI OVERBURDEN GROUNDWATER ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Metals													
Mercury	UG/L	0.7	9	1	0.500	0.500	0.500	-	0.377	0	Log	MW-10	0-0
Nickel	UG/L	100	6	2	49.80	70.00	59.90	14.28	62.97	0	Log	MW-17	0-0
Selenium	UG/L	10	6	-	-	-	-	-	-	0	-	-	
Silver	UG/L	50	6	-	-	-	-	-	-	0	-	-	
Vanadium	UG/L	-	9	3	6.90	501.0	189.3	271.2	2,664	0	Log	MW-10	0-0
Zinc	UG/L	2000	9	6	9.10	2,460	568.7	953.9	5.87E+06	1	Log	MW-10	0-0
Filtered Metals													
Aluminum	UG/L	-	6	1	19.70	19.70	19.70	-	183.1	0	Log	MW-10	0-0
Antimony	UG/L	3	6	-	-	-	-	-	-	0	-	-	
Arsenic	UG/L	25	6	1	2.50	2.50	2.50	-	3.28	0	Log	MW-21S	0-0
Barium	UG/L	1000	6	6	90.00	726.0	317.0	224.2	950.0	0	Log	MW-21S	0-0
Cadmium	UG/L	5	4	-	-	-	-	-	-	0	-	-	
Chromium	UG/L	50	6	-	-	-	-	-	-	0	-	-	
Copper	UG/L	200	6	2	1.80	5.20	3.50	2.40	272.3	0	Log	MW-21S	0-0
Iron	UG/L	300	6	6	28.90	4,930	1,432	1,980	9.36E+06	3	Log	MW-14S	0-0
Lead	UG/L	25	6	-	-	-	-	-	-	0	-	-	
Manganese	UG/L	300	6	6	80.00	4,520	1,501	1,787	1.16E+05	5	Log	MW-14S	0-0

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class GA.

Concentration Exceeds Criteria

N:\38393614.00000\DB\Program\Stat.mde
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WHERE [SITEID] = '01' AND ([LOCID] = 'MW-10' or [LOCID] = 'MW-16' OR [LOCID] = 'MW-17' OR [LOCID] = 'MW-12' OR [LOCID] LIKE "S') AND [MATRIX] = 'WG' AND [LOGDATE] > #01/01/01# AND [REMARK] IS NULL;

TABLE A-6
STATISTICAL SUMMARY OF SRI OVERBURDEN GROUNDWATER ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Filtered Metals													
Mercury	UG/L	0.7	6	-	-	-	-	-	-	0	-	-	
Nickel	UG/L	100	6	1	7.90	7.90	7.90	-	32.20	0	Normal	MW-21S	0-0
Selenium	UG/L	10	6	-	-	-	-	-	-	0	-	-	
Silver	UG/L	50	6	-	-	-	-	-	-	0	-	-	
Vanadium	UG/L	-	6	-	-	-	-	-	-	0	-	-	
Zinc	UG/L	2000	6	2	10.00	189.0	99.50	126.6	1.79E+05	0	Log	MW-21S	0-0
Miscellaneous Parameters													
Cyanide, amenable	UG/L	-	4	-	-	-	-	-	-	0	-	-	
Cyanide, Free (weak & dissoc.)	UG/L	-	6	-	-	-	-	-	-	0	-	-	
Cyanide, Total	UG/L	200	10	5	60.00	170.0	105.6	44.12	90.45	0	Normal	MW-14S	0-0
Phenolics, Total Recoverable	UG/L	-	10	5	2.00	24.00	7.80	9.15	12.77	0	Log	MW-21S	0-0

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class GA.


Concentration Exceeds Criteria

N:\38393614.00000\DB\Program\Stat.mde
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WHERE [SITEID] = '01' AND ([LOCID] = 'MW-10' or [LOCID] = 'MW-16' OR [LOCID] = 'MW-17' OR [LOCID] = 'MW-12' OR [LOCID] LIKE "S') AND [MATRIX] = 'WG' AND [LOGDATE] > #01/01/01# AND [REMARK] IS NULL;

TABLE A-6
STATISTICAL SUMMARY OF TOTAL PAHs IN SRI OVERBURDEN GROUNDWATER
NYSEG - MECHANICVILLE

LOCID	LOGDATE	SBD	SED	MATRIX	UNITS	PRCCODE	PARNAME	CONC
MW-10	18-Feb-03	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	3
MW-14S	15-Oct-01	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	119.2
MW-21S	25-Sep-01	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	265.7
MW-21S	19-Feb-03	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	204

MINIMUM	3
MAXIMUM	265.7
AVERAGE	147.975

TABLE A-7
STATISTICAL SUMMARY OF PRE-SRI BEDROCK GROUNDWATER ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Volatile Organic Compounds													
1,1,1-Trichloroethane	UG/L	5	67	10	2.00	17.00	6.26	4.89	42.40	5	Log	MW-15	0-0
1,1,2,2-Tetrachloroethane	UG/L	5	66	-	-	-	-	-	-	0	-	-	
1,1,2-Trichloroethane	UG/L	1	66	-	-	-	-	-	-	0	-	-	
1,1-Dichloroethane	UG/L	5	67	7	3.30	5.00	4.40	0.661	36.86	3	Log	MW-15	0-0
1,1-Dichloroethene	UG/L	5	67	1	4.00	4.00	4.00	-	45.80	0	Log	MW-15	0-0
1,2-Dichloroethane	UG/L	0.6	66	1	21.00	21.00	21.00	-	40.14	1	Log	MW-04	0-0
1,2-Dichloroethene (total)	UG/L	-	46	-	-	-	-	-	-	0	-	-	
1,2-Dichloroethene (trans)	UG/L	5	25	-	-	-	-	-	-	0	-	-	
1,2-Dichloropropane	UG/L	1	67	-	-	-	-	-	-	0	-	-	
1,3-Dichloropropene (cis)	UG/L	0.4	67	-	-	-	-	-	-	0	-	-	
1,3-Dichloropropene (trans)	UG/L	0.4	66	-	-	-	-	-	-	0	-	-	
2-Chloroethyl vinyl ether	UG/L	-	25	-	-	-	-	-	-	0	-	-	
2-Hexanone	UG/L	50	67	1	1.10	1.10	1.10	-	80.99	0	Log	MW-15	0-0
4-Methyl-2-Pentanone	UG/L	-	67	-	-	-	-	-	-	0	-	-	
Acetone	UG/L	50	86	11	5.00	3,780	561.5	1,104	198.9	9	Log	MW-01	0-0
Benzene	UG/L	1	94	60	2.60	1.20E+04	1,649	2,314	2.93E+04	60	Log	MW-13	0-0
Bromochloromethane	UG/L	-	5	-	-	-	-	-	-	0	-	-	

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class GA.

Concentration Exceeds Criteria

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WHERE [SITEID] = '01' AND ([LOCID] <> 'MW-10' and [LOCID] <> 'MW-16' and [LOCID] <> 'MW-17' and [LOCID] <> 'MW-12' and [LOCID] not LIKE '*S') AND [MATRIX] = 'WG' AND [LOGDATE] <= #01/01/01# AND [LOCID] NOT LIKE 'SP-*';

TABLE A-7
STATISTICAL SUMMARY OF PRE-SRI BEDROCK GROUNDWATER ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Volatile Organic Compounds													
Bromodichloromethane	UG/L	50	46	-	-	-	-	-	-	0	-	-	
Bromoform	UG/L	50	67	-	-	-	-	-	-	0	-	-	
Bromoethane	UG/L	-	24	-	-	-	-	-	-	0	-	-	
Bromomethane	UG/L	5	47	-	-	-	-	-	-	0	-	-	
Carbon Disulfide	UG/L	60	67	-	-	-	-	-	-	0	-	-	
Carbon Tetrachloride	UG/L	5	67	-	-	-	-	-	-	0	-	-	
Chlorobenzene	UG/L	5	67	2	1.60	1.60	1.60	0.00E+00	46.04	0	Log	MW-02	0-0
Chloroethane	UG/L	5	67	1	2.00	2.00	2.00	-	66.32	0	Log	MW-15	0-0
Chloroform	UG/L	7	67	-	-	-	-	-	-	0	-	-	
Chloromethane	UG/L	5	66	-	-	-	-	-	-	0	-	-	
Dibromochloromethane	UG/L	50	67	-	-	-	-	-	-	0	-	-	
Dichlorobromomethane	UG/L	-	20	-	-	-	-	-	-	0	-	-	
Ethylbenzene	UG/L	5	94	51	29.00	3,100	1,016	892.8	9,453	51	Log	MW-13	0-0
Methyl ethyl ketone (2-Butanone)	UG/L	50	67	1	220.0	220.0	220.0	-	93.32	1	Log	MW-04	0-0
Methylene Chloride	UG/L	5	86	22	1.00	3.60E+04	1,749	7,655	90.18	11	Log	MW-13	0-0
Styrene	UG/L	5	90	5	51.00	1,800	768.2	713.9	68.17	5	Log	MW-13	0-0
Tetrachloroethene	UG/L	5	66	-	-	-	-	-	-	0	-	-	

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class GA.

Concentration Exceeds Criteria

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WHERE [SITEID] = '01' AND ([LOCID] <> 'MW-10' and [LOCID] <> 'MW-16' and [LOCID] <> 'MW-17' and [LOCID] <> 'MW-12' and [LOCID] not LIKE '*S') AND [MATRIX] = 'WG' AND [LOGDATE] <= #01/01/01# AND [LOCID] NOT LIKE 'SP-*';

TABLE A-7
STATISTICAL SUMMARY OF PRE-SRI BEDROCK GROUNDWATER ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Volatile Organic Compounds													
Toluene	UG/L	5	93	49	6.30	6,400	505.8	1,045	1,137	49	Log	MW-13	0-0
Trichloroethene	UG/L	5	67	1	53.00	53.00	53.00	-	43.75	1	Log	MW-13	0-0
Trimethylbenzene	UG/L	-	6	3	46.00	120.0	84.67	37.11	86.66	0	Normal	MW-06	0-0
Vinyl Acetate	UG/L	-	53	1	27.00	27.00	27.00	-	73.15	0	Log	MW-04	0-0
Vinyl Chloride	UG/L	2	67	-	-	-	-	-	-	0	-	-	
Xylene (total)	UG/L	5	94	58	2.70	3,500	920.9	865.2	1.15E+04	57	Log	MW-13	0-0
Semivolatile Organic Compounds													
1,2,4-Trichlorobenzene	UG/L	5	65	-	-	-	-	-	-	0	-	-	
1,2-Dichlorobenzene	UG/L	3	66	-	-	-	-	-	-	0	-	-	
1,3-Dichlorobenzene	UG/L	3	65	-	-	-	-	-	-	0	-	-	
1,4-Dichlorobenzene	UG/L	3	65	-	-	-	-	-	-	0	-	-	
2,2'-oxybis(1-Chloropropane)	UG/L	5	7	-	-	-	-	-	-	0	-	-	
2,4,5-Trichlorophenol	UG/L	1	65	-	-	-	-	-	-	0	-	-	
2,4,6-Trichlorophenol	UG/L	1	65	-	-	-	-	-	-	0	-	-	
2,4-Dichlorophenol	UG/L	5	66	-	-	-	-	-	-	0	-	-	
2,4-Dimethylphenol	UG/L	50	65	2	6.90	13.00	9.95	4.31	107.7	0	Log	MW-04	0-0
2,4-Dinitrophenol	UG/L	10	66	-	-	-	-	-	-	0	-	-	

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class GA.

Concentration Exceeds Criteria

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WHERE [SITEID] = '01' AND ([LOCID] <> 'MW-10' and [LOCID] <> 'MW-16' and [LOCID] <> 'MW-17' and [LOCID] <> 'MW-12' and [LOCID] not LIKE '*S') AND [MATRIX] = 'WG' AND [LOGDATE] <= #01/01/01# AND [LOCID] NOT LIKE 'SP-*';

TABLE A-7
STATISTICAL SUMMARY OF PRE-SRI BEDROCK GROUNDWATER ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Semivolatile Organic Compounds													
2,4-Dinitrotoluene	UG/L	5	65	2	52.00	300.0	176.0	175.4	149.7	2	Log	MW-03	0-0
2,6-Dinitrotoluene	UG/L	5	65	2	36.00	260.0	148.0	158.4	123.9	2	Log	MW-05	0-0
2-Chloronaphthalene	UG/L	10	66	1	140.0	140.0	140.0	-	102.8	1	Log	MW-05	0-0
2-Chlorophenol	UG/L	1	66	-	-	-	-	-	-	0	-	-	
2-Methylnaphthalene	UG/L	-	85	43	2.00	1.97E+05	6,903	3.06E+04	5,969	43	Log	MW-05	0-0
2-Methylphenol (o-cresol)	UG/L	1	66	2	5.50	8.00	6.75	1.77	212.3	2	Log	MW-04	0-0
2-Nitroaniline	UG/L	5	66	3	1.10	460.0	181.4	244.8	708.6	2	Log	MW-05	0-0
2-Nitrophenol	UG/L	1	66	-	-	-	-	-	-	0	-	-	
3,3'-Dichlorobenzidine	UG/L	5	66	-	-	-	-	-	-	0	-	-	
3-Nitroaniline	UG/L	5	64	1	1,200	1,200	1,200	-	843.6	1	Log	MW-05	0-0
4,6-Dinitro-2-Methylphenol	UG/L	1	66	-	-	-	-	-	-	0	-	-	
4-Bromophenyl-phenylether	UG/L	50	66	-	-	-	-	-	-	0	-	-	
4-Chloro-3-Methylphenol	UG/L	1	66	-	-	-	-	-	-	0	-	-	
4-Chloroaniline	UG/L	5	66	-	-	-	-	-	-	0	-	-	
4-Chlorophenyl-phenylether	UG/L	50	65	-	-	-	-	-	-	0	-	-	
4-Methylphenol (p-cresol)	UG/L	1	66	6	3.00	270.0	54.67	105.9	124.6	6	Log	MW-05	0-0
4-Nitroaniline	UG/L	5	66	1	120.0	120.0	120.0	-	513.9	1	Log	MW-03	0-0

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class GA.

(oval) Concentration Exceeds Criteria

TABLE A-7
STATISTICAL SUMMARY OF PRE-SRI BEDROCK GROUNDWATER ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Semivolatile Organic Compounds													
4-Nitrophenol	UG/L	1	66	-	-	-	-	-	-	0	-	-	
6-Nitroaniline	UG/L	-	7	-	-	-	-	-	-	0	-	-	
Acenaphthene	UG/L	20	94	58	1.00	1.50E+05	4,740	2.07E+04	3,898	56	Log	MW-05	0-0
Acenaphthylene	UG/L	50	93	40	1.00	1.50E+05	4,943	2.40E+04	936.4	16	Log	MW-05	0-0
Anthracene	UG/L	50	93	38	2.00	1.78E+05	5,653	2.89E+04	548.7	13	Log	MW-05	0-0
Benzo(a)anthracene	UG/L	0.002	94	13	2.00	1.84E+04	1,637	5,075	180.9	13	Log	MW-05	0-0
Benzo(a)pyrene	UG/L	ND	92	16	2.00	4,800	546.6	1,280	129.0	16	Log	MW-06	0-0
Benzo(b)fluoranthene	UG/L	0.002	93	9	1.00	4,000	513.3	1,319	116.5	9	Log	MW-06	0-0
Benzo(g,h,i)perylene	UG/L	50	91	3	2.00	13.00	7.00	5.57	131.7	0	Log	MW-15	0-0
Benzo(k)fluoranthene	UG/L	0.002	94	10	2.00	7,200	916.4	2,248	147.0	10	Log	MW-06	0-0
Benzoic Acid	UG/L	-	52	2	9.00	100.0	54.50	64.35	983.9	0	Log	MW-05	0-0
Benzyl Alcohol	UG/L	50	52	1	1.00	1.00	1.00	-	188.5	0	Log	MW-15	0-0
bis(2-Chloroethoxy)methane	UG/L	5	66	-	-	-	-	-	-	0	-	-	
bis(2-Chloroethyl)ether	UG/L	1	65	-	-	-	-	-	-	0	-	-	
bis(2-Ethylhexyl)phthalate	UG/L	5	85	33	1.00	1,710	78.52	296.7	168.8	22	Log	MW-02	0-0
Butylbenzylphthalate	UG/L	50	66	1	37.00	37.00	37.00	-	139.9	0	Log	MW-04	0-0
Carbazole	UG/L	50	45	12	4.00	10.00	6.33	1.92	30.33	0	Log	MW-13	0-0

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class GA.

Concentration Exceeds Criteria

TABLE A-7
STATISTICAL SUMMARY OF PRE-SRI BEDROCK GROUNDWATER ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Semivolatile Organic Compounds													
Chrysene	UG/L	0.002	94	15	2.00	2.50E+04	1,882	6,409	197.5	15	Log	MW-06	0-0
Dibenz(a,h)anthracene	UG/L	50	94	-	-	-	-	-	-	0	-	-	
Dibenzofuran	UG/L	50	66	28	1.10	2,000	83.63	376.0	105.1	3	Log	MW-05	0-0
Diethylphthalate	UG/L	50	66	-	-	-	-	-	-	0	-	-	
Dimethylphthalate	UG/L	50	65	-	-	-	-	-	-	0	-	-	
Di-n-butylphthalate	UG/L	50	66	-	-	-	-	-	-	0	-	-	
Di-n-octylphthalate	UG/L	50	65	-	-	-	-	-	-	0	-	-	
Fluoranthene	UG/L	50	94	44	2.00	9.30E+04	4,045	1.54E+04	1,398	19	Log	MW-06	0-0
Fluorene	UG/L	50	94	47	10.00	1.20E+05	4,744	1.95E+04	1,269	28	Log	MW-06	0-0
Hexachlorobenzene	UG/L	0.04	66	-	-	-	-	-	-	0	-	-	
Hexachlorobutadiene	UG/L	0.5	66	-	-	-	-	-	-	0	-	-	
Hexachlorocyclopentadiene	UG/L	5	66	-	-	-	-	-	-	0	-	-	
Hexachloroethane	UG/L	5	65	-	-	-	-	-	-	0	-	-	
Indeno(1,2,3-cd)pyrene	UG/L	0.002	94	2	10.00	200.0	105.0	134.4	94.69	2	Log	MW-03	0-0
Isophorone	UG/L	50	66	-	-	-	-	-	-	0	-	-	
Naphthalene	UG/L	10	93	62	2.00	3.32E+05	1.55E+04	5.47E+04	3.41E+05	58	Log	MW-05	0-0
Nitrobenzene	UG/L	0.4	66	1	1.10	1.10	1.10	-	118.8	1	Log	MW-15	0-0

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class GA.

Concentration Exceeds Criteria

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WHERE [SITEID] = '01' AND ([LOCID] <> 'MW-10' and [LOCID] <> 'MW-16' and [LOCID] <> 'MW-17' and [LOCID] <> 'MW-12' and [LOCID] not LIKE '*S') AND [MATRIX] = 'WG' AND [LOGDATE] <= #01/01/01# AND [LOCID] NOT LIKE 'SP-*';

TABLE A-7
STATISTICAL SUMMARY OF PRE-SRI BEDROCK GROUNDWATER ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Semivolatile Organic Compounds													
N-Nitrosodimethylamine	UG/L	-	6	-	-	-	-	-	-	0	-	-	
N-Nitroso-di-n-propylamine	UG/L	50	66	-	-	-	-	-	-	0	-	-	
N-Nitrosodiphenylamine	UG/L	50	65	1	620.0	620.0	620.0	-	132.2	1	Log	MW-05	0-0
Pentachlorophenol	UG/L	1	66	-	-	-	-	-	-	0	-	-	
Phenanthrene	UG/L	50	93	51	1.00	1.78E+05	5,973	2.59E+04	2,872	33	Log	MW-05	0-0
Phenol	UG/L	1	66	18	1.70	580.0	73.82	149.7	154.8	18	Log	MW-13	0-0
Pyrene	UG/L	50	93	41	1.70	9.35E+04	4,058	1.57E+04	1,189	17	Log	MW-05	0-0
Pyridine	UG/L	-	5	1	2.00	2.00	2.00	-	8.07E+05	0	Log	MW-14	0-0
Metals													
Aluminum	UG/L	-	14	8	62.00	1,020	226.1	335.0	416.0	0	Log	MW-18	0-0
Antimony	UG/L	3	14	3	14.50	17.00	16.07	1.37	10.60	3	Log	MW-15	0-0
Arsenic	UG/L	25	7	1	4.40	4.40	4.40	-	2.61	0	Log	MW-04	0-0
Barium	UG/L	1000	7	7	90.00	2,690	856.4	1,029	1.79E+04	2	Log	MW-13	0-0
Beryllium	UG/L	3	7	-	-	-	-	-	-	0	-	-	
Cadmium	UG/L	5	12	-	-	-	-	-	-	0	-	-	
Calcium	UG/L	-	7	7	9.07E+04	2.00E+05	1.30E+05	3.55E+04	1.61E+05	0	Log	MW-18	0-0
Chromium	UG/L	50	14	10	4.00	80.50	12.40	23.96	18.89	1	Log	MW-01	0-0

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class GA.

Concentration Exceeds Criteria

TABLE A-7
STATISTICAL SUMMARY OF PRE-SRI BEDROCK GROUNDWATER ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Metals													
Cobalt	UG/L	-	14	-	-	-	-	-	-	0	-	-	
Copper	UG/L	200	14	2	4.00	7.00	5.50	2.12	3.28	0	Log	MW-01	0-0
Iron	UG/L	300	57	52	40.00	6.10E+04	6,450	1.24E+04	3.83E+04	28	Log	MW-04	0-0
Lead	UG/L	25	14	8	1.00	18.00	4.91	5.63	7.91	0	Log	MW-11	0-0
Magnesium	UG/L	35000	7	7	1.98E+04	5.45E+04	3.01E+04	1.14E+04	4.01E+04	1	Log	MW-18	0-0
Manganese	UG/L	300	14	14	111.0	2,040	771.1	566.1	1,306	13	Log	MW-11	0-0
Mercury	UG/L	0.7	7	-	-	-	-	-	-	0	-	-	
Nickel	UG/L	100	14	4	11.00	125.0	56.63	50.60	99.34	1	Log	MW-01	0-0
Potassium	UG/L	-	7	7	4,350	9,370	6,453	1,739	7,730	0	Normal	MW-04	0-0
Selenium	UG/L	10	7	-	-	-	-	-	-	0	-	-	
Silver	UG/L	50	7	7	8.63E+04	1.67E+05	1.27E+05	2.97E+04	1.49E+05	7	Normal	MW-01	0-0
Thallium	UG/L	0.5	7	-	-	-	-	-	-	0	-	-	
Vanadium	UG/L	-	7	2	5.00	7.00	6.00	1.41	5.30	0	Log	MW-02	0-0
Zinc	UG/L	2000	57	42	5.00	1,090	90.37	198.2	90.55	0	Log	MW-05	0-0
Filtered Metals													
Aluminum	UG/L	-	7	4	52.00	97.00	69.50	21.08	69.14	0	Normal	MW-18	0-0
Antimony	UG/L	3	7	-	-	-	-	-	-	0	-	-	

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class GA.

Concentration Exceeds Criteria

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WHERE [SITEID] = '01' AND ([LOCID] <> 'MW-10' and [LOCID] <> 'MW-16' and [LOCID] <> 'MW-17' and [LOCID] <> 'MW-12' and [LOCID] not LIKE '*S') AND [MATRIX] = 'WG' AND [LOGDATE] <= #01/01/01# AND [LOCID] NOT LIKE 'SP-*';

TABLE A-7
STATISTICAL SUMMARY OF PRE-SRI BEDROCK GROUNDWATER ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Filtered Metals													
Arsenic	UG/L	25	38	15	3.10	7,600	1,610	2,849	8,569	4	Log	MW-18	0-0
Cadmium	UG/L	5	38	-	-	-	-	-	-	0	-	-	
Chromium	UG/L	50	45	3	4.00	4,600	1,536	2,653	1,407	1	Log	MW-01	0-0
Cobalt	UG/L	-	7	-	-	-	-	-	-	0	-	-	
Copper	UG/L	200	7	1	7.00	7.00	7.00	-	5.40	0	Log	MW-18	0-0
Iron	UG/L	300	45	24	8.00	1.94E+04	2,348	5,583	9.72E+04	5	Log	MW-04	0-0
Lead	UG/L	25	45	1	1.00	1.00	1.00	-	1,099	0	Log	MW-18	0-0
Manganese	UG/L	300	7	7	123.0	2,170	827.1	665.1	3,163	6	Log	MW-11	0-0
Mercury	UG/L	0.7	38	1	0.320	0.320	0.320	-	63.85	0	Log	MW-04	0-0
Nickel	UG/L	100	7	2	41.00	64.00	52.50	16.26	2.65E+04	0	Log	MW-11	0-0
Zinc	UG/L	2000	45	19	1.40	7.85E+04	1.00E+04	1.97E+04	8.70E+04	6	Log	MW-18	0-0
Miscellaneous Parameters													
Ammonia	UG/L	-	45	34	150.0	3,780	1,541	762.5	1,433	0	Normal	MW-04	0-0
Conductivity	UMHO/CM	-	68	68	0.00E+00	6,100	1,085	1,066	0.00E+00	0	Log	MW-04	0-0
Cyanide, amenable	UG/L	-	53	11	10.00	100.0	38.49	28.56	117.7	0	Log	MW-06	0-0
Cyanide, Ferro-ferric	UG/L	-	23	17	10.00	460.0	104.2	145.0	2,133	0	Log	MW-03	0-0
Cyanide, iron-cyanide	UG/L	-	7	2	22.50	196.0	109.3	122.7	1.70E+05	0	Log	MW-14	0-0

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class GA.

Concentration Exceeds Criteria

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WHERE [SITEID] = '01' AND ([LOCID] <> 'MW-10' and [LOCID] <> 'MW-16' and [LOCID] <> 'MW-17' and [LOCID] <> 'MW-12' and [LOCID] not LIKE '*S') AND [MATRIX] = 'WG' AND [LOGDATE] <= #01/01/01# AND [LOCID] NOT LIKE 'SP-*';

TABLE A-7
STATISTICAL SUMMARY OF PRE-SRI BEDROCK GROUNDWATER ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Miscellaneous Parameters													
Cyanide, Total	UG/L	200	94	56	3.00	1.66E+05	4,938	2.45E+04	1,169	11	Log	MW-14	0-0
Cyanide, undistilled	UG/L	-	19	3	10.00	70.00	33.33	32.15	11.41	0	Log	MW-06	0-0
Organics, Total NYS Regulated	UG/L	-	23	20	0.00E+00	1.06E+06	1.01E+05	2.68E+05	0.00E+00	0	Log	MW-05	0-0
pH	S.U.	-	72	72	0.00E+00	7.70	6.14	2.37	0.00E+00	0	Log	MW-06	0-0
Phenolics, Total Recoverable	UG/L	-	77	51	0.00E+00	1.70E+04	372.9	2,376	0.00E+00	0	Log	MW-03	0-0
Sulfate	UG/L	-	51	50	57.80	6.52E+05	6.23E+04	9.03E+04	1.53E+05	0	Log	MW-02	0-0
Temperature	DEG C	-	72	72	0.00E+00	2,300	293.6	629.8	0.00E+00	0	Log	MW-06	0-0
Total Organic Carbon (TOC)	UG/L	-	85	77	16.00	1.00E+07	2.43E+05	1.45E+06	5.71E+04	0	Log	MW-06	0-0
Turbidity	NTU	-	56	56	0.580	536.0	50.18	91.53	101.9	0	Log	MW-02	0-0
Filtered Miscellaneous Parameters													
Cyanide, amenable	UG/L	-	7	-	-	-	-	-	-	0	-	-	
Cyanide, iron-cyanide	UG/L	-	7	2	23.00	196.0	109.5	122.3	1.74E+05	0	Log	MW-14	0-0
Cyanide, total	UG/L	-	7	-	-	-	-	-	-	0	-	-	

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class GA.

Concentration Exceeds Criteria

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WHERE [SITEID] = '01' AND ([LOCID] <> 'MW-10' and [LOCID] <> 'MW-16' and [LOCID] <> 'MW-17' and [LOCID] <> 'MW-12' and [LOCID] not LIKE '*S') AND [MATRIX] = 'WG' AND [LOGDATE] <= #01/01/01# AND [LOCID] NOT LIKE 'SP-*';

TABLE A-7
STATISTICAL SUMMARY OF TOTAL PAHs IN PRE-SRI BEDROCK GROUNDWATER
NYSEG - MECHANICVILLE

LOCID	LOGDATE	SBD	SED	MATRIX	UNITS	PRCCODE	PARNAME	CONC
MW-01	09-Sep-86	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	1980
MW-01	02-Dec-86	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	252
MW-01	15-Jul-93	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	4
MW-01	24-May-94	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	6
MW-01	28-Feb-95	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	4
MW-02	10-Mar-87	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	9694
MW-02	02-Jun-87	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	1575
MW-02	19-Feb-96	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	3
MW-03	09-Sep-86	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	22240
MW-03	02-Dec-86	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	6160
MW-03	10-Mar-87	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	4820
MW-03	02-Jun-87	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	4210
MW-03	22-Dec-87	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	208700
MW-03	30-Mar-88	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	324
MW-04	09-Sep-86	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	64680
MW-04	02-Dec-86	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	6360
MW-04	10-Mar-87	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	4265
MW-04	02-Jun-87	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	3508
MW-04	22-Dec-87	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	2550
MW-04	30-Mar-88	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	2785
MW-04	12-Oct-93	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	4407
MW-04	24-May-94	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	3383
MW-04	28-Feb-95	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	6713
MW-04	19-Feb-96	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	4456
MW-04	19-Feb-98	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	10193
MW-05	09-Sep-86	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	17710
MW-05	02-Dec-86	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	93000
MW-05	02-Jun-87	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	1812200
MW-05	22-Dec-87	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	5530
MW-05	30-Mar-88	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	142800
MW-06	09-Sep-86	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	782300
MW-06	02-Dec-86	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	6980
MW-06	10-Mar-87	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	10793
MW-06	02-Jun-87	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	50240
MW-06	22-Dec-87	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	26890
MW-06	30-Mar-88	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	307
MW-13	22-Dec-87	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	5380
MW-13	29-Mar-88	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	14776
MW-13	29-Oct-92	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	6416.6
MW-13	14-Jul-93	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	2923
MW-13	15-Jul-93	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	39
MW-13	13-Oct-93	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	2737
MW-13	24-May-94	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	2077
MW-13	28-Feb-95	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	5867
MW-13	20-Feb-96	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	3556
MW-13	27-Feb-97	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	7197
MW-13	19-Feb-98	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	8489
MW-14	22-Dec-87	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	149
MW-14	29-Mar-88	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	2158
MW-14	29-Oct-92	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	4226.4

MINIMUM	3
MAXIMUM	1812200
AVERAGE	50126.4765

MW-14	15-Jul-93	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	3171
MW-14	13-Oct-93	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	544
MW-14	24-May-94	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	1067
MW-14	28-Feb-95	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	3292
MW-14	20-Feb-96	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	1636
MW-14	27-Feb-97	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	1782
MW-14	19-Feb-98	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	2317
MW-15	22-Dec-87	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	206
MW-15	29-Mar-88	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	60.3
MW-15	29-Oct-92	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	470.1
MW-15	14-Jul-93	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	733
MW-15	12-Oct-93	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	550
MW-15	24-May-94	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	1428
MW-15	28-Feb-95	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	1461
MW-15	19-Feb-96	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	611
MW-15	27-Feb-97	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	641
MW-15	19-Feb-98	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	613
MW-18	20-Feb-96	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	5

TABLE A-8
STATISTICAL SUMMARY OF SRI BEDROCK GROUNDWATER ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Volatile Organic Compounds													
1,1,1-Trichloroethane	UG/L	5	46	-	-	-	-	-	-	0	-	-	
1,1,2,2-Tetrachloroethane	UG/L	5	46	2	1.00	2.00	1.50	0.707	3.30	0	Log	MW-17I	0-0
1,1,2-Trichloroethane	UG/L	1	46	-	-	-	-	-	-	0	-	-	
1,1-Dichloroethane	UG/L	5	46	-	-	-	-	-	-	0	-	-	
1,1-Dichloroethene	UG/L	5	46	-	-	-	-	-	-	0	-	-	
1,2-Dichloroethane	UG/L	0.6	46	-	-	-	-	-	-	0	-	-	
1,2-Dichloroethene (cis)	UG/L	5	29	-	-	-	-	-	-	0	-	-	
1,2-Dichloroethene (total)	UG/L	-	17	-	-	-	-	-	-	0	-	-	
1,2-Dichloroethene (trans)	UG/L	5	29	-	-	-	-	-	-	0	-	-	
1,2-Dichloropropane	UG/L	1	46	-	-	-	-	-	-	0	-	-	
1,3-Dichloropropene (cis)	UG/L	0.4	46	-	-	-	-	-	-	0	-	-	
1,3-Dichloropropene (trans)	UG/L	0.4	46	-	-	-	-	-	-	0	-	-	
2-Chloroethyl vinyl ether	UG/L	-	17	-	-	-	-	-	-	0	-	-	
2-Hexanone	UG/L	50	46	-	-	-	-	-	-	0	-	-	
4-Methyl-2-Pentanone	UG/L	-	46	2	1.00	2.00	1.50	0.707	6.72	2	Log	MW-23D	0-0
Acetone	UG/L	50	46	4	15.00	21.00	17.75	2.75	8.11	0	Log	MW-32D	0-0
Benzene	UG/L	1	78	9	1.00	1,100	163.9	362.5	7.66	9	Log	MW-33D	0-0

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class GA.

Concentration Exceeds Criteria

TABLE A-8
STATISTICAL SUMMARY OF SRI BEDROCK GROUNDWATER ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Volatile Organic Compounds													
Bromodichloromethane	UG/L	50	46	-	-	-	-	-	-	0	-	-	
Bromoform	UG/L	50	46	-	-	-	-	-	-	0	-	-	
Bromomethane	UG/L	5	46	-	-	-	-	-	-	0	-	-	
Carbon Disulfide	UG/L	60	46	1	2.00	2.00	2.00	-	3.81	0	Log	MW-43D	0-0
Carbon Tetrachloride	UG/L	5	46	-	-	-	-	-	-	0	-	-	
Chlorobenzene	UG/L	5	46	2	4.00	15.00	9.50	7.78	3.68	1	Log	MW-21D	0-0
Chloroethane	UG/L	5	46	-	-	-	-	-	-	0	-	-	
Chloroform	UG/L	7	46	6	1.00	15.00	7.67	4.89	4.24	4	Log	MW-32D	0-0
Chloromethane	UG/L	5	46	-	-	-	-	-	-	0	-	-	
Dibromochloromethane	UG/L	50	46	-	-	-	-	-	-	0	-	-	
Ethylbenzene	UG/L	5	78	4	14.00	900.0	306.0	416.4	5.33	4	Log	MW-35I	0-0
Methyl ethyl ketone (2-Butanone)	UG/L	50	46	2	43.00	46.00	44.50	2.12	8.51	0	Log	MW-32D	0-0
Methylene Chloride	UG/L	5	46	3	3.00	5.00	4.33	1.15	3.47	2	Log	MW-34D	0-0
Methyl-t-Butyl Ether	UG/L	-	2	-	-	-	-	-	-	0	-	-	
Styrene	UG/L	5	46	-	-	-	-	-	-	0	-	-	
Tetrachloroethene	UG/L	5	46	-	-	-	-	-	-	0	-	-	
Toluene	UG/L	5	78	8	1.00	550.0	85.50	191.4	4.15	3	Log	MW-35I	0-0

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class GA.

Concentration Exceeds Criteria

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WHERE [SITEID] = '01' AND ([LOCID] <> 'MW-10' and [LOCID] <> 'MW-16' and [LOCID] <> 'MW-17' and [LOCID] <> 'MW-12' and [LOCID] not LIKE "*S') AND [MATRIX] = 'WG' AND [LOGDATE] > #01/01/01# AND [LOCID] NOT LIKE 'D*' AND [REMARK] IS NULL;

TABLE A-8
STATISTICAL SUMMARY OF SRI BEDROCK GROUNDWATER ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Volatile Organic Compounds													
Trichloroethene	UG/L	5	46	-	-	-	-	-	-	0	-	-	
Vinyl Acetate	UG/L	-	17	-	-	-	-	-	-	0	-	-	
Vinyl Chloride	UG/L	2	46	-	-	-	-	-	-	0	-	-	
Xylene (total)	UG/L	5	78	5	1.00	900.0	227.6	385.8	4.95	4	Log	MW-35I	0-0
Semivolatile Organic Compounds													
2-Methylnaphthalene	UG/L	-	44	3	1.00	5.00	3.00	2.00	3.86	3	Normal	MW-21D	0-0
Acenaphthene	UG/L	20	44	4	1.30	6.00	3.08	2.07	3.88	0	Normal	MW-32D	0-0
Acenaphthylene	UG/L	50	44	-	-	-	-	-	-	0	-	-	
Anthracene	UG/L	50	44	-	-	-	-	-	-	0	-	-	
Benzo(a)anthracene	UG/L	0.002	44	-	-	-	-	-	-	0	-	-	
Benzo(a)pyrene	UG/L	ND	44	1	0.600	0.600	0.600	-	3.86	1	Normal	MW-18	0-0
Benzo(b)fluoranthene	UG/L	0.002	44	1	0.800	0.800	0.800	-	3.86	1	Normal	MW-18	0-0
Benzo(g,h,i)perylene	UG/L	50	44	-	-	-	-	-	-	0	-	-	
Benzo(k)fluoranthene	UG/L	0.002	44	1	0.800	0.800	0.800	-	3.86	1	Normal	MW-18	0-0
Carbazole	UG/L	50	18	-	-	-	-	-	-	0	-	-	
Chrysene	UG/L	0.002	44	1	0.900	0.900	0.900	-	3.86	1	Normal	MW-18	0-0
Dibenz(a,h)anthracene	UG/L	50	44	-	-	-	-	-	-	0	-	-	

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class GA.

Concentration Exceeds Criteria

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WHERE [SITEID] = '01' AND ([LOCID] <> 'MW-10' and [LOCID] <> 'MW-16' and [LOCID] <> 'MW-17' and [LOCID] <> 'MW-12' and [LOCID] not LIKE "*S') AND [MATRIX] = 'WG' AND [LOGDATE] > #01/01/01# AND [LOCID] NOT LIKE 'D*' AND [REMARK] IS NULL;

TABLE A-8
STATISTICAL SUMMARY OF SRI BEDROCK GROUNDWATER ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Semivolatile Organic Compounds													
Dibenzofuran	UG/L	50	44	-	-	-	-	-	-	0	-	-	
Fluoranthene	UG/L	50	44	1	2.00	2.00	2.00	-	3.87	0	Normal	MW-18	0-0
Fluorene	UG/L	50	44	-	-	-	-	-	-	0	-	-	
Indeno(1,2,3-cd)pyrene	UG/L	0.002	44	1	0.600	0.600	0.600	-	3.86	1	Normal	MW-18	0-0
Naphthalene	UG/L	10	43	3	6.00	23.00	13.67	8.62	4.78	2	Log	MW-21D	0-0
Phenanthrene	UG/L	50	44	2	0.700	1.00	0.850	0.212	3.83	0	Normal	MW-18	0-0
Pyrene	UG/L	50	44	1	1.00	1.00	1.00	-	3.86	0	Normal	MW-18	0-0
Metals													
Aluminum	UG/L	-	40	40	100.0	5.20E+05	2.07E+04	8.33E+04	4.52E+04	0	Log	MW-17D	0-0
Antimony	UG/L	3	31	6	2.90	21.00	7.55	6.91	22.39	5	Normal	MW-17D	0-0
Arsenic	UG/L	25	30	1	21.00	21.00	21.00	-	2.85	0	Log	MW-17D	0-0
Barium	UG/L	1000	44	44	30.00	8,280	1,338	1,702	2,250	19	Log	MW-17D	0-0
Cadmium	UG/L	5	17	1	9.00	9.00	9.00	-	5.25	1	Log	MW-18	0-0
Chromium	UG/L	50	44	26	4.40	2.01E+05	8,059	3.94E+04	1,301	9	Log	MW-01	0-0
Copper	UG/L	200	44	28	2.50	3,040	260.6	696.6	228.5	3	Log	MW-01	0-0
Iron	UG/L	300	44	44	430.0	1.94E+06	1.30E+05	4.00E+05	3.18E+05	44	Log	MW-29D	0-0
Lead	UG/L	25	44	9	1.70	165.0	26.37	52.52	5.70	1	Log	MW-29D	0-0

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class GA.

Concentration Exceeds Criteria

TABLE A-8
STATISTICAL SUMMARY OF SRI BEDROCK GROUNDWATER ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Metals													
Manganese	UG/L	300	44	44	27.40	1.61E+05	6,164	2.46E+04	1.08E+04	24	Log	MW-01	0-0
Mercury	UG/L	0.7	44	5	0.130	0.940	0.448	0.303	0.191	1	Log	MW-17D	0-0
Nickel	UG/L	100	31	12	1.30	880.0	176.7	287.0	634.8	4	Log	MW-01	0-0
Selenium	UG/L	10	31	-	-	-	-	-	-	0	-	-	
Silver	UG/L	50	31	-	-	-	-	-	-	0	-	-	
Vanadium	UG/L	-	44	13	5.20	501.0	82.43	135.9	73.70	0	Log	MW-17D	0-0
Zinc	UG/L	2000	43	32	8.10	2,950	339.4	678.3	2,088	1	Log	MW-11	0-0
Filtered Metals													
Aluminum	UG/L	-	28	8	13.30	3,800	804.2	1,302	517.1	0	Log	MW-17D	0-0
Antimony	UG/L	3	34	4	2.50	8.40	4.85	2.51	13.93	3	Normal	MW-32D	0-0
Arsenic	UG/L	25	34	20	2.30	31.00	6.31	6.27	6.24	1	Log	MW-17D	0-0
Barium	UG/L	1000	34	34	2.30	2,090	779.1	583.5	948.5	8	Normal	MW-37I	0-0
Cadmium	UG/L	5	10	-	-	-	-	-	-	0	-	-	
Chromium	UG/L	50	34	14	4.20	19.00	6.51	3.85	4.69	0	Log	MW-01	0-0
Copper	UG/L	200	34	10	1.50	37.10	9.24	12.76	13.91	0	Normal	MW-37I	0-0
Iron	UG/L	300	34	27	4.30	9,590	627.3	1,868	981.7	9	Log	MW-37I	0-0
Lead	UG/L	25	29	-	-	-	-	-	-	0	-	-	

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class GA.

Concentration Exceeds Criteria

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WHERE [SITEID] = '01' AND ([LOCID] <> 'MW-10' and [LOCID] <> 'MW-16' and [LOCID] <> 'MW-17' and [LOCID] <> 'MW-12' and [LOCID] not LIKE "*S') AND [MATRIX] = 'WG' AND [LOGDATE] > #01/01/01# AND [LOCID] NOT LIKE 'D*' AND [REMARK] IS NULL;

TABLE A-8
STATISTICAL SUMMARY OF SRI BEDROCK GROUNDWATER ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value	Depth Of Max
					Min	Max	Avg	StdDev	UCL95				
Filtered Metals													
Manganese	UG/L	300	34	29	1.10	5,900	712.9	1,518	9,307	9	Log	MW-11	0-0
Mercury	UG/L	0.7	28	-	-	-	-	-	-	0	-	-	
Nickel	UG/L	100	34	17	1.20	223.0	27.99	60.13	74.51	2	Log	MW-01	0-0
Selenium	UG/L	10	28	2	2.90	6.00	4.45	2.19	2.23	0	Log	MW-02I	0-0
Silver	UG/L	50	34	-	-	-	-	-	-	0	-	-	
Vanadium	UG/L	-	34	3	4.10	110.0	40.70	60.05	20.21	0	Log	MW-17D	0-0
Zinc	UG/L	2000	33	25	0.580	416.0	75.67	99.32	766.0	0	Log	MW-40D	0-0
Miscellaneous Parameters													
Cyanide, amenable	UG/L	-	27	-	-	-	-	-	-	0	-	-	
Cyanide, Free (weak & dissoc.)	UG/L	-	17	-	-	-	-	-	-	0	-	-	
Cyanide, Total	UG/L	200	44	4	12.00	48.00	24.75	15.90	7.78	0	Log	MW-18	0-0
Phenolics, Total Recoverable	UG/L	-	44	15	2.00	31.00	6.27	7.73	3.03	0	Log	MW-23D	0-0

*Criteria- NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class GA.

Concentration Exceeds Criteria

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WHERE [SITEID] = '01' AND ([LOCID] <> 'MW-10' and [LOCID] <> 'MW-16' and [LOCID] <> 'MW-17' and [LOCID] <> 'MW-12' and [LOCID] not LIKE "*S') AND [MATRIX] = 'WG' AND [LOGDATE] > #01/01/01# AND [LOCID] NOT LIKE 'D*' AND [REMARK] IS NULL;

TABLE A-8
STATISTICAL SUMMARY OF TOTAL PAHs IN SRI BEDROCK GROUNDWATER
NYSEG - MECHANICVILLE

LOCID	LOGDATE	SBD	SED	MATRIX	UNITS	PRCCODE	PARNAME	CONC
MW-18	07-Feb-03	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	7.7
MW-21D	25-Sep-01	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	13
MW-21D	19-Feb-03	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	31
MW-28I	03-Oct-01	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	1.3
MW-32D	28-Feb-03	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	6
MW-38D	14-Feb-03	0	0	WG	UG/L	SVOC	Total Polycyclic Aromatic Hydrocarbons	11.7

MINIMUM	1.3
MAXIMUM	31
AVERAGE	11.7833333

TABLE A-9
STATISTICAL SUMMARY OF PRE-SRI SURFACE WATER ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value
					Min	Max	Avg	StdDev	UCL95			
Volatile Organic Compounds												
1,1,1-Trichloroethane	UG/L	-	4	-	-	-	-	-	-	0	-	-
1,1,2,2-Tetrachloroethane	UG/L	-	4	-	-	-	-	-	-	0	-	-
1,1,2-Trichloroethane	UG/L	-	4	-	-	-	-	-	-	0	-	-
1,1-Dichloroethane	UG/L	-	4	-	-	-	-	-	-	0	-	-
1,1-Dichloroethene	UG/L	-	4	-	-	-	-	-	-	0	-	-
1,2-Dichloroethane	UG/L	-	4	-	-	-	-	-	-	0	-	-
1,2-Dichloroethene (trans)	UG/L	-	4	-	-	-	-	-	-	0	-	-
1,2-Dichloropropane	UG/L	-	4	-	-	-	-	-	-	0	-	-
1,3-Dichloropropene (cis)	UG/L	-	4	-	-	-	-	-	-	0	-	-
1,3-Dichloropropene (trans)	UG/L	-	4	-	-	-	-	-	-	0	-	-
2-Chloroethyl vinyl ether	UG/L	-	4	-	-	-	-	-	-	0	-	-
2-Hexanone	UG/L	-	4	-	-	-	-	-	-	0	-	-
4-Methyl-2-Pentanone	UG/L	-	4	-	-	-	-	-	-	0	-	-
Acetone	UG/L	-	13	1	7.50	7.50	7.50	-	-	0	Non-Normal	SW-2
Benzene	UG/L	-	16	-	-	-	-	-	-	0	-	-
Bromodichloromethane	UG/L	-	4	-	-	-	-	-	-	0	-	-
Bromoform	UG/L	-	4	-	-	-	-	-	-	0	-	-

*Criteria- NYSDEC Class C Surface Water Criteria.

Concentration Exceeds Criteria

1) For samples with duplicates, detected concentrations for parameters were averaged.
2) For non-detects 1/2 the detection limit was used in the statistical analysis.

TABLE A-9
STATISTICAL SUMMARY OF PRE-SRI SURFACE WATER ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value
					Min	Max	Avg	StdDev	UCL95			
Volatile Organic Compounds												
Bromomethane	UG/L	-	4	-	-	-	-	-	-	0	-	-
Carbon Disulfide	UG/L	-	4	-	-	-	-	-	-	0	-	-
Carbon Tetrachloride	UG/L	-	4	-	-	-	-	-	-	0	-	-
Chlorobenzene	UG/L	-	4	1	2.55	2.55	2.55	-	-	0	Non-Normal	SW-4
Chloroethane	UG/L	-	4	-	-	-	-	-	-	0	-	-
Chloroform	UG/L	-	4	-	-	-	-	-	-	0	-	-
Chloromethane	UG/L	-	4	-	-	-	-	-	-	0	-	-
Dibromochloromethane	UG/L	-	4	-	-	-	-	-	-	0	-	-
Ethylbenzene	UG/L	-	16	-	-	-	-	-	-	0	-	-
Methyl ethyl ketone (2-Butanone)	UG/L	-	4	-	-	-	-	-	-	0	-	-
Methylene Chloride	UG/L	-	10	1	5.20	5.20	5.20	-	-	0	Non-Normal	SW-1
Styrene	UG/L	-	16	-	-	-	-	-	-	0	-	-
Tetrachloroethene	UG/L	-	4	-	-	-	-	-	-	0	-	-
Toluene	UG/L	-	16	-	-	-	-	-	-	0	-	-
Trichloroethene	UG/L	-	4	-	-	-	-	-	-	0	-	-
Trimethylbenzene	UG/L	-	3	-	-	-	-	-	-	0	-	-
Vinyl Acetate	UG/L	-	4	-	-	-	-	-	-	0	-	-

*Criteria- NYSDEC Class C Surface Water Criteria.

Concentration Exceeds Criteria

1) For samples with duplicates, detected concentrations for parameters were averaged.
2) For non-detects 1/2 the detection limit was used in the statistical analysis.

TABLE A-9
STATISTICAL SUMMARY OF PRE-SRI SURFACE WATER ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value
					Min	Max	Avg	StdDev	UCL95			
Volatile Organic Compounds												
Vinyl Chloride	UG/L	-	4	-	-	-	-	-	-	0	-	-
Xylene (total)	UG/L	-	16	-	-	-	-	-	-	0	-	-
Semivolatile Organic Compounds												
1,2,4-Trichlorobenzene	UG/L	5	6	-	-	-	-	-	-	0	-	-
1,2-Dichlorobenzene	UG/L	5	6	-	-	-	-	-	-	0	-	-
1,3-Dichlorobenzene	UG/L	5	6	-	-	-	-	-	-	0	-	-
1,4-Dichlorobenzene	UG/L	5	6	-	-	-	-	-	-	0	-	-
2,4,5-Trichlorophenol	UG/L	-	6	-	-	-	-	-	-	0	-	-
2,4,6-Trichlorophenol	UG/L	-	6	-	-	-	-	-	-	0	-	-
2,4-Dichlorophenol	UG/L	-	6	-	-	-	-	-	-	0	-	-
2,4-Dimethylphenol	UG/L	-	6	-	-	-	-	-	-	0	-	-
2,4-Dinitrophenol	UG/L	-	6	-	-	-	-	-	-	0	-	-
2,4-Dinitrotoluene	UG/L	-	6	-	-	-	-	-	-	0	-	-
2,6-Dinitrotoluene	UG/L	-	6	-	-	-	-	-	-	0	-	-
2-Chloronaphthalene	UG/L	-	6	-	-	-	-	-	-	0	-	-
2-Chlorophenol	UG/L	-	6	-	-	-	-	-	-	0	-	-
2-Methylnaphthalene	UG/L	-	15	1	37.00	37.00	37.00	-	-	0	Non-Normal	SW-2

*Criteria- NYSDEC Class C Surface Water Criteria.

Concentration Exceeds Criteria

1) For samples with duplicates, detected concentrations for parameters were averaged.
2) For non-detects 1/2 the detection limit was used in the statistical analysis.

TABLE A-9
STATISTICAL SUMMARY OF PRE-SRI SURFACE WATER ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value
					Min	Max	Avg	StdDev	UCL95			
Semivolatile Organic Compounds												
2-Methylphenol (o-cresol)	UG/L	-	6	-	-	-	-	-	-	0	-	-
2-Nitroaniline	UG/L	-	6	-	-	-	-	-	-	0	-	-
2-Nitrophenol	UG/L	-	6	-	-	-	-	-	-	0	-	-
3,3'-Dichlorobenzidine	UG/L	-	6	-	-	-	-	-	-	0	-	-
3-Nitroaniline	UG/L	-	6	-	-	-	-	-	-	0	-	-
4,6-Dinitro-2-Methylphenol	UG/L	-	6	-	-	-	-	-	-	0	-	-
4-Bromophenyl-phenylether	UG/L	-	6	-	-	-	-	-	-	0	-	-
4-Chloro-3-Methylphenol	UG/L	-	6	-	-	-	-	-	-	0	-	-
4-Chloroaniline	UG/L	-	6	-	-	-	-	-	-	0	-	-
4-Chlorophenyl-phenylether	UG/L	-	6	-	-	-	-	-	-	0	-	-
4-Methylphenol (p-cresol)	UG/L	-	6	-	-	-	-	-	-	0	-	-
4-Nitroaniline	UG/L	-	6	-	-	-	-	-	-	0	-	-
4-Nitrophenol	UG/L	-	6	-	-	-	-	-	-	0	-	-
Acenaphthene	UG/L	-	18	1	23.50	23.50	23.50	-	-	0	Non-Normal	SW-2
Acenaphthylene	UG/L	-	18	1	24.00	24.00	24.00	-	-	0	Non-Normal	SW-2
Anthracene	UG/L	-	18	-	-	-	-	-	-	0	-	-
Benzo(a)anthracene	UG/L	-	18	-	-	-	-	-	-	0	-	-

*Criteria- NYSDEC Class C Surface Water Criteria.

Concentration Exceeds Criteria

1) For samples with duplicates, detected concentrations for parameters were averaged.
2) For non-detects 1/2 the detection limit was used in the statistical analysis.

TABLE A-9
STATISTICAL SUMMARY OF PRE-SRI SURFACE WATER ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value
					Min	Max	Avg	StdDev	UCL95			
Semivolatile Organic Compounds												
Benzo(a)pyrene	UG/L	-	18	-	-	-	-	-	-	0	-	-
Benzo(b)fluoranthene	UG/L	-	18	-	-	-	-	-	-	0	-	-
Benzo(g,h,i)perylene	UG/L	-	18	-	-	-	-	-	-	0	-	-
Benzo(k)fluoranthene	UG/L	-	18	-	-	-	-	-	-	0	-	-
Benzoic Acid	UG/L	-	6	-	-	-	-	-	-	0	-	-
Benzyl Alcohol	UG/L	-	6	-	-	-	-	-	-	0	-	-
bis(2-Chloroethoxy)methane	UG/L	-	6	-	-	-	-	-	-	0	-	-
bis(2-Chloroethyl)ether	UG/L	-	6	-	-	-	-	-	-	0	-	-
bis(2-Ethylhexyl)phthalate	UG/L	0.6	15	6	8.50	390.0	83.92	150.2	204.1	5	Non-Normal	SW-1
Butylbenzylphthalate	UG/L	-	6	-	-	-	-	-	-	0	-	-
Chrysene	UG/L	-	18	-	-	-	-	-	-	0	-	-
Dibenz(a,h)anthracene	UG/L	-	18	-	-	-	-	-	-	0	-	-
Dibenzofuran	UG/L	-	6	-	-	-	-	-	-	0	-	-
Diethylphthalate	UG/L	-	6	-	-	-	-	-	-	0	-	-
Dimethylphthalate	UG/L	-	6	-	-	-	-	-	-	0	-	-
Di-n-butylphthalate	UG/L	-	6	-	-	-	-	-	-	0	-	-
Di-n-octylphthalate	UG/L	-	6	-	-	-	-	-	-	0	-	-

*Criteria- NYSDEC Class C Surface Water Criteria.

Concentration Exceeds Criteria

1) For samples with duplicates, detected concentrations for parameters were averaged.
2) For non-detects 1/2 the detection limit was used in the statistical analysis.

TABLE A-9
STATISTICAL SUMMARY OF PRE-SRI SURFACE WATER ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value
					Min	Max	Avg	StdDev	UCL95			
Semivolatile Organic Compounds												
Fluoranthene	UG/L	-	18	-	-	-	-	-	-	0	-	-
Fluorene	UG/L	-	18	-	-	-	-	-	-	0	-	-
Hexachlorobenzene	UG/L	-	6	-	-	-	-	-	-	0	-	-
Hexachlorobutadiene	UG/L	1	6	-	-	-	-	-	-	0	-	-
Hexachlorocyclopentadiene	UG/L	0.45	6	-	-	-	-	-	-	0	-	-
Hexachloroethane	UG/L	-	6	-	-	-	-	-	-	0	-	-
Indeno(1,2,3-cd)pyrene	UG/L	-	18	-	-	-	-	-	-	0	-	-
Isophorone	UG/L	-	6	-	-	-	-	-	-	0	-	-
Naphthalene	UG/L	-	18	-	-	-	-	-	-	0	-	-
Nitrobenzene	UG/L	-	6	-	-	-	-	-	-	0	-	-
N-Nitroso-di-n-propylamine	UG/L	-	6	-	-	-	-	-	-	0	-	-
N-Nitrosodiphenylamine	UG/L	-	6	-	-	-	-	-	-	0	-	-
Pentachlorophenol	UG/L	CALC	6	-	-	-	-	-	-	0	-	-
Phenanthrene	UG/L	-	18	-	-	-	-	-	-	0	-	-
Phenol	UG/L	-	6	-	-	-	-	-	-	0	-	-
Pyrene	UG/L	-	18	1	12.50	12.50	12.50	-	-	0	Non-Normal	SW-2

*Criteria- NYSDEC Class C Surface Water Criteria.

Concentration Exceeds Criteria

1) For samples with duplicates, detected concentrations for parameters were averaged.
2) For non-detects 1/2 the detection limit was used in the statistical analysis.

TABLE A-9
STATISTICAL SUMMARY OF PRE-SRI SURFACE WATER ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections					No. Exceed	Dist	Location of Max Value
					Min	Max	Avg	StdDev	UCL95			
Metals												
Iron	UG/L	300	18	18	37.00	1,800	523.2	432.5	723.0	12	Non-Normal	SW-2
Zinc	UG/L	CALC	18	7	10.00	30.00	14.86	7.65	20.52	0	Non-Normal	SW-1
Miscellaneous Parameters												
Cyanide, amenable	UG/L	-	10	-	-	-	-	-	-	0	-	-
Cyanide, Ferro-ferric	UG/L	-	12	5	5.00	25.00	12.00	7.58	18.65	0	Non-Normal	SW-2
Cyanide, Total	UG/L	-	18	4	7.50	10.00	8.75	1.44	10.16	0	Normal	SW-1
Cyanide, undistilled	UG/L	-	6	-	-	-	-	-	-	0	-	-
Oil and Grease	UG/L	-	2	1	1.10E+04	1.10E+04	1.10E+04	-	-	0	-	SW-1
Phenolics, Total Recoverable	UG/L	-	12	7	5.00	240.0	41.50	87.72	106.5	0	Non-Normal	SW-1
Sulfate	UG/L	-	3	3	1.64E+04	1.90E+04	1.79E+04	1,342	1.94E+04	0	Non-Normal	SW-2
Total Organic Carbon (TOC)	UG/L	-	18	17	4,200	1.10E+04	6,635	2,119	7,643	0	Normal	SW-1

*Criteria- NYSDEC Class C Surface Water Criteria.

Concentration Exceeds Criteria

1) For samples with duplicates, detected concentrations for parameters were averaged.
2) For non-detects 1/2 the detection limit was used in the statistical analysis.

TABLE A-10
STATISTICAL SUMMARY OF PRE-SRI SEDIMENT ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	No. of Samples	No. of Detections	Range of Detections					Dist	Location of Max Value	Depth Of Max
				Min	Max	Avg	StdDev	UCL95			
Volatile Organic Compounds											
1,1,1-Trichloroethane	UG/KG	6	-	-	-	-	-	-	-	-	
1,1,2,2-Tetrachloroethane	UG/KG	6	-	-	-	-	-	-	-	-	
1,1,2-Trichloroethane	UG/KG	6	-	-	-	-	-	-	-	-	
1,1-Dichloroethane	UG/KG	6	-	-	-	-	-	-	-	-	
1,1-Dichloroethene	UG/KG	6	-	-	-	-	-	-	-	-	
1,2-Dichloroethane	UG/KG	6	-	-	-	-	-	-	-	-	
1,2-Dichloroethene (total)	UG/KG	3	-	-	-	-	-	-	-	-	
1,2-Dichloroethene (trans)	UG/KG	3	-	-	-	-	-	-	-	-	
1,2-Dichloropropane	UG/KG	6	-	-	-	-	-	-	-	-	
1,3-Dichloropropene (cis)	UG/KG	6	-	-	-	-	-	-	-	-	
1,3-Dichloropropene (trans)	UG/KG	6	-	-	-	-	-	-	-	-	
2-Chloroethyl vinyl ether	UG/KG	6	-	-	-	-	-	-	-	-	
2-Hexanone	UG/KG	6	-	-	-	-	-	-	-	-	
4-Methyl-2-Pentanone	UG/KG	6	-	-	-	-	-	-	-	-	
Acetone	UG/KG	18	9	4.00	5,300	1,617	2,440	3,210	Non-Normal	SED-01	0-0
Benzene	UG/KG	24	5	1.00	190.0	55.60	80.23	125.9	Non-Normal	SED-02	0-0
Bromodichloromethane	UG/KG	6	-	-	-	-	-	-	-	-	
Bromoform	UG/KG	6	-	-	-	-	-	-	-	-	

1) For samples with duplicates, detected concentrations for parameters were averaged.

2) For non-detects 1/2 the detection limit was used in the statistical analysis.

TABLE A-10
STATISTICAL SUMMARY OF PRE-SRI SEDIMENT ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	No. of Samples	No. of Detections	Range of Detections					Dist	Location of Max Value	Depth Of Max
				Min	Max	Avg	StdDev	UCL95			
Volatile Organic Compounds											
Bromomethane	UG/KG	6	-	-	-	-	-	-	-	-	
Carbon Disulfide	UG/KG	6	-	-	-	-	-	-	-	-	
Carbon Tetrachloride	UG/KG	6	-	-	-	-	-	-	-	-	
Chlorobenzene	UG/KG	6	-	-	-	-	-	-	-	-	
Chloroethane	UG/KG	6	-	-	-	-	-	-	-	-	
Chloroform	UG/KG	6	-	-	-	-	-	-	-	-	
Chloromethane	UG/KG	12	1	4.00	4.00	4.00	-	-	Non-Normal	SD-05	0-1
Dibromochloromethane	UG/KG	6	-	-	-	-	-	-	-	-	
Ethylbenzene	UG/KG	24	3	1.75	87.00	30.58	48.86	85.88	Non-Normal	SED-02	0-0
Methyl ethyl ketone (2-Butanone)	UG/KG	3	-	-	-	-	-	-	-	-	
Methylene Chloride	UG/KG	15	9	4.00	2,950	853.4	1,284	1,693	Non-Normal	SED-02	0-0
Styrene	UG/KG	18	-	-	-	-	-	-	-	-	
Tetrachloroethene	UG/KG	6	-	-	-	-	-	-	-	-	
Toluene	UG/KG	18	1	70.00	70.00	70.00	-	-	Normal	SED-03	0-0
Trichloroethene	UG/KG	6	-	-	-	-	-	-	-	-	
Vinyl Acetate	UG/KG	6	-	-	-	-	-	-	-	-	
Vinyl Chloride	UG/KG	6	-	-	-	-	-	-	-	-	
Xylene (total)	UG/KG	24	1	5.25	5.25	5.25	-	-	Non-Normal	SD-03	

1) For samples with duplicates, detected concentrations for parameters were averaged.

2) For non-detects 1/2 the detection limit was used in the statistical analysis.

TABLE A-10
STATISTICAL SUMMARY OF PRE-SRI SEDIMENT ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	No. of Samples	No. of Detections	Range of Detections					Dist	Location of Max Value	Depth Of Max
				Min	Max	Avg	StdDev	UCL95			
Semivolatile Organic Compounds											
1,2,4-Trichlorobenzene	UG/KG	6	-	-	-	-	-	-	-	-	
1,2-Dichlorobenzene	UG/KG	6	-	-	-	-	-	-	-	-	
1,3-Dichlorobenzene	UG/KG	6	-	-	-	-	-	-	-	-	
1,4-Dichlorobenzene	UG/KG	6	-	-	-	-	-	-	-	-	
2,4,5-Trichlorophenol	UG/KG	6	-	-	-	-	-	-	-	-	
2,4,6-Trichlorophenol	UG/KG	6	-	-	-	-	-	-	-	-	
2,4-Dichlorophenol	UG/KG	6	-	-	-	-	-	-	-	-	
2,4-Dimethylphenol	UG/KG	6	-	-	-	-	-	-	-	-	
2,4-Dinitrophenol	UG/KG	6	-	-	-	-	-	-	-	-	
2,4-Dinitrotoluene	UG/KG	6	-	-	-	-	-	-	-	-	
2,6-Dinitrotoluene	UG/KG	6	-	-	-	-	-	-	-	-	
2-Chloronaphthalene	UG/KG	6	-	-	-	-	-	-	-	-	
2-Chlorophenol	UG/KG	6	-	-	-	-	-	-	-	-	
2-Methylnaphthalene	UG/KG	18	3	57.00	795.0	484.0	382.4	916.8	Normal	SD-03	0-1
2-Methylphenol (o-cresol)	UG/KG	6	-	-	-	-	-	-	-	-	
2-Nitroaniline	UG/KG	6	-	-	-	-	-	-	-	-	
2-Nitrophenol	UG/KG	6	-	-	-	-	-	-	-	-	
3,3'-Dichlorobenzidine	UG/KG	6	-	-	-	-	-	-	-	-	

1) For samples with duplicates, detected concentrations for parameters were averaged.

2) For non-detects 1/2 the detection limit was used in the statistical analysis.

TABLE A-10
STATISTICAL SUMMARY OF PRE-SRI SEDIMENT ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	No. of Samples	No. of Detections	Range of Detections					Dist	Location of Max Value	Depth Of Max
				Min	Max	Avg	StdDev	UCL95			
Semivolatile Organic Compounds											
3-Nitroaniline	UG/KG	6	-	-	-	-	-	-	-	-	
4,6-Dinitro-2-Methylphenol	UG/KG	6	-	-	-	-	-	-	-	-	
4-Bromophenyl-phenylether	UG/KG	6	-	-	-	-	-	-	-	-	
4-Chloro-3-Methylphenol	UG/KG	6	-	-	-	-	-	-	-	-	
4-Chloroaniline	UG/KG	6	-	-	-	-	-	-	-	-	
4-Chlorophenyl-phenylether	UG/KG	6	-	-	-	-	-	-	-	-	
4-Methylphenol (p-cresol)	UG/KG	6	-	-	-	-	-	-	-	-	
4-Nitroaniline	UG/KG	6	-	-	-	-	-	-	-	-	
4-Nitrophenol	UG/KG	6	-	-	-	-	-	-	-	-	
Acenaphthene	UG/KG	24	7	40.00	1,220	715.1	487.0	1,076	Non-Normal	SD-03	0-1
Acenaphthylene	UG/KG	24	9	37.25	8,800	1,624	2,858	3,491	Non-Normal	SED-03	0-0
Anthracene	UG/KG	24	5	79.00	3,300	950.4	1,390	2,169	Non-Normal	SD-04	0-1
Benzo(a)anthracene	UG/KG	24	6	58.00	530.0	244.2	219.4	419.7	Non-Normal	SED-02	0-0
Benzo(a)pyrene	UG/KG	24	10	82.00	3,275	674.8	946.0	1,261	Non-Normal	SED-02	0-0
Benzo(b)fluoranthene	UG/KG	24	9	60.25	1,225	529.3	445.3	820.2	Non-Normal	SED-02	0-0
Benzo(g,h,i)perylene	UG/KG	24	7	50.25	7,725	2,233	2,994	4,451	Non-Normal	SED-02	0-0
Benzo(k)fluoranthene	UG/KG	24	3	460.0	2,625	1,350	1,133	2,632	Non-Normal	SED-02	0-0
Benzoic Acid	UG/KG	6	-	-	-	-	-	-	-	-	

1) For samples with duplicates, detected concentrations for parameters were averaged.

2) For non-detects 1/2 the detection limit was used in the statistical analysis.

TABLE A-10
STATISTICAL SUMMARY OF PRE-SRI SEDIMENT ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	No. of Samples	No. of Detections	Range of Detections					Dist	Location of Max Value	Depth Of Max
				Min	Max	Avg	StdDev	UCL95			
Semivolatile Organic Compounds											
Benzyl Alcohol	UG/KG	6	-	-	-	-	-	-	-	-	
bis(2-Chloroethoxy)methane	UG/KG	6	-	-	-	-	-	-	-	-	
bis(2-Chloroethyl)ether	UG/KG	6	-	-	-	-	-	-	-	-	
bis(2-Ethylhexyl)phthalate	UG/KG	18	5	70.25	420.0	262.1	126.5	372.9	Non-Normal	SD-05	0-1
Butylbenzylphthalate	UG/KG	6	-	-	-	-	-	-	-	-	
Carbazole	UG/KG	6	1	120.0	120.0	120.0	-	-	Non-Normal	SD-05	0-1
Chrysene	UG/KG	24	11	90.00	4,475	898.5	1,307	1,671	Non-Normal	SED-02	0-0
Dibenz(a,h)anthracene	UG/KG	24	5	120.0	3,775	1,611	1,441	2,874	Non-Normal	SED-02	0-0
Dibenzofuran	UG/KG	12	1	40.25	40.25	40.25	-	-	Non-Normal	SD-03	0-1
Diethylphthalate	UG/KG	6	-	-	-	-	-	-	-	-	
Dimethylphthalate	UG/KG	6	-	-	-	-	-	-	-	-	
Di-n-butylphthalate	UG/KG	9	3	2,100	3,200	2,483	621.2	3,186	Non-Normal	SED-03	0-0
Di-n-octylphthalate	UG/KG	6	3	1,160	2.50E+04	9,387	1.35E+04	2.47E+04	Non-Normal	SED-01	0-0
Fluoranthene	UG/KG	24	12	80.00	3,450	1,005	1,122	1,640	Non-Normal	SED-03	0-0
Fluorene	UG/KG	24	8	74.00	4,150	1,044	1,369	1,992	Non-Normal	SED-03	0-0
Hexachlorobenzene	UG/KG	6	-	-	-	-	-	-	-	-	
Hexachlorobutadiene	UG/KG	6	-	-	-	-	-	-	-	-	
Hexachlorocyclopentadiene	UG/KG	6	-	-	-	-	-	-	-	-	

1) For samples with duplicates, detected concentrations for parameters were averaged.

2) For non-detects 1/2 the detection limit was used in the statistical analysis.

TABLE A-10
STATISTICAL SUMMARY OF PRE-SRI SEDIMENT ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	No. of Samples	No. of Detections	Range of Detections					Dist	Location of Max Value	Depth Of Max
				Min	Max	Avg	StdDev	UCL95			
Semivolatile Organic Compounds											
Hexachloroethane	UG/KG	6	-	-	-	-	-	-	-	-	
Indeno(1,2,3-cd)pyrene	UG/KG	24	5	56.50	330.0	145.5	108.2	240.3	Non-Normal	SD-05	0-1
Isophorone	UG/KG	6	-	-	-	-	-	-	-	-	
Naphthalene	UG/KG	24	7	480.0	1.45E+04	6,158	4,950	9,825	Non-Normal	SED-03	0-0
Nitrobenzene	UG/KG	6	-	-	-	-	-	-	-	-	
N-Nitroso-di-n-propylamine	UG/KG	6	-	-	-	-	-	-	-	-	
N-Nitrosodiphenylamine	UG/KG	6	-	-	-	-	-	-	-	-	
Pentachlorophenol	UG/KG	12	1	110.0	110.0	110.0	-	-	Non-Normal	SD-01	0-1
Phenanthrene	UG/KG	24	11	64.00	2,150	864.9	646.7	1,247	Non-Normal	SED-03	0-0
Phenol	UG/KG	6	-	-	-	-	-	-	-	-	
Pyrene	UG/KG	24	11	140.0	3,175	1,033	967.8	1,605	Non-Normal	SED-02	0-0
Metals											
Aluminum	UG/KG	6	6	5.00E+06	6.97E+06	5.93E+06	8.30E+05	6.59E+06	Normal	SD-03	0-1
Antimony	UG/KG	6	-	-	-	-	-	-	-	-	
Cadmium	UG/KG	6	-	-	-	-	-	-	-	-	
Chromium	UG/KG	6	6	8,000	1.20E+04	1.04E+04	1,563	1.17E+04	Normal	SD-06	0-1
Cobalt	UG/KG	6	6	4,000	7,000	5,833	1,169	6,769	Normal	SD-03	0-1
Copper	UG/KG	6	6	1.60E+04	2.70E+04	1.95E+04	3,886	2.26E+04	Non-Normal	SD-05	0-1

1) For samples with duplicates, detected concentrations for parameters were averaged.

2) For non-detects 1/2 the detection limit was used in the statistical analysis.

TABLE A-10
STATISTICAL SUMMARY OF PRE-SRI SEDIMENT ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	No. of Samples	No. of Detections	Range of Detections					Dist	Location of Max Value	Depth Of Max
				Min	Max	Avg	StdDev	UCL95			
Metals											
Iron	UG/KG	21	21	7.70E+06	3.31E+07	1.49E+07	5.81E+06	1.74E+07	Normal	SED-03	0-0
Lead	UG/KG	6	6	1.20E+04	3.60E+04	1.77E+04	9,092	2.49E+04	Non-Normal	SD-05	0-1
Manganese	UG/KG	6	6	2.36E+05	4.12E+05	3.12E+05	6.33E+04	3.63E+05	Normal	SD-05	0-1
Nickel	UG/KG	6	6	10,000	1.50E+04	1.27E+04	1,633	1.40E+04	Normal	SD-03	0-1
Zinc	UG/KG	18	18	2.65E+04	9.60E+04	5.85E+04	2.10E+04	6.82E+04	Normal	SD-05	0-1
Miscellaneous Parameters											
Cyanide, amenable	UG/KG	17	-	-	-	-	-	-	-	-	
Cyanide, Ferro-ferric	UG/KG	11	-	-	-	-	-	-	-	-	
Cyanide, iron-cyanide	UG/KG	6	-	-	-	-	-	-	-	-	
Cyanide, Total	UG/KG	15	1	1,300	1,300	1,300	-	-	Non-Normal	SED-02	0-0
Phenolics, Total Recoverable	UG/KG	15	6	940.0	4,600	2,340	1,343	3,415	Non-Normal	SED-02	0-0
Sulfate	UG/KG	3	2	3.00E+04	5.00E+04	4.00E+04	1.41E+04	5.96E+04	Non-Normal	SED-02	0-0
Total Organic Carbon (TOC)	MG/KG	15	15	7.70	3.20E+04	1.01E+04	8,040	1.42E+04	Non-Normal	SED-02	0-0

1) For samples with duplicates, detected concentrations for parameters were averaged.

2) For non-detects 1/2 the detection limit was used in the statistical analysis.

TABLE A-10B
STATISTICAL SUMMARY OF TOTAL PAHs IN PRE-SRI SEDIMENT
NYSEG - MECHANICVILLE

LOCID	LOGDATE	SBD	SED	MATRIX	UNITS	PRCCODE	PARNAME	CONC
SD-01	21-May-93	0	1	SE	UG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	1068
SD-02	21-May-93	0	1	SE	UG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	2382
SD-03	21-May-93	0	1	SE	UG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	8301
SD-04	21-May-93	0	1	SE	UG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	7112
SD-05	21-May-93	0	1	SE	UG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	6225
SD-06	21-May-93	0	1	SE	UG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	120
SED-01	09-Sep-86	0	0	SE	UG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	8580
SED-01	02-Dec-86	0	0	SE	UG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	7300
SED-02	09-Sep-86	0	0	SE	UG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	7940
SED-02	02-Dec-86	0	0	SE	UG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	75800
SED-02	02-Jun-87	0	0	SE	UG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	17300
SED-02	22-Dec-87	0	0	SE	UG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	6120
SED-02	30-Mar-88	0	0	SE	UG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	1900
SED-03	09-Sep-86	0	0	SE	UG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	45700
SED-03	02-Dec-86	0	0	SE	UG/KG	SVOC	Total Polycyclic Aromatic Hydrocarbons	16780

MINIMUM	120
MAXIMUM	75800
AVERAGE	14175.2

TABLE A-11A
SEDIMENT SAMPLE ANALYTICAL RESULTS - COMPARED TO BENTHIC ACUTE PROTECTION
NYSEG - MECHANICVILLE

Location ID		SED-AK01	SED-AK01	SED-AK02	SED-AK03	SED-AK04
Sample ID		AK-1 (0-1)	AK-1 (0-1) META	AK-2 (0-1)	AK-3 (0-2)	AK-4 (0-1)
Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-1.0	0.0-1.0	0.0-1.0	0.0-2.0	0.0-1.0
Date Sampled		08/28/02	10/02/02	08/28/02	08/28/02	08/28/02
Parameter	**Units**					
Volatile Organic Compounds						
1,1,1-Trichloroethane	UG/KG	5 U	NA	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane	UG/KG	5 U	NA	5 U	5 U	5 U
1,1,2-Trichloroethane	UG/KG	5 U	NA	5 U	5 U	5 U
1,1-Dichloroethane	UG/KG	5 U	NA	5 U	5 U	5 U
1,1-Dichloroethene	UG/KG	5 U	NA	5 U	5 U	5 U
1,2,4-Trimethylbenzene	UG/KG	NA	80 U (3,653)	NA	NA	NA
1,2-Dichloroethane	UG/KG	5 U	NA	5 U	5 U	5 U
1,2-Dichloroethene (total)	UG/KG	5 U	NA	5 U	5 U	5 U
1,2-Dichloropropane	UG/KG	5 U	NA	5 U	5 U	5 U
1,3-Dichloropropene (cis)	UG/KG	5 U	NA	5 U	5 U	5 U
1,3-Dichloropropene (trans)	UG/KG	5 U	NA	5 U	5 U	5 U
2-Chloroethyl vinyl ether	UG/KG	10 U	NA	10 U	10 U	10 U
2-Hexanone	UG/KG	10 U	NA	10 U	10 U	10 U
4-Methyl-2-Pentanone	UG/KG	10 U	NA	10 U	10 U	10 U
Acetone	UG/KG	10 U	NA	10 U	10 U	10 U
Benzene	UG/KG	5 U (231)	80 U (231)	5 U (558)	5 U (261)	5 U (196)
Bromodichloromethane	UG/KG	5 U	NA	5 U	5 U	5 U
Bromoform	UG/KG	5 U	NA	5 U	5 U	5 U
Bromomethane	UG/KG	10 U	NA	10 U	10 U	10 U
Carbon Disulfide	UG/KG	5 U	NA	5 U	5 U	5 U
Carbon Tetrachloride	UG/KG	5 U	NA	5 U	5 U	5 U
Chlorobenzene	UG/KG	5 U (77.5)	NA	5 U (188)	5 U (87.5)	5 U (65.7)

Criteria- NYSDEC Technical Guidance for Screening Contaminated Sediments, Benthic Acute Toxicity, January 25, 1999.

(NV) - No Calculable Value, TOC Not Detected

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria.

U - Not detected above the reported quantitation limit.

J - The reported quantitation limit is an estimated value.

NA - Not Analyzed

Detection Limits shown are MDL

TABLE A-11A
SEDIMENT SAMPLE ANALYTICAL RESULTS - COMPARED TO BENTHIC ACUTE PROTECTION
NYSEG - MECHANICVILLE

Location ID		SED-AK01	SED-AK01	SED-AK02	SED-AK03	SED-AK04
Sample ID		AK-1 (0-1)	AK-1 (0-1) META	AK-2 (0-1)	AK-3 (0-2)	AK-4 (0-1)
Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-1.0	0.0-1.0	0.0-1.0	0.0-2.0	0.0-1.0
Date Sampled		08/28/02	10/02/02	08/28/02	08/28/02	08/28/02
Parameter	**Units**					
Volatile Organic Compounds						
Chloroethane	UG/KG	10 U	NA	10 U	10 U	10 U
Chloroform	UG/KG	5 U	NA	5 U	5 U	5 U
Chloromethane	UG/KG	10 U	NA	10 U	10 U	10 U
Dibromochloromethane	UG/KG	5 U	NA	5 U	5 U	5 U
Ethylbenzene	UG/KG	5 U (475)	80 U (475)	5 U (1,149)	5 U (536)	5 U (403)
Methyl ethyl ketone (2-Butanone)	UG/KG	10 U	NA	10 U	10 U	10 U
Methylene Chloride	UG/KG	5 U	NA	5 U	5 U	5 U
Styrene	UG/KG	5 U	80 U	5 U	5 U	5 U
Tetrachloroethene	UG/KG	5 U	NA	5 U	5 U	5 U
Toluene	UG/KG	5 U (526)	100 (526)	5 U (1,274)	5 U (595)	5 U (447)
Trichloroethene	UG/KG	5 U	NA	5 U	5 U	5 U
Vinyl Acetate	UG/KG	10 U	NA	10 U	10 U	10 U
Vinyl Chloride	UG/KG	10 U	NA	10 U	10 U	10 U
Xylene (total)	UG/KG	5 U (1,866)	80 U (1,866)	5 U (4,515)	5 U (2,107)	5 U (1,583)
Semivolatile Organic Compounds						
1-Methylnaphthalene	UG/KG	NA	80 U	NA	NA	NA
2-Methylnaphthalene	UG/KG	330 U (681)	80 U (681)	330 U (1,648)	330 U (769)	330 U (578)
Acenaphthene	UG/KG	330 U	80 U	330 U	330 U	330 U
Acenaphthylene	UG/KG	330 U	80 U	330 U	330 U	330 U
Anthracene	UG/KG	330 U (2,209)	80 U (2,209)	330 U (5,344)	330 U (2,495)	330 U (1,873)
Benzo(a)anthracene	UG/KG	330 U (211)	120 (211)	330 U (509)	330 U (238)	330 U (179)
Benzo(a)pyrene	UG/KG	330 U	130	330 U	330 U	330 U

Criteria- NYSDEC Technical Guidance for Screening Contaminated Sediments, Benthic Acute Toxicity, January 25, 1999.

(NV) - No Calculable Value, TOC Not Detected

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria.

U - Not detected above the reported quantitation limit.

J - The reported quantitation limit is an estimated value.

NA - Not Analyzed

Detection Limits shown are MDL

TABLE A-11A
SEDIMENT SAMPLE ANALYTICAL RESULTS - COMPARED TO BENTHIC ACUTE PROTECTION
NYSEG - MECHANICVILLE

Location ID		SED-AK01	SED-AK01	SED-AK02	SED-AK03	SED-AK04
Sample ID		AK-1 (0-1)	AK-1 (0-1) META	AK-2 (0-1)	AK-3 (0-2)	AK-4 (0-1)
Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-1.0	0.0-1.0	0.0-1.0	0.0-2.0	0.0-1.0
Date Sampled		08/28/02	10/02/02	08/28/02	08/28/02	08/28/02
Parameter	**Units**					
Semivolatile Organic Compounds						
Benzo(b)fluoranthene	UG/KG	330 U	170	330 U	330 U	330 U
Benzo(e)pyrene	UG/KG	NA	110	NA	NA	NA
Benzo(g,h,i)perylene	UG/KG	330 U	160	330 U	330 U	330 U
Benzo(k)fluoranthene	UG/KG	330 U	130	330 U	330 U	330 U
Chrysene	UG/KG	330 U	170	330 U	330 U	330 U
Dibenz(a,h)anthracene	UG/KG	330 U	80 U	330 U	330 U	330 U
Dibenzofuran	UG/KG	330 U	80 U	330 U	330 U	330 U
Fluoranthene	UG/KG	330 U	300	330 U	330 U	330 U
Fluorene	UG/KG	330 U (164)	80 U (164)	330 U (396)	330 U (185)	330 U (139)
Indeno(1,2,3-cd)pyrene	UG/KG	330 U	130	330 U	330 U	330 U
Naphthalene	UG/KG	330 U (578)	50 J (578)	330 U (1,398)	330 U (653)	330 U (490)
Perylene	UG/KG	NA	80 U	NA	NA	NA
Phenanthrene	UG/KG	330 U	120	330 U	330 U	330 U
Pyrene	UG/KG	330 U (19,656)	230 (19,656)	330 U (47,561)	330 U (22,201)	330 U (16,673)
Total Polycyclic Aromatic Hydrocarbons	UG/KG	ND	1,710	ND	ND	ND
Polychlorinated Biphenyls						
Aroclor 1016	UG/KG	1,000 U (6,184)	NA	1,000 U (14,964)	1,000 U (6,985)	1,000 U (5,246)
Aroclor 1221	UG/KG	1,000 U (6,184)	NA	1,000 U (14,964)	1,000 U (6,985)	1,000 U (5,246)
Aroclor 1232	UG/KG	1,000 U (6,184)	NA	1,000 U (14,964)	1,000 U (6,985)	1,000 U (5,246)
Aroclor 1242	UG/KG	1,000 U (6,184)	NA	1,000 U (14,964)	1,000 U (6,985)	1,000 U (5,246)
Aroclor 1248	UG/KG	1,000 U (6,184)	NA	1,000 U (14,964)	1,000 U (6,985)	1,000 U (5,246)
Aroclor 1254	UG/KG	1,000 U (6,184)	NA	1,000 U (14,964)	1,000 U (6,985)	1,000 U (5,246)

Criteria- NYSDEC Technical Guidance for Screening Contaminated Sediments, Benthic Acute Toxicity, January 25, 1999.

(NV) - No Calculable Value, TOC Not Detected

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria.

U - Not detected above the reported quantitation limit.

J - The reported quantitation limit is an estimated value.

NA - Not Analyzed

Detection Limits shown are MDL

TABLE A-11A
SEDIMENT SAMPLE ANALYTICAL RESULTS - COMPARED TO BENTHIC ACUTE PROTECTION
NYSEG - MECHANICVILLE

Location ID		SED-AK01	SED-AK01	SED-AK02	SED-AK03	SED-AK04
Sample ID		AK-1 (0-1)	AK-1 (0-1) META	AK-2 (0-1)	AK-3 (0-2)	AK-4 (0-1)
Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-1.0	0.0-1.0	0.0-1.0	0.0-2.0	0.0-1.0
Date Sampled		08/28/02	10/02/02	08/28/02	08/28/02	08/28/02
Parameter	**Units**					
Polychlorinated Biphenyls						
Aroclor 1260	UG/KG	1,000 U (6,184)	NA	1,000 U (14,964)	1,000 U (6,985)	1,000 U (5,246)
Miscellaneous Parameters						
Cyanide, Free (weak & dissoc.)	UG/KG	1,200 U	NA	1,400 U	1,200 U	1,200 U
Cyanide, Total	UG/KG	1,200 U	NA	1,400 U	1,200 U	1,200 U
Phenolics, Total Recoverable	UG/KG	200 U	NA	200 U	200 U	200 U
Total Organic Carbon (TOC)	MG/KG	2,240	2,240	5,420	2,530	1,900

Criteria- NYSDEC Technical Guidance for Screening Contaminated Sediments, Benthic Acute Toxicity, January 25, 1999.

(NV) - No Calculable Value, TOC Not Detected

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria.

U - Not detected above the reported quantitation limit.

J - The reported quantitation limit is an estimated value.

NA - Not Analyzed

Detection Limits shown are MDL

TABLE A-11A
SEDIMENT SAMPLE ANALYTICAL RESULTS - COMPARED TO BENTHIC ACUTE PROTECTION
NYSEG - MECHANICVILLE

Location ID		SED-AK05	SED-AK05	SED-AK06	SED-AK07	SED-AK07
Sample ID		AK-5 (0-1)	AK-5 (0-1) META	AK-6 (0-1)	AK-7 (0-1)	AK-7 (0-1)DUP
Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0
Date Sampled		08/28/02	10/02/02	08/28/02	08/28/02	08/28/02
Parameter	Units					Field Duplicate (1-1)
Volatile Organic Compounds						
1,1,1-Trichloroethane	UG/KG	5 U	NA	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane	UG/KG	5 U	NA	5 U	5 U	5 U
1,1,2-Trichloroethane	UG/KG	5 U	NA	5 U	5 U	5 U
1,1-Dichloroethane	UG/KG	5 U	NA	5 U	5 U	5 U
1,1-Dichloroethene	UG/KG	5 U	NA	5 U	5 U	5 U
1,2,4-Trimethylbenzene	UG/KG	NA	1,120 (5,138)	NA	NA	NA
1,2-Dichloroethane	UG/KG	5 U	NA	5 U	5 U	5 U
1,2-Dichloroethene (total)	UG/KG	5 U	NA	5 U	5 U	5 U
1,2-Dichloropropane	UG/KG	5 U	NA	5 U	5 U	5 U
1,3-Dichloropropene (cis)	UG/KG	5 U	NA	5 U	5 U	5 U
1,3-Dichloropropene (trans)	UG/KG	5 U	NA	5 U	5 U	5 U
2-Chloroethyl vinyl ether	UG/KG	10 U	NA	10 U	10 U	10 U
2-Hexanone	UG/KG	10 U	NA	10 U	10 U	10 U
4-Methyl-2-Pentanone	UG/KG	10 U	NA	10 U	10 U	10 U
Acetone	UG/KG	10 U	NA	10 U	10 U	10 U
Benzene	UG/KG	5 U (324)	3,520 (324)	5 U (637)	5 U (2,421)	5 U (2,421)
Bromodichloromethane	UG/KG	5 U	NA	5 U	5 U	5 U
Bromoform	UG/KG	5 U	NA	5 U	5 U	5 U
Bromomethane	UG/KG	10 U	NA	10 U	10 U	10 U
Carbon Disulfide	UG/KG	5 U	NA	5 U	5 U	5 U
Carbon Tetrachloride	UG/KG	5 U	NA	5 U	5 U	5 U
Chlorobenzene	UG/KG	5 U (109)	NA	5 U (214)	5 U (813)	5 U (813)

Criteria- NYSDEC Technical Guidance for Screening Contaminated Sediments, Benthic Acute Toxicity, January 25, 1999.

(NV) - No Calculable Value, TOC Not Detected

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria.

U - Not detected above the reported quantitation limit.

J - The reported quantitation limit is an estimated value.

NA - Not Analyzed

Detection Limits shown are MDL

TABLE A-11A
SEDIMENT SAMPLE ANALYTICAL RESULTS - COMPARED TO BENTHIC ACUTE PROTECTION
NYSEG - MECHANICVILLE

Location ID		SED-AK05	SED-AK05	SED-AK06	SED-AK07	SED-AK07
Sample ID		AK-5 (0-1)	AK-5 (0-1) META	AK-6 (0-1)	AK-7 (0-1)	AK-7 (0-1)DUP
Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0
Date Sampled		08/28/02	10/02/02	08/28/02	08/28/02	08/28/02
Parameter	Units					Field Duplicate (1-1)
Volatile Organic Compounds						
Chloroethane	UG/KG	10 U	NA	10 U	10 U	10 U
Chloroform	UG/KG	5 U	NA	5 U	5 U	5 U
Chloromethane	UG/KG	10 U	NA	10 U	10 U	10 U
Dibromochloromethane	UG/KG	5 U	NA	5 U	5 U	5 U
Ethylbenzene	UG/KG	5 U (668)	9,600 (668)	5 U (1,310)	5 U (4,982)	5 U (4,982)
Methyl ethyl ketone (2-Butanone)	UG/KG	10 U	NA	10 U	10 U	10 U
Methylene Chloride	UG/KG	5 U	NA	5 U	5 U	5 U
Styrene	UG/KG	5 U	80	5 U	5 U	5 U
Tetrachloroethene	UG/KG	5 U	NA	5 U	5 U	5 U
Toluene	UG/KG	5 U (740)	730 (740)	5 U (1,452)	5 U (5,523)	5 U (5,523)
Trichloroethene	UG/KG	5 U	NA	5 U	5 U	5 U
Vinyl Acetate	UG/KG	10 U	NA	10 U	10 U	10 U
Vinyl Chloride	UG/KG	10 U	NA	10 U	10 U	10 U
Xylene (total)	UG/KG	5 U (2,624)	6,060 (2,624)	5 U (5,148)	5 U (19,576)	5 U (19,576)
Semivolatile Organic Compounds						
1-Methylnaphthalene	UG/KG	NA	19,500	NA	NA	NA
2-Methylnaphthalene	UG/KG	380 (958)	27,200 (958)	330 U (1,879)	870 (7,144)	NA
Acenaphthene	UG/KG	530	12,600	330 U	600	NA
Acenaphthylene	UG/KG	330 U	910	330 U	330 U	NA
Anthracene	UG/KG	330 U (3,106)	2,240 (3,106)	330 U (6,093)	530 (23,171)	NA
Benzo(a)anthracene	UG/KG	330 U (296)	970 (296)	330 U (581)	500 (2,209)	NA
Benzo(a)pyrene	UG/KG	330 U	1,070	330 U	470	NA

Criteria- NYSDEC Technical Guidance for Screening Contaminated Sediments, Benthic Acute Toxicity, January 25, 1999.

(NV) - No Calculable Value, TOC Not Detected

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria.

U - Not detected above the reported quantitation limit.

J - The reported quantitation limit is an estimated value.

NA - Not Analyzed

Detection Limits shown are MDL

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[SITEID] = '01' AND [MATRIX] = 'SE' AND [LOGDATE] >= #1/1/2001# AND [LOCID] LIKE 'SED-AK*' AND [PRCCODE] <> 'ASVOC' AND [PRCCODE] <> 'AVS/S' AND

TABLE A-11A
SEDIMENT SAMPLE ANALYTICAL RESULTS - COMPARED TO BENTHIC ACUTE PROTECTION
NYSEG - MECHANICVILLE

Location ID		SED-AK05	SED-AK05	SED-AK06	SED-AK07	SED-AK07
Sample ID		AK-5 (0-1)	AK-5 (0-1) META	AK-6 (0-1)	AK-7 (0-1)	AK-7 (0-1)DUP
Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0
Date Sampled		08/28/02	10/02/02	08/28/02	08/28/02	08/28/02
Parameter	**Units**					Field Duplicate (1-1)
Semivolatile Organic Compounds						
Benzo(b)fluoranthene	UG/KG	330 U	600	330 U	330 U	NA
Benzo(e)pyrene	UG/KG	NA	620	NA	NA	NA
Benzo(g,h,i)perylene	UG/KG	330 U	770	330 U	330 U	NA
Benzo(k)fluoranthene	UG/KG	330 U	600	330 U	330 U	NA
Chrysene	UG/KG	330 U	930	330 U	480	NA
Dibenz(a,h)anthracene	UG/KG	330 U	190	330 U	330 U	NA
Dibenzofuran	UG/KG	330 U	730	330 U	330 U	NA
Fluoranthene	UG/KG	330	2,670	330 U	1,100	NA
Fluorene	UG/KG	330 U (230)	5,680 (230)	330 U (451)	420 (1,716)	NA
Indeno(1,2,3-cd)pyrene	UG/KG	330 U	550	330 U	350	NA
Naphthalene	UG/KG	1,300 (813)	71,400 (813)	330 U (1,594)	830 (6,063)	NA
Perylene	UG/KG	NA	170	NA	NA	NA
Phenanthrene	UG/KG	620	10,000	330 U	2,000	NA
Pyrene	UG/KG	380 (27,641)	3,630 (27,641)	330 U (54,230)	2,000 (206,213)	NA
Total Polycyclic Aromatic Hydrocarbons	UG/KG	3,540	142,010	ND	10,150	NA
Polychlorinated Biphenyls						
Aroclor 1016	UG/KG	1,000 U (8,697)	NA	1,000 U (17,062)	1,000 U (64,879)	1,000 U (64,879)
Aroclor 1221	UG/KG	1,000 U (8,697)	NA	1,000 U (17,062)	1,000 U (64,879)	1,000 U (64,879)
Aroclor 1232	UG/KG	1,000 U (8,697)	NA	1,000 U (17,062)	1,000 U (64,879)	1,000 U (64,879)
Aroclor 1242	UG/KG	1,000 U (8,697)	NA	1,000 U (17,062)	1,000 U (64,879)	1,000 U (64,879)
Aroclor 1248	UG/KG	1,000 U (8,697)	NA	1,000 U (17,062)	1,000 U (64,879)	1,000 U (64,879)
Aroclor 1254	UG/KG	1,000 U (8,697)	NA	1,000 U (17,062)	1,000 U (64,879)	1,000 U (64,879)

Criteria- NYSDEC Technical Guidance for Screening Contaminated Sediments, Benthic Acute Toxicity, January 25, 1999.

(NV) - No Calculable Value, TOC Not Detected

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria.

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J - The reported quantitation limit is an estimated value.

NA - Not Analyzed

Detection Limits shown are MDL

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Printed: 12/12/2005 1:44:14 P
[SITEID] = '01' AND [MATRIX] = 'SE' AND [LOGDATE] >= #1/1/2001# AND [LOCID] LIKE 'SED-AK*' AND [PRCCODE] <> 'ASVOC' AND [PRCCODE] <> 'AVS/S' AND

TABLE A-11A
SEDIMENT SAMPLE ANALYTICAL RESULTS - COMPARED TO BENTHIC ACUTE PROTECTION
NYSEG - MECHANICVILLE

Location ID		SED-AK05	SED-AK05	SED-AK06	SED-AK07	SED-AK07
Sample ID		AK-5 (0-1)	AK-5 (0-1) META	AK-6 (0-1)	AK-7 (0-1)	AK-7 (0-1)DUP
Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0
Date Sampled		08/28/02	10/02/02	08/28/02	08/28/02	08/28/02
Parameter	**Units**					Field Duplicate (1-1)
Polychlorinated Biphenyls						
Aroclor 1260	UG/KG	1,000 U (8,697)	NA	1,000 U (17,062)	1,000 U (64,879)	1,000 U (64,879)
Miscellaneous Parameters						
Cyanide, Free (weak & dissoc.)	UG/KG	1,200 U	NA	1,200 U	1,800 U	NA
Cyanide, Total	UG/KG	1,200 U	NA	1,200 U	1,800 U	NA
Phenolics, Total Recoverable	UG/KG	200 U	NA	1,300	200 U	200 U
Total Organic Carbon (TOC)	MG/KG	3,150	3,150	6,180	23,500	23,500

Criteria- NYSDEC Technical Guidance for Screening Contaminated Sediments, Benthic Acute Toxicity, January 25, 1999.

(NV) - No Calculable Value, TOC Not Detected

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria.

U - Not detected above the reported quantitation limit.

J - The reported quantitation limit is an estimated value.

NA - Not Analyzed

Detection Limits shown are MDL

TABLE A-11A
SEDIMENT SAMPLE ANALYTICAL RESULTS - COMPARED TO BENTHIC ACUTE PROTECTION
NYSEG - MECHANICVILLE

Location ID		SED-AK07
Sample ID		AK-7 (0-1) META
Matrix		Sediment
Depth Interval (ft)		0.0-1.0
Date Sampled		10/02/02
Parameter	**Units**	
Volatile Organic Compounds		
1,1,1-Trichloroethane	UG/KG	NA
1,1,2,2-Tetrachloroethane	UG/KG	NA
1,1,2-Trichloroethane	UG/KG	NA
1,1-Dichloroethane	UG/KG	NA
1,1-Dichloroethene	UG/KG	NA
1,2,4-Trimethylbenzene	UG/KG	14,400 (38,329)
1,2-Dichloroethane	UG/KG	NA
1,2-Dichloroethene (total)	UG/KG	NA
1,2-Dichloropropane	UG/KG	NA
1,3-Dichloropropene (cis)	UG/KG	NA
1,3-Dichloropropene (trans)	UG/KG	NA
2-Chloroethyl vinyl ether	UG/KG	NA
2-Hexanone	UG/KG	NA
4-Methyl-2-Pentanone	UG/KG	NA
Acetone	UG/KG	NA
Benzene	UG/KG	3,190 (2,421)
Bromodichloromethane	UG/KG	NA
Bromoform	UG/KG	NA
Bromomethane	UG/KG	NA
Carbon Disulfide	UG/KG	NA
Carbon Tetrachloride	UG/KG	NA
Chlorobenzene	UG/KG	NA

Criteria- NYSDEC Technical Guidance for Screening Contaminated Sediments, Benthic Acute Toxicity, January 25, 1999.

(NV) - No Calculable Value, TOC Not Detected

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria.

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NA - Not Analyzed

Detection Limits shown are MDL

TABLE A-11A
SEDIMENT SAMPLE ANALYTICAL RESULTS - COMPARED TO BENTHIC ACUTE PROTECTION
NYSEG - MECHANICVILLE

Location ID		SED-AK07
Sample ID		AK-7 (0-1) META
Matrix		Sediment
Depth Interval (ft)		0.0-1.0
Date Sampled		10/02/02
Parameter	**Units**	
Volatile Organic Compounds		
Chloroethane	UG/KG	NA
Chloroform	UG/KG	NA
Chloromethane	UG/KG	NA
Dibromochloromethane	UG/KG	NA
Ethylbenzene	UG/KG	78,100 (4,982)
Methyl ethyl ketone (2-Butanone)	UG/KG	NA
Methylene Chloride	UG/KG	NA
Styrene	UG/KG	5,780
Tetrachloroethene	UG/KG	NA
Toluene	UG/KG	24,800 (5,523)
Trichloroethene	UG/KG	NA
Vinyl Acetate	UG/KG	NA
Vinyl Chloride	UG/KG	NA
Xylene (total)	UG/KG	64,700 (19,576)
Semivolatile Organic Compounds		
1-Methylnaphthalene	UG/KG	255,000
2-Methylnaphthalene	UG/KG	414,000 (7,144)
Acenaphthene	UG/KG	137,000
Acenaphthylene	UG/KG	127,000
Anthracene	UG/KG	111,000 (23,171)
Benzo(a)anthracene	UG/KG	77,600 (2,209)
Benzo(a)pyrene	UG/KG	65,800

Criteria- NYSDEC Technical Guidance for Screening Contaminated Sediments, Benthic Acute Toxicity, January 25, 1999.

(NV) - No Calculable Value, TOC Not Detected

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TABLE A-11A
SEDIMENT SAMPLE ANALYTICAL RESULTS - COMPARED TO BENTHIC ACUTE PROTECTION
NYSEG - MECHANICVILLE

Location ID		SED-AK07
Sample ID		AK-7 (0-1) META
Matrix		Sediment
Depth Interval (ft)		0.0-1.0
Date Sampled		10/02/02
Parameter	**Units**	
Semivolatile Organic Compounds		
Benzo(b)fluoranthene	UG/KG	32,900
Benzo(e)pyrene	UG/KG	33,100
Benzo(g,h,i)perylene	UG/KG	22,800
Benzo(k)fluoranthene	UG/KG	33,400
Chrysene	UG/KG	65,300
Dibenz(a,h)anthracene	UG/KG	5,630
Dibenzofuran	UG/KG	12,700
Fluoranthene	UG/KG	150,000
Fluorene	UG/KG	140,000 (1,716)
Indeno(1,2,3-cd)pyrene	UG/KG	17,400
Naphthalene	UG/KG	808,000 (6,063)
Perylene	UG/KG	7,940
Phenanthrene	UG/KG	382,000
Pyrene	UG/KG	221,000 (206,213)
Total Polycyclic Aromatic Hydrocarbons	UG/KG	2,810,830
Polychlorinated Biphenyls		
Aroclor 1016	UG/KG	NA
Aroclor 1221	UG/KG	NA
Aroclor 1232	UG/KG	NA
Aroclor 1242	UG/KG	NA
Aroclor 1248	UG/KG	NA
Aroclor 1254	UG/KG	NA

Criteria- NYSDEC Technical Guidance for Screening Contaminated Sediments, Benthic Acute Toxicity, January 25, 1999.

(NV) - No Calculable Value, TOC Not Detected

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NA - Not Analyzed

Detection Limits shown are MDL

TABLE A-11A
SEDIMENT SAMPLE ANALYTICAL RESULTS - COMPARED TO BENTHIC ACUTE PROTECTION
NYSEG - MECHANICVILLE

Location ID		SED-AK07
Sample ID		AK-7 (0-1) META
Matrix		Sediment
Depth Interval (ft)		0.0-1.0
Date Sampled		10/02/02
Parameter	**Units**	
Polychlorinated Biphenyls		
Aroclor 1260	UG/KG	NA
Miscellaneous Parameters		
Cyanide, Free (weak & dissoc.)	UG/KG	NA
Cyanide, Total	UG/KG	NA
Phenolics, Total Recoverable	UG/KG	NA
Total Organic Carbon (TOC)	MG/KG	23,500

Criteria- NYSDEC Technical Guidance for Screening Contaminated Sediments, Benthic Acute Toxicity, January 25, 1999.

(NV) - No Calculable Value, TOC Not Detected

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria.

U - Not detected above the reported quantitation limit.

J - The reported quantitation limit is an estimated value.

NA - Not Analyzed

Detection Limits shown are MDL

TABLE A-11B
SEDIMENT SAMPLE ANALYTICAL RESULTS - COMPARED TO BENTHIC CHRONIC PROTECTION
NYSEG - MECHANICVILLE

Location ID		SED-AK01	SED-AK01	SED-AK02	SED-AK03	SED-AK04
Sample ID		AK-1 (0-1)	AK-1 (0-1) META	AK-2 (0-1)	AK-3 (0-2)	AK-4 (0-1)
Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-1.0	0.0-1.0	0.0-1.0	0.0-2.0	0.0-1.0
Date Sampled		08/28/02	10/02/02	08/28/02	08/28/02	08/28/02
Parameter	**Units**					
Volatile Organic Compounds						
1,1,1-Trichloroethane	UG/KG	5 U	NA	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane	UG/KG	5 U	NA	5 U	5 U	5 U
1,1,2-Trichloroethane	UG/KG	5 U	NA	5 U	5 U	5 U
1,1-Dichloroethane	UG/KG	5 U	NA	5 U	5 U	5 U
1,1-Dichloroethene	UG/KG	5 U	NA	5 U	5 U	5 U
1,2,4-Trimethylbenzene	UG/KG	NA	80 U (417)	NA	NA	NA
1,2-Dichloroethane	UG/KG	5 U	NA	5 U	5 U	5 U
1,2-Dichloroethene (total)	UG/KG	5 U	NA	5 U	5 U	5 U
1,2-Dichloropropane	UG/KG	5 U	NA	5 U	5 U	5 U
1,3-Dichloropropene (cis)	UG/KG	5 U	NA	5 U	5 U	5 U
1,3-Dichloropropene (trans)	UG/KG	5 U	NA	5 U	5 U	5 U
2-Chloroethyl vinyl ether	UG/KG	10 U	NA	10 U	10 U	10 U
2-Hexanone	UG/KG	10 U	NA	10 U	10 U	10 U
4-Methyl-2-Pentanone	UG/KG	10 U	NA	10 U	10 U	10 U
Acetone	UG/KG	10 U	NA	10 U	10 U	10 U
Benzene	UG/KG	5 U (62.7)	80 U (62.7)	5 U (152)	5 U (70.8)	5 U (53.2)
Bromodichloromethane	UG/KG	5 U	NA	5 U	5 U	5 U
Bromoform	UG/KG	5 U	NA	5 U	5 U	5 U
Bromomethane	UG/KG	10 U	NA	10 U	10 U	10 U
Carbon Disulfide	UG/KG	5 U	NA	5 U	5 U	5 U
Carbon Tetrachloride	UG/KG	5 U	NA	5 U	5 U	5 U
Chlorobenzene	UG/KG	5 U (7.8)	NA	5 U (19.0)	5 U (8.9)	5 U (6.7)

Criteria- NYSDEC Technical Guidance for Screening Contaminated Sediments, Benthic Chronic Toxicity, January 25, 1999.

(NV) - No Calculable Value, TOC Not Detected

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria.

U - Not detected above the reported quantitation limit.

J - The reported quantitation limit is an estimated value.

NA - Not Analyzed

Detection Limits shown are MDL

TABLE A-11B
SEDIMENT SAMPLE ANALYTICAL RESULTS - COMPARED TO BENTHIC CHRONIC PROTECTION
NYSEG - MECHANICVILLE

Location ID		SED-AK01	SED-AK01	SED-AK02	SED-AK03	SED-AK04
Sample ID		AK-1 (0-1)	AK-1 (0-1) META	AK-2 (0-1)	AK-3 (0-2)	AK-4 (0-1)
Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-1.0	0.0-1.0	0.0-1.0	0.0-2.0	0.0-1.0
Date Sampled		08/28/02	10/02/02	08/28/02	08/28/02	08/28/02
Parameter	**Units**					
Volatile Organic Compounds						
Chloroethane	UG/KG	10 U	NA	10 U	10 U	10 U
Chloroform	UG/KG	5 U	NA	5 U	5 U	5 U
Chloromethane	UG/KG	10 U	NA	10 U	10 U	10 U
Dibromochloromethane	UG/KG	5 U	NA	5 U	5 U	5 U
Ethylbenzene	UG/KG	5 U (53.8)	80 U (53.8)	5 U (130)	5 U (60.7)	5 U (45.6)
Methyl ethyl ketone (2-Butanone)	UG/KG	10 U	NA	10 U	10 U	10 U
Methylene Chloride	UG/KG	5 U	NA	5 U	5 U	5 U
Styrene	UG/KG	5 U	80 U	5 U	5 U	5 U
Tetrachloroethene	UG/KG	5 U	NA	5 U	5 U	5 U
Toluene	UG/KG	5 U (110)	100 (110)	5 U (266)	5 U (124)	5 U (93.1)
Trichloroethene	UG/KG	5 U	NA	5 U	5 U	5 U
Vinyl Acetate	UG/KG	10 U	NA	10 U	10 U	10 U
Vinyl Chloride	UG/KG	10 U	NA	10 U	10 U	10 U
Xylene (total)	UG/KG	5 U (206)	80 U (206)	5 U (499)	5 U (233)	5 U (175)
Semivolatile Organic Compounds						
1-Methylnaphthalene	UG/KG	NA	80 U	NA	NA	NA
2-Methylnaphthalene	UG/KG	330 U (76.2)	80 U (76.2)	330 U (184)	330 U (86.0)	330 U (64.6)
Acenaphthene	UG/KG	330 U (314)	80 U (314)	330 U (759)	330 U (354)	330 U (266)
Acenaphthylene	UG/KG	330 U	80 U	330 U	330 U	330 U
Anthracene	UG/KG	330 U (240)	80 U (240)	330 U (580)	330 U (271)	330 U (203)
Benzo(a)anthracene	UG/KG	330 U (26.9)	120 (26.9)	330 U (65.0)	330 U (30.4)	330 U (22.8)
Benzo(a)pyrene	UG/KG	330 U	130	330 U	330 U	330 U

Criteria- NYSDEC Technical Guidance for Screening Contaminated Sediments, Benthic Chronic Toxicity, January 25, 1999.

(NV) - No Calculable Value, TOC Not Detected

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Printed: 12/12/2005 1:49:18 P
[SITEID] = '01' AND [MATRIX] = 'SE' AND [LOGDATE] >= #1/1/2001# AND [LOCID] LIKE 'SED-AK*' AND [PRCCODE] <> 'ASVOC' AND [PRCCODE] <> 'AVS/S' AND

TABLE A-11B
SEDIMENT SAMPLE ANALYTICAL RESULTS - COMPARED TO BENTHIC CHRONIC PROTECTION
NYSEG - MECHANICVILLE

Location ID		SED-AK01	SED-AK01	SED-AK02	SED-AK03	SED-AK04
Sample ID		AK-1 (0-1)	AK-1 (0-1) META	AK-2 (0-1)	AK-3 (0-2)	AK-4 (0-1)
Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-1.0	0.0-1.0	0.0-1.0	0.0-2.0	0.0-1.0
Date Sampled		08/28/02	10/02/02	08/28/02	08/28/02	08/28/02
Parameter	**Units**					
Semivolatile Organic Compounds						
Benzo(b)fluoranthene	UG/KG	330 U	170	330 U	330 U	330 U
Benzo(e)pyrene	UG/KG	NA	110	NA	NA	NA
Benzo(g,h,i)perylene	UG/KG	330 U	160	330 U	330 U	330 U
Benzo(k)fluoranthene	UG/KG	330 U	130	330 U	330 U	330 U
Chrysene	UG/KG	330 U	170	330 U	330 U	330 U
Dibenz(a,h)anthracene	UG/KG	330 U	80 U	330 U	330 U	330 U
Dibenzofuran	UG/KG	330 U	80 U	330 U	330 U	330 U
Fluoranthene	UG/KG	330 U (2,285)	300 (2,285)	330 U (5,528)	330 U (2,581)	330 U (1,938)
Fluorene	UG/KG	330 U (17.9)	80 U (17.9)	330 U (43.4)	330 U (20.2)	330 U (15.2)
Indeno(1,2,3-cd)pyrene	UG/KG	330 U	130	330 U	330 U	330 U
Naphthalene	UG/KG	330 U (67.2)	50 J (67.2)	330 U (163)	330 U (75.9)	330 U (57.0)
Perylene	UG/KG	NA	80 U	NA	NA	NA
Phenanthrene	UG/KG	330 U (269)	120 (269)	330 U (650)	330 U (304)	330 U (228)
Pyrene	UG/KG	330 U (2,153)	230 (2,153)	330 U (5,209)	330 U (2,431)	330 U (1,826)
Total Polycyclic Aromatic Hydrocarbons	UG/KG	ND	1,710	ND	ND	ND
Polychlorinated Biphenyls						
Aroclor 1016	UG/KG	1,000 U (43.2)	NA	1,000 U (105)	1,000 U (48.8)	1,000 U (36.7)
Aroclor 1221	UG/KG	1,000 U (43.2)	NA	1,000 U (105)	1,000 U (48.8)	1,000 U (36.7)
Aroclor 1232	UG/KG	1,000 U (43.2)	NA	1,000 U (105)	1,000 U (48.8)	1,000 U (36.7)
Aroclor 1242	UG/KG	1,000 U (43.2)	NA	1,000 U (105)	1,000 U (48.8)	1,000 U (36.7)
Aroclor 1248	UG/KG	1,000 U (43.2)	NA	1,000 U (105)	1,000 U (48.8)	1,000 U (36.7)
Aroclor 1254	UG/KG	1,000 U (43.2)	NA	1,000 U (105)	1,000 U (48.8)	1,000 U (36.7)

Criteria- NYSDEC Technical Guidance for Screening Contaminated Sediments, Benthic Chronic Toxicity, January 25, 1999.

(NV) - No Calculable Value, TOC Not Detected

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria.

U - Not detected above the reported quantitation limit.

J - The reported quantitation limit is an estimated value.

NA - Not Analyzed

Detection Limits shown are MDL

TABLE A-11B
SEDIMENT SAMPLE ANALYTICAL RESULTS - COMPARED TO BENTHIC CHRONIC PROTECTION
NYSEG - MECHANICVILLE

Location ID		SED-AK01	SED-AK01	SED-AK02	SED-AK03	SED-AK04
Sample ID		AK-1 (0-1)	AK-1 (0-1) META	AK-2 (0-1)	AK-3 (0-2)	AK-4 (0-1)
Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-1.0	0.0-1.0	0.0-1.0	0.0-2.0	0.0-1.0
Date Sampled		08/28/02	10/02/02	08/28/02	08/28/02	08/28/02
Parameter	**Units**					
Polychlorinated Biphenyls						
Aroclor 1260	UG/KG	1,000 U (43.2)	NA	1,000 U (105)	1,000 U (48.8)	1,000 U (36.7)
Miscellaneous Parameters						
Cyanide, Free (weak & dissoc.)	UG/KG	1,200 U	NA	1,400 U	1,200 U	1,200 U
Cyanide, Total	UG/KG	1,200 U	NA	1,400 U	1,200 U	1,200 U
Phenolics, Total Recoverable	UG/KG	200 U	NA	200 U	200 U	200 U
Total Organic Carbon (TOC)	MG/KG	2,240	2,240	5,420	2,530	1,900

Criteria- NYSDEC Technical Guidance for Screening Contaminated Sediments, Benthic Chronic Toxicity, January 25, 1999.

(NV) - No Calculable Value, TOC Not Detected

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria.

U - Not detected above the reported quantitation limit.

J - The reported quantitation limit is an estimated value.

NA - Not Analyzed

Detection Limits shown are MDL

TABLE A-11B
SEDIMENT SAMPLE ANALYTICAL RESULTS - COMPARED TO BENTHIC CHRONIC PROTECTION
NYSEG - MECHANICVILLE

Location ID		SED-AK05	SED-AK05	SED-AK06	SED-AK07	SED-AK07
Sample ID		AK-5 (0-1)	AK-5 (0-1) META	AK-6 (0-1)	AK-7 (0-1)	AK-7 (0-1)DUP
Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0
Date Sampled		08/28/02	10/02/02	08/28/02	08/28/02	08/28/02
Parameter	Units					Field Duplicate (1-1)
Volatile Organic Compounds						
1,1,1-Trichloroethane	UG/KG	5 U	NA	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane	UG/KG	5 U	NA	5 U	5 U	5 U
1,1,2-Trichloroethane	UG/KG	5 U	NA	5 U	5 U	5 U
1,1-Dichloroethane	UG/KG	5 U	NA	5 U	5 U	5 U
1,1-Dichloroethene	UG/KG	5 U	NA	5 U	5 U	5 U
1,2,4-Trimethylbenzene	UG/KG	NA	1,120 (586)	NA	NA	NA
1,2-Dichloroethane	UG/KG	5 U	NA	5 U	5 U	5 U
1,2-Dichloroethene (total)	UG/KG	5 U	NA	5 U	5 U	5 U
1,2-Dichloropropane	UG/KG	5 U	NA	5 U	5 U	5 U
1,3-Dichloropropene (cis)	UG/KG	5 U	NA	5 U	5 U	5 U
1,3-Dichloropropene (trans)	UG/KG	5 U	NA	5 U	5 U	5 U
2-Chloroethyl vinyl ether	UG/KG	10 U	NA	10 U	10 U	10 U
2-Hexanone	UG/KG	10 U	NA	10 U	10 U	10 U
4-Methyl-2-Pentanone	UG/KG	10 U	NA	10 U	10 U	10 U
Acetone	UG/KG	10 U	NA	10 U	10 U	10 U
Benzene	UG/KG	5 U (88.2)	3,520 (88.2)	5 U (173)	5 U (658)	5 U (658)
Bromodichloromethane	UG/KG	5 U	NA	5 U	5 U	5 U
Bromoform	UG/KG	5 U	NA	5 U	5 U	5 U
Bromomethane	UG/KG	10 U	NA	10 U	10 U	10 U
Carbon Disulfide	UG/KG	5 U	NA	5 U	5 U	5 U
Carbon Tetrachloride	UG/KG	5 U	NA	5 U	5 U	5 U
Chlorobenzene	UG/KG	5 U (11.0)	NA	5 U (21.6)	5 U (82.3)	5 U (82.3)

Criteria- NYSDEC Technical Guidance for Screening Contaminated Sediments, Benthic Chronic Toxicity, January 25, 1999.

(NV) - No Calculable Value, TOC Not Detected

Flags assigned during chemistry validation are shown.

( ) Concentration Exceeds Criteria.

U - Not detected above the reported quantitation limit.

J - The reported quantitation limit is an estimated value.

NA - Not Analyzed

Detection Limits shown are MDL

TABLE A-11B
SEDIMENT SAMPLE ANALYTICAL RESULTS - COMPARED TO BENTHIC CHRONIC PROTECTION
NYSEG - MECHANICVILLE

Location ID		SED-AK05	SED-AK05	SED-AK06	SED-AK07	SED-AK07
Sample ID		AK-5 (0-1)	AK-5 (0-1) META	AK-6 (0-1)	AK-7 (0-1)	AK-7 (0-1)DUP
Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0
Date Sampled		08/28/02	10/02/02	08/28/02	08/28/02	08/28/02
Parameter	Units					Field Duplicate (1-1)
Volatile Organic Compounds						
Chloroethane	UG/KG	10 U	NA	10 U	10 U	10 U
Chloroform	UG/KG	5 U	NA	5 U	5 U	5 U
Chloromethane	UG/KG	10 U	NA	10 U	10 U	10 U
Dibromochloromethane	UG/KG	5 U	NA	5 U	5 U	5 U
Ethylbenzene	UG/KG	5 U (75.6)	9,600 (75.6)	5 U (148)	5 U (564)	5 U (564)
Methyl ethyl ketone (2-Butanone)	UG/KG	10 U	NA	10 U	10 U	10 U
Methylene Chloride	UG/KG	5 U	NA	5 U	5 U	5 U
Styrene	UG/KG	5 U	80	5 U	5 U	5 U
Tetrachloroethene	UG/KG	5 U	NA	5 U	5 U	5 U
Toluene	UG/KG	5 U (154)	730 (154)	5 U (303)	5 U (1,152)	5 U (1,152)
Trichloroethene	UG/KG	5 U	NA	5 U	5 U	5 U
Vinyl Acetate	UG/KG	10 U	NA	10 U	10 U	10 U
Vinyl Chloride	UG/KG	10 U	NA	10 U	10 U	10 U
Xylene (total)	UG/KG	5 U (290)	6,060 (290)	5 U (569)	5 U (2,162)	5 U (2,162)
Semivolatile Organic Compounds						
1-Methylnaphthalene	UG/KG	NA	19,500	NA	NA	NA
2-Methylnaphthalene	UG/KG	380 (107)	27,200 (107)	330 U (210)	870 (799)	NA
Acenaphthene	UG/KG	530 (441)	12,600 (441)	330 U (865)	600 (3,290)	NA
Acenaphthylene	UG/KG	330 U	910	330 U	330 U	NA
Anthracene	UG/KG	330 U (337)	2,240 (337)	330 U (661)	530 (2,515)	NA
Benzo(a)anthracene	UG/KG	330 U (37.8)	970 (37.8)	330 U (74.2)	500 (282)	NA
Benzo(a)pyrene	UG/KG	330 U	1,070	330 U	470	NA

Criteria- NYSDEC Technical Guidance for Screening Contaminated Sediments, Benthic Chronic Toxicity, January 25, 1999.

(NV) - No Calculable Value, TOC Not Detected

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria.

U - Not detected above the reported quantitation limit.

J - The reported quantitation limit is an estimated value.

NA - Not Analyzed

Detection Limits shown are MDL

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[SITEID] = '01' AND [MATRIX] = 'SE' AND [LOGDATE] >= #1/1/2001# AND [LOCID] LIKE 'SED-AK*' AND [PRCCODE] <> 'ASVOC' AND [PRCCODE] <> 'AVS/S' AND

TABLE A-11B
SEDIMENT SAMPLE ANALYTICAL RESULTS - COMPARED TO BENTHIC CHRONIC PROTECTION
NYSEG - MECHANICVILLE

Location ID		SED-AK05	SED-AK05	SED-AK06	SED-AK07	SED-AK07
Sample ID		AK-5 (0-1)	AK-5 (0-1) META	AK-6 (0-1)	AK-7 (0-1)	AK-7 (0-1)DUP
Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0
Date Sampled		08/28/02	10/02/02	08/28/02	08/28/02	08/28/02
Parameter	**Units**					Field Duplicate (1-1)
Semivolatile Organic Compounds						
Benzo(b)fluoranthene	UG/KG	330 U	600	330 U	330 U	NA
Benzo(e)pyrene	UG/KG	NA	620	NA	NA	NA
Benzo(g,h,i)perylene	UG/KG	330 U	770	330 U	330 U	NA
Benzo(k)fluoranthene	UG/KG	330 U	600	330 U	330 U	NA
Chrysene	UG/KG	330 U	930	330 U	480	NA
Dibenz(a,h)anthracene	UG/KG	330 U	190	330 U	330 U	NA
Dibenzofuran	UG/KG	330 U	730	330 U	330 U	NA
Fluoranthene	UG/KG	330 (3,213)	2,670 (3,213)	330 U (6,304)	1,100 (23,970)	NA
Fluorene	UG/KG	330 U (25.2)	5,680 (25.2)	330 U (49.4)	420 (188)	NA
Indeno(1,2,3-cd)pyrene	UG/KG	330 U	550	330 U	350	NA
Naphthalene	UG/KG	1,300 (94.5)	71,400 (94.5)	330 U (185)	830 (705)	NA
Perylene	UG/KG	NA	170	NA	NA	NA
Phenanthrene	UG/KG	620 (378)	10,000 (378)	330 U (742)	2,000 (2,820)	NA
Pyrene	UG/KG	380 (3,027)	3,630 (3,027)	330 U (5,939)	2,000 (22,584)	NA
Total Polycyclic Aromatic Hydrocarbons	UG/KG	3,540	142,010	ND	10,150	NA
Polychlorinated Biphenyls						
Aroclor 1016	UG/KG	1,000 U (60.8)	NA	1,000 U (119)	1,000 U (454)	1,000 U (454)
Aroclor 1221	UG/KG	1,000 U (60.8)	NA	1,000 U (119)	1,000 U (454)	1,000 U (454)
Aroclor 1232	UG/KG	1,000 U (60.8)	NA	1,000 U (119)	1,000 U (454)	1,000 U (454)
Aroclor 1242	UG/KG	1,000 U (60.8)	NA	1,000 U (119)	1,000 U (454)	1,000 U (454)
Aroclor 1248	UG/KG	1,000 U (60.8)	NA	1,000 U (119)	1,000 U (454)	1,000 U (454)
Aroclor 1254	UG/KG	1,000 U (60.8)	NA	1,000 U (119)	1,000 U (454)	1,000 U (454)

Criteria- NYSDEC Technical Guidance for Screening Contaminated Sediments, Benthic Chronic Toxicity, January 25, 1999.

(NV) - No Calculable Value, TOC Not Detected

Flags assigned during chemistry validation are shown.

( ) Concentration Exceeds Criteria.

U - Not detected above the reported quantitation limit.

J - The reported quantitation limit is an estimated value.

NA - Not Analyzed

Detection Limits shown are MDL

TABLE A-11B
SEDIMENT SAMPLE ANALYTICAL RESULTS - COMPARED TO BENTHIC CHRONIC PROTECTION
NYSEG - MECHANICVILLE

Location ID		SED-AK05	SED-AK05	SED-AK06	SED-AK07	SED-AK07
Sample ID		AK-5 (0-1)	AK-5 (0-1) META	AK-6 (0-1)	AK-7 (0-1)	AK-7 (0-1)DUP
Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0
Date Sampled		08/28/02	10/02/02	08/28/02	08/28/02	08/28/02
Parameter	Units					Field Duplicate (1-1)
Polychlorinated Biphenyls						
Aroclor 1260	UG/KG	1,000 U (60.8)	NA	1,000 U (119)	1,000 U (454)	1,000 U (454)
Miscellaneous Parameters						
Cyanide, Free (weak & dissoc.)	UG/KG	1,200 U	NA	1,200 U	1,800 U	NA
Cyanide, Total	UG/KG	1,200 U	NA	1,200 U	1,800 U	NA
Phenolics, Total Recoverable	UG/KG	200 U	NA	1,300	200 U	200 U
Total Organic Carbon (TOC)	MG/KG	3,150	3,150	6,180	23,500	23,500

Criteria- NYSDEC Technical Guidance for Screening Contaminated Sediments, Benthic Chronic Toxicity, January 25, 1999.

(NV) - No Calculable Value, TOC Not Detected

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria.

U - Not detected above the reported quantitation limit.

J - The reported quantitation limit is an estimated value.

NA - Not Analyzed

Detection Limits shown are MDL

TABLE A-11B
SEDIMENT SAMPLE ANALYTICAL RESULTS - COMPARED TO BENTHIC CHRONIC PROTECTION
NYSEG - MECHANICVILLE

Location ID		SED-AK07
Sample ID		AK-7 (0-1) META
Matrix		Sediment
Depth Interval (ft)		0.0-1.0
Date Sampled		10/02/02
Parameter	**Units**	
Volatile Organic Compounds		
1,1,1-Trichloroethane	UG/KG	NA
1,1,2,2-Tetrachloroethane	UG/KG	NA
1,1,2-Trichloroethane	UG/KG	NA
1,1-Dichloroethane	UG/KG	NA
1,1-Dichloroethene	UG/KG	NA
1,2,4-Trimethylbenzene	UG/KG	14,400 (4,371)
1,2-Dichloroethane	UG/KG	NA
1,2-Dichloroethene (total)	UG/KG	NA
1,2-Dichloropropane	UG/KG	NA
1,3-Dichloropropene (cis)	UG/KG	NA
1,3-Dichloropropene (trans)	UG/KG	NA
2-Chloroethyl vinyl ether	UG/KG	NA
2-Hexanone	UG/KG	NA
4-Methyl-2-Pentanone	UG/KG	NA
Acetone	UG/KG	NA
Benzene	UG/KG	3,190 (658)
Bromodichloromethane	UG/KG	NA
Bromoform	UG/KG	NA
Bromomethane	UG/KG	NA
Carbon Disulfide	UG/KG	NA
Carbon Tetrachloride	UG/KG	NA
Chlorobenzene	UG/KG	NA

Criteria- NYSDEC Technical Guidance for Screening Contaminated Sediments, Benthic Chronic Toxicity, January 25, 1999.

(NV) - No Calculable Value, TOC Not Detected

Flags assigned during chemistry validation are shown.

( ) Concentration Exceeds Criteria.

U - Not detected above the reported quantitation limit.

J - The reported quantitation limit is an estimated value.

NA - Not Analyzed

Detection Limits shown are MDL

TABLE A-11B
SEDIMENT SAMPLE ANALYTICAL RESULTS - COMPARED TO BENTHIC CHRONIC PROTECTION
NYSEG - MECHANICVILLE

Location ID		SED-AK07
Sample ID		AK-7 (0-1) META
Matrix		Sediment
Depth Interval (ft)		0.0-1.0
Date Sampled		10/02/02
Parameter	**Units**	
Volatile Organic Compounds		
Chloroethane	UG/KG	NA
Chloroform	UG/KG	NA
Chloromethane	UG/KG	NA
Dibromochloromethane	UG/KG	NA
Ethylbenzene	UG/KG	78,100 (564)
Methyl ethyl ketone (2-Butanone)	UG/KG	NA
Methylene Chloride	UG/KG	NA
Styrene	UG/KG	5,780
Tetrachloroethene	UG/KG	NA
Toluene	UG/KG	24,800 (1,152)
Trichloroethene	UG/KG	NA
Vinyl Acetate	UG/KG	NA
Vinyl Chloride	UG/KG	NA
Xylene (total)	UG/KG	64,700 (2,162)
Semivolatile Organic Compounds		
1-Methylnaphthalene	UG/KG	255,000
2-Methylnaphthalene	UG/KG	414,000 (799)
Acenaphthene	UG/KG	137,000 (3,290)
Acenaphthylene	UG/KG	127,000
Anthracene	UG/KG	111,000 (2,515)
Benzo(a)anthracene	UG/KG	77,600 (282)
Benzo(a)pyrene	UG/KG	65,800

Criteria- NYSDEC Technical Guidance for Screening Contaminated Sediments, Benthic Chronic Toxicity, January 25, 1999.

(NV) - No Calculable Value, TOC Not Detected

Flags assigned during chemistry validation are shown.

( ) Concentration Exceeds Criteria.

U - Not detected above the reported quantitation limit.

J - The reported quantitation limit is an estimated value.

NA - Not Analyzed

Detection Limits shown are MDL

TABLE A-11B
SEDIMENT SAMPLE ANALYTICAL RESULTS - COMPARED TO BENTHIC CHRONIC PROTECTION
NYSEG - MECHANICVILLE

Location ID		SED-AK07
Sample ID		AK-7 (0-1) META
Matrix		Sediment
Depth Interval (ft)		0.0-1.0
Date Sampled		10/02/02
Parameter	**Units**	
Semivolatile Organic Compounds		
Benzo(b)fluoranthene	UG/KG	32,900
Benzo(e)pyrene	UG/KG	33,100
Benzo(g,h,i)perylene	UG/KG	22,800
Benzo(k)fluoranthene	UG/KG	33,400
Chrysene	UG/KG	65,300
Dibenz(a,h)anthracene	UG/KG	5,630
Dibenzofuran	UG/KG	12,700
Fluoranthene	UG/KG	150,000 (23,970)
Fluorene	UG/KG	140,000 (188)
Indeno(1,2,3-cd)pyrene	UG/KG	17,400
Naphthalene	UG/KG	808,000 (705)
Perylene	UG/KG	7,940
Phenanthrene	UG/KG	382,000 (2,820)
Pyrene	UG/KG	221,000 (22,584)
Total Polycyclic Aromatic Hydrocarbons	UG/KG	2,810,830
Polychlorinated Biphenyls		
Aroclor 1016	UG/KG	NA
Aroclor 1221	UG/KG	NA
Aroclor 1232	UG/KG	NA
Aroclor 1242	UG/KG	NA
Aroclor 1248	UG/KG	NA
Aroclor 1254	UG/KG	NA

Criteria- NYSDEC Technical Guidance for Screening Contaminated Sediments, Benthic Chronic Toxicity, January 25, 1999.

(NV) - No Calculable Value, TOC Not Detected

Flags assigned during chemistry validation are shown.

( ) Concentration Exceeds Criteria.

U - Not detected above the reported quantitation limit.

J - The reported quantitation limit is an estimated value.

NA - Not Analyzed

Detection Limits shown are MDL

TABLE A-11B
SEDIMENT SAMPLE ANALYTICAL RESULTS - COMPARED TO BENTHIC CHRONIC PROTECTION
NYSEG - MECHANICVILLE

Location ID		SED-AK07
Sample ID		AK-7 (0-1) META
Matrix		Sediment
Depth Interval (ft)		0.0-1.0
Date Sampled		10/02/02
Parameter	**Units**	
Polychlorinated Biphenyls		
Aroclor 1260	UG/KG	NA
Miscellaneous Parameters		
Cyanide, Free (weak & dissoc.)	UG/KG	NA
Cyanide, Total	UG/KG	NA
Phenolics, Total Recoverable	UG/KG	NA
Total Organic Carbon (TOC)	MG/KG	23,500

Criteria- NYSDEC Technical Guidance for Screening Contaminated Sediments, Benthic Chronic Toxicity, January 25, 1999.

(NV) - No Calculable Value, TOC Not Detected

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria.

U - Not detected above the reported quantitation limit.

J - The reported quantitation limit is an estimated value.

NA - Not Analyzed

Detection Limits shown are MDL

TABLE A-11C
SEDIMENT SAMPLE ANALYTICAL RESULTS - COMPARED TO HUMAN HEALTH BIOACCUMULATION
NYSEG - MECHANICVILLE

Location ID		SED-AK01	SED-AK01	SED-AK02	SED-AK03	SED-AK04
Sample ID		AK-1 (0-1)	AK-1 (0-1) META	AK-2 (0-1)	AK-3 (0-2)	AK-4 (0-1)
Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-1.0	0.0-1.0	0.0-1.0	0.0-2.0	0.0-1.0
Date Sampled		08/28/02	10/02/02	08/28/02	08/28/02	08/28/02
Parameter	Units					
Volatile Organic Compounds						
1,1,1-Trichloroethane	UG/KG	5 U	NA	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane	UG/KG	5 U (0.67)	NA	5 U (1.6)	5 U (0.76)	5 U (0.57)
1,1,2-Trichloroethane	UG/KG	5 U (1.3)	NA	5 U (3.3)	5 U (1.5)	5 U (1.1)
1,1-Dichloroethane	UG/KG	5 U	NA	5 U	5 U	5 U
1,1-Dichloroethene	UG/KG	5 U (0.04)	NA	5 U (0.11)	5 U (0.05)	5 U (0.04)
1,2,4-Trimethylbenzene	UG/KG	NA	80 U	NA	NA	NA
1,2-Dichloroethane	UG/KG	5 U (1.6)	NA	5 U (3.8)	5 U (1.8)	5 U (1.3)
1,2-Dichloroethene (total)	UG/KG	5 U	NA	5 U	5 U	5 U
1,2-Dichloropropane	UG/KG	5 U	NA	5 U	5 U	5 U
1,3-Dichloropropene (cis)	UG/KG	5 U	NA	5 U	5 U	5 U
1,3-Dichloropropene (trans)	UG/KG	5 U	NA	5 U	5 U	5 U
2-Chloroethyl vinyl ether	UG/KG	10 U	NA	10 U	10 U	10 U
2-Hexanone	UG/KG	10 U	NA	10 U	10 U	10 U
4-Methyl-2-Pentanone	UG/KG	10 U	NA	10 U	10 U	10 U
Acetone	UG/KG	10 U	NA	10 U	10 U	10 U
Benzene	UG/KG	5 U (1.3)	80 U (1.3)	5 U (3.3)	5 U (1.5)	5 U (1.1)
Bromodichloromethane	UG/KG	5 U	NA	5 U	5 U	5 U
Bromoform	UG/KG	5 U	NA	5 U	5 U	5 U
Bromomethane	UG/KG	10 U	NA	10 U	10 U	10 U
Carbon Disulfide	UG/KG	5 U	NA	5 U	5 U	5 U
Carbon Tetrachloride	UG/KG	5 U (1.3)	NA	5 U (3.3)	5 U (1.5)	5 U (1.1)

Criteria- NYSDEC Technical Guidance for Screening Contaminated Sediments, Human Health Bioaccumulation, January 25, 1999.

(NV) - No Calculable Value, TOC Not Detected

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria.

U - Not detected above the reported quantitation limit.

J - The reported quantitation limit is an estimated value.

NA - Not Analyzed

Detection Limits shown are MDL

TABLE A-11C
SEDIMENT SAMPLE ANALYTICAL RESULTS - COMPARED TO HUMAN HEALTH BIOACCUMULATION
NYSEG - MECHANICVILLE

Location ID		SED-AK01	SED-AK01	SED-AK02	SED-AK03	SED-AK04
Sample ID		AK-1 (0-1)	AK-1 (0-1) META	AK-2 (0-1)	AK-3 (0-2)	AK-4 (0-1)
Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-1.0	0.0-1.0	0.0-1.0	0.0-2.0	0.0-1.0
Date Sampled		08/28/02	10/02/02	08/28/02	08/28/02	08/28/02
Parameter	**Units**					
Volatile Organic Compounds						
Chlorobenzene	UG/KG	5 U	NA	5 U	5 U	5 U
Chloroethane	UG/KG	10 U	NA	10 U	10 U	10 U
Chloroform	UG/KG	5 U	NA	5 U	5 U	5 U
Chloromethane	UG/KG	10 U	NA	10 U	10 U	10 U
Dibromochloromethane	UG/KG	5 U	NA	5 U	5 U	5 U
Ethylbenzene	UG/KG	5 U	80 U	5 U	5 U	5 U
Methyl ethyl ketone (2-Butanone)	UG/KG	10 U	NA	10 U	10 U	10 U
Methylene Chloride	UG/KG	5 U	NA	5 U	5 U	5 U
Styrene	UG/KG	5 U	80 U	5 U	5 U	5 U
Tetrachloroethene	UG/KG	5 U (1.8)	NA	5 U (4.3)	5 U (2.0)	5 U (1.5)
Toluene	UG/KG	5 U	100	5 U	5 U	5 U
Trichloroethene	UG/KG	5 U (4.5)	NA	5 U (10.8)	5 U (5.1)	5 U (3.8)
Vinyl Acetate	UG/KG	10 U	NA	10 U	10 U	10 U
Vinyl Chloride	UG/KG	10 U (0.16)	NA	10 U (0.38)	10 U (0.18)	10 U (0.13)
Xylene (total)	UG/KG	5 U	80 U	5 U	5 U	5 U
Semivolatile Organic Compounds						
1-Methylnaphthalene	UG/KG	NA	80 U	NA	NA	NA
2-Methylnaphthalene	UG/KG	330 U	80 U	330 U	330 U	330 U
Acenaphthene	UG/KG	330 U	80 U	330 U	330 U	330 U
Acenaphthylene	UG/KG	330 U	80 U	330 U	330 U	330 U
Anthracene	UG/KG	330 U	80 U	330 U	330 U	330 U

Criteria- NYSDEC Technical Guidance for Screening Contaminated Sediments, Human Health Bioaccumulation, January 25, 1999.

(NV) - No Calculable Value, TOC Not Detected

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria.

U - Not detected above the reported quantitation limit.

J - The reported quantitation limit is an estimated value.

NA - Not Analyzed

Detection Limits shown are MDL

TABLE A-11C
SEDIMENT SAMPLE ANALYTICAL RESULTS - COMPARED TO HUMAN HEALTH BIOACCUMULATION
NYSEG - MECHANICVILLE

Location ID		SED-AK01	SED-AK01	SED-AK02	SED-AK03	SED-AK04
Sample ID		AK-1 (0-1)	AK-1 (0-1) META	AK-2 (0-1)	AK-3 (0-2)	AK-4 (0-1)
Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-1.0	0.0-1.0	0.0-1.0	0.0-2.0	0.0-1.0
Date Sampled		08/28/02	10/02/02	08/28/02	08/28/02	08/28/02
Parameter	**Units**					
Semivolatile Organic Compounds						
Benzo(a)anthracene	UG/KG	330 U (2.9)	120 (2.9)	330 U (7.0)	330 U (3.3)	330 U (2.5)
Benzo(a)pyrene	UG/KG	330 U (2.9)	130 (2.9)	330 U (7.0)	330 U (3.3)	330 U (2.5)
Benzo(b)fluoranthene	UG/KG	330 U (2.9)	170 (2.9)	330 U (7.0)	330 U (3.3)	330 U (2.5)
Benzo(e)pyrene	UG/KG	NA	110	NA	NA	NA
Benzo(g,h,i)perylene	UG/KG	330 U	160	330 U	330 U	330 U
Benzo(k)fluoranthene	UG/KG	330 U (2.9)	130 (2.9)	330 U (7.0)	330 U (3.3)	330 U (2.5)
Chrysene	UG/KG	330 U (2.9)	170 (2.9)	330 U (7.0)	330 U (3.3)	330 U (2.5)
Dibenz(a,h)anthracene	UG/KG	330 U	80 U	330 U	330 U	330 U
Dibenzofuran	UG/KG	330 U	80 U	330 U	330 U	330 U
Fluoranthene	UG/KG	330 U	300	330 U	330 U	330 U
Fluorene	UG/KG	330 U	80 U	330 U	330 U	330 U
Indeno(1,2,3-cd)pyrene	UG/KG	330 U (2.9)	130 (2.9)	330 U (7.0)	330 U (3.3)	330 U (2.5)
Naphthalene	UG/KG	330 U	50 J	330 U	330 U	330 U
Perylene	UG/KG	NA	80 U	NA	NA	NA
Phenanthrene	UG/KG	330 U	120	330 U	330 U	330 U
Pyrene	UG/KG	330 U	230	330 U	330 U	330 U
Total Polycyclic Aromatic Hydrocarbons	UG/KG	ND	1,710	ND	ND	ND
Polychlorinated Biphenyls						
Aroclor 1016	UG/KG	1,000 U (0.00)	NA	1,000 U (0.00)	1,000 U (0.00)	1,000 U (0.00)
Aroclor 1221	UG/KG	1,000 U (0.00)	NA	1,000 U (0.00)	1,000 U (0.00)	1,000 U (0.00)
Aroclor 1232	UG/KG	1,000 U (0.00)	NA	1,000 U (0.00)	1,000 U (0.00)	1,000 U (0.00)

Criteria- NYSDEC Technical Guidance for Screening Contaminated Sediments, Human Health Bioaccumulation, January 25, 1999.

(NV) - No Calculable Value, TOC Not Detected

Flags assigned during chemistry validation are shown.

( ) Concentration Exceeds Criteria.

U - Not detected above the reported quantitation limit.

J - The reported quantitation limit is an estimated value.

NA - Not Analyzed

Detection Limits shown are MDL

TABLE A-11C
SEDIMENT SAMPLE ANALYTICAL RESULTS - COMPARED TO HUMAN HEALTH BIOACCUMULATION
NYSEG - MECHANICVILLE

Location ID		SED-AK01	SED-AK01	SED-AK02	SED-AK03	SED-AK04
Sample ID		AK-1 (0-1)	AK-1 (0-1) META	AK-2 (0-1)	AK-3 (0-2)	AK-4 (0-1)
Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-1.0	0.0-1.0	0.0-1.0	0.0-2.0	0.0-1.0
Date Sampled		08/28/02	10/02/02	08/28/02	08/28/02	08/28/02
Parameter	**Units**					
Polychlorinated Biphenyls						
Aroclor 1242	UG/KG	1,000 U (0.00)	NA	1,000 U (0.00)	1,000 U (0.00)	1,000 U (0.00)
Aroclor 1248	UG/KG	1,000 U (0.00)	NA	1,000 U (0.00)	1,000 U (0.00)	1,000 U (0.00)
Aroclor 1254	UG/KG	1,000 U (0.00)	NA	1,000 U (0.00)	1,000 U (0.00)	1,000 U (0.00)
Aroclor 1260	UG/KG	1,000 U (0.00)	NA	1,000 U (0.00)	1,000 U (0.00)	1,000 U (0.00)
Miscellaneous Parameters						
Cyanide, Free (weak & dissoc.)	UG/KG	1,200 U	NA	1,400 U	1,200 U	1,200 U
Cyanide, Total	UG/KG	1,200 U	NA	1,400 U	1,200 U	1,200 U
Phenolics, Total Recoverable	UG/KG	200 U	NA	200 U	200 U	200 U
Total Organic Carbon (TOC)	MG/KG	2,240	2,240	5,420	2,530	1,900

Criteria- NYSDEC Technical Guidance for Screening Contaminated Sediments, Human Health Bioaccumulation, January 25, 1999.

(NV) - No Calculable Value, TOC Not Detected

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria.

U - Not detected above the reported quantitation limit.

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NA - Not Analyzed

Detection Limits shown are MDL

TABLE A-11C
SEDIMENT SAMPLE ANALYTICAL RESULTS - COMPARED TO HUMAN HEALTH BIOACCUMULATION
NYSEG - MECHANICVILLE

Location ID		SED-AK05	SED-AK05	SED-AK06	SED-AK07	SED-AK07
Sample ID		AK-5 (0-1)	AK-5 (0-1) META	AK-6 (0-1)	AK-7 (0-1)	AK-7 (0-1)DUP
Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0
Date Sampled		08/28/02	10/02/02	08/28/02	08/28/02	08/28/02
Parameter	Units					Field Duplicate (1-1)
Volatile Organic Compounds						
1,1,1-Trichloroethane	UG/KG	5 U	NA	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane	UG/KG	5 U (0.95)	NA	5 U (1.9)	5 U (7.1)	5 U (7.1)
1,1,2-Trichloroethane	UG/KG	5 U (1.9)	NA	5 U (3.7)	5 U (14.1)	5 U (14.1)
1,1-Dichloroethane	UG/KG	5 U	NA	5 U	5 U	5 U
1,1-Dichloroethene	UG/KG	5 U (0.06)	NA	5 U (0.12)	5 U (0.47)	5 U (0.47)
1,2,4-Trimethylbenzene	UG/KG	NA	1,120	NA	NA	NA
1,2-Dichloroethane	UG/KG	5 U (2.2)	NA	5 U (4.3)	5 U (16.5)	5 U (16.5)
1,2-Dichloroethene (total)	UG/KG	5 U	NA	5 U	5 U	5 U
1,2-Dichloropropane	UG/KG	5 U	NA	5 U	5 U	5 U
1,3-Dichloropropene (cis)	UG/KG	5 U	NA	5 U	5 U	5 U
1,3-Dichloropropene (trans)	UG/KG	5 U	NA	5 U	5 U	5 U
2-Chloroethyl vinyl ether	UG/KG	10 U	NA	10 U	10 U	10 U
2-Hexanone	UG/KG	10 U	NA	10 U	10 U	10 U
4-Methyl-2-Pentanone	UG/KG	10 U	NA	10 U	10 U	10 U
Acetone	UG/KG	10 U	NA	10 U	10 U	10 U
Benzene	UG/KG	5 U (1.9)	3,520 (1.9)	5 U (3.7)	5 U (14.1)	5 U (14.1)
Bromodichloromethane	UG/KG	5 U	NA	5 U	5 U	5 U
Bromoform	UG/KG	5 U	NA	5 U	5 U	5 U
Bromomethane	UG/KG	10 U	NA	10 U	10 U	10 U
Carbon Disulfide	UG/KG	5 U	NA	5 U	5 U	5 U
Carbon Tetrachloride	UG/KG	5 U (1.9)	NA	5 U (3.7)	5 U (14.1)	5 U (14.1)

Criteria- NYSDEC Technical Guidance for Screening Contaminated Sediments, Human Health Bioaccumulation, January 25, 1999.

(NV) - No Calculable Value, TOC Not Detected

Flags assigned during chemistry validation are shown.

( ) Concentration Exceeds Criteria.

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NA - Not Analyzed

Detection Limits shown are MDL

TABLE A-11C
SEDIMENT SAMPLE ANALYTICAL RESULTS - COMPARED TO HUMAN HEALTH BIOACCUMULATION
NYSEG - MECHANICVILLE

Location ID		SED-AK05	SED-AK05	SED-AK06	SED-AK07	SED-AK07
Sample ID		AK-5 (0-1)	AK-5 (0-1) META	AK-6 (0-1)	AK-7 (0-1)	AK-7 (0-1)DUP
Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0
Date Sampled		08/28/02	10/02/02	08/28/02	08/28/02	08/28/02
Parameter	Units					Field Duplicate (1-1)
Volatile Organic Compounds						
Chlorobenzene	UG/KG	5 U	NA	5 U	5 U	5 U
Chloroethane	UG/KG	10 U	NA	10 U	10 U	10 U
Chloroform	UG/KG	5 U	NA	5 U	5 U	5 U
Chloromethane	UG/KG	10 U	NA	10 U	10 U	10 U
Dibromochloromethane	UG/KG	5 U	NA	5 U	5 U	5 U
Ethylbenzene	UG/KG	5 U	9,600	5 U	5 U	5 U
Methyl ethyl ketone (2-Butanone)	UG/KG	10 U	NA	10 U	10 U	10 U
Methylene Chloride	UG/KG	5 U	NA	5 U	5 U	5 U
Styrene	UG/KG	5 U	80	5 U	5 U	5 U
Tetrachloroethene	UG/KG	5 U (2.5)	NA	5 U (4.9)	5 U (18.8)	5 U (18.8)
Toluene	UG/KG	5 U	730	5 U	5 U	5 U
Trichloroethene	UG/KG	5 U (6.3)	NA	5 U (12.4)	5 U (47.0)	5 U (47.0)
Vinyl Acetate	UG/KG	10 U	NA	10 U	10 U	10 U
Vinyl Chloride	UG/KG	10 U (0.22)	NA	10 U (0.43)	10 U (1.6)	10 U (1.6)
Xylene (total)	UG/KG	5 U	6,060	5 U	5 U	5 U
Semivolatile Organic Compounds						
1-Methylnaphthalene	UG/KG	NA	19,500	NA	NA	NA
2-Methylnaphthalene	UG/KG	380	27,200	330 U	870	NA
Acenaphthene	UG/KG	530	12,600	330 U	600	NA
Acenaphthylene	UG/KG	330 U	910	330 U	330 U	NA
Anthracene	UG/KG	330 U	2,240	330 U	530	NA

Criteria- NYSDEC Technical Guidance for Screening Contaminated Sediments, Human Health Bioaccumulation, January 25, 1999.

(NV) - No Calculable Value, TOC Not Detected

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Concentration Exceeds Criteria.

U - Not detected above the reported quantitation limit.

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NA - Not Analyzed

Detection Limits shown are MDL

TABLE A-11C
SEDIMENT SAMPLE ANALYTICAL RESULTS - COMPARED TO HUMAN HEALTH BIOACCUMULATION
NYSEG - MECHANICVILLE

Location ID		SED-AK05	SED-AK05	SED-AK06	SED-AK07	SED-AK07
Sample ID		AK-5 (0-1)	AK-5 (0-1) META	AK-6 (0-1)	AK-7 (0-1)	AK-7 (0-1)DUP
Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0
Date Sampled		08/28/02	10/02/02	08/28/02	08/28/02	08/28/02
Parameter	Units					Field Duplicate (1-1)
Semivolatile Organic Compounds						
Benzo(a)anthracene	UG/KG	330 U (4.1)	970 (4.1)	330 U (8.0)	500 (30.6)	NA
Benzo(a)pyrene	UG/KG	330 U (4.1)	1,070 (4.1)	330 U (8.0)	470 (30.6)	NA
Benzo(b)fluoranthene	UG/KG	330 U (4.1)	600 (4.1)	330 U (8.0)	330 U (30.6)	NA
Benzo(e)pyrene	UG/KG	NA	620	NA	NA	NA
Benzo(g,h,i)perylene	UG/KG	330 U	770	330 U	330 U	NA
Benzo(k)fluoranthene	UG/KG	330 U (4.1)	600 (4.1)	330 U (8.0)	330 U (30.6)	NA
Chrysene	UG/KG	330 U (4.1)	930 (4.1)	330 U (8.0)	480 (30.6)	NA
Dibenz(a,h)anthracene	UG/KG	330 U	190	330 U	330 U	NA
Dibenzofuran	UG/KG	330 U	730	330 U	330 U	NA
Fluoranthene	UG/KG	330	2,670	330 U	1,100	NA
Fluorene	UG/KG	330 U	5,680	330 U	420	NA
Indeno(1,2,3-cd)pyrene	UG/KG	330 U (4.1)	550 (4.1)	330 U (8.0)	350 (30.6)	NA
Naphthalene	UG/KG	1,300	71,400	330 U	830	NA
Perylene	UG/KG	NA	170	NA	NA	NA
Phenanthrene	UG/KG	620	10,000	330 U	2,000	NA
Pyrene	UG/KG	380	3,630	330 U	2,000	NA
Total Polycyclic Aromatic Hydrocarbons	UG/KG	3,540	142,010	ND	10,150	NA
Polychlorinated Biphenyls						
Aroclor 1016	UG/KG	1,000 U (0.00)	NA	1,000 U (0.00)	1,000 U (0.02)	1,000 U (0.02)
Aroclor 1221	UG/KG	1,000 U (0.00)	NA	1,000 U (0.00)	1,000 U (0.02)	1,000 U (0.02)
Aroclor 1232	UG/KG	1,000 U (0.00)	NA	1,000 U (0.00)	1,000 U (0.02)	1,000 U (0.02)

Criteria- NYSDEC Technical Guidance for Screening Contaminated Sediments, Human Health Bioaccumulation, January 25, 1999.

(NV) - No Calculable Value, TOC Not Detected

Flags assigned during chemistry validation are shown.

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Detection Limits shown are MDL

TABLE A-11C
SEDIMENT SAMPLE ANALYTICAL RESULTS - COMPARED TO HUMAN HEALTH BIOACCUMULATION
NYSEG - MECHANICVILLE

Location ID		SED-AK05	SED-AK05	SED-AK06	SED-AK07	SED-AK07
Sample ID		AK-5 (0-1)	AK-5 (0-1) META	AK-6 (0-1)	AK-7 (0-1)	AK-7 (0-1)DUP
Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0
Date Sampled		08/28/02	10/02/02	08/28/02	08/28/02	08/28/02
Parameter	Units					Field Duplicate (1-1)
Polychlorinated Biphenyls						
Aroclor 1242	UG/KG	1,000 U (0.00)	NA	1,000 U (0.00)	1,000 U (0.02)	1,000 U (0.02)
Aroclor 1248	UG/KG	1,000 U (0.00)	NA	1,000 U (0.00)	1,000 U (0.02)	1,000 U (0.02)
Aroclor 1254	UG/KG	1,000 U (0.00)	NA	1,000 U (0.00)	1,000 U (0.02)	1,000 U (0.02)
Aroclor 1260	UG/KG	1,000 U (0.00)	NA	1,000 U (0.00)	1,000 U (0.02)	1,000 U (0.02)
Miscellaneous Parameters						
Cyanide, Free (weak & dissoc.)	UG/KG	1,200 U	NA	1,200 U	1,800 U	NA
Cyanide, Total	UG/KG	1,200 U	NA	1,200 U	1,800 U	NA
Phenolics, Total Recoverable	UG/KG	200 U	NA	1,300	200 U	200 U
Total Organic Carbon (TOC)	MG/KG	3,150	3,150	6,180	23,500	23,500

Criteria- NYSDEC Technical Guidance for Screening Contaminated Sediments, Human Health Bioaccumulation, January 25, 1999.

(NV) - No Calculable Value, TOC Not Detected

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria.

U - Not detected above the reported quantitation limit.

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NA - Not Analyzed

Detection Limits shown are MDL

TABLE A-11C
SEDIMENT SAMPLE ANALYTICAL RESULTS - COMPARED TO HUMAN HEALTH BIOACCUMULATION
NYSEG - MECHANICVILLE

Location ID		SED-AK07
Sample ID		AK-7 (0-1) META
Matrix		Sediment
Depth Interval (ft)		0.0-1.0
Date Sampled		10/02/02
Parameter	**Units**	
Volatile Organic Compounds		
1,1,1-Trichloroethane	UG/KG	NA
1,1,2,2-Tetrachloroethane	UG/KG	NA
1,1,2-Trichloroethane	UG/KG	NA
1,1-Dichloroethane	UG/KG	NA
1,1-Dichloroethene	UG/KG	NA
1,2,4-Trimethylbenzene	UG/KG	14,400
1,2-Dichloroethane	UG/KG	NA
1,2-Dichloroethene (total)	UG/KG	NA
1,2-Dichloropropane	UG/KG	NA
1,3-Dichloropropene (cis)	UG/KG	NA
1,3-Dichloropropene (trans)	UG/KG	NA
2-Chloroethyl vinyl ether	UG/KG	NA
2-Hexanone	UG/KG	NA
4-Methyl-2-Pentanone	UG/KG	NA
Acetone	UG/KG	NA
Benzene	UG/KG	3,190 (14.1)
Bromodichloromethane	UG/KG	NA
Bromoform	UG/KG	NA
Bromomethane	UG/KG	NA
Carbon Disulfide	UG/KG	NA
Carbon Tetrachloride	UG/KG	NA

Criteria- NYSDEC Technical Guidance for Screening Contaminated Sediments, Human Health Bioaccumulation, January 25, 1999.

(NV) - No Calculable Value, TOC Not Detected

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria.

U - Not detected above the reported quantitation limit.

J - The reported quantitation limit is an estimated value.

NA - Not Analyzed

Detection Limits shown are MDL

TABLE A-11C
SEDIMENT SAMPLE ANALYTICAL RESULTS - COMPARED TO HUMAN HEALTH BIOACCUMULATION
NYSEG - MECHANICVILLE

Location ID		SED-AK07
Sample ID		AK-7 (0-1) META
Matrix		Sediment
Depth Interval (ft)		0.0-1.0
Date Sampled		10/02/02
Parameter	**Units**	
Volatile Organic Compounds		
Chlorobenzene	UG/KG	NA
Chloroethane	UG/KG	NA
Chloroform	UG/KG	NA
Chloromethane	UG/KG	NA
Dibromochloromethane	UG/KG	NA
Ethylbenzene	UG/KG	78,100
Methyl ethyl ketone (2-Butanone)	UG/KG	NA
Methylene Chloride	UG/KG	NA
Styrene	UG/KG	5,780
Tetrachloroethene	UG/KG	NA
Toluene	UG/KG	24,800
Trichloroethene	UG/KG	NA
Vinyl Acetate	UG/KG	NA
Vinyl Chloride	UG/KG	NA
Xylene (total)	UG/KG	64,700
Semivolatile Organic Compounds		
1-Methylnaphthalene	UG/KG	255,000
2-Methylnaphthalene	UG/KG	414,000
Acenaphthene	UG/KG	137,000
Acenaphthylene	UG/KG	127,000
Anthracene	UG/KG	111,000

Criteria- NYSDEC Technical Guidance for Screening Contaminated Sediments, Human Health Bioaccumulation, January 25, 1999.

(NV) - No Calculable Value, TOC Not Detected

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria.

U - Not detected above the reported quantitation limit.

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Detection Limits shown are MDL

TABLE A-11C
SEDIMENT SAMPLE ANALYTICAL RESULTS - COMPARED TO HUMAN HEALTH BIOACCUMULATION
NYSEG - MECHANICVILLE

Location ID		SED-AK07
Sample ID		AK-7 (0-1) META
Matrix		Sediment
Depth Interval (ft)		0.0-1.0
Date Sampled		10/02/02
Parameter	**Units**	
Semivolatile Organic Compounds		
Benzo(a)anthracene	UG/KG	77,600 (30.6)
Benzo(a)pyrene	UG/KG	65,800 (30.6)
Benzo(b)fluoranthene	UG/KG	32,900 (30.6)
Benzo(e)pyrene	UG/KG	33,100
Benzo(g,h,i)perylene	UG/KG	22,800
Benzo(k)fluoranthene	UG/KG	33,400 (30.6)
Chrysene	UG/KG	65,300 (30.6)
Dibenz(a,h)anthracene	UG/KG	5,630
Dibenzofuran	UG/KG	12,700
Fluoranthene	UG/KG	150,000
Fluorene	UG/KG	140,000
Indeno(1,2,3-cd)pyrene	UG/KG	17,400 (30.6)
Naphthalene	UG/KG	808,000
Perylene	UG/KG	7,940
Phenanthrene	UG/KG	382,000
Pyrene	UG/KG	221,000
Total Polycyclic Aromatic Hydrocarbons	UG/KG	2,810,830
Polychlorinated Biphenyls		
Aroclor 1016	UG/KG	NA
Aroclor 1221	UG/KG	NA
Aroclor 1232	UG/KG	NA

Criteria- NYSDEC Technical Guidance for Screening Contaminated Sediments, Human Health Bioaccumulation, January 25, 1999.

(NV) - No Calculable Value, TOC Not Detected

Flags assigned during chemistry validation are shown.

( ) Concentration Exceeds Criteria.

U - Not detected above the reported quantitation limit.

J - The reported quantitation limit is an estimated value.

NA - Not Analyzed

Detection Limits shown are MDL

TABLE A-11C
SEDIMENT SAMPLE ANALYTICAL RESULTS - COMPARED TO HUMAN HEALTH BIOACCUMULATION
NYSEG - MECHANICVILLE

Location ID		SED-AK07
Sample ID		AK-7 (0-1) META
Matrix		Sediment
Depth Interval (ft)		0.0-1.0
Date Sampled		10/02/02
Parameter	**Units**	
Polychlorinated Biphenyls		
Aroclor 1242	UG/KG	NA
Aroclor 1248	UG/KG	NA
Aroclor 1254	UG/KG	NA
Aroclor 1260	UG/KG	NA
Miscellaneous Parameters		
Cyanide, Free (weak & dissoc.)	UG/KG	NA
Cyanide, Total	UG/KG	NA
Phenolics, Total Recoverable	UG/KG	NA
Total Organic Carbon (TOC)	MG/KG	23,500

Criteria- NYSDEC Technical Guidance for Screening Contaminated Sediments, Human Health Bioaccumulation, January 25, 1999.

(NV) - No Calculable Value, TOC Not Detected

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria.

U - Not detected above the reported quantitation limit.

J - The reported quantitation limit is an estimated value.

NA - Not Analyzed

Detection Limits shown are MDL

TABLE A-11D
SEDIMENT SAMPLE ANALYTICAL RESULTS - COMPARED TO WILDLIFE BIOACCUMULATION
NYSEG - MECHANICVILLE

Location ID		SED-AK01	SED-AK01	SED-AK02	SED-AK03	SED-AK04
Sample ID		AK-1 (0-1)	AK-1 (0-1) META	AK-2 (0-1)	AK-3 (0-2)	AK-4 (0-1)
Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-1.0	0.0-1.0	0.0-1.0	0.0-2.0	0.0-1.0
Date Sampled		08/28/02	10/02/02	08/28/02	08/28/02	08/28/02
Parameter	**Units**					
Volatile Organic Compounds						
1,1,1-Trichloroethane	UG/KG	5 U	NA	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane	UG/KG	5 U	NA	5 U	5 U	5 U
1,1,2-Trichloroethane	UG/KG	5 U	NA	5 U	5 U	5 U
1,1-Dichloroethane	UG/KG	5 U	NA	5 U	5 U	5 U
1,1-Dichloroethene	UG/KG	5 U	NA	5 U	5 U	5 U
1,2,4-Trimethylbenzene	UG/KG	NA	80 U	NA	NA	NA
1,2-Dichloroethane	UG/KG	5 U	NA	5 U	5 U	5 U
1,2-Dichloroethene (total)	UG/KG	5 U	NA	5 U	5 U	5 U
1,2-Dichloropropane	UG/KG	5 U	NA	5 U	5 U	5 U
1,3-Dichloropropene (cis)	UG/KG	5 U	NA	5 U	5 U	5 U
1,3-Dichloropropene (trans)	UG/KG	5 U	NA	5 U	5 U	5 U
2-Chloroethyl vinyl ether	UG/KG	10 U	NA	10 U	10 U	10 U
2-Hexanone	UG/KG	10 U	NA	10 U	10 U	10 U
4-Methyl-2-Pentanone	UG/KG	10 U	NA	10 U	10 U	10 U
Acetone	UG/KG	10 U	NA	10 U	10 U	10 U
Benzene	UG/KG	5 U	80 U	5 U	5 U	5 U
Bromodichloromethane	UG/KG	5 U	NA	5 U	5 U	5 U
Bromoform	UG/KG	5 U	NA	5 U	5 U	5 U
Bromomethane	UG/KG	10 U	NA	10 U	10 U	10 U
Carbon Disulfide	UG/KG	5 U	NA	5 U	5 U	5 U
Carbon Tetrachloride	UG/KG	5 U	NA	5 U	5 U	5 U
Chlorobenzene	UG/KG	5 U	NA	5 U	5 U	5 U

Criteria- NYSDEC Technical Guidance for Screening Contaminated Sediments, Wildlife Bioaccumulation, January 25, 1999.

(NV) - No Calculable Value, TOC Not Detected

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria.

U - Not detected above the reported quantitation limit.

J - The reported quantitation limit is an estimated value.

NA - Not Analyzed

Detection Limits shown are MDL

TABLE A-11D
SEDIMENT SAMPLE ANALYTICAL RESULTS - COMPARED TO WILDLIFE BIOACCUMULATION
NYSEG - MECHANICVILLE

Location ID		SED-AK01	SED-AK01	SED-AK02	SED-AK03	SED-AK04
Sample ID		AK-1 (0-1)	AK-1 (0-1) META	AK-2 (0-1)	AK-3 (0-2)	AK-4 (0-1)
Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-1.0	0.0-1.0	0.0-1.0	0.0-2.0	0.0-1.0
Date Sampled		08/28/02	10/02/02	08/28/02	08/28/02	08/28/02
Parameter	**Units**					
Volatile Organic Compounds						
Chloroethane	UG/KG	10 U	NA	10 U	10 U	10 U
Chloroform	UG/KG	5 U	NA	5 U	5 U	5 U
Chloromethane	UG/KG	10 U	NA	10 U	10 U	10 U
Dibromochloromethane	UG/KG	5 U	NA	5 U	5 U	5 U
Ethylbenzene	UG/KG	5 U	80 U	5 U	5 U	5 U
Methyl ethyl ketone (2-Butanone)	UG/KG	10 U	NA	10 U	10 U	10 U
Methylene Chloride	UG/KG	5 U	NA	5 U	5 U	5 U
Styrene	UG/KG	5 U	80 U	5 U	5 U	5 U
Tetrachloroethene	UG/KG	5 U	NA	5 U	5 U	5 U
Toluene	UG/KG	5 U	100	5 U	5 U	5 U
Trichloroethene	UG/KG	5 U	NA	5 U	5 U	5 U
Vinyl Acetate	UG/KG	10 U	NA	10 U	10 U	10 U
Vinyl Chloride	UG/KG	10 U	NA	10 U	10 U	10 U
Xylene (total)	UG/KG	5 U	80 U	5 U	5 U	5 U
Semivolatile Organic Compounds						
1-Methylnaphthalene	UG/KG	NA	80 U	NA	NA	NA
2-Methylnaphthalene	UG/KG	330 U	80 U	330 U	330 U	330 U
Acenaphthene	UG/KG	330 U	80 U	330 U	330 U	330 U
Acenaphthylene	UG/KG	330 U	80 U	330 U	330 U	330 U
Anthracene	UG/KG	330 U	80 U	330 U	330 U	330 U
Benzo(a)anthracene	UG/KG	330 U	120	330 U	330 U	330 U
Benzo(a)pyrene	UG/KG	330 U	130	330 U	330 U	330 U

Criteria- NYSDEC Technical Guidance for Screening Contaminated Sediments, Wildlife Bioaccumulation, January 25, 1999.

(NV) - No Calculable Value, TOC Not Detected

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria.

U - Not detected above the reported quantitation limit.

J - The reported quantitation limit is an estimated value.

NA - Not Analyzed

Detection Limits shown are MDL

TABLE A-11D
SEDIMENT SAMPLE ANALYTICAL RESULTS - COMPARED TO WILDLIFE BIOACCUMULATION
NYSEG - MECHANICVILLE

Location ID		SED-AK01	SED-AK01	SED-AK02	SED-AK03	SED-AK04
Sample ID		AK-1 (0-1)	AK-1 (0-1) META	AK-2 (0-1)	AK-3 (0-2)	AK-4 (0-1)
Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-1.0	0.0-1.0	0.0-1.0	0.0-2.0	0.0-1.0
Date Sampled		08/28/02	10/02/02	08/28/02	08/28/02	08/28/02
Parameter	**Units**					
Semivolatile Organic Compounds						
Benzo(b)fluoranthene	UG/KG	330 U	170	330 U	330 U	330 U
Benzo(e)pyrene	UG/KG	NA	110	NA	NA	NA
Benzo(g,h,i)perylene	UG/KG	330 U	160	330 U	330 U	330 U
Benzo(k)fluoranthene	UG/KG	330 U	130	330 U	330 U	330 U
Chrysene	UG/KG	330 U	170	330 U	330 U	330 U
Dibenz(a,h)anthracene	UG/KG	330 U	80 U	330 U	330 U	330 U
Dibenzofuran	UG/KG	330 U	80 U	330 U	330 U	330 U
Fluoranthene	UG/KG	330 U	300	330 U	330 U	330 U
Fluorene	UG/KG	330 U	80 U	330 U	330 U	330 U
Indeno(1,2,3-cd)pyrene	UG/KG	330 U	130	330 U	330 U	330 U
Naphthalene	UG/KG	330 U	50 J	330 U	330 U	330 U
Perylene	UG/KG	NA	80 U	NA	NA	NA
Phenanthrene	UG/KG	330 U	120	330 U	330 U	330 U
Pyrene	UG/KG	330 U	230	330 U	330 U	330 U
Total Polycyclic Aromatic Hydrocarbons	UG/KG	ND	1,710	ND	ND	ND
Polychlorinated Biphenyls						
Aroclor 1016	UG/KG	1,000 U (3.1)	NA	1,000 U (7.6)	1,000 U (3.5)	1,000 U (2.7)
Aroclor 1221	UG/KG	1,000 U (3.1)	NA	1,000 U (7.6)	1,000 U (3.5)	1,000 U (2.7)
Aroclor 1232	UG/KG	1,000 U (3.1)	NA	1,000 U (7.6)	1,000 U (3.5)	1,000 U (2.7)
Aroclor 1242	UG/KG	1,000 U (3.1)	NA	1,000 U (7.6)	1,000 U (3.5)	1,000 U (2.7)
Aroclor 1248	UG/KG	1,000 U (3.1)	NA	1,000 U (7.6)	1,000 U (3.5)	1,000 U (2.7)
Aroclor 1254	UG/KG	1,000 U (3.1)	NA	1,000 U (7.6)	1,000 U (3.5)	1,000 U (2.7)

Criteria- NYSDEC Technical Guidance for Screening Contaminated Sediments, Wildlife Bioaccumulation, January 25, 1999.

(NV) - No Calculable Value, TOC Not Detected

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria.

U - Not detected above the reported quantitation limit.

J - The reported quantitation limit is an estimated value.

NA - Not Analyzed

Detection Limits shown are MDL

TABLE A-11D
SEDIMENT SAMPLE ANALYTICAL RESULTS - COMPARED TO WILDLIFE BIOACCUMULATION
NYSEG - MECHANICVILLE

Location ID		SED-AK01	SED-AK01	SED-AK02	SED-AK03	SED-AK04
Sample ID		AK-1 (0-1)	AK-1 (0-1) META	AK-2 (0-1)	AK-3 (0-2)	AK-4 (0-1)
Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-1.0	0.0-1.0	0.0-1.0	0.0-2.0	0.0-1.0
Date Sampled		08/28/02	10/02/02	08/28/02	08/28/02	08/28/02
Parameter	**Units**					
Polychlorinated Biphenyls						
Aroclor 1260	UG/KG	1,000 U (3.1)	NA	1,000 U (7.6)	1,000 U (3.5)	1,000 U (2.7)
Miscellaneous Parameters						
Cyanide, Free (weak & dissoc.)	UG/KG	1,200 U	NA	1,400 U	1,200 U	1,200 U
Cyanide, Total	UG/KG	1,200 U	NA	1,400 U	1,200 U	1,200 U
Phenolics, Total Recoverable	UG/KG	200 U	NA	200 U	200 U	200 U
Total Organic Carbon (TOC)	MG/KG	2,240	2,240	5,420	2,530	1,900

Criteria- NYSDEC Technical Guidance for Screening Contaminated Sediments, Wildlife Bioaccumulation, January 25, 1999.

(NV) - No Calculable Value, TOC Not Detected

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria.

U - Not detected above the reported quantitation limit.

J - The reported quantitation limit is an estimated value.

NA - Not Analyzed

Detection Limits shown are MDL

TABLE A-11D
SEDIMENT SAMPLE ANALYTICAL RESULTS - COMPARED TO WILDLIFE BIOACCUMULATION
NYSEG - MECHANICVILLE

Location ID		SED-AK05	SED-AK05	SED-AK06	SED-AK07	SED-AK07
Sample ID		AK-5 (0-1)	AK-5 (0-1) META	AK-6 (0-1)	AK-7 (0-1)	AK-7 (0-1)DUP
Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0
Date Sampled		08/28/02	10/02/02	08/28/02	08/28/02	08/28/02
Parameter	Units					Field Duplicate (1-1)
Volatile Organic Compounds						
1,1,1-Trichloroethane	UG/KG	5 U	NA	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane	UG/KG	5 U	NA	5 U	5 U	5 U
1,1,2-Trichloroethane	UG/KG	5 U	NA	5 U	5 U	5 U
1,1-Dichloroethane	UG/KG	5 U	NA	5 U	5 U	5 U
1,1-Dichloroethene	UG/KG	5 U	NA	5 U	5 U	5 U
1,2,4-Trimethylbenzene	UG/KG	NA	1,120	NA	NA	NA
1,2-Dichloroethane	UG/KG	5 U	NA	5 U	5 U	5 U
1,2-Dichloroethene (total)	UG/KG	5 U	NA	5 U	5 U	5 U
1,2-Dichloropropane	UG/KG	5 U	NA	5 U	5 U	5 U
1,3-Dichloropropene (cis)	UG/KG	5 U	NA	5 U	5 U	5 U
1,3-Dichloropropene (trans)	UG/KG	5 U	NA	5 U	5 U	5 U
2-Chloroethyl vinyl ether	UG/KG	10 U	NA	10 U	10 U	10 U
2-Hexanone	UG/KG	10 U	NA	10 U	10 U	10 U
4-Methyl-2-Pentanone	UG/KG	10 U	NA	10 U	10 U	10 U
Acetone	UG/KG	10 U	NA	10 U	10 U	10 U
Benzene	UG/KG	5 U	3,520	5 U	5 U	5 U
Bromodichloromethane	UG/KG	5 U	NA	5 U	5 U	5 U
Bromoform	UG/KG	5 U	NA	5 U	5 U	5 U
Bromomethane	UG/KG	10 U	NA	10 U	10 U	10 U
Carbon Disulfide	UG/KG	5 U	NA	5 U	5 U	5 U
Carbon Tetrachloride	UG/KG	5 U	NA	5 U	5 U	5 U
Chlorobenzene	UG/KG	5 U	NA	5 U	5 U	5 U

Criteria- NYSDEC Technical Guidance for Screening Contaminated Sediments, Wildlife Bioaccumulation, January 25, 1999.

(NV) - No Calculable Value, TOC Not Detected

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria.

U - Not detected above the reported quantitation limit.

J - The reported quantitation limit is an estimated value.

NA - Not Analyzed

Detection Limits shown are MDL

TABLE A-11D
SEDIMENT SAMPLE ANALYTICAL RESULTS - COMPARED TO WILDLIFE BIOACCUMULATION
NYSEG - MECHANICVILLE

Location ID		SED-AK05	SED-AK05	SED-AK06	SED-AK07	SED-AK07
Sample ID		AK-5 (0-1)	AK-5 (0-1) META	AK-6 (0-1)	AK-7 (0-1)	AK-7 (0-1)DUP
Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0
Date Sampled		08/28/02	10/02/02	08/28/02	08/28/02	08/28/02
Parameter	**Units**					Field Duplicate (1-1)
Volatile Organic Compounds						
Chloroethane	UG/KG	10 U	NA	10 U	10 U	10 U
Chloroform	UG/KG	5 U	NA	5 U	5 U	5 U
Chloromethane	UG/KG	10 U	NA	10 U	10 U	10 U
Dibromochloromethane	UG/KG	5 U	NA	5 U	5 U	5 U
Ethylbenzene	UG/KG	5 U	9,600	5 U	5 U	5 U
Methyl ethyl ketone (2-Butanone)	UG/KG	10 U	NA	10 U	10 U	10 U
Methylene Chloride	UG/KG	5 U	NA	5 U	5 U	5 U
Styrene	UG/KG	5 U	80	5 U	5 U	5 U
Tetrachloroethene	UG/KG	5 U	NA	5 U	5 U	5 U
Toluene	UG/KG	5 U	730	5 U	5 U	5 U
Trichloroethene	UG/KG	5 U	NA	5 U	5 U	5 U
Vinyl Acetate	UG/KG	10 U	NA	10 U	10 U	10 U
Vinyl Chloride	UG/KG	10 U	NA	10 U	10 U	10 U
Xylene (total)	UG/KG	5 U	6,060	5 U	5 U	5 U
Semivolatile Organic Compounds						
1-Methylnaphthalene	UG/KG	NA	19,500	NA	NA	NA
2-Methylnaphthalene	UG/KG	380	27,200	330 U	870	NA
Acenaphthene	UG/KG	530	12,600	330 U	600	NA
Acenaphthylene	UG/KG	330 U	910	330 U	330 U	NA
Anthracene	UG/KG	330 U	2,240	330 U	530	NA
Benzo(a)anthracene	UG/KG	330 U	970	330 U	500	NA
Benzo(a)pyrene	UG/KG	330 U	1,070	330 U	470	NA

Criteria- NYSDEC Technical Guidance for Screening Contaminated Sediments, Wildlife Bioaccumulation, January 25, 1999.

(NV) - No Calculable Value, TOC Not Detected

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria.

U - Not detected above the reported quantitation limit.

J - The reported quantitation limit is an estimated value.

NA - Not Analyzed

Detection Limits shown are MDL

TABLE A-11D
SEDIMENT SAMPLE ANALYTICAL RESULTS - COMPARED TO WILDLIFE BIOACCUMULATION
NYSEG - MECHANICVILLE

Location ID		SED-AK05	SED-AK05	SED-AK06	SED-AK07	SED-AK07
Sample ID		AK-5 (0-1)	AK-5 (0-1) META	AK-6 (0-1)	AK-7 (0-1)	AK-7 (0-1)DUP
Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0
Date Sampled		08/28/02	10/02/02	08/28/02	08/28/02	08/28/02
Parameter	**Units**					Field Duplicate (1-1)
Semivolatile Organic Compounds						
Benzo(b)fluoranthene	UG/KG	330 U	600	330 U	330 U	NA
Benzo(e)pyrene	UG/KG	NA	620	NA	NA	NA
Benzo(g,h,i)perylene	UG/KG	330 U	770	330 U	330 U	NA
Benzo(k)fluoranthene	UG/KG	330 U	600	330 U	330 U	NA
Chrysene	UG/KG	330 U	930	330 U	480	NA
Dibenz(a,h)anthracene	UG/KG	330 U	190	330 U	330 U	NA
Dibenzofuran	UG/KG	330 U	730	330 U	330 U	NA
Fluoranthene	UG/KG	330	2,670	330 U	1,100	NA
Fluorene	UG/KG	330 U	5,680	330 U	420	NA
Indeno(1,2,3-cd)pyrene	UG/KG	330 U	550	330 U	350	NA
Naphthalene	UG/KG	1,300	71,400	330 U	830	NA
Perylene	UG/KG	NA	170	NA	NA	NA
Phenanthrene	UG/KG	620	10,000	330 U	2,000	NA
Pyrene	UG/KG	380	3,630	330 U	2,000	NA
Total Polycyclic Aromatic Hydrocarbons	UG/KG	3,540	142,010	ND	10,150	NA
Polychlorinated Biphenyls						
Aroclor 1016	UG/KG	1,000 U (4.4)	NA	1,000 U (8.7)	1,000 U (32.9)	1,000 U (32.9)
Aroclor 1221	UG/KG	1,000 U (4.4)	NA	1,000 U (8.7)	1,000 U (32.9)	1,000 U (32.9)
Aroclor 1232	UG/KG	1,000 U (4.4)	NA	1,000 U (8.7)	1,000 U (32.9)	1,000 U (32.9)
Aroclor 1242	UG/KG	1,000 U (4.4)	NA	1,000 U (8.7)	1,000 U (32.9)	1,000 U (32.9)
Aroclor 1248	UG/KG	1,000 U (4.4)	NA	1,000 U (8.7)	1,000 U (32.9)	1,000 U (32.9)
Aroclor 1254	UG/KG	1,000 U (4.4)	NA	1,000 U (8.7)	1,000 U (32.9)	1,000 U (32.9)

Criteria- NYSDEC Technical Guidance for Screening Contaminated Sediments, Wildlife Bioaccumulation, January 25, 1999.

(NV) - No Calculable Value, TOC Not Detected

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria.

U - Not detected above the reported quantitation limit.

J - The reported quantitation limit is an estimated value.

NA - Not Analyzed

Detection Limits shown are MDL

TABLE A-11D
SEDIMENT SAMPLE ANALYTICAL RESULTS - COMPARED TO WILDLIFE BIOACCUMULATION
NYSEG - MECHANICVILLE

Location ID		SED-AK05	SED-AK05	SED-AK06	SED-AK07	SED-AK07
Sample ID		AK-5 (0-1)	AK-5 (0-1) META	AK-6 (0-1)	AK-7 (0-1)	AK-7 (0-1)DUP
Matrix		Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)		0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0	0.0-1.0
Date Sampled		08/28/02	10/02/02	08/28/02	08/28/02	08/28/02
Parameter	Units					Field Duplicate (1-1)
Polychlorinated Biphenyls						
Aroclor 1260	UG/KG	1,000 U (4.4)	NA	1,000 U (8.7)	1,000 U (32.9)	1,000 U (32.9)
Miscellaneous Parameters						
Cyanide, Free (weak & dissoc.)	UG/KG	1,200 U	NA	1,200 U	1,800 U	NA
Cyanide, Total	UG/KG	1,200 U	NA	1,200 U	1,800 U	NA
Phenolics, Total Recoverable	UG/KG	200 U	NA	1,300	200 U	200 U
Total Organic Carbon (TOC)	MG/KG	3,150	3,150	6,180	23,500	23,500

Criteria- NYSDEC Technical Guidance for Screening Contaminated Sediments, Wildlife Bioaccumulation, January 25, 1999.

(NV) - No Calculable Value, TOC Not Detected

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria.

U - Not detected above the reported quantitation limit.

J - The reported quantitation limit is an estimated value.

NA - Not Analyzed

Detection Limits shown are MDL

TABLE A-11D
SEDIMENT SAMPLE ANALYTICAL RESULTS - COMPARED TO WILDLIFE BIOACCUMULATION
NYSEG - MECHANICVILLE

Location ID		SED-AK07
Sample ID		AK-7 (0-1) META
Matrix		Sediment
Depth Interval (ft)		0.0-1.0
Date Sampled		10/02/02
Parameter	**Units**	
Volatile Organic Compounds		
1,1,1-Trichloroethane	UG/KG	NA
1,1,2,2-Tetrachloroethane	UG/KG	NA
1,1,2-Trichloroethane	UG/KG	NA
1,1-Dichloroethane	UG/KG	NA
1,1-Dichloroethene	UG/KG	NA
1,2,4-Trimethylbenzene	UG/KG	14,400
1,2-Dichloroethane	UG/KG	NA
1,2-Dichloroethene (total)	UG/KG	NA
1,2-Dichloropropane	UG/KG	NA
1,3-Dichloropropene (cis)	UG/KG	NA
1,3-Dichloropropene (trans)	UG/KG	NA
2-Chloroethyl vinyl ether	UG/KG	NA
2-Hexanone	UG/KG	NA
4-Methyl-2-Pentanone	UG/KG	NA
Acetone	UG/KG	NA
Benzene	UG/KG	3,190
Bromodichloromethane	UG/KG	NA
Bromoform	UG/KG	NA
Bromomethane	UG/KG	NA
Carbon Disulfide	UG/KG	NA
Carbon Tetrachloride	UG/KG	NA
Chlorobenzene	UG/KG	NA

Criteria- NYSDEC Technical Guidance for Screening Contaminated Sediments, Wildlife Bioaccumulation, January 25, 1999.

(NV) - No Calculable Value, TOC Not Detected

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria.

U - Not detected above the reported quantitation limit.

J - The reported quantitation limit is an estimated value.

NA - Not Analyzed

Detection Limits shown are MDL

TABLE A-11D
SEDIMENT SAMPLE ANALYTICAL RESULTS - COMPARED TO WILDLIFE BIOACCUMULATION
NYSEG - MECHANICVILLE

Location ID		SED-AK07
Sample ID		AK-7 (0-1) META
Matrix		Sediment
Depth Interval (ft)		0.0-1.0
Date Sampled		10/02/02
Parameter	**Units**	
Volatile Organic Compounds		
Chloroethane	UG/KG	NA
Chloroform	UG/KG	NA
Chloromethane	UG/KG	NA
Dibromochloromethane	UG/KG	NA
Ethylbenzene	UG/KG	78,100
Methyl ethyl ketone (2-Butanone)	UG/KG	NA
Methylene Chloride	UG/KG	NA
Styrene	UG/KG	5,780
Tetrachloroethene	UG/KG	NA
Toluene	UG/KG	24,800
Trichloroethene	UG/KG	NA
Vinyl Acetate	UG/KG	NA
Vinyl Chloride	UG/KG	NA
Xylene (total)	UG/KG	64,700
Semivolatile Organic Compounds		
1-Methylnaphthalene	UG/KG	255,000
2-Methylnaphthalene	UG/KG	414,000
Acenaphthene	UG/KG	137,000
Acenaphthylene	UG/KG	127,000
Anthracene	UG/KG	111,000
Benzo(a)anthracene	UG/KG	77,600
Benzo(a)pyrene	UG/KG	65,800

Criteria- NYSDEC Technical Guidance for Screening Contaminated Sediments, Wildlife Bioaccumulation, January 25, 1999.

(NV) - No Calculable Value, TOC Not Detected

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria.

U - Not detected above the reported quantitation limit.

J - The reported quantitation limit is an estimated value.

NA - Not Analyzed

Detection Limits shown are MDL

TABLE A-11D
SEDIMENT SAMPLE ANALYTICAL RESULTS - COMPARED TO WILDLIFE BIOACCUMULATION
NYSEG - MECHANICVILLE

Location ID		SED-AK07
Sample ID		AK-7 (0-1) META
Matrix		Sediment
Depth Interval (ft)		0.0-1.0
Date Sampled		10/02/02
Parameter	**Units**	
Semivolatile Organic Compounds		
Benzo(b)fluoranthene	UG/KG	32,900
Benzo(e)pyrene	UG/KG	33,100
Benzo(g,h,i)perylene	UG/KG	22,800
Benzo(k)fluoranthene	UG/KG	33,400
Chrysene	UG/KG	65,300
Dibenz(a,h)anthracene	UG/KG	5,630
Dibenzofuran	UG/KG	12,700
Fluoranthene	UG/KG	150,000
Fluorene	UG/KG	140,000
Indeno(1,2,3-cd)pyrene	UG/KG	17,400
Naphthalene	UG/KG	808,000
Perylene	UG/KG	7,940
Phenanthrene	UG/KG	382,000
Pyrene	UG/KG	221,000
Total Polycyclic Aromatic Hydrocarbons	UG/KG	2,810,830
Polychlorinated Biphenyls		
Aroclor 1016	UG/KG	NA
Aroclor 1221	UG/KG	NA
Aroclor 1232	UG/KG	NA
Aroclor 1242	UG/KG	NA
Aroclor 1248	UG/KG	NA
Aroclor 1254	UG/KG	NA

Criteria- NYSDEC Technical Guidance for Screening Contaminated Sediments, Wildlife Bioaccumulation, January 25, 1999.

(NV) - No Calculable Value, TOC Not Detected

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria.

U - Not detected above the reported quantitation limit.

J - The reported quantitation limit is an estimated value.

NA - Not Analyzed

Detection Limits shown are MDL

TABLE A-11D
SEDIMENT SAMPLE ANALYTICAL RESULTS - COMPARED TO WILDLIFE BIOACCUMULATION
NYSEG - MECHANICVILLE

Location ID		SED-AK07
Sample ID		AK-7 (0-1) META
Matrix		Sediment
Depth Interval (ft)		0.0-1.0
Date Sampled		10/02/02
Parameter	**Units**	
Polychlorinated Biphenyls		
Aroclor 1260	UG/KG	NA
Miscellaneous Parameters		
Cyanide, Free (weak & dissoc.)	UG/KG	NA
Cyanide, Total	UG/KG	NA
Phenolics, Total Recoverable	UG/KG	NA
Total Organic Carbon (TOC)	MG/KG	23,500

Criteria- NYSDEC Technical Guidance for Screening Contaminated Sediments, Wildlife Bioaccumulation, January 25, 1999.

(NV) - No Calculable Value, TOC Not Detected

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria.

U - Not detected above the reported quantitation limit.

J - The reported quantitation limit is an estimated value.

NA - Not Analyzed

Detection Limits shown are MDL

TABLE A-11E
SEDIMENT SAMPLE ANALYTICAL RESULTS - METALS COMPARED TO LOWEST AND SEVERE EFFECT LEVELS
NYSEG - MECHANICVILLE

Location ID				SED-AK01	SED-AK02	SED-AK03	SED-AK04	SED-AK05
Sample ID				AK-1 (0-1)	AK-2 (0-1)	AK-3 (0-2)	AK-4 (0-1)	AK-5 (0-1)
Matrix				Sediment	Sediment	Sediment	Sediment	Sediment
Depth Interval (ft)				0.0-1.0	0.0-1.0	0.0-2.0	0.0-1.0	0.0-1.0
Date Sampled				08/28/02	08/28/02	08/28/02	08/28/02	08/28/02
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**					
Metals								
Aluminum	UG/KG	-	-	3,440,000	4,400,000	3,810,000	4,340,000	4,540,000
Antimony	UG/KG	-	-	3,680 U	4,000 U	3,640 U	3,500 U	3,750 U
Arsenic	UG/KG	-	-	310 U	340 U	300 U	300 U	310 U
Barium	UG/KG	-	-	18,900	24,600	18,300	22,700	27,700
Cadmium	UG/KG	-	-	310 U	340 U	300 U	300 U	310 U
Chromium	UG/KG	-	-	2,580	3,160	2,240	3,710	3,060
Copper	UG/KG	-	-	3,670	8,820	3,940	10,500	5,000
Iron	UG/KG	-	-	6,570,000	8,040,000	7,700,000	8,410,000	875,000
Lead	UG/KG	-	-	980	5,060	6,610	350	9,190
Manganese	UG/KG	-	-	179,000	207,000	293,000	315,000	538,000
Mercury	UG/KG	-	-	24 U	27 U	24 U	24 U	25 U
Nickel	UG/KG	-	-	4,970	6,800	5,390	6,470	7,060
Selenium	UG/KG	-	-	310 U	340 U	300 U	300 U	310 U
Silver	UG/KG	-	-	1,230 U	1,340 U	1,210 U	1,180 U	1,250 U
Vanadium	UG/KG	-	-	4,940	6,390	5,640	6,700	6,440
Zinc	UG/KG	-	-	29,800	37,400	30,200	25,600	29,700

Criteria (1)- NYSDEC Technical Guidance for Screening Contaminated Sediments, Lowest Effect Level, January 25, 1999.

Criteria (2)- NYSDEC Technical Guidance for Screening Contaminated Sediments, Severe Effect Level, January 25, 1999.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria (1)

Concentration Exceeds Criteria (2)

U - Not detected above the reported quantitation limit.
J - The reported quantitation limit is an estimated value.
NA - Not Analyzed

Detection Limits shown are MDL

N:\38393614.00000\DB\Program\EDMS.md
Printed: 12/12/2005 2:08:23 P
[SITEID] = '01' AND [MATRIX] = 'SE' AND [LOGDATE] >= #1/1/2001# AND [LOCID] LIKE 'SED-AK*' AND [PRCCODE] <> 'ASVOC' AND [PRCCODE] <> 'AVS/S' AND

TABLE A-11E
SEDIMENT SAMPLE ANALYTICAL RESULTS - METALS COMPARED TO LOWEST AND SEVERE EFFECT LEVELS
NYSEG - MECHANICVILLE

Location ID				SED-AK06	SED-AK07	SED-AK07
Sample ID				AK-6 (0-1)	AK-7 (0-1)	AK-7 (0-1)DUP
Matrix				Sediment	Sediment	Sediment
Depth Interval (ft)				0.0-1.0	0.0-1.0	0.0-1.0
Date Sampled				08/28/02	08/28/02	08/28/02
Parameter	Units	Criteria (1)	Criteria (2)			Field Duplicate (1-1)
Metals						
Aluminum	UG/KG	-	-	3,300,000	5,470,000	5,520,000
Antimony	UG/KG	-	-	3,720 U	5,260 U	5,000 U
Arsenic	UG/KG	-	-	310 U	440 U	1 U
Barium	UG/KG	-	-	19,200	39,300	38,700
Cadmium	UG/KG	-	-	310 U	440 U	420 U
Chromium	UG/KG	-	-	1,920	3,020	2,830
Copper	UG/KG	-	-	4,090	10,600	8,750
Iron	UG/KG	-	-	6,630,000	8,440,000	8,450,000
Lead	UG/KG	-	-	1,880	15,100	4,940
Manganese	UG/KG	-	-	253,000	554,000	532,000
Mercury	UG/KG	-	-	25 U	35 U	33 U
Nickel	UG/KG	-	-	4,810	6,400	6,300
Selenium	UG/KG	-	-	310 U	440 U	420 U
Silver	UG/KG	-	-	1,240 U	1,750 U	1,770 U
Vanadium	UG/KG	-	-	4,800	7,540	7,470
Zinc	UG/KG	-	-	23,800	52,100	42,000

Criteria (1)- NYSDEC Technical Guidance for Screening Contaminated Sediments, Lowest Effect Level, January 25, 1999.

Criteria (2)- NYSDEC Technical Guidance for Screening Contaminated Sediments, Severe Effect Level, January 25, 1999.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria (1)

Concentration Exceeds Criteria (2)

U - Not detected above the reported quantitation limit.
J - The reported quantitation limit is an estimated value.
NA - Not Analyzed

Detection Limits shown are MDL

TABLE A-11F
STATISTICAL SUMMARY OF SRI SEDIMENT ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	No. of Samples	No. of Detections	Range of Detections					Dist	Location of Max Value	Depth Of Max
				Min	Max	Avg	StdDev	UCL95			
Volatile Organic Compounds											
1,1,1-Trichloroethane	UG/KG	7	-	-	-	-	-	-	-	-	
1,1,2,2-Tetrachloroethane	UG/KG	7	-	-	-	-	-	-	-	-	
1,1,2-Trichloroethane	UG/KG	7	-	-	-	-	-	-	-	-	
1,1-Dichloroethane	UG/KG	7	-	-	-	-	-	-	-	-	
1,1-Dichloroethene	UG/KG	7	-	-	-	-	-	-	-	-	
1,2,4-Trimethylbenzene	UG/KG	3	2	1,120	1.44E+04	7,760	9,390	2.08E+04	Non-Normal	SED-AK07	0-1
1,2-Dichloroethane	UG/KG	7	-	-	-	-	-	-	-	-	
1,2-Dichloroethene (total)	UG/KG	7	-	-	-	-	-	-	-	-	
1,2-Dichloropropane	UG/KG	7	-	-	-	-	-	-	-	-	
1,3-Dichloropropene (cis)	UG/KG	7	-	-	-	-	-	-	-	-	
1,3-Dichloropropene (trans)	UG/KG	7	-	-	-	-	-	-	-	-	
2-Chloroethyl vinyl ether	UG/KG	7	-	-	-	-	-	-	-	-	
2-Hexanone	UG/KG	7	-	-	-	-	-	-	-	-	
4-Methyl-2-Pentanone	UG/KG	7	-	-	-	-	-	-	-	-	
Acetone	UG/KG	7	-	-	-	-	-	-	-	-	
Benzene	UG/KG	10	2	3,190	3,520	3,355	233.3	3,678	Non-Normal	SED-AK05	0-1
Bromodichloromethane	UG/KG	7	-	-	-	-	-	-	-	-	
Bromoform	UG/KG	7	-	-	-	-	-	-	-	-	

1) For samples with duplicates, detected concentrations for parameters were averaged.

2) For non-detects 1/2 the detection limit was used in the statistical analysis.

TABLE A-11F
STATISTICAL SUMMARY OF SRI SEDIMENT ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	No. of Samples	No. of Detections	Range of Detections					Dist	Location of Max Value	Depth Of Max
				Min	Max	Avg	StdDev	UCL95			
Volatile Organic Compounds											
Bromomethane	UG/KG	7	-	-	-	-	-	-	-	-	
Carbon Disulfide	UG/KG	7	-	-	-	-	-	-	-	-	
Carbon Tetrachloride	UG/KG	7	-	-	-	-	-	-	-	-	
Chlorobenzene	UG/KG	7	-	-	-	-	-	-	-	-	
Chloroethane	UG/KG	7	-	-	-	-	-	-	-	-	
Chloroform	UG/KG	7	-	-	-	-	-	-	-	-	
Chloromethane	UG/KG	7	-	-	-	-	-	-	-	-	
Dibromochloromethane	UG/KG	7	-	-	-	-	-	-	-	-	
Ethylbenzene	UG/KG	10	2	9,600	7.81E+04	4.39E+04	4.84E+04	1.11E+05	Non-Normal	SED-AK07	0-1
Methyl ethyl ketone (2-Butanone)	UG/KG	7	-	-	-	-	-	-	-	-	
Methylene Chloride	UG/KG	7	-	-	-	-	-	-	-	-	
Styrene	UG/KG	10	2	80.00	5,780	2,930	4,031	8,516	Non-Normal	SED-AK07	0-1
Tetrachloroethene	UG/KG	7	-	-	-	-	-	-	-	-	
Toluene	UG/KG	10	3	100.0	2.48E+04	8,543	1.41E+04	2.45E+04	Non-Normal	SED-AK07	0-1
Trichloroethene	UG/KG	7	-	-	-	-	-	-	-	-	
Vinyl Acetate	UG/KG	7	-	-	-	-	-	-	-	-	
Vinyl Chloride	UG/KG	7	-	-	-	-	-	-	-	-	
Xylene (total)	UG/KG	10	2	6,060	6.47E+04	3.54E+04	4.15E+04	9.28E+04	Non-Normal	SED-AK07	0-1

1) For samples with duplicates, detected concentrations for parameters were averaged.

2) For non-detects 1/2 the detection limit was used in the statistical analysis.

TABLE A-11F
STATISTICAL SUMMARY OF SRI SEDIMENT ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	No. of Samples	No. of Detections	Range of Detections					Dist	Location of Max Value	Depth Of Max
				Min	Max	Avg	StdDev	UCL95			
Semivolatile Organic Compounds											
1-Methylnaphthalene	UG/KG	3	2	1.95E+04	2.55E+05	1.37E+05	1.67E+05	3.68E+05	Non-Normal	SED-AK07	0-1
2-Methylnaphthalene	UG/KG	10	4	380.0	4.14E+05	1.11E+05	2.03E+05	3.09E+05	Non-Normal	SED-AK07	0-1
Acenaphthene	UG/KG	10	4	530.0	1.37E+05	3.77E+04	6.65E+04	1.03E+05	Non-Normal	SED-AK07	0-1
Acenaphthylene	UG/KG	10	2	910.0	1.27E+05	6.40E+04	8.92E+04	1.88E+05	Non-Normal	SED-AK07	0-1
Anthracene	UG/KG	10	3	530.0	1.11E+05	3.79E+04	6.33E+04	1.10E+05	Non-Normal	SED-AK07	0-1
Benzo(a)anthracene	UG/KG	10	4	120.0	7.76E+04	1.98E+04	3.85E+04	5.76E+04	Non-Normal	SED-AK07	0-1
Benzo(a)pyrene	UG/KG	10	4	130.0	6.58E+04	1.69E+04	3.26E+04	4.88E+04	Non-Normal	SED-AK07	0-1
Benzo(b)fluoranthene	UG/KG	10	3	170.0	3.29E+04	1.12E+04	1.88E+04	3.25E+04	Non-Normal	SED-AK07	0-1
Benzo(e)pyrene	UG/KG	3	3	110.0	3.31E+04	1.13E+04	1.89E+04	3.27E+04	Non-Normal	SED-AK07	0-1
Benzo(g,h,i)perylene	UG/KG	10	3	160.0	2.28E+04	7,910	1.29E+04	2.25E+04	Non-Normal	SED-AK07	0-1
Benzo(k)fluoranthene	UG/KG	10	3	130.0	3.34E+04	1.14E+04	1.91E+04	3.30E+04	Non-Normal	SED-AK07	0-1
Chrysene	UG/KG	10	4	170.0	6.53E+04	1.67E+04	3.24E+04	4.85E+04	Non-Normal	SED-AK07	0-1
Dibenz(a,h)anthracene	UG/KG	10	2	190.0	5,630	2,910	3,847	8,241	Non-Normal	SED-AK07	0-1
Dibenzofuran	UG/KG	10	2	730.0	1.27E+04	6,715	8,464	1.84E+04	Non-Normal	SED-AK07	0-1
Fluoranthene	UG/KG	10	5	300.0	1.50E+05	3.09E+04	6.66E+04	8.93E+04	Non-Normal	SED-AK07	0-1
Fluorene	UG/KG	10	3	420.0	1.40E+05	4.87E+04	7.91E+04	1.38E+05	Non-Normal	SED-AK07	0-1
Indeno(1,2,3-cd)pyrene	UG/KG	10	4	130.0	1.74E+04	4,608	8,530	1.30E+04	Non-Normal	SED-AK07	0-1
Naphthalene	UG/KG	10	5	50.00	8.08E+05	1.76E+05	3.54E+05	4.87E+05	Non-Normal	SED-AK07	0-1

1) For samples with duplicates, detected concentrations for parameters were averaged.

2) For non-detects 1/2 the detection limit was used in the statistical analysis.

TABLE A-11F
STATISTICAL SUMMARY OF SRI SEDIMENT ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	No. of Samples	No. of Detections	Range of Detections					Dist	Location of Max Value	Depth Of Max
				Min	Max	Avg	StdDev	UCL95			
Semivolatile Organic Compounds											
Perylene	UG/KG	3	2	170.0	7,940	4,055	5,494	1.17E+04	Non-Normal	SED-AK07	0-1
Phenanthrene	UG/KG	10	5	120.0	3.82E+05	7.89E+04	1.69E+05	2.27E+05	Non-Normal	SED-AK07	0-1
Pyrene	UG/KG	10	5	230.0	2.21E+05	4.54E+04	9.81E+04	1.31E+05	Non-Normal	SED-AK07	0-1
Polychlorinated Biphenyls											
Aroclor 1016	UG/KG	7	-	-	-	-	-	-	-	-	
Aroclor 1221	UG/KG	7	-	-	-	-	-	-	-	-	
Aroclor 1232	UG/KG	7	-	-	-	-	-	-	-	-	
Aroclor 1242	UG/KG	7	-	-	-	-	-	-	-	-	
Aroclor 1248	UG/KG	7	-	-	-	-	-	-	-	-	
Aroclor 1254	UG/KG	7	-	-	-	-	-	-	-	-	
Aroclor 1260	UG/KG	7	-	-	-	-	-	-	-	-	
Metals											
Aluminum	UG/KG	7	7	3.30E+06	5.50E+06	4.19E+06	7.52E+05	4.75E+06	Normal	SED-AK07	0-1
Antimony	UG/KG	7	-	-	-	-	-	-	-	-	
Arsenic	UG/KG	7	-	-	-	-	-	-	-	-	
Barium	UG/KG	7	7	1.83E+04	3.90E+04	2.43E+04	7,320	2.98E+04	Non-Normal	SED-AK07	0-1
Cadmium	UG/KG	7	-	-	-	-	-	-	-	-	
Chromium	UG/KG	7	7	1,920	3,710	2,799	602.4	3,246	Normal	SED-AK04	0-1

1) For samples with duplicates, detected concentrations for parameters were averaged.

2) For non-detects 1/2 the detection limit was used in the statistical analysis.

TABLE A-11F
STATISTICAL SUMMARY OF SRI SEDIMENT ANALYTICAL RESULTS
NYSEG - MECHANICVILLE

Parameter	Units	No. of Samples	No. of Detections	Range of Detections					Dist	Location of Max Value	Depth Of Max
				Min	Max	Avg	StdDev	UCL95			
Metals											
Copper	UG/KG	7	7	3,670	1.05E+04	6,528	3,002	8,752	Normal	SED-AK04	0-1
Iron	UG/KG	7	7	8.75E+05	8.45E+06	6.67E+06	2.67E+06	8.64E+06	Non-Normal	SED-AK07	0-1
Lead	UG/KG	7	7	350.0	1.00E+04	4,870	3,932	7,783	Normal	SED-AK07	0-1
Manganese	UG/KG	7	7	1.79E+05	5.43E+05	3.33E+05	1.49E+05	4.43E+05	Normal	SED-AK07	0-1
Mercury	UG/KG	7	-	-	-	-	-	-	-	-	
Nickel	UG/KG	7	7	4,810	7,060	5,979	908.6	6,652	Normal	SED-AK05	0-1
Selenium	UG/KG	7	-	-	-	-	-	-	-	-	
Silver	UG/KG	7	-	-	-	-	-	-	-	-	
Vanadium	UG/KG	7	7	4,800	7,505	6,059	980.6	6,786	Normal	SED-AK07	0-1
Zinc	UG/KG	7	7	2.38E+04	4.71E+04	3.19E+04	7,929	3.78E+04	Non-Normal	SED-AK07	0-1
Miscellaneous Parameters											
Cyanide, Free (weak & dissoc.)	UG/KG	7	-	-	-	-	-	-	-	-	
Cyanide, Total	UG/KG	7	-	-	-	-	-	-	-	-	
Phenolics, Total Recoverable	UG/KG	7	1	1,300	1,300	1,300	-	-	Non-Normal	SED-AK06	0-1
Total Organic Carbon (TOC)	MG/KG	10	10	1,900	2.35E+04	7,381	8,610	1.27E+04	Non-Normal	SED-AK07	0-1

1) For samples with duplicates, detected concentrations for parameters were averaged.

2) For non-detects 1/2 the detection limit was used in the statistical analysis.

WHERE [SITEID] = '01' AND [MATRIX] = 'SE' AND [LOGDATE] > #1/1/2001# AND [LOCID] LIKE 'SED-AK*' AND [PRCCODE] <> 'ASVOC' AND [PRCCODE] <> 'AVS/S';

APPENDIX B

NAPL INFORMATION

Memorandum - Clifton Park

URS Corporation
28 Corporate Drive, Suite200
Clifton Park, New York 12065

Telephone - (518) 688-0015
Fax - (518) 688-0022

TO: Tracy Blazicek-NYSEG
John Spellman- NYSDEC

INFO: Michael Gutmann-URS/Buffalo
Paul Pavone-URS/Plattsburgh

FROM: Eriko Fujita

DATE: September 1, 2005

SUBJECT: Progress Report – Supplemental Remedial Investigation Field Work
NYSEG-Mechanicville, NY

Tasks Completed During the week of August 22, 2005

Summary of NAPL Observations

Table 1 provides a summary of NAPL observations for the wells through August 26, 2005. As of August 26, 2005, the cumulative volume of NAPL recovered from the wells is 749 liters. Graphs showing periodic product recovery and cumulative product recovery for wells MW-26S, RH-1S, MW-10D, and MW-42D are attached. Well MW-30D, which has shown traces of NAPL since 2001, was checked for recoverable NAPL on June 22, 2005 and 1.7 liters of DNAPL was recovered using a bailer. URS returned to well MW-30D on August 11, 2005 to attempt to recover additional NAPL. A trace of DNAPL was recovered. URS continue to monitor the NAPL accumulation in well MW-30D.

On January 8, 2004, the water level at deep bedrock monitoring well RH-1D was measured at 42.74 feet msl (approximately 40 feet below top of casing). In December 2003, the water level at well RH-1D was approximately –10 feet msl (97 feet below top of casing). URS removed approximately 10 gallons of water from the well on January 21, 2004. After one hour, the water level remained at -11.46 feet msl (98 feet below top of casing). Since January 21, 2004, the water level at well RH-1D has slowly risen to 1.48 feet msl (85.35 feet below top of casing). URS will continue to monitor the water level at well RH-1D.

Tasks to be Completed During the Week of August 29, 2005

URS will continue to check wells for NAPL, monitor the kill at the site, and recover NAPL as necessary.

TABLE 1

SUMMARY OF NAPL OBSERVATIONS

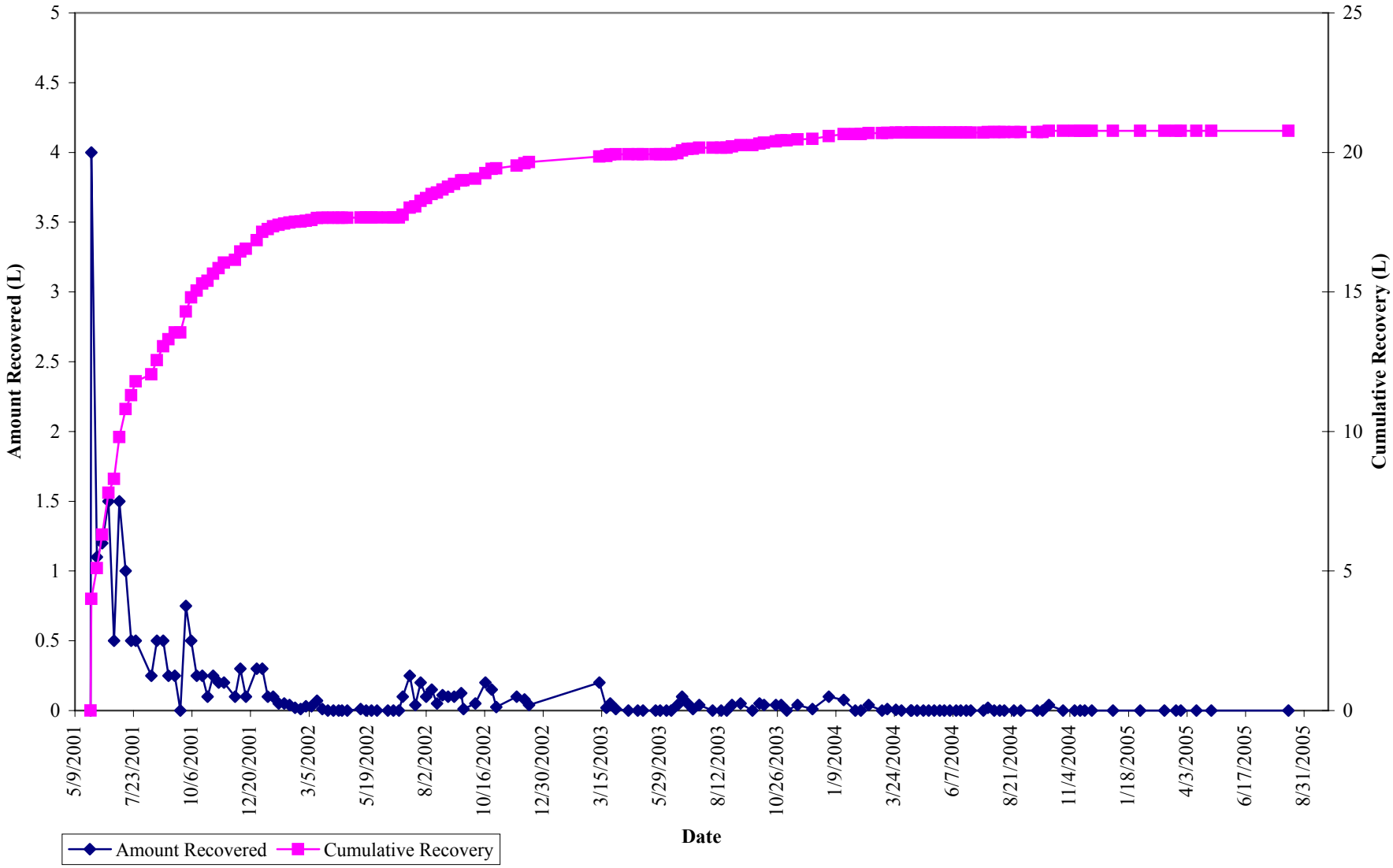
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Well Number	Screen Interval (feet bgs)	Type of Screen	Date Checked	NAPL Observation/Recovery (L)	Total NAPL Recovered To Date (L)
MW-10	8.7 to 19.5	Screen	08/18/05	Trace NAPL	Trace NAPL
MW-12	14.5 to 25.5	Screen	08/18/05	NAPL Not Present	Trace NAPL
MW-12S	11 to 26	Screen	08/18/05	NAPL Not Present	Trace NAPL
MW-14S	10 to 25	Screen	08/18/05	NAPL Not Present	Trace NAPL
MW-15S	5 to 10	Screen	08/18/05	NAPL Not Present	Trace NAPL
MW-16	6 to 16	Screen	06/14/05	NAPL Not Present	NAPL Not Present
MW-17	13 to 23	Screen	06/14/05	NAPL Not Present	NAPL Not Present
MW-21S	5 to 10	Screen	08/18/05	NAPL Not Present	NAPL Not Present
MW-23S	7.5 to 12.5	Screen	08/18/05	NAPL Not Present	Trace NAPL
MW-25S	11 to 26	Screen	08/18/05	NAPL Not Present	Trace NAPL
MW-26S	7.5 to 22.5	Screen	08/18/05	Trace NAPL	20.7
MW-30S	10 to 25	Screen	08/18/05	NAPL Not Present	Trace NAPL
MW-31S	8 to 18	Screen	06/14/05	NAPL Not Present	NAPL Not Present
RH-1S	1.8 to 17.3	Screen	08/26/05	0.75	56.3
MW-1	11.6 to 16.85	Screen	06/14/05	NAPL Not Present	NAPL Not Present
MW-10I	22 to 43	Open Hole	06/14/05	NAPL Not Present	NAPL Not Present
MW-11	9.5 to 15	Screen	06/14/05	NAPL Not Present	NAPL Not Present
MW-13	44.7 to 55.5	Screen	08/18/05	Trace NAPL	Trace NAPL
MW-14	30 to 41	Screen	08/18/05	NAPL Not Present	Trace NAPL
MW-15I	12.5 to 22.5	Screen	08/18/05	NAPL Not Present	Trace NAPL
MW-17I	23 to 45	Open Hole	06/14/05	NAPL Not Present	NAPL Not Present
MW-18	28 to 38	Screen	06/14/05	NAPL Not Present	NAPL Not Present
MW-19I	18 to 38.5	Open Hole	06/14/05	NAPL Not Present	NAPL Not Present
MW-1I	45 to 75	Open Hole	08/18/05	Trace NAPL	2.3
MW-2	11.2 to 14.35	Screen	06/14/05	NAPL Not Present	NAPL Not Present
MW-22I	17 to 32	Screen	08/18/05	NAPL Not Present	Trace NAPL
MW-25I	27 to 47	Open Hole	08/18/05	NAPL Not Present	Trace NAPL
MW-26I	24.5 to 45.5	Open Hole	08/18/05	NAPL Not Present	Trace NAPL
MW-28I	15 to 25	Screen	06/16/05	NAPL Not Present	NAPL Not Present
MW-29I	11.5 to 26	Open Hole	08/18/05	NAPL Not Present	Trace NAPL
MW-2I	11.28 to 32.2	Open Hole	06/16/05	NAPL Not Present	NAPL Not Present
MW-35I	12.5 to 38	Open Hole	08/18/05	Trace NAPL	3.51
MW-36I	20 to 45	Open Hole	06/16/05	NAPL Not Present	NAPL Not Present
MW-37I	30 to 50	Open Hole	06/14/05	NAPL Not Present	NAPL Not Present
MW-38I	90 to 120	Open Hole	08/18/05	NAPL Not Present	Trace NAPL
MW-10D	82 to 114	Open Hole	08/26/05	1.6	408
MW-14D	91 to 121.7	Open Hole	06/14/05	NAPL Not Present	NAPL Not Present
MW-15D	96 to 105.8	Open Hole	06/16/05	NAPL Not Present	NAPL Not Present
MW-17D	121 to 142.5	Open Hole	06/14/05	NAPL Not Present	NAPL Not Present
MW-1D	121 to 155.2	Open Hole	06/14/05	NAPL Not Present	2.00
MW-20D	90 to 110.1	Open Hole	06/14/05	NAPL Not Present	NAPL Not Present
MW-21D	48.7 to 59.4	Open Hole	06/16/05	NAPL Not Present	NAPL Not Present
MW-23D	56 to 80	Open Hole	06/16/05	NAPL Not Present	NAPL Not Present
MW-29D	90 to 110	Open Hole	06/16/05	NAPL Not Present	NAPL Not Present
MW-30D	90 to 121	Open Hole	08/18/05	Trace NAPL	1.7
MW-31D	120 to 150	Screen	06/14/05	NAPL Not Present	NAPL Not Present
MW-32D	91 to 111.5	Open Hole	06/14/05	NAPL Not Present	NAPL Not Present
MW-33D	119.7 to 140.5	Open Hole	08/18/05	NAPL Not Present	Trace NAPL
MW-34D	100 to 120.5	Open Hole	06/14/05	NAPL Not Present	NAPL Not Present
MW-36D	140 to 161	Open Hole	06/16/05	NAPL Not Present	NAPL Not Present
MW-37D	155 to 185	Open Hole	06/14/05	NAPL Not Present	NAPL Not Present
MW-38D	150 to 170.1	Open Hole	06/14/05	NAPL Not Present	Trace NAPL
MW-39D	130.4 to 150.4	Open Hole	06/14/05	NAPL Not Present	NAPL Not Present
MW-40D	140 to 170	Screen	06/14/05	NAPL Not Present	23.8
MW-41D	120 to 140	Open Hole	06/14/05	NAPL Not Present	NAPL Not Present
MW-42D	140 to 175	Open Hole	08/26/05	0.05	231
MW-43D	120 to 150	Screen	06/14/05	NAPL Not Present	NAPL Not Present
RH-1D	86.5 to 107.5	Open Hole	06/14/05	NAPL Not Present	NAPL Not Present

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SUMMARY OF PRODUCT RECOVERY
MW-26S

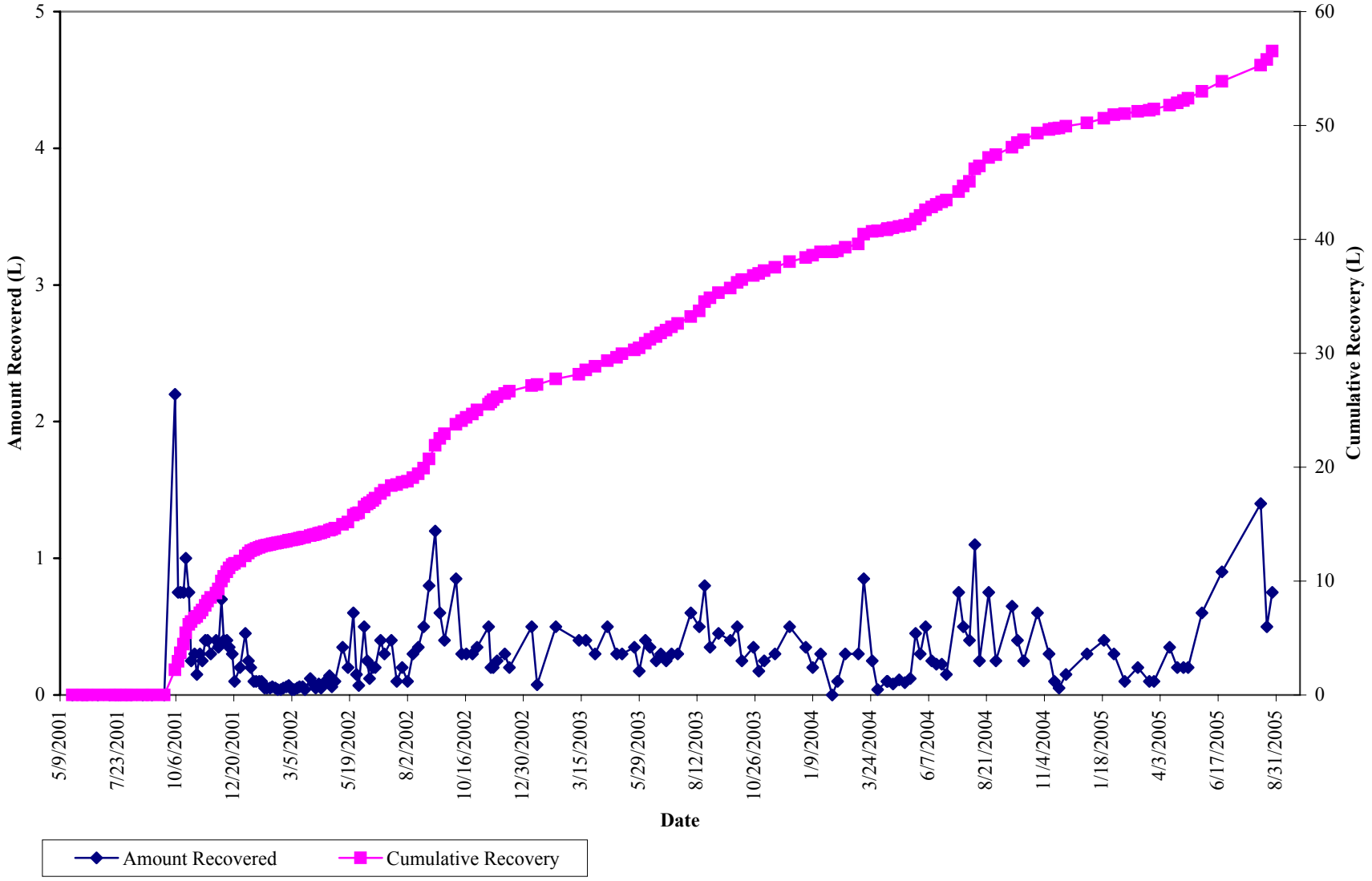
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SUMMARY OF PRODUCT RECOVERY
RH-1S

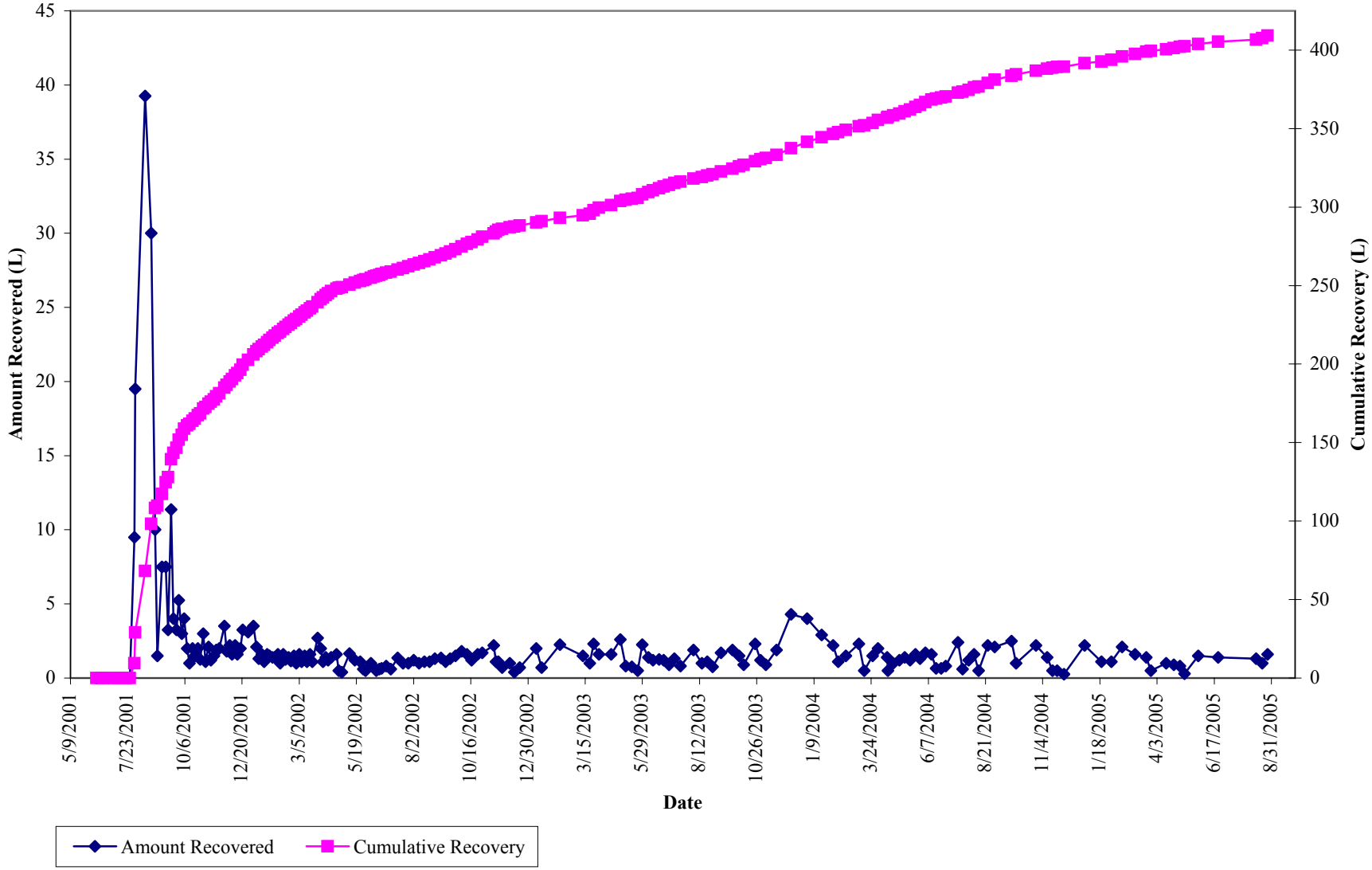
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SUMMARY OF PRODUCT RECOVERY
MW-10D

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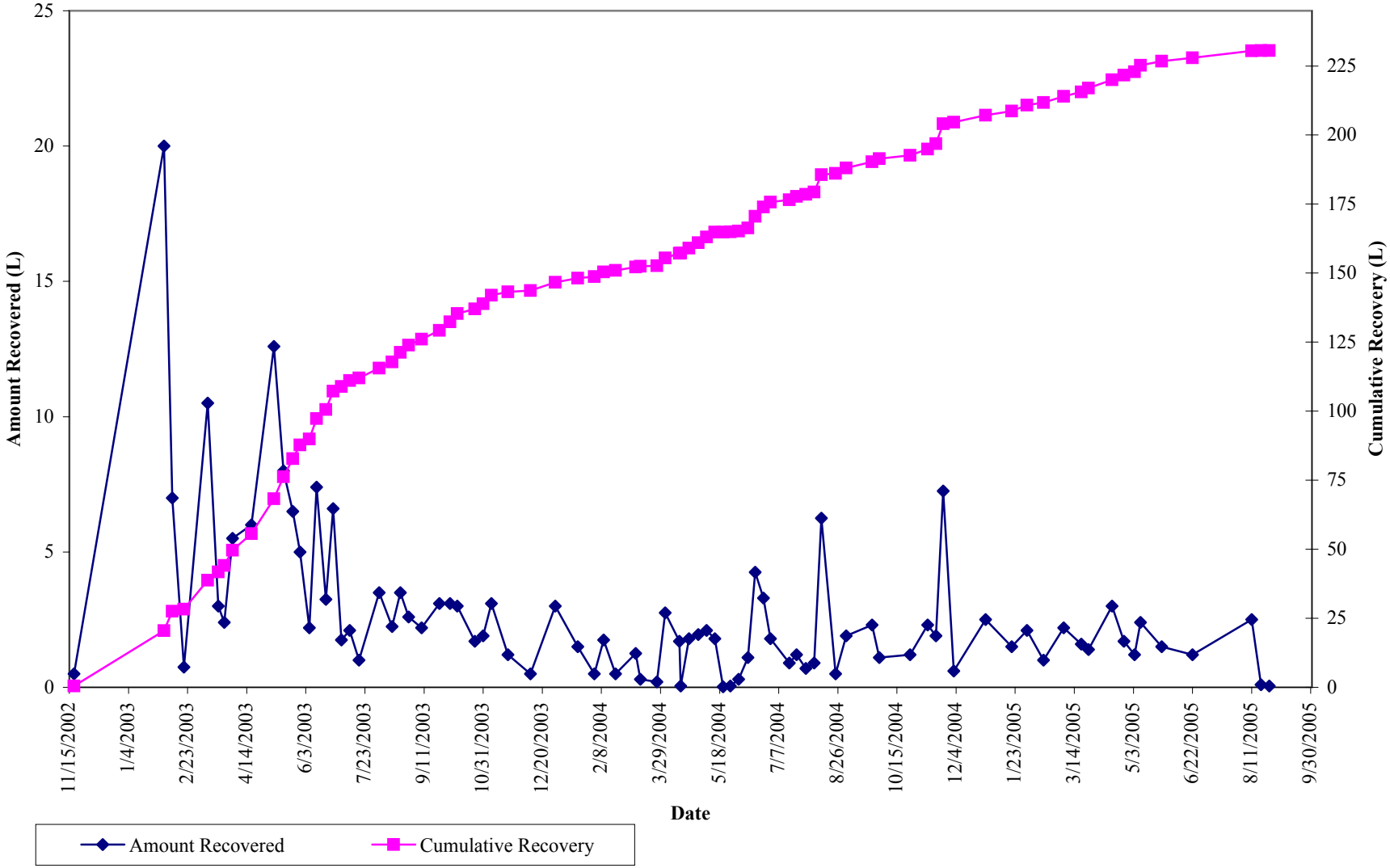
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SUMMARY OF PRODUCT RECOVERY
MW-42D

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APPENDIX C

GROUNDWATER CALCULATIONS

URS

EXHIBIT 4.7-2

CALCULATION COVER SHEET

Client: NYSEG

Project Name: Mechanicville

Project/Calculation Number: 111 73 501

Title: GW Extraction Rates for Dewatering of the Excavation

Total Number of Pages (including cover sheet):

Total Number of Computer Runs: 0

Prepared by: Marek Ostrowski

Date: Jan 6, 2005

Checked by: Amy Mont.

Date: Jan 6, 2005

Description and Purpose: To calculate GW extraction rates required to dewater the excavation around the gas relief holder.

Design Basis/References/Assumptions: See text.

Remarks/Conclusions/Results:

- Total 580 gpm with cutoff walls in overb
- Total 730 gpm without cutoff
- Initial rate to dewater the excavation in one day: Q = 210 gpm
- Rate to maintain dry excavation:
  Q = 370 gpm from bedrock
  Q = 150 gpm from overburden

Note: Significant uncertainty, conductivity not known.

Calculation Approved by: [signature] 1/20/2005

Project Manager/Date

Revision No.:	Description of Revision:	Approved by:

Project Manager/Date

MADE BY: M.O. DATE: Jan 5, 2005
CHKD.BY: Amm DATE: Jan 6, 2005

PROJECT: Former NYSEG Coal Gasification Site - Mechanicville
SUBJECT: Ground Water Extraction Rate for Dewatering of the Excavation

1. PURPOSE

The purpose of this calculation is to estimate the extraction rate required to dewater the excavation of contaminated soils around the gas relief holder.

2. PROBLEM DESCRIPTION

The area of excavation is shown on Figure 3-3 of reference 1.

The hydrogeology of the site is described in Sections 6.1 and 6.2 of the SRI report (reference 1). A short summary of information relevant to this calculation is presented below.

Ground water at the site can be found in overburden and the underlying bedrock. The overburden consists predominantly of man-made fill, comprising mostly sand and gravel, with lesser amount of silt and clay. Other materials present within the fill are various kinds of debris (brick, concrete) and industrial waste (slag, clinker, etc). A limited amount of native material is also present, presumably of alluvial origin. The saturated thickness of the overburden ranges from few feet in the western part of the site to approximately 10 feet along the eastern boundary (Figure 6-10 of reference 1). The fill in general is considered to be relatively permeable. The bedrock is identified as shale. Significant fraction of the bedrock mass contains a "pencil cleavage", and is thought to be relatively permeable. The cleavage zones are embedded within the competent bedrock, whose permeability is considered to be negligible by comparison.

A typical cross section is shown on Figure 6-7 of reference 1.

Two of the faults present within the bedrock are considered to be preferential flow paths. One is located along the Anthony Kill, which borders the site to the north. The other fault parallels the Anthony Kill along the southern boundary of the site (Figure 6-2 of reference 1). The combination of the northern fault and Anthony Kill forms the discharge area. The southern fault appears to affect the direction of the ground water flow, channeling it to the east.

The potentiometric surface map and the inferred flow directions are shown on Figure 6-11 of reference 1. The flow appears to be essentially to the north and north-east. The hydraulic gradients are relatively high, on the order of 1/100 to 1/10. The flow pattern upgradient of the site is not known.

Quantitative information on the hydraulic conductivities in the study area is not available.

The soils are to be excavated to the top of bedrock, which is located at the elevation of approximately 70 ft in the vicinity of the gas relief holder (Figure 6-7 of reference 1). The elevations of the potentiometric surface along the upgradient and downgradient limits of the excavation are approximately 86 and 78 ft, respectively (Figure 6-11 of reference 1). It is assumed that the water level inside the excavation will be maintained close to the bottom that is at 70 ft. The width of the excavation is approximately 100 ft (Figure 3-3 of reference 1).

3. METHOD OF ANALYSIS

3.1 Flow Through Bedrock

The flow system was simplified for analysis. The simplification involved two conservative assumptions:

- An infinite source of water was assumed in the form of a constant head boundary on the upgradient side.
- The aquifer was assumed to be of infinite depth.

Both assumptions, even though conservative, are likely to be realistic. The northern fault could constitute a significant source of water, and the relatively permeable pencil cleavage extends to the depths on the order of at least 100 ft. The system used for analysis is shown on page 11. Essentially, it is an areal drain installed in an infinitely thick aquifer, near a constant head boundary. The solution for the flow rate entering the drain has been presented in reference 2, in the form of nomograms shown on Figures 7-15a through 7-15c. The nomograms relate the discharge rate to the hydraulic conductivity of the aquifer and various geometric parameters of the system.

Terms are:

h - head differential between the drain and the upstream constant head boundary, [ft]
h_0 - head differential between water levels upstream and downstream of the drain, [ft]
k - hydraulic conductivity of the aquifer, [ft/d]
L - distance from the drain to the upstream boundary, [ft]
L_0 - length of the drain, [ft]
S - distance from drain to critical streamline, [ft]
q - discharge rate, [ft^2/s]
Q - flow rate, [ft^3/s]
W - width of the drain, [ft]

The two-dimensional discharge rate is:

$$q = f(s/L; h_0/h)\ k\ h$$

The three-dimensional flow rate is:

$$Q_{rock} = W\ q$$

Function $f(s/L; h_0/h)$ is read from Figure 7-15c of reference 2. Value of s/L as a function of L_0/L and h_0/h is read from Figure 7-15a or 7-15b.

3.2 Flow Through Overburden

As seen on Figure 6-10 of reference 1, the saturated thickness of the overburden is generally very low (H = 0 - 4 ft) south, west and north of the excavation. In such low saturated thickness, the excavation would not develop any appreciable sidegradient or downgradient capture zone. Water would flow into the excavation from upgradient (from the south) essentially only through the strip nearly equal to the width W_{north} of the north side of excavation:

$$Q_{south} = W_{south}\ H_{south}\ K\ i$$

"K" is conductivity of overburden, "i" is hydraulic gradient. The only area of significant saturated thickness lies to the east of the excavation. The saturated thickness is approximately 10 ft up to approximately 200 ft from the excavation. This area would experience dewatering if vertical cutoff walls within overburden were not used. The extraction

rate during dewatering is estimated using the approximation of a strip aquifer (see reference 3). One side of the strip borders the excavation, where water table is dropped at time zero. The other side borders an impervious boundary, represented here by the thinning of the saturated thickness to negligible values approximately 200 ft east of the excavation.

The two-dimensional discharge rate into the excavation as a function of time is (equation 3a of reference 3):

$$q = 2\, s_0\, (T\, S / \pi)^{1/2} / t^{1/2}$$

This formula accounts for discharge from both sides of the aquifer. Here, only the east side of the excavation will receive flow:

$$q_{east} = q / 2 = s_0\, (T\, S / \pi)^{1/2} / t^{1/2}$$

The three-dimensional flow rate over the excavation width "W_{east}" to the east is:

$$Q_{east} = W_{east}\, q_{east} = W_{east}\, s_0\, (T\, S / \pi)^{1/2} / t^{1/2}$$

Here, "s_0" is the drop of water table at the excavation and "t" is time from the lowering of water table. Also, "S" is the storativity of aquifer, and "T" is transmissivity ($T = K\, H_{west}$).

Note that equation 3a is valid for "small" times. It will be shown that with the selected system parameters, the approximation of a small time can be used. Also, the equation is conservative, as it represents the flow during the period before the effect of the impervious boundary is felt.

Condition of validity: $2\Sigma\exp(-n^2a^2/\nu t) << 1$; n = 1, 2, …, where $\nu = T/S$ and "a" is the length of the strip aquifer.

Value of $\exp(-n^2a^2/\nu t)$ is greatest at n = 1. From this, the condition can be assessed based on:

$$2\exp(-a^2/\nu t) << 1$$

3.3 Removal of Ground Water Within Excavation

Volume "V_{ini}" of ground water present within the limits of excavation can be estimated from the area "A" of the excavation, the depth "s_0" of excavation below the water table and the storage coefficient "S" of soil.

$$V_{ini} = A\ S\ s_0$$

The extraction rate required to remove that volume during time "t" is:

$$Q_{ini} = V_{ini} / t = A\ S\ s_0 / t$$

4. PARAMETERS

4.1 Bedrock Flow System

Based on data listed in Section 2, and the sketch on page 11.

$$h_0 = El_{GW\ upstr} - EL_{GW\ downstr} = \approx 86 - 78 = 8\ ft$$

$$h = El_{GW\ upstr} - EL_{GW\ bottom\ excavation} = \approx 86 - 70 = 16\ ft$$

$$L_0 \approx 100\ ft$$

The width of the excavation is approximately 100 ft. However, this is in one-dimensional space. In reality, the flow will also reach the excavation from sidegradient directions. To account for that, increase the width by a factor of 2.

$$W \approx 200\ ft$$

Assume that the source of water is the upgradient fault. Based on Figure 6-2 of reference 1, it is located approximately 75 ft from the excavation.

$$L \approx 75\ ft$$

The overburden will be cut off from the excavation by means of a vertical barrier. The flow within the overburden will be small and is neglected here. Flow in bedrock will be estimated.

Hydraulic conductivity of the bedrock is not known. It is estimated based on qualitative considerations. During drilling, most wells located within the zone of pencil cleavage provided 1 to 10 gpm (verbal communication). This is indicative of moderate conductivities, say $1*10^{-3}$ to $5*10^{-3}$ cm/s or so (K = 3 to 14 ft/d). Assume conductivity based on the upper-end value, say 20 ft/d. Wells drilled within the non-cleavage zone were essentially dry, indicating negligible conductivity. Here, it is assumed that the entire bedrock mass has the conductivity of the pencil cleavage zone.

k = 20 ft/d

4.2 Overburden Flow System

The hydraulic conductivity of the overburden is not known. Overburden deposits have been described as mostly sand and gravel; therefore, their hydraulic conductivity can potentially be high, on the order of $1*10^{-1}$ cm/s. Conservatively, use a value based on the upper end of the range, say $5*10^{-2}$ cm/s, or 140 ft/d.

K = 140 ft/d

Storage coefficient is likely to be high. Use 25%.

S = 0.25

Saturated thickness to the south is between 0 and 4 ft (Figure 6-10 of reference 1). Use 2 ft.

H_{south} = 2 ft

Hydraulic gradient upgradient of the excavation is approximately 1/50 (Figure 6-11 of reference 1).

i = 1 / 50 = 0.02

The area of significant saturated thickness east of the excavation is approximately 200 ft long, with the saturated thickness approximately 10 ft (Figure 6-10 of reference 1).

a = 200 ft

H_{east} = 10 ft

The depth of excavation below the water table has been estimated in Section 4.1 (value of "h"):

$s_0 = h = 16$ ft

Use the dimension of the excavation for width of inflow along the south and east:

H_{south} and $H_{east} = 100$ ft

4.3 Initial Volume

The excavation area is anticipated to be approximately 100 by 100 ft (Figure 3-3 of reference 1).

$A = 100^2 = 10,000$ ft^2

Storage coefficient and drop of water table were assumed in Section 4.2:

$S = 0.25$

$s_0 = h = 16$ ft

4.3 Time

Assume that the water level has to be lowered within one day.

$t = 1$ d

5. CALCULATIONS

5.1 Bedrock Flow System

Summary of parameters:

$S = 16$ ft
$h_0 = 8$ ft
$k = 20$ ft/d
$L = 75$ ft
$W = 200$ ft
$L_0 = 100$ m

Calculate input values for the nomogram:

$L/h = 75/16 = 4.7$

Use the nomogram for the closest value, $L/h = 4$.

$h_0/h = 8/16 = 0.5$

$L_0/L = 100/75 = 1.3$

From Figure 7-15b of reference 1:

$s/L(L/h=4; h_0/h=0.5; L_0/L=1.3) \approx 6$

From Figure 7-15c (note: for $s/L > 4$ the nomogram lines become straight and can be easily extended):

$q/kh(s/L=6; h_0/h=0.5) \approx 1.1$

And:

$q = 1.1\ k\ h = 1.1*20*16 = 352\ ft^2/d$

$Q = q\ W = 352*200 = 70,400\ ft^3/d = 370\ gpm$

This is the flow rate required to maintain the excavation dry.

5.2 Overburden Flow System

Summary of parameters:

$S = 0.25$ ft
$s_0 = 16$ ft
$K = 140$ ft/d
$a = 200$ ft
$H_{south} = 2$ ft
$H_{east} = 10$ ft
$W_{south} = 100$ ft
$W_{east} = 100$ ft
$i = 0.02$
$t = 1$ d

Calculate flow from the south:

$$Q_{south} = W_{south}\ H_{south}\ K\ i =$$
$$= 100*2*140*0.02 = 560\ ft^3/d = 3\ gpm$$

Calculate flow from the east:

$$Q_{east} = W_{east}\ s_0\ (T\ S\ /\ \pi)^{1/2}\ /\ t^{1/2}$$
$$= 100*16*(140*10*0.25/\pi)^{1/2}\ /\ t^{1/2} =$$
$$= 16,900\ /\ t^{1/2}$$

Calculate at times 4, 12 and 20 hrs, that is in the middle of three 8-hr intervals of the 24-hr period required to lower the water level.

t [hr]	t [d]	Q_{east} [ft3/d]	[gpm]
4	0.17	41,000	210
12	0.50	24,000	130
20	0.83	19,000	100
Average			150

Check validity of the approximation at 1 day:

$$\exp(-a^2/\nu t) = 2\ \exp[-200^2/(140*10/0.25)*1] =$$
$$= 2\ \exp(-7.1) = 0.002$$

The error is on the order of 1%.

$$Q_{overburden} = 150 + 3 \approx 150\ gpm$$

5.3 Initial Volume

Summary of parameters:

$S = 0.25$ ft
$s_0 = 16$ ft
$A = 10,000\ ft^2$
$t = 1$ d

Calculate flow:

$$Q_{ini} = A\ S\ s_0\ /\ t = 10,000*0.25*16/1 =$$
$$= 40,000\ ft^3/d = 210\ gpm$$

6. SUMMARY

This calculation contains analytical estimates of extraction rates needed to dewater the proposed excavation and maintain it dry. The estimates are:

- Rate required for initial dewatering of the excavation (in one day):
  Q = 210 gpm
- Rate required to maintain the excavation dry:
  Q = 370 gpm from bedrock
  Q = 150 gpm from overburden

Therefore, the total rate is 580 gpm if the vertical barriers were installed in the overburden, and 730 gpm without the barriers.

Note that a significant degree of uncertainty is associated with the lack of data on hydraulic conductivity. Therefore, the estimate has to be treated as order-of-magnitude. Conductivity test would need to be performed to finalize the estimate.

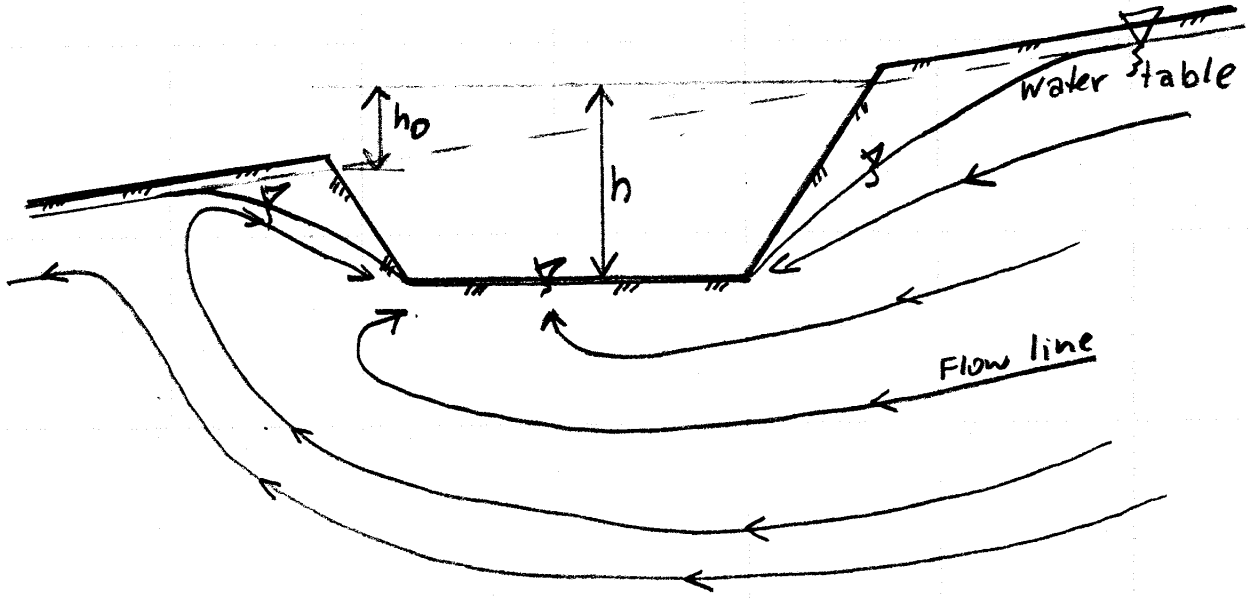
7. REFERENCES

1 Draft Supplemental Remedial Investigation Report
Mechanicville Former Manufactured Gas Plant
URS, July 2003

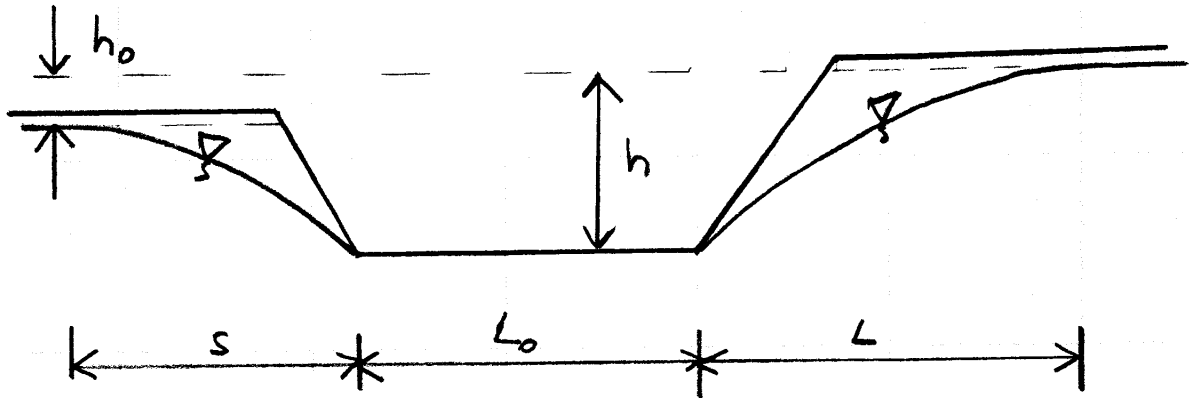
2 Groundwater and Seepage
M.E. Harr
McGraw Hill, 1962

3 Non-Steady-Flow Type Curves for Strip Aquifers with Constant Drawdown
H. Onder
Journal of Irrigation and Drainage Engineering, July/August 1994

Conceptual Model of the Flow System
Bedrock



Simplified System Used for Analysis of the Bedrock Flow System



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New York State Electric & Gas Corporation

Mechanicville Former Manufactured Gas Plan
Mechanicville, New Yor

DRAFT SUPPLEMENTAL REMEDIAL INVESTIGATION REPORT

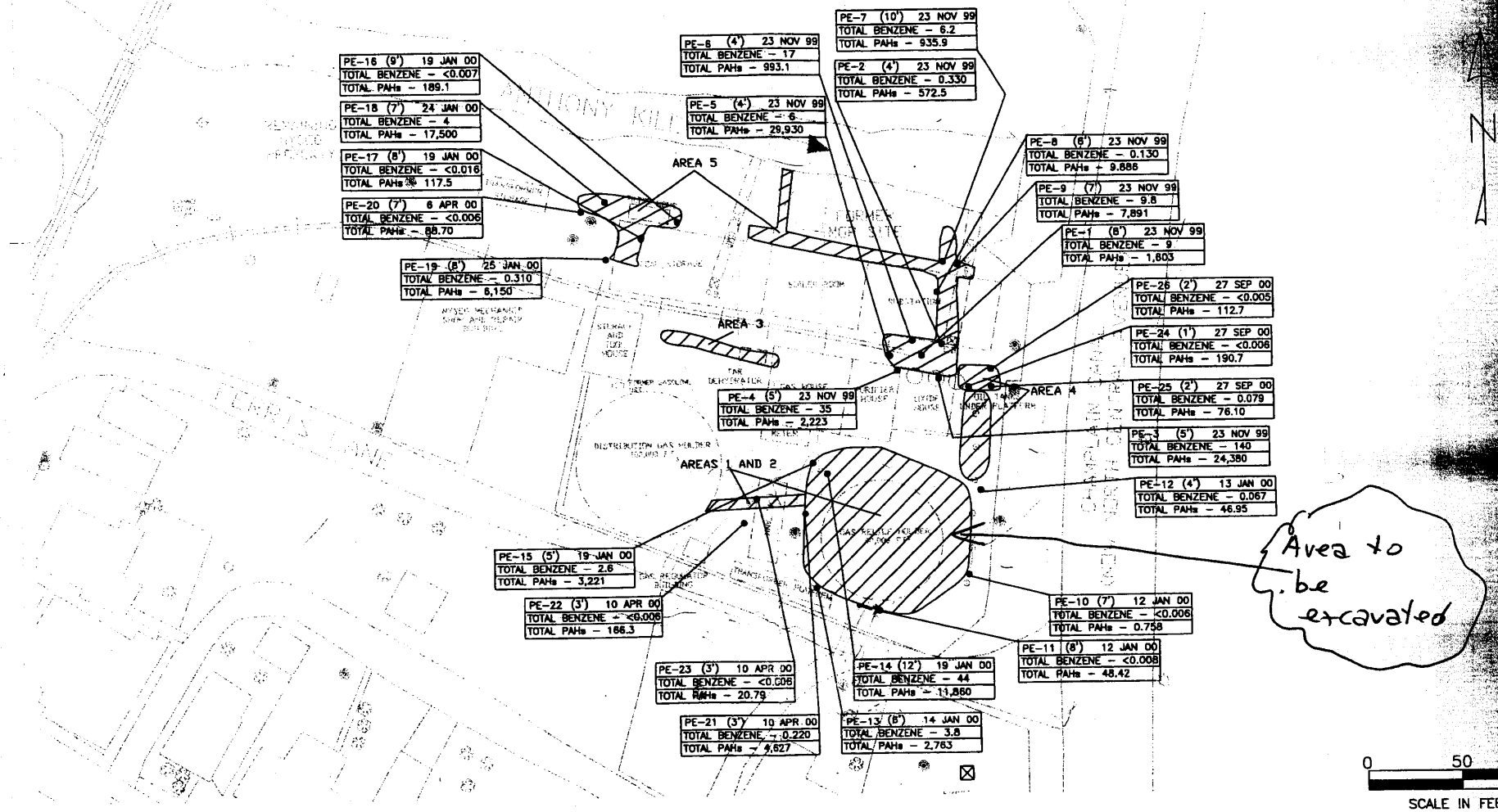
Reference 1

JULY 30, 2003



Prepared For:
New York State Electric & Gas Corporation
Kirkwood Industrial P
Binghamton, New Y

URS
URS Corporation - New Yor
28 Corporate Drive, Suite 20
Clifton Park, New York 1206



LEGEND

- FORMER STRUCTURE
- POWER POLE
- LIGHT POLE
- POST, SIGN
- FORMER RAILROAD TRACKS

ALL VALUES IN mg/kg

- APPROXIMATE LIMIT OF EXCAVATION (NOVEMBER 1999 TO APRIL 2000)
- PE-23 ● 1999/2000 IRM EXCAVATION ENDPOINT SAMPLING LOCATION

BASE PROVIDED BY NYSEG ENGINEERING SERVICES, BINGHAMTON, NY.

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FIGURE 3-3	1999 AND 2000 INTER REMEDIAL MEASURE
NYSEG	NEW YORK STATE ELECTRIC FORMER COAL GASIFICA MECHANICVILLE, NE
URS	URS CO 28 CORPORATE CLIFTON PARK,

P:/Database/NYSEG/Mechanicville/Other Figures/Fig 3-3 Interim Remedial Measure

pg 10 of —



pg 14 of 24

LEGEND:

TOP OF BEDROCK (FEET MSL)

FAULT

GRAPHIC SCALE

0 50 100 150 200 Feet

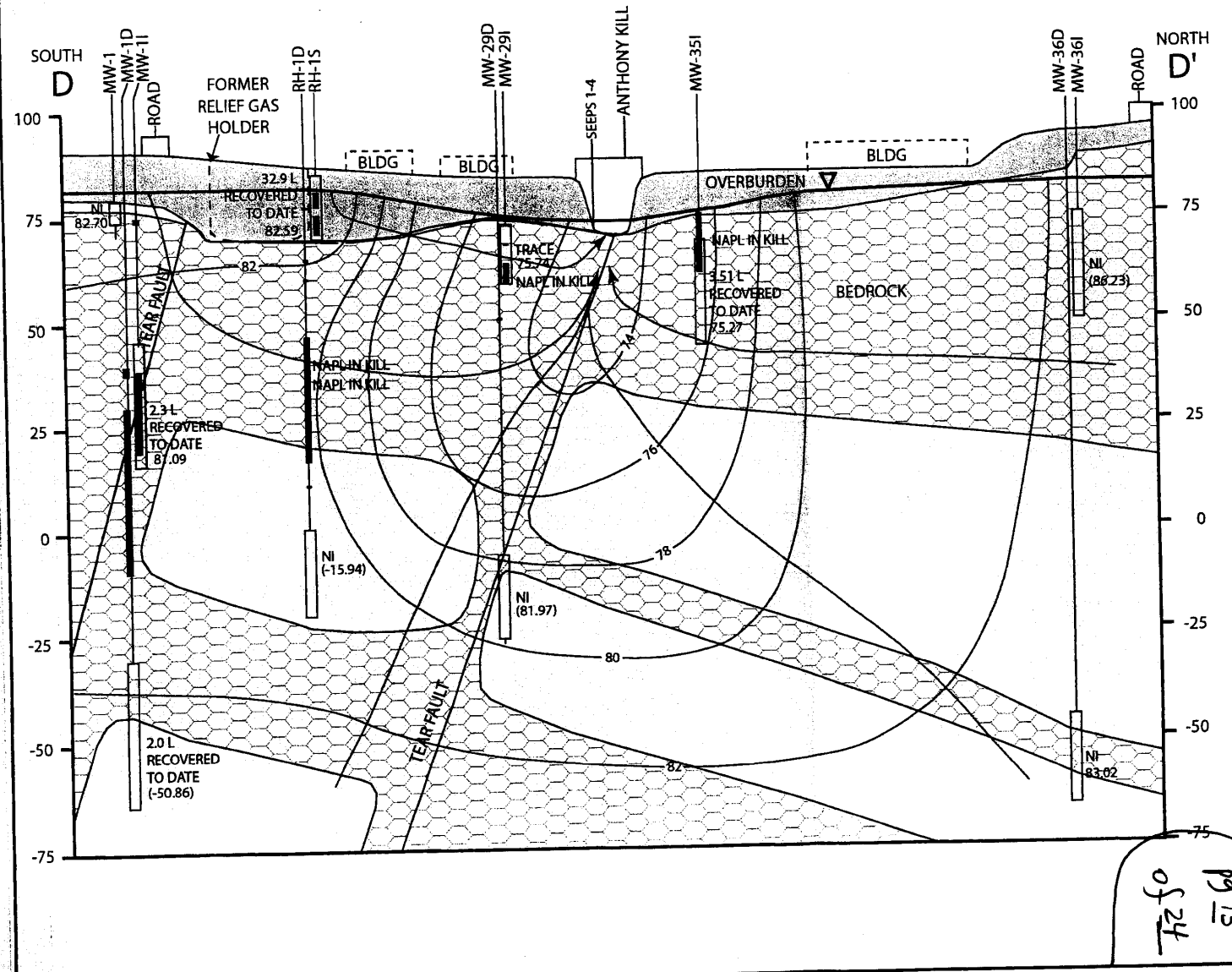
FIGURE 6-2 TOP OF BEDROCK MAP

NYSEG NEW YORK STATE ELECTRIC AND GAS
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MECHANICVILLE, NEW YORK

URS CORPORATION
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CLIFTON PARK, NEW YORK 12065

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DRAFT



LEGEND:

- MW-2 — WELL DESIGNATION AND APPROXIMATE LOCATION; GENERALIZED GROUND SURFACE; SCREENED INTERVAL
- NAPL OBSERVED
- TRACE — TRACE NAPL (NOT RECOVERABLE)
- NI — NO INDICATION OF NAPL
- OVERBURDEN
- BEDROCK - SNAKE HILL SHALE
- ZONE OF INTENSE PENCIL CLEAVAGE
- WATER TABLE - MAY 9, 2003; (): INDICATES WATER LEVEL THAT HAS NOT STAB
- –79– EQUIPOTENTIAL CONTOUR (FEET MSL)
- ASH LAYER

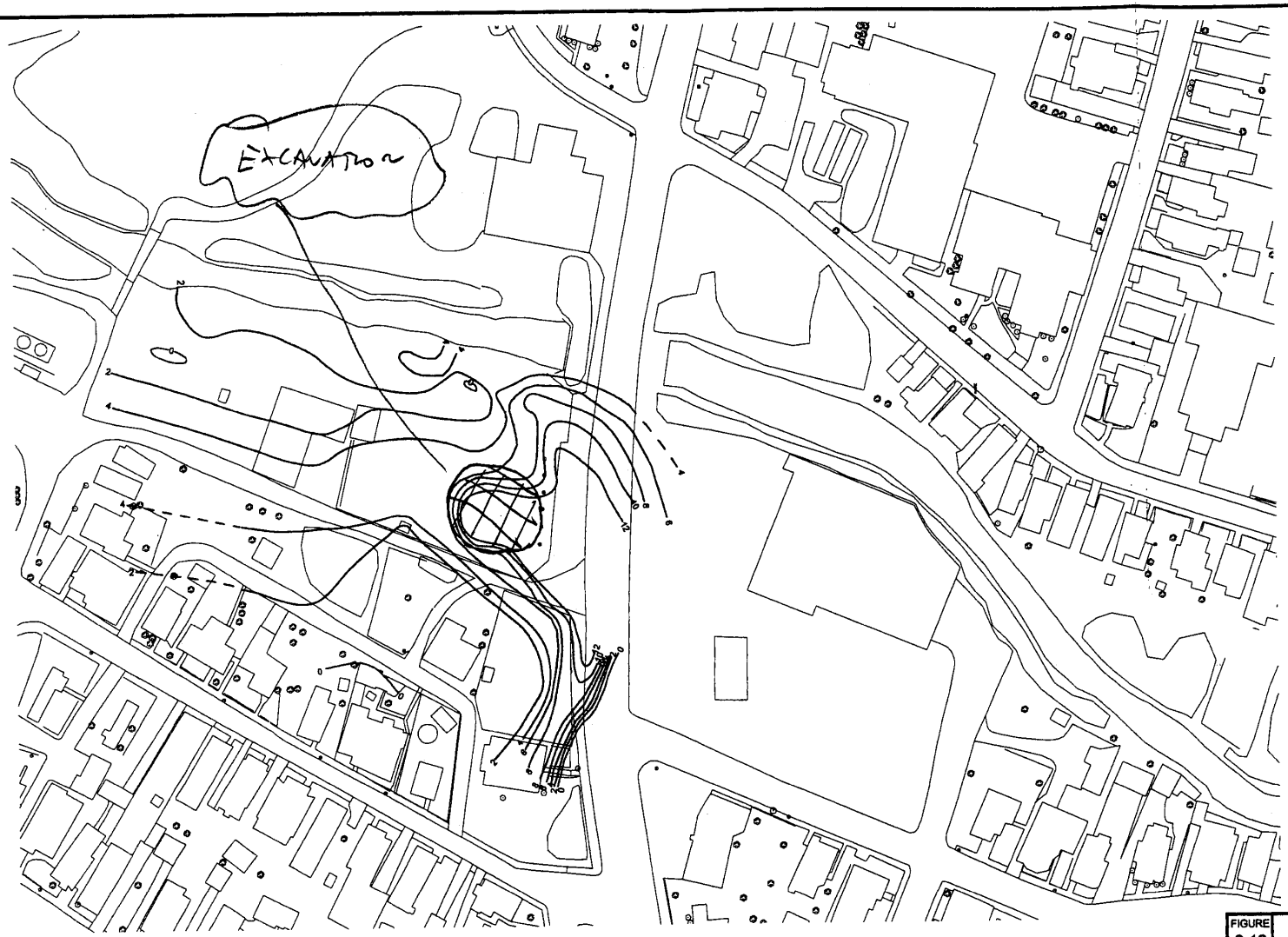
NOTES:

1. REFER TO FIGURE 6-3 FOR THE ORIENTATION OF THE OF SECTION.
2. REFER TO THE BORING LOGS AND BEDROCK CORE APPENDIX E FOR DETAILED LITHOLOGIC DESCRIPTIO
3. NAPL OBSERVATIONS THROUGH JULY 18, 2003.

HORIZONTAL SCALE (IN FEET)
0 50 100
VERTICAL EXAGGERATION = 2X

FIGURE 6-7	GEOLOGIC CROSS-SECTION D-D'
NYSEG	NEW YORK STATE ELECTRIC AND GAS FORMER COAL GASIFICATION SITE MECHANICVILLE, NEW YORK
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N

DRAFT

LEGEND:

SATURATED THICKNESS OF OVERBURDEN CONTOURS (FEET)

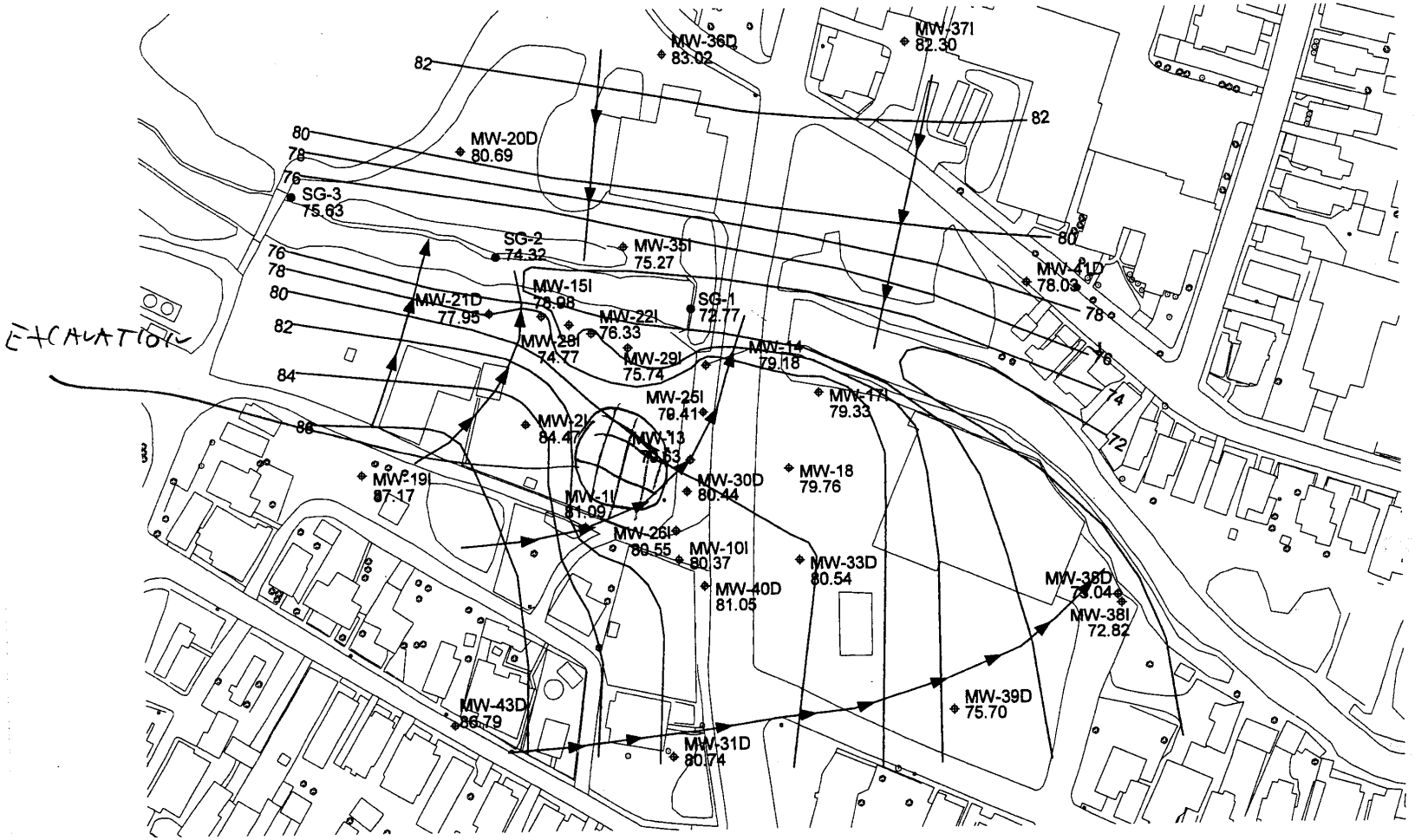
UNSATURATED OVERBURDEN

GRAPHIC SCALE

0 50 100 150 200 Feet

FIGURE 6-10	SATURATED THICKNESS OF OVERBURDEN
NYSEG	NEW YORK STATE ELECTRIC & FORMER COAL GASIFICATION MECHANICVILLE, NEW YORK
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LEGEND:

- BEDROCK MONITORING WELL LOCATION
  POTENTIOMETRIC SURFACE ELEVATION - MAY 9, 2003
- STAFF GAUGE LOCATION
- POTENTIOMETRIC SURFACE ELEVATION CONTOURS (FEET MSL)
- FLOW LINES

NOTE: BEDROCK WELLS AT WHICH WATER LEVELS HAVE NOT STABILIZED ARE NOT SHOWN.

GRAPHIC SCALE

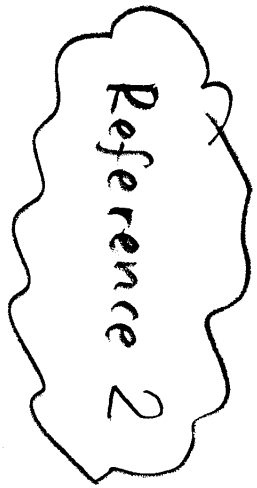
0 50 100 150 200 Feet

FIGURE 6-11 POTENTIOMETRIC SURFACE ELEVATION MAP

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Groundwater and Seepage

M. E. Harr

Professor of Soil Mechanics
School of Civil Engineering, Purdue University

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New York
San Francisco
Toronto
London

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where the modulus m is given by

$$\frac{L_0}{h} = \frac{1}{K(1-m)} - \frac{K'}{2K} \tag{12}$$

3. The parameter L,

$$\frac{L}{h} = \frac{2m}{K(1-m^2)} \tag{13}$$

4. The minimum length of underdrain,

$$\frac{L_{dr}}{h} = \frac{K'}{2K} - \frac{1}{K(1+m)} \tag{14}$$

Plots of the discharge and the minimum length of underdrain for the horizontal case are shown in Fig. 7-12.*

Figure 7-12*b* shows that for $L_0/h > 3$, the minimum length of underdrain L_{dr} is less than $0.2h$ for any shape or inclination of upstream slope. Whereas the infinite extent of the impervious base underlying the underdrain, such as given here, would require a greater *minimum length of underdrain* than the same structure without the impervious boundary, the lengths given in Fig. 7-12*b* can be considered to be on the safe side for any homogeneous section of great depth with any shape or inclination of upstream slope. Also, noting that the impervious boundary may be taken as a cutoff wall or sheetpile, the above results can be considered as a reasonable approximation for these cases when the cutoff is complete.

7-7. Seepage through Earth Structures into Drains of Finite Length

In the previous sections of this chapter it was assumed that the flow terminated into drains of infinite extent. We shall now consider these drains to be finite. The section to be investigated is shown in Fig. 7-14*a*. Point D on this figure locates the terminal point of what may be called the *critical* streamline (or *water divide*). All streamlines included between the free surface AB and the critical streamline terminate at the drain; those below terminate at the ground surface to the right of point D. The location of this point and the locus of the free surface DB' are of considerable engineering importance in that the effects of seepage must be considered in the design of the right cut slope as well as the left.

The essential analytical results of this section were first derived in a somewhat modified way by Nelson-Skornyakov; however, his results are not amenable to design use in that they contained elliptic integrals of the third kind in implicit form. To obviate this difficulty Harr and Brahma [52] reduced these solutions to a simple graphical form given below.

* See previous footnote.

As in the previous sections, the two limiting cases will be investigated: (1) horizontal upstream slope and (2) close to vertical upstream slope.

Case 1. Horizontal Upstream Slope (Fig. 7-14*b*). The G plane is shown in Fig. 7-14*c* and the corresponding w plane in Fig. 7-14*d*. Selecting a parametric p plane as shown in Fig. 7-14*e*, we have for the mapping of the w plane onto the p plane ($N = 0$, $w_A = p_A = 0$)

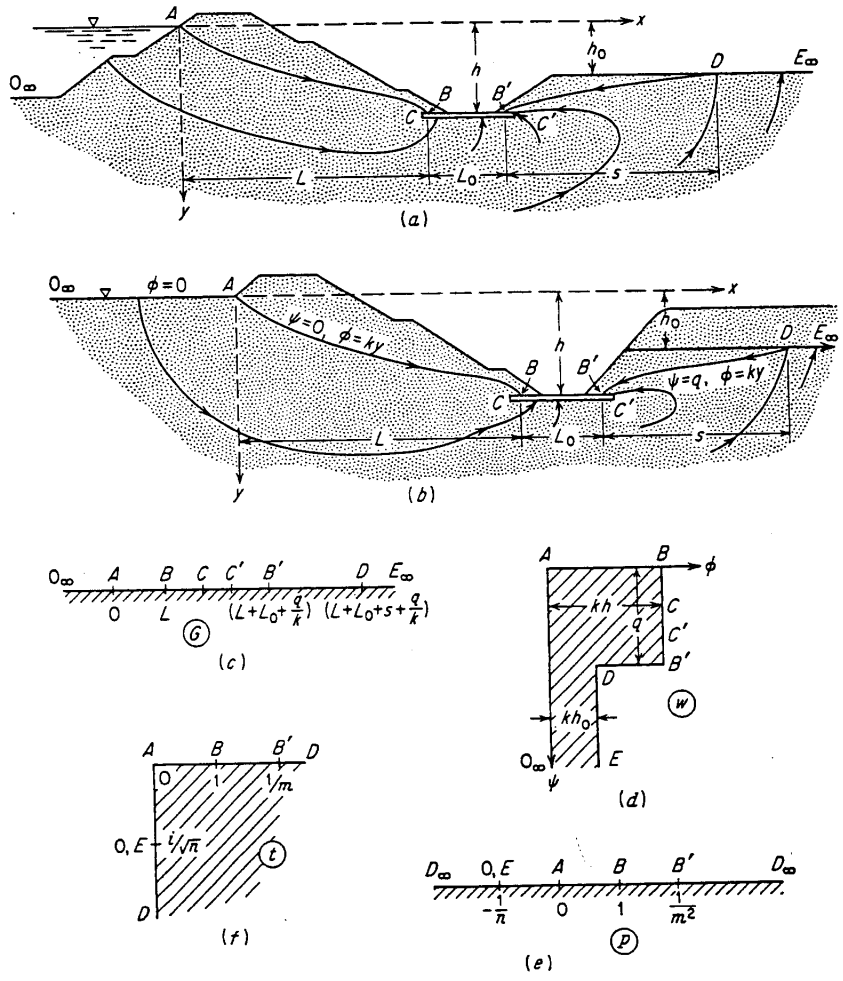


FIG. 7-14

$$w = M \int_0^p \frac{dp}{(p + 1/n)\sqrt{p(p-1)(p-1/m^2)}}$$

Now, introducing a change of variable $t^2 = p$ (this is equivalent to

defining the t plane as given in Fig. 7-14f), we obtain

$$w = M \int_0^t \frac{2t\,dt}{(t^2 + 1/n)\sqrt{t^2(t^2 - 1)(t^2 - 1/m^2)}} = M_1 \Pi(m,n,t) \quad (1)$$

where $\Pi(m,n,t)$ is the elliptic integral of the third kind with modulus m, parameter n (cf. Sec. B-6), and amplitude t. From the correspondence at points B ($w = kh$, $t = 1$) we find $M_1 = kh/\Pi_0(m,n)$, where $\Pi_0(m,n)$ is the complete elliptic integral of the third kind, and

$$w = kh \frac{\Pi(m,n,t)}{\Pi_0(m,n)} \quad (2)$$

At points B', $w = kh + iq$, $t = 1/m$, and Eq. (2) becomes*

$$kh + iq = \frac{kh}{\Pi_0(m,n)} \left[\Pi_0(m,n) + \frac{im^2}{n + m^2} \Pi_0(m',n') \right]$$

where

$$n' = -\frac{nm'^2}{m^2 + n}$$

$$m' = \sqrt{1 - m^2}$$

and hence we get for the quantity of seepage,

$$q = \frac{khm^2\Pi_0(m',n')}{(n + m^2)\Pi_0(m,n)} \quad (3)$$

Thus the discharge can be determined once the modulus m and the parameter n are known.

Mapping the G plane onto the p plane (cross-ratio formula) and substituting $t^2 = p$, we obtain for the characteristic function

$$z = \frac{iw}{k} + L\frac{(1 + n)t^2}{(1 + nt^2)} \quad (4)$$

Substituting the corresponding values at points B' into Eq. (4) ($z = L + L_0 + ih$, $w = kh + iq$, and $t = 1/m$), we have

$$L_0 = L\frac{m'^2}{m^2 + n} - \frac{q}{k} \quad (5)$$

In a similar manner, at points D, where $z = L + L_0 + s + ih_0$, $w = kh_0 + iq$, and $t = \infty$, we obtain

$$L_0 = \frac{L}{n} - \frac{q}{k} - s \quad (6)$$

* See Eqs. (28), Appendix B.

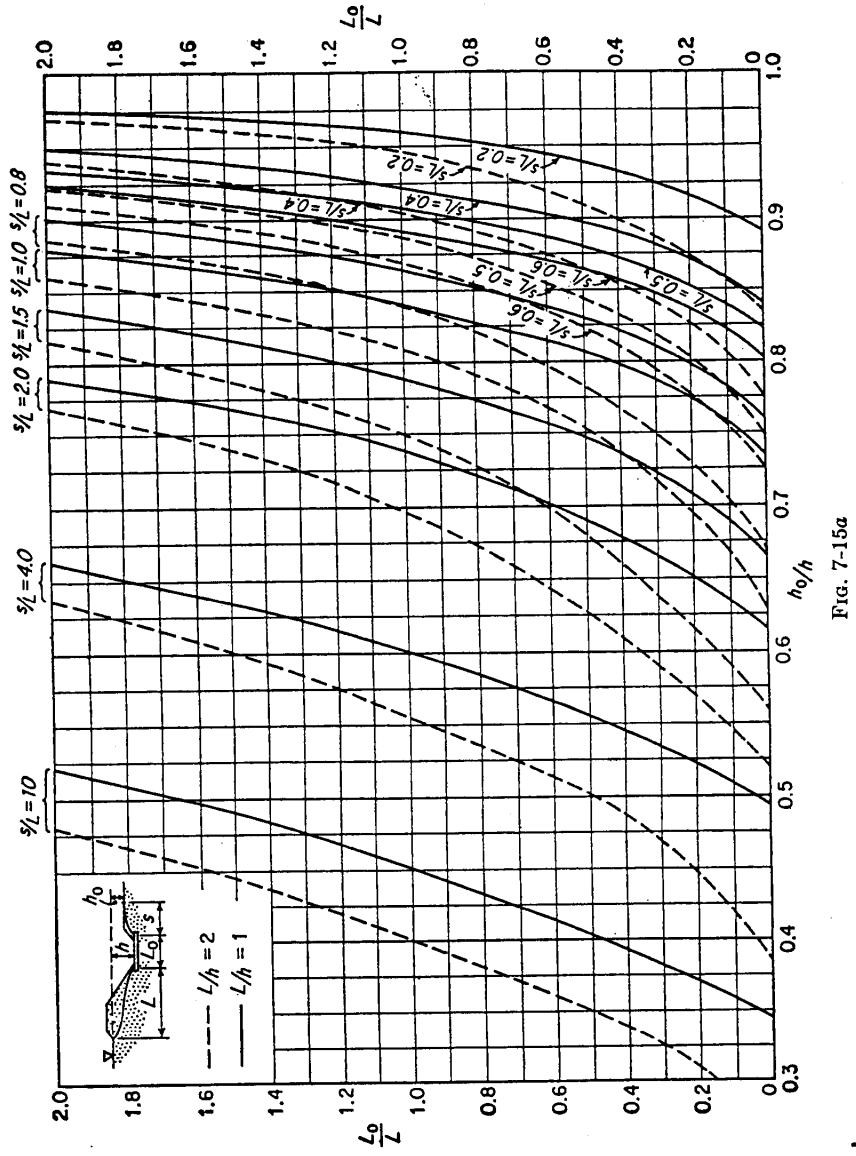


FIG. 7-15a

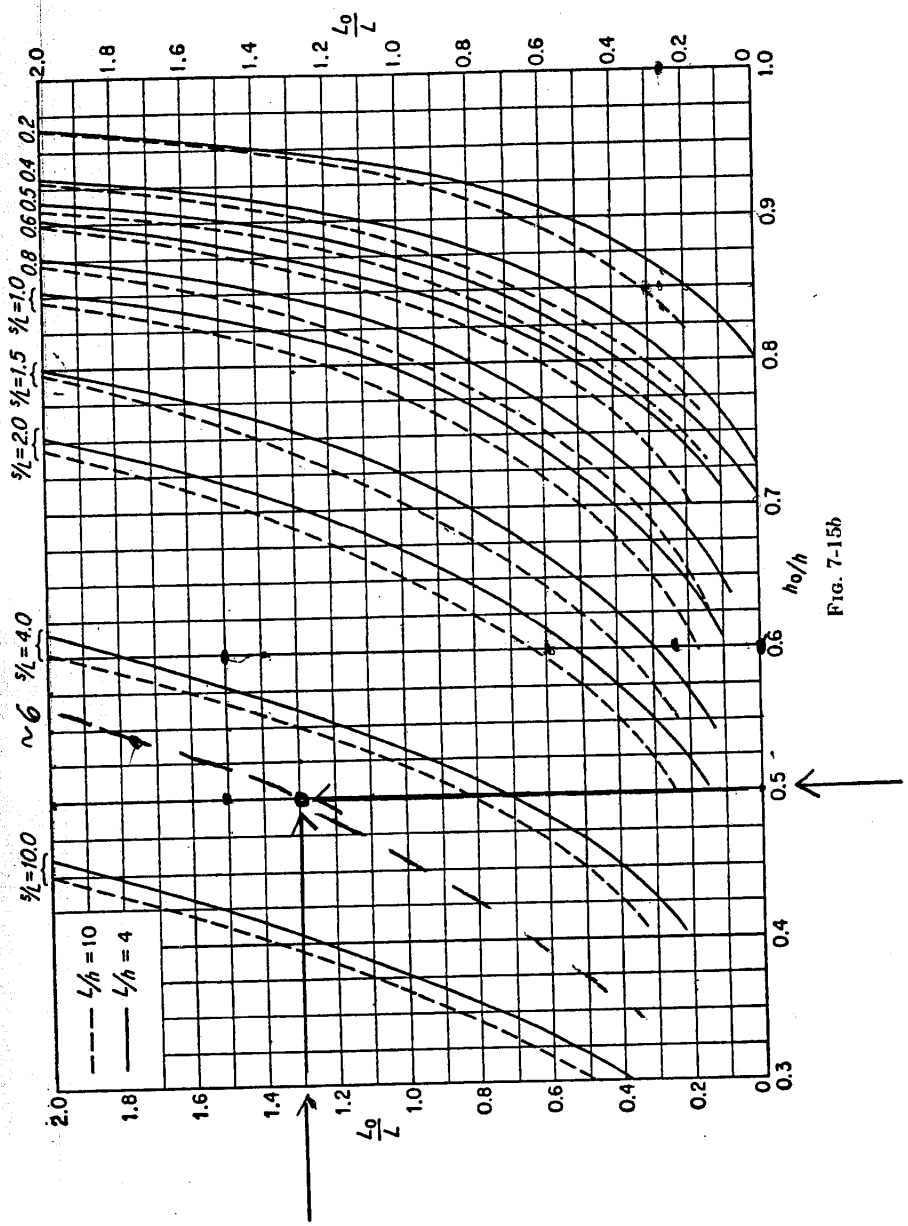


FIG. 7-15b

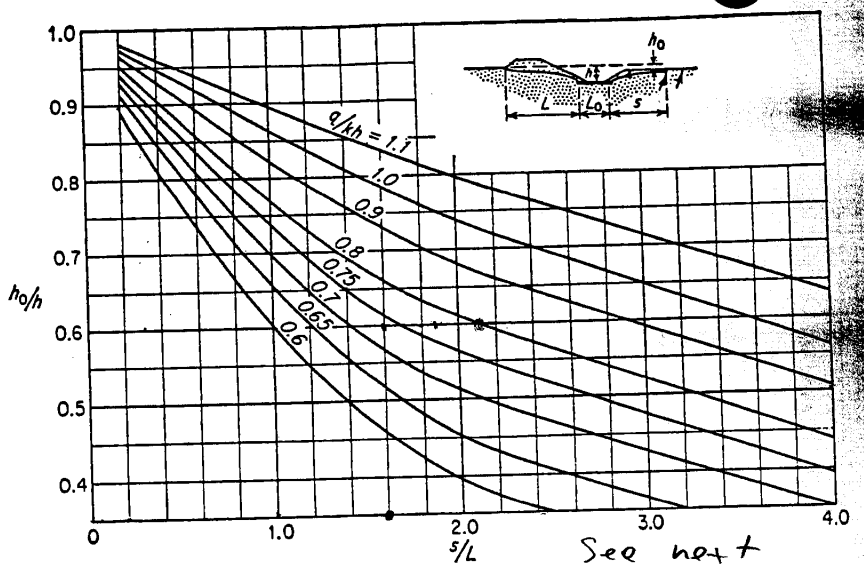


FIG. 7-15c

which, when combined with Eq. (5), yields

$$\frac{s}{L} = \frac{n+1}{n + n^2/m^2} \tag{7}$$

Now, substituting the corresponding values of the w and t planes at points D into Eq. (2),

$$kh_0 + iq = \frac{kh}{\Pi_0(m,n)} \int_0^\infty \frac{dt}{(1+nt^2)\sqrt{(1-t^2)(1-m^2t^2)}}$$

Using the results given in Eqs. (27b) and (28), Appendix B, we obtain

$$\frac{h_0}{h} = \frac{\pi}{2\Pi_0(m,n)\sqrt{(1+n)(1+m^2/n)}} \tag{8}$$

Equations (3), (5), (7), and (8) yield the complete solution of the problem, assuming the characteristic dimensions L_0/h, L, and h_0/h of the flow domain are known. With regard to L_0: as a first approximation L_0 can be taken as the total width of the drain. This will generally suffice; however, should greater precision be required, L_0 could be taken as the width of the drain reduced by twice 0.1 h with L increased by 0.1 h. The curves given in Fig. 7-15 present the above results in simple graphical form. The use of these curves will be illustrated by an example.

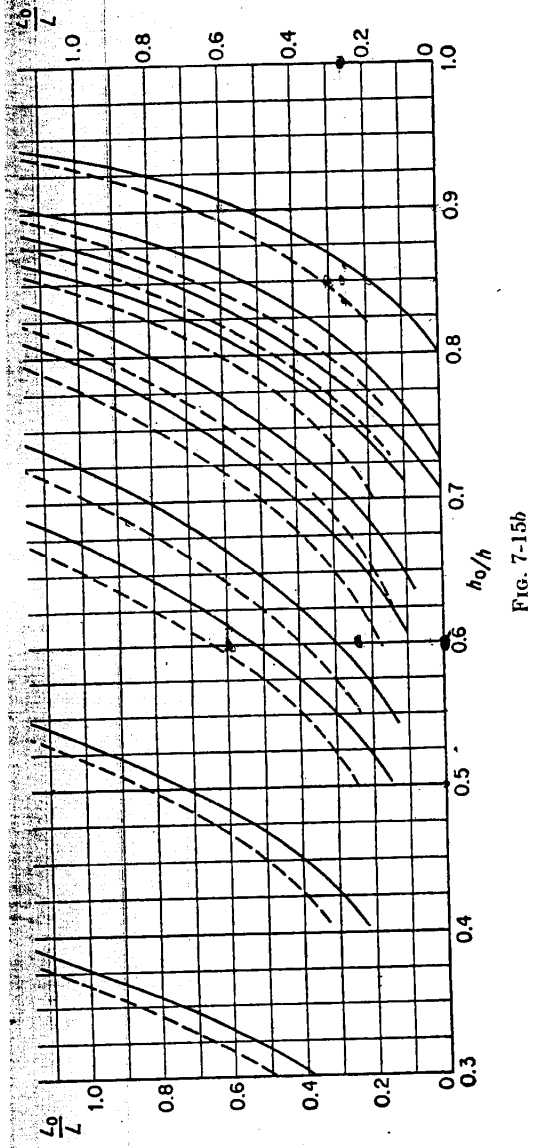


FIG. 7-15b

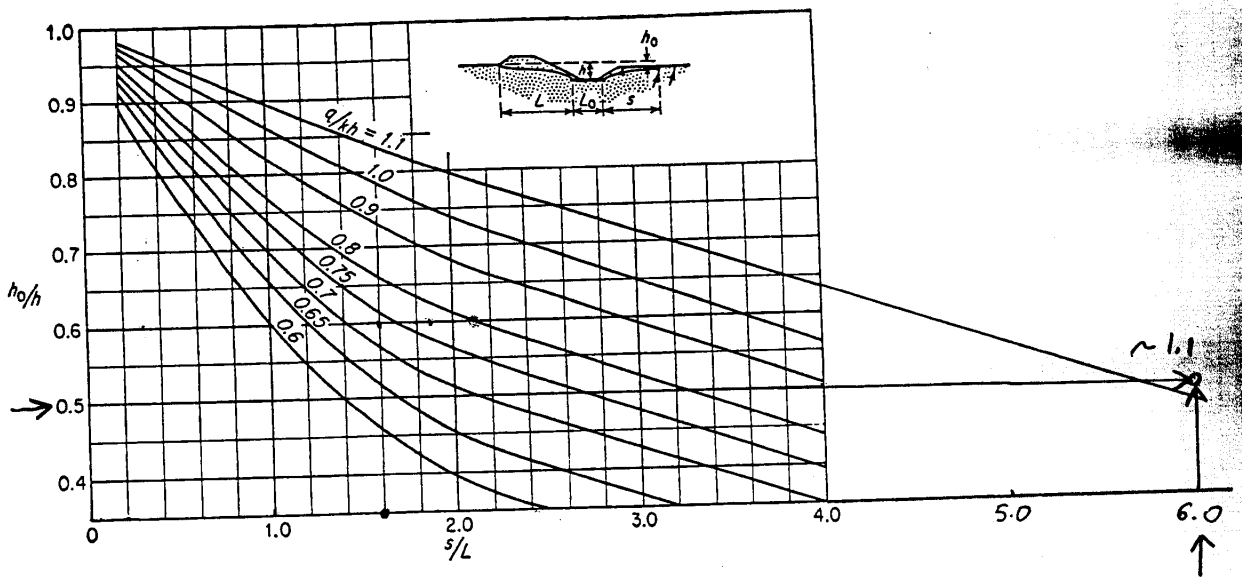


FIG. 7-15c

which, when combined with Eq. (5), yields

$$\frac{s}{L} = \frac{n+1}{n + n^2/m^2} \tag{7}$$

Now, substituting the corresponding values of the w and t planes at points D into Eq. (2),

$$kh_0 + iq = \frac{kh}{\Pi_0(m,n)} \int_0^\infty \frac{dt}{(1+nt^2)\sqrt{(1-t^2)(1-m^2t^2)}}$$

Using the results given in Eqs. (27b) and (28), Appendix B, we obtain

$$\frac{h_0}{h} = \frac{\pi}{2\Pi_0(m,n)\sqrt{(1+n)(1+m^2/n)}} \tag{8}$$

Equations (3), (5), (7), and (8) yield the complete solution of the problem, assuming the characteristic dimensions L_0/h, L, and h_0/h of the flow domain are known. With regard to L_0: as a first approximation L_0 can be taken as the total width of the drain. This will generally suffice; however, should greater precision be required, L_0 could be taken as the width of the drain reduced by twice 0.1 h with L increased by 0.1 h. The curves given in Fig. 7-15 present the above results in simple graphical form. The use of these curves will be illustrated by an example.

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Example 7-2. For the section shown in Fig. 7-16, assuming the upstream slope as horizontal determine (*a*) the distance *s* and (*b*) the reduced discharge.

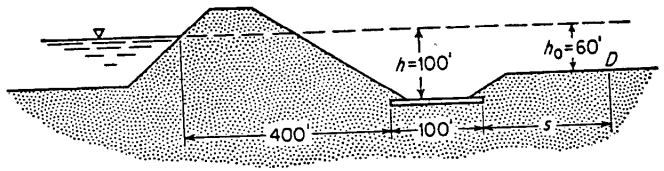


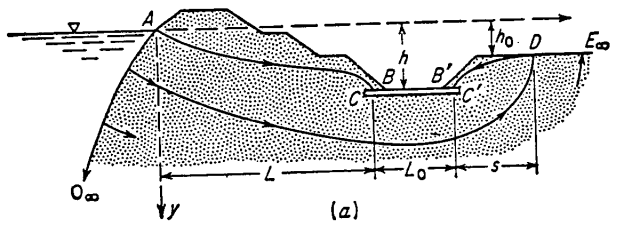
FIG. 7-16

As a first approximation, we take $L = 400$ ft and $L_0 = 100$ ft. Hence, $L/h = 4$, $L_0/L = 0.25$, and $h_0/h = 0.6$. From Fig. 7-15*b* we find (solid lines for $L/h = 4$) $s/L = 1.4$ or $s = 560$ ft, and point D (Fig. 7-16) is 1,060 ft from the entrance point ($x = 1{,}060$ ft).

For the discharge, from Fig. 7-15*c*, with $s/L = 1.4$ and $h_0/h = 0.6$, we obtain $q/kh = 0.70$; hence the reduced discharge is $q/k = 70$ ft (m and n in this example are 0.7 and 0.5, respectively).

Taking into account the difference between the width of the drain and L_0, assuming $L_{dr} = 0.1\ h$, $L_0 = 80$ ft, and $L = 410$, we obtain $s = 520$ ft, and point D is 1,010 ft from the entrance point. The reduced discharge for this case would be $q/k = 66$ ft.

Case 2. Close to Vertical Upstream Slope (Fig. 7-17*a*). With the upstream slope as the equipotential line ($\phi = 0$) along which $\psi = -kx$,



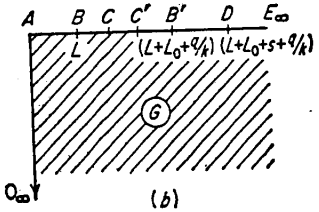


FIG. 7-17

the corresponding G plane is as given in Fig. 7-17*b*. The w plane for this case remains the same as in case 1 above (Fig. 7-14*d*). With the parametric t plane as before (Fig. 7-14*f*), the mapping of the w plane onto the t plane will be given by Eq. (2). Hence Eq. (3) will provide the discharge quantity, and Eq. (8) will be valid for the ratio of h_0/h for the present case as well as for the case of the horizontal upstream slope.

The appropriate mapping of the G plane onto the t plane is

$$G = L\sqrt{\frac{(1+n)t^2}{1+nt^2}} \tag{9}$$

and hence the characteristic function will be given by

$$z = \frac{iw}{k} + L\sqrt{\frac{(1+n)t^2}{1+nt^2}} \tag{10}$$

Substituting the corresponding values of the G plane and t plane at points B' ($G = L + L_0 + q/k$ and $t = 1/m$) into Eq. (10), we obtain

$$L_0 = L\left(\sqrt{\frac{1+n}{m^2+n}} - 1\right) - \frac{q}{k} \tag{11}$$

Now, making use of the conditions at points D, where

$$G = L + L_0 + s + \frac{q}{k}$$

and $t = \infty$, from Eqs. (9) and (11) we find that for the close to vertical upstream slope

$$\frac{s}{L} = \sqrt{\frac{1+n}{n}} - \sqrt{\frac{1+n}{m^2+n}} \tag{12}$$

As in the previous case Eqs. (3), (8), (11), and (12) provide the complete solution for the close to vertical upstream slope. The results are reduced to graphical form in Fig. 7-18.

NON-STEADY-FLOW TYPE CURVES FOR STRIP AQUIFERS WITH CONSTANT DRAWDOWN

By Halil Onder[1]

ABSTRACT: A type-curve method to determine aquifer parameters from a constant-drawdown test at a drain in a finite strip aquifer is described. An available solution in the form of complementary error functions to one-dimensional, nonsteady flow toward a drain, under constant drawdown condition in a strip aquifer bounded on the other side by an impervious formation, is used to define a drain function. Values of the drain function are calculated by using a polynomial approximation for the complementary error function and are tabulated, and a corresponding family of type curves is constructed for selected values of dimensionless distance along the width of the strip aquifer. The method is demonstrated through an application. The proposed match-point procedure may be used to determine the aquifer parameters from observed drawdown values in an observation well in the strip aquifer and discharge data measured in the drain during constant drawdown canal pumping tests.

Reference 3

INTRODUCTION

Determination of aquifer parameters from observed water levels by type-curve matching methods is the most commonly used technique for aquifer identification. Two drain functions with associated type curves, for one-dimensional (1D), nonsteady flow in a semiinfinite nonleaky aquifer under constant drawdown and constant discharge conditions, respectively, are described by Lohman (1972). Solutions and type curves for leaky semiinfinite aquifers under similar conditions are given by Vandenberg (1977a,b; 1978) and by Motz (1990a,b; 1991). Other works involving type-curve matching methods for 1D flow include Gustafson (1977), Sen (1986), and Motz (1992).

Rorabaugh (1960) used water levels in estimating aquifer constants in a finite aquifer. Although he presented dimensionless graphs for drawdowns, he did not elaborate his analysis to develop a type-curve matching technique. Using an available solution for 1D, nonsteady flow towards a drain, under constant drawdown condition in a strip aquifer, a drain function may be defined and a corresponding family of type curves may be constructed.

THEORETICAL BACKGROUND

One-dimensional (1D) nonsteady horizontal flow toward a drain under step drawdown conditions from a strip aquifer is shown in Fig. 1. The aquifer is homogeneous, isotropic, and of finite areal extent (bounded on one side by the drain and by an impermeable boundary on the other). The drain completely penetrates the aquifer. The aquifer is bound above and below by impermeable formations.

The solution to this problem is available from the analogous problem in heat flow [Carslaw and Jaeger (1978); see page 97, equation (9)] and it has

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Note. Discussion open until January 1, 1995. To extend the closing date one month, a written request must be filed with the ASCE Manager of Journals. The manuscript for this paper was submitted for review and possible publication on April 5, 1993. This paper is part of the ***Journal of Irrigation and Drainage Engineering***, Vol. 120, No. 4, July/August, 1994. ©ASCE, ISSN 0733-9437/94/0004-0732/$2.00 + $.25 per page. Paper No. 5935.

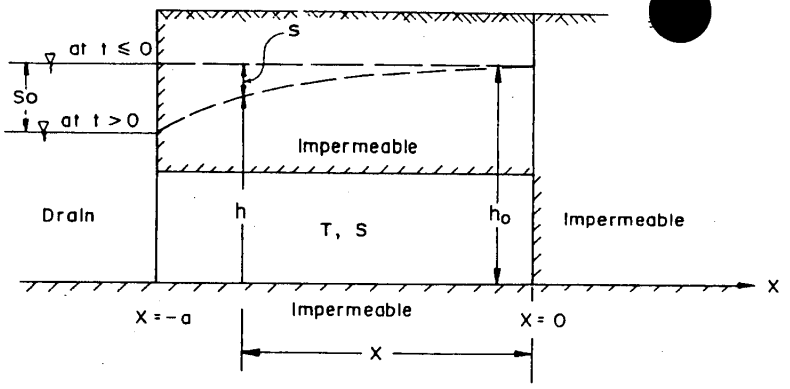


FIG. 1. 1D Flow in Finite Aquifer with Constant Drawdown in Drain

been used in the analysis of ground-water flow (Pinder et al. 1969). It may be written as

$$s = s_0 \sum_{n=0}^{\infty} (-1)^n \left[\operatorname{erfc} \frac{(2n+1)a + x}{2\sqrt{\nu t}} + \operatorname{erfc} \frac{(2n+1)a - x}{2\sqrt{\nu t}} \right] \quad (1)$$

where s = draw down; s_0 = constant draw down at $x = -a$; x = distance from the drain; t = time; $\nu = T/S$ = hydraulic diffusivity in which T = transmissivity; S = storage coefficient; a = width of finite strip aquifer along x axis; n = a positive integer; and erfc( ) = complementary error function.

The time dependent discharge Q of the aquifer from both sides of the drain, per unit length, resulting from a step drawdown in the stage, at $x = -a$, is [Carslaw and Jaeger (1978); see page 97, equations 12 and 13)]

$$Q = \frac{4Ts_0}{a} \sum_{n=0}^{\infty} \exp\left[-\frac{(2n+1)^2 \pi^2 \nu t}{4a^2} \right] \quad (2a)$$

or

$$Q = \frac{2Ts_0}{\sqrt{\pi \nu t}} \left[1 + 2 \sum_{n=1}^{\infty} (-1)^n e^{-(n^2 a^2/\nu t)} \right] \quad (2b)$$

For very small values of time, the exponentials in (2b) may be replaced by zero, then it becomes

$$Q = \frac{2Ts_0}{\sqrt{\pi \nu t}} = \frac{2s_0}{\sqrt{\pi t}} \sqrt{TS} \quad . \quad (3a)$$

Obviously, when the time is small, such that the flow behavior in the aquifer has not been affected by the no-flow boundary at $x = 0$ yet; the discharge formula is the same as the one for the semiinfinite aquifer case [see, for example, Lohman (1972); page 43, equation (120); and Rorabaugh (1964); equation 4]. Eq. (2a), when t is sufficiently large, may be approximated by taking only the first term in the series (Rorabaugh 1964)

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URS

EXHIBIT 4.7-2

CALCULATION COVER SHEET

Client: NYSEG

Project Name: Mechanicville

Project/Calculation Number: 111 73 501

Title: Hydraulic Containment

Total Number of Pages (including cover sheet): 16 (15 + cover)

Total Number of Computer Runs: 0

Prepared by: Marek Ostrowski

Date: Jan 5, 2005

Checked by: Amy Mont.

Date: Jan 6, 2005

Description and Purpose: To estimate ground water extraction rate required for hydraulic containment of area where soil contamination has been found.

Design Basis/References/Assumptions See text.

Remarks/Conclusions/Results: Required rate estimated to be [in gpm]

	entire site	source area
containment	70 - 420	10 - 90
containment (+) barriers	10 - 120	2 - 8

Calculation Approved by: [signature] 1/20/2005

Project Manager/Date

Revision No.:	Description of Revision:	Approved by:

Project Manager/Date

1. PURPOSE

The purpose of this calculation is to estimate the ground water extraction rate required to contain the dissolved-phase contamination. Two scenarios are investigated:

- Hydraulic containment of either the entire site or just the source area. In this case, water is intercepted from both the bedrock and overburden.
- Containment with vertical barriers, either the entire site or just the source area. Vertical barriers are installed in overburden and water is extracted only from overburden.

2. GENERAL

The area that has to be contained is shown on page 8 of this calculation package. It comprises locations where soils heave been found to be contaminated.

The hydrogeology of the site is described in Sections 6.1 and 6.2 of the RI report (reference 1). A short summary of information relevant to this calculation is presented below.

Ground water at the site can be found in overburden and the underlying bedrock. The overburden consists predominantly of man-made fill, comprising mostly sand and gravel, with lesser amount of silt and clay. Other materials present within the fill are various kinds of debris (brick, concrete) and industrial waste (slag, clinker, etc). A limited amount of native material is also present, presumably of alluvial origin. The saturated thickness of the overburden ranges from few feet in the western part of the site to approximately 10 feet along the eastern boundary (Figure 6-10 of reference 1). The fill in general is considered to be relatively permeable. The bedrock is identified as shale. Significant fraction of the bedrock mass contains a "pencil cleavage", and is thought to be relatively permeable. The cleavage zones are embedded within the competent bedrock, whose permeability is considered to be negligible by comparison.

Typical cross section is shown on Figure 6-7 of reference 1.

Two of the faults present within the bedrock are considered to be preferential flow paths. One is located along the Anthony Kill, which borders the site to the north. The other fault parallels the Anthony Kill along the southern boundary of the site (Figure 6-2 of reference 1). The combination of the northern fault and Anthony Kill forms the discharge area. The southern fault appears to affect the direction of the ground water flow, channeling it to the east.

The potentiometric surface map and the inferred flow directions are shown on Figure 6-11 of reference 1. Flow appears to be essentially to the north and northeast. Gradients are relatively high, on the order of 1/100 to 1/10. Flow pattern upgradient of the site is not known. Quantitative information on the hydraulic conductivities in the study area is not available.

3. CALCULATIONS

3.1 Hydraulic Containment

Entire Site

The amount of water flowing through the site can be estimated either by considering the tributary area and sources of water located within it, or by analyzing hydraulic gradients and hydraulic conductivities. The tributary area of the site is not known, because the flow pattern upgradient of the site is not known. The hydraulic gradients at the site can be estimated; however, there are no quantitative data on the hydraulic conductivities. Because of that, no reasonably accurate estimate of the flow rate can be performed.

This calculation will attempt to estimate the order-of-magnitude of the flow, using the observed hydraulic gradients and the values of hydraulic conductivity assessed based on qualitative considerations.

The overburden is thought to consist of mostly sand and gravel. It is assumed that the conductivity of this kind of deposits ranges between $1*10^{-2}$ and $1*10^{-1}$ cm/s ($K_{overburden}$ = 28 to 280 ft/d). The average thickness of the overburden is approximately 2 ft within the western 300 ft of the site, and approximately 10 ft within the eastern 100 ft. Use the weighted average of:

$$H_{overburden} = (300*2 + 100*10) / 400 = 4 \text{ ft}$$

Similarly, the hydraulic gradient is approximately 10/150 in the western 200 ft and 10/250 within the eastern 200 ft. the average gradient is:

$$i_{avg} = (10/150 + 10/250) / 2 = 0.053$$

During drilling, most wells located within the zone of pencil cleavage provided 1 to 10 gpm (verbal communication). This is indicative of moderate conductivities. Assume $1*10^{-3}$ to $5*10^{-5}$ cm/s (K_{rock} = 3 to 14 ft/d). Wells drilled within the non-cleavage zone were essentially dry. It is assumed that the conductivity of the non-cleavage part of the bedrock is negligible.

The thickness of bedrock conducting the flow is essentially unknown. It is assumed to be approximately 200 ft. The zone of cleavage is assumed to form approximately half of that thickness. From this, the thickness of the conductive zone within the bedrock is:

$$H_{rock} = 200 / 2 = 100 \text{ ft}$$

Using the above assumptions, the volume of water flowing through the 400-ft width "W" of the site is:

$$Q = Q_{overburden} + Q_{rock}$$

$$Q = W\ i\ [(K\ H)_{overburden} + (K\ H)_{rock}]$$

The low-end estimate is:

$$Q_{low} = 400*0.053*[(28*4 + 3*100)]$$

$$Q_{high} = 21.2*(112 + 300) = 8,734 \text{ ft}^3/\text{d} = 45 \text{ gpm}$$

The high-end estimate is:

$$Q_{low} = 400*0.053*[(280*4 + 14*100)]$$

$$Q_{high} = 21.2*(1,120 + 1,400) = 53,424 \text{ ft}^3/\text{d} = 278 \text{ gpm}$$

It should to be noted that the site is located near a creek, and the contaminated area essentially extends to the creek bank. The extraction system will have to withdraw certain quantity of water from the creek, to maintain the inward gradient. This quantity depends on the design of the extraction system. The design is beyond the scope of this calculation. To account for this feature, a 50% factor of safety is applied.

$Q \approx 70$ to 420 gpm

Source Area

The source area is shown on figure 3-3 of reference 1. It is located in the southeastern part of the site. The width of the source area is approximately 100 ft.

As shown on Figures 6-2 and 6-10 of reference 1, bedrock surface dips in that area and the saturated thickness of the overburden increases locally to approximately 10 ft. Ground water flowing horizontally within the top layer of bedrock most likely flows horizontally through the area of increased saturated thickness in the overburden (see page 9). In this calculation, it is assumed that intercepting overburden ground water in the source area will also require intercepting top 20 ft of bedrock flow.

Using hydraulic conductivities and gradients defined previously:

$$Q = Q_{overburden} + Q_{rock}$$

$$Q = W\ i\ [(K\ H)_{overburden} + (K\ H)_{rock}]$$

The low-end estimate is:

$$Q_{low} = 100*0.053*[(28*10 + 3*20)]$$

$$Q_{high} = 5.3*(280 + 60) = 1{,}802\ ft^3/d = 9\ gpm$$

The high-end estimate is:

$$Q_{low} = 100*0.053*[(280*10 + 14*20)]$$

$$Q_{high} = 5.3*(2{,}800 + 280) = 16{,}324\ ft^3/d = 85\ gpm$$

Source area is located relatively far from the creek, and a system can be engineered that would minimize or eliminate the withdrawal of surface water. Therefore, a factor of safety is not used here.

3.2 Containment with Cutoff Walls

Entire Site

Under this scenario, ground water would NOT be intercepted within bedrock. Instead, a cutoff wall would be constructed within the overburden around the entire site, and water would be extracted from the overburden within the containment area.

The saturated thickness of the overburden is very low over most of the site. Typical values are 2 to 4 ft. Saturated thickness decreases to essentially zero in the central portion of the site. Only around the gas relief holder the saturated thickness is approximately 10 ft. This area; however, is very small and is not continuous. Bedrock surface actually goes up between the gas holder and the downgradient limit of the site.

Under these conditions, lowering of water table within the enclosure by extracting only from the overburden is essentially impossible. Therefore, even with the presence of the upgradient cutoff wall, the water table at the upgradient boundary is unlikely to differ much from the present conditions. Ground water would simply flow up from within the bedrock, until existing gradients are restored.

Assuming that some sort of the extraction facility exists along the downgradient boundary of the site (for example a trench), the amount of water reaching it would be essentially the same as the amount of water flowing through the overburden at the present. Therefore, estimates produced in the previous section (for overburden only) would apply.

The low-end and high-end estimates are:

$$Q_{low} = 21.2*(112 + 0) = 2,374 \text{ ft}^3/\text{d} = 12 \text{ gpm}$$

$$Q_{high} = 21.2*(1,120 + 0) = 23,744 \text{ ft}^3/\text{d} = 124 \text{ gpm}$$

The top of bedrock is at a similar elevation as the water surface in Anthony Kill (Figure 6-7 of reference 1). Therefore, the water level in the potential extraction facility could not be significantly lower than water level in the Kill. Flow from the creek into the extraction facility would be unlikely to occur.

$Q \approx 10$ to 120 gpm

Source Area

It is assumed that the flow within overburden is cut off by vertical barriers and only the flow in bedrock is intercepted, as indicated in Section 3.1 Source Area. The flow rate in bedrock has been estimated at:

$$Q = Q_{rock}$$

$$Q = W\ i\ [(K\ H)_{rock}]$$

The low-end estimate is:

$$Q_{low} = 100*0.053*[(3*20)]$$

$$Q_{high} = 5.3*(60) = 318\ ft^3/d = 2\ gpm$$

The high-end estimate is:

$$Q_{low} = 100*0.053*[(14*20)]$$

$$Q_{high} = 5.3*(280) = 1,484\ ft^3/d = 8\ gpm$$

4. SUMMARY

Following estimates of the extraction rates were obtained:

- For hydraulic containment of the entire site:

  $Q \approx 70$ to 420 gpm

- For hydraulic containment of source area:

  $Q \approx 10$ to 90 gpm

- For vertical barrier around the site and extraction only from the overburden:

  $Q \approx 10$ to 120 gpm

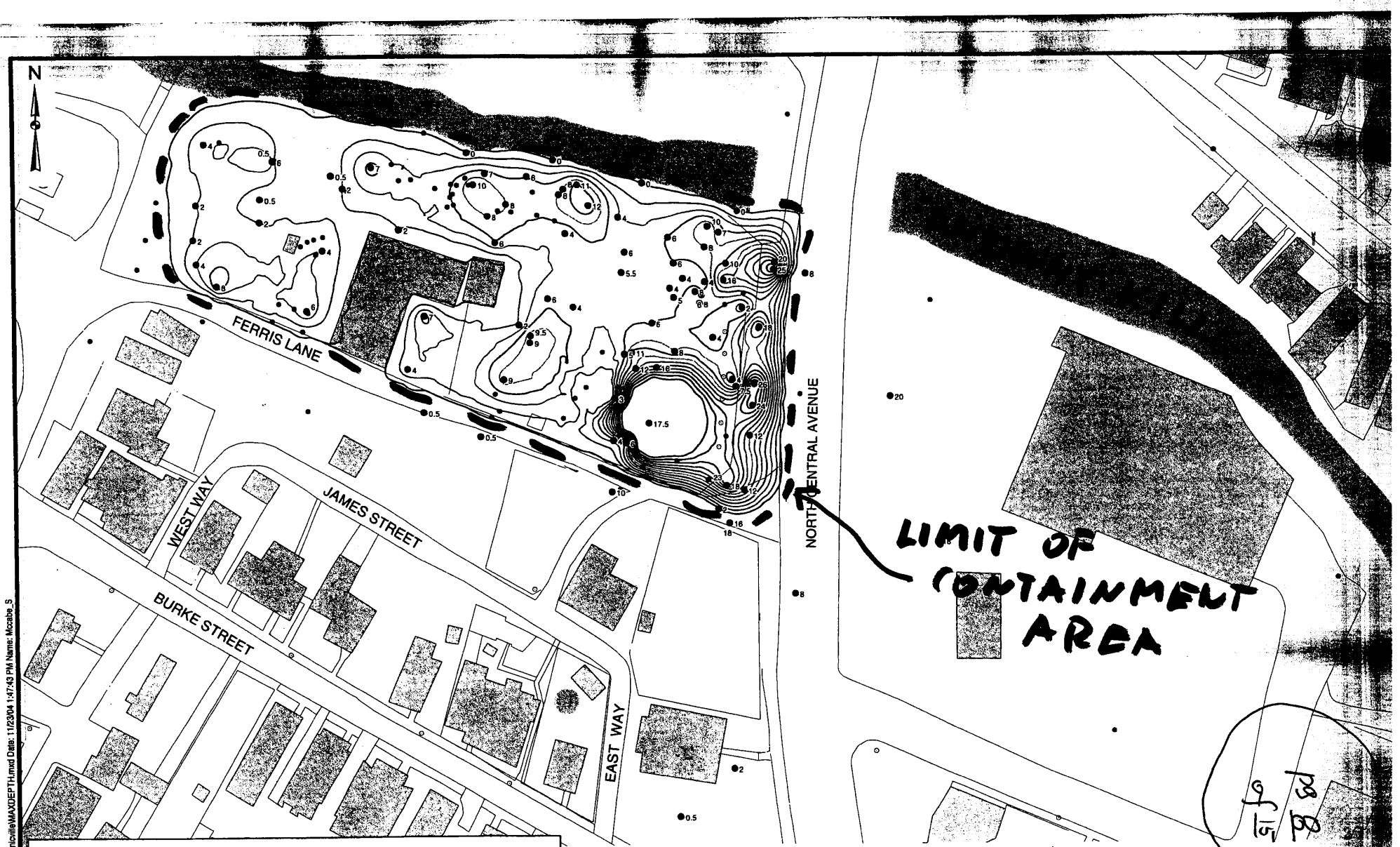
- For vertical barrier around the source area and extraction only from overburden:

  $Q \approx 2$ to 8 gpm

Note that there is significant uncertainty associated with these estimates. This is because the hydraulic conductivities are essentially unknown. Aquifer would have to be tested in order to refine the flow estimates.

5. REFERENCES

1. Draft Supplemental Remedial Investigation Report
Mechanicville Former Manufactured Gas Plant
URS, July 2003

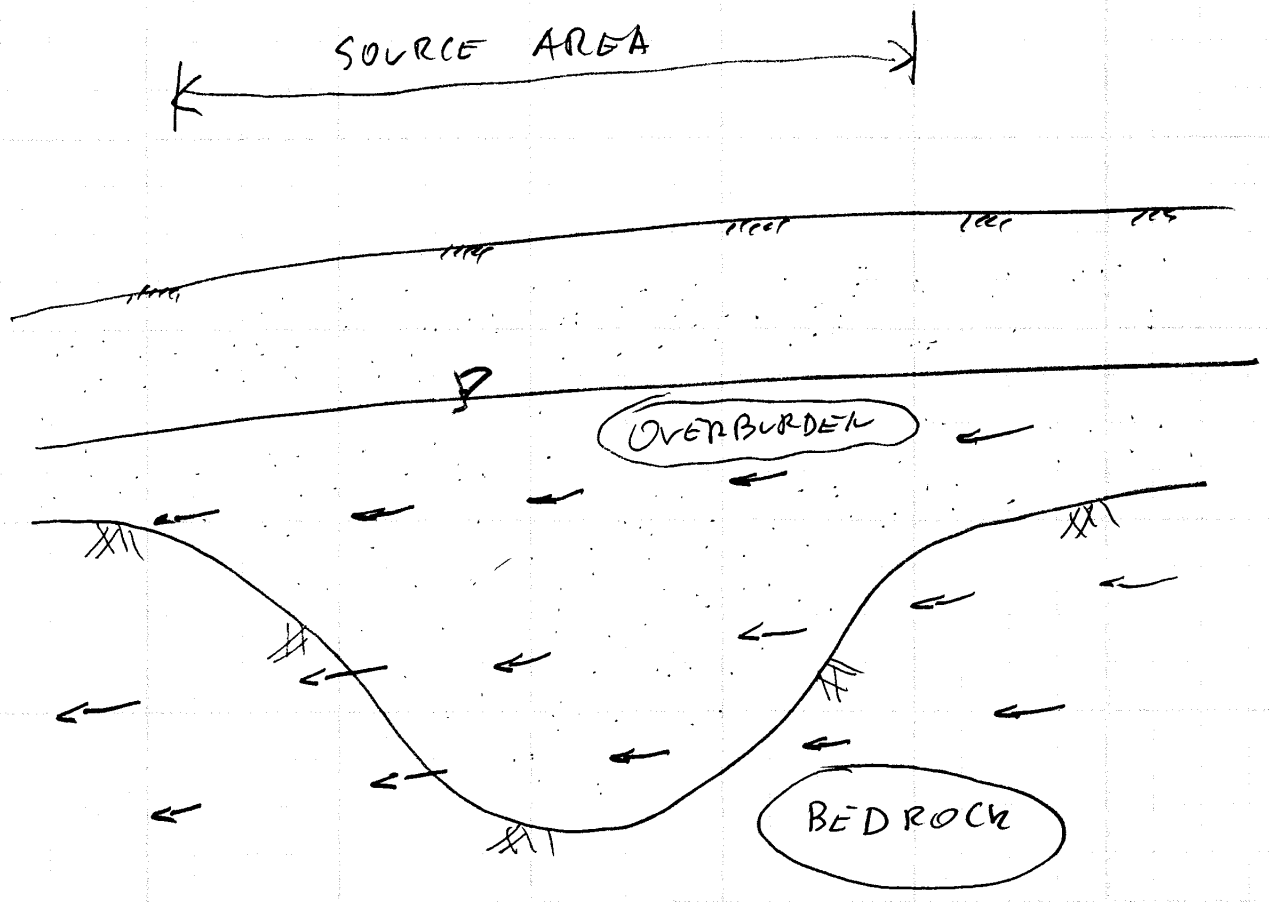


N:\38989614.00000\DB\MechanicvilleMAXDEPTH.mxd Date: 11/23/04 1:47:43 PM Name: Mcabe_S

NYSEG - MECHANICVILLE
MAXIMUM DEPTH OF SOIL CONTAMINATION

URS

FIGURE



Flow through source area

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Reference 1

NYSEG

New York State Electric & Gas Corporation

Mechanicville Former Manufactured Gas Plan
Mechanicville, New Yor

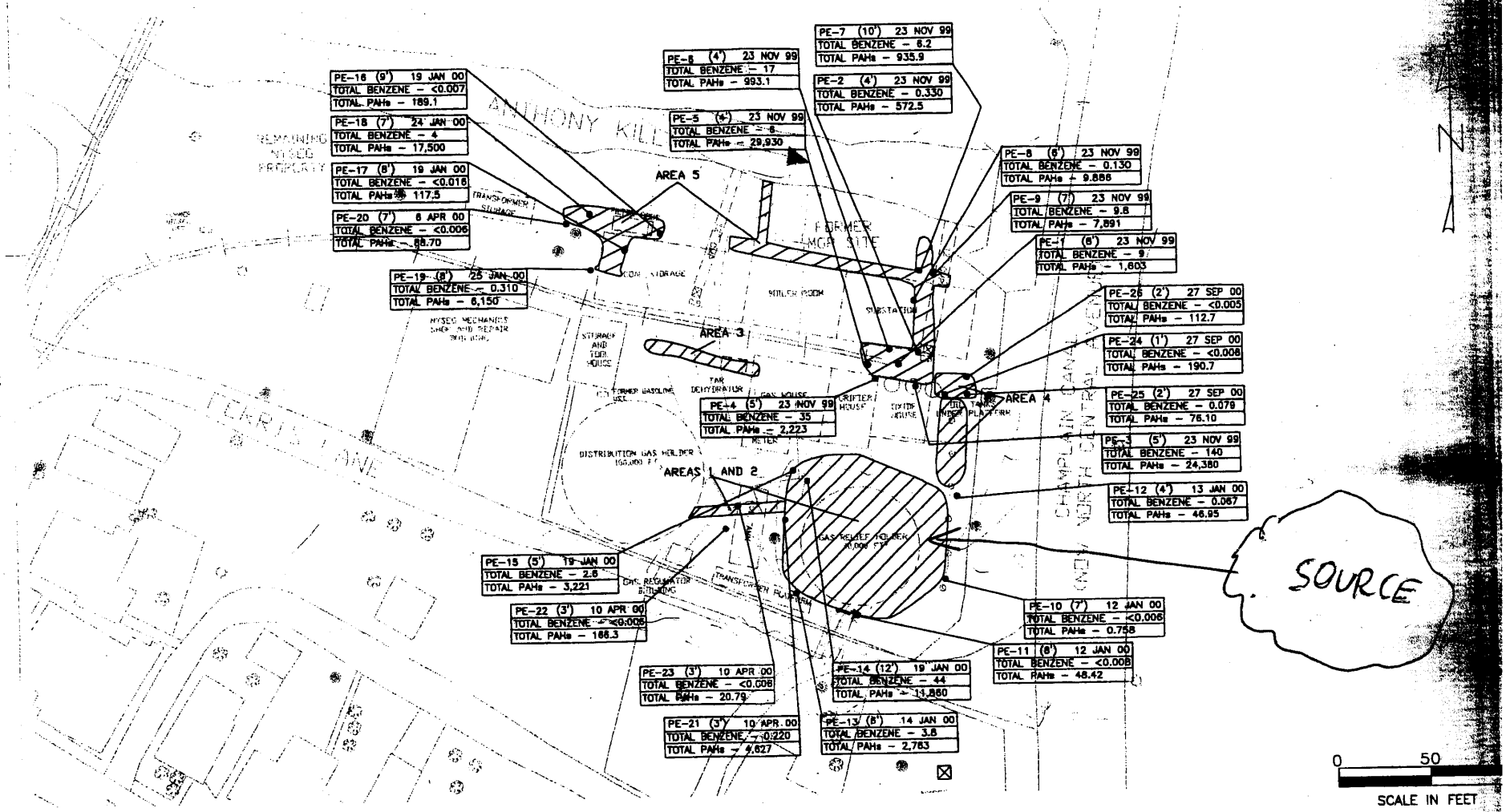
DRAFT SUPPLEMENTAL REMEDIAL INVESTIGATION REPORT

JULY 30, 2003



Prepared For:
New York State Electric & Gas Corporation
Kirkwood Industrial Park
Binghamton, New York

URS
URS Corporation - New York
28 Corporate Drive, Suite 20(
Clifton Park, New York 1206



LEGEND

- FORMER STRUCTURE
- POWER POLE
- LIGHT POLE
- POST, SIGN
- FORMER RAILROAD TRACKS

ALL VALUES IN mg/kg

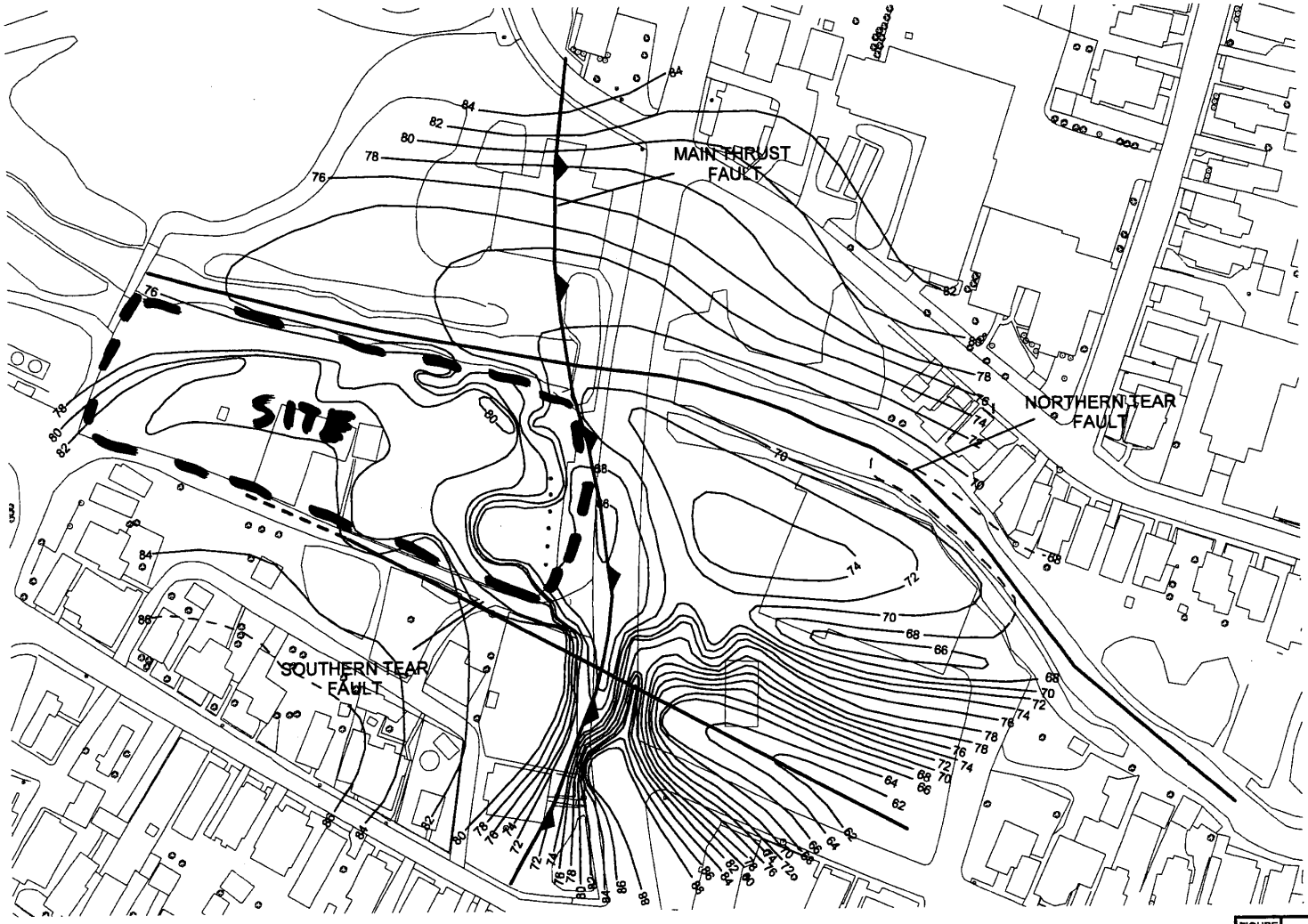
- APPROXIMATE LIMIT OF EXCAVATION (NOVEMBER 1999 TO APRIL 2000)
- PE-23 ● 1999/2000 IRM EXCAVATION ENDPOINT SAMPLING LOCATION

BASE PROVIDED BY NYSEG ENGINEERING SERVICES, BINGHAMTON, NY.

9/15/11

FIGURE 3-3	1999 AND 2000 IN REMEDIAL MEAS
NYSEG	NEW YORK STATE EL FORMER COAL GAS MECHANICVILL
URS	URS C 28 CORPORA CLIFTON PAR

P:/Database/NYSEG/Mechanicville\Other_Figures\Fig. 3-3 Interim Remedial Measure



LEGEND:

TOP OF BEDROCK (FEET MSL)

FAULT

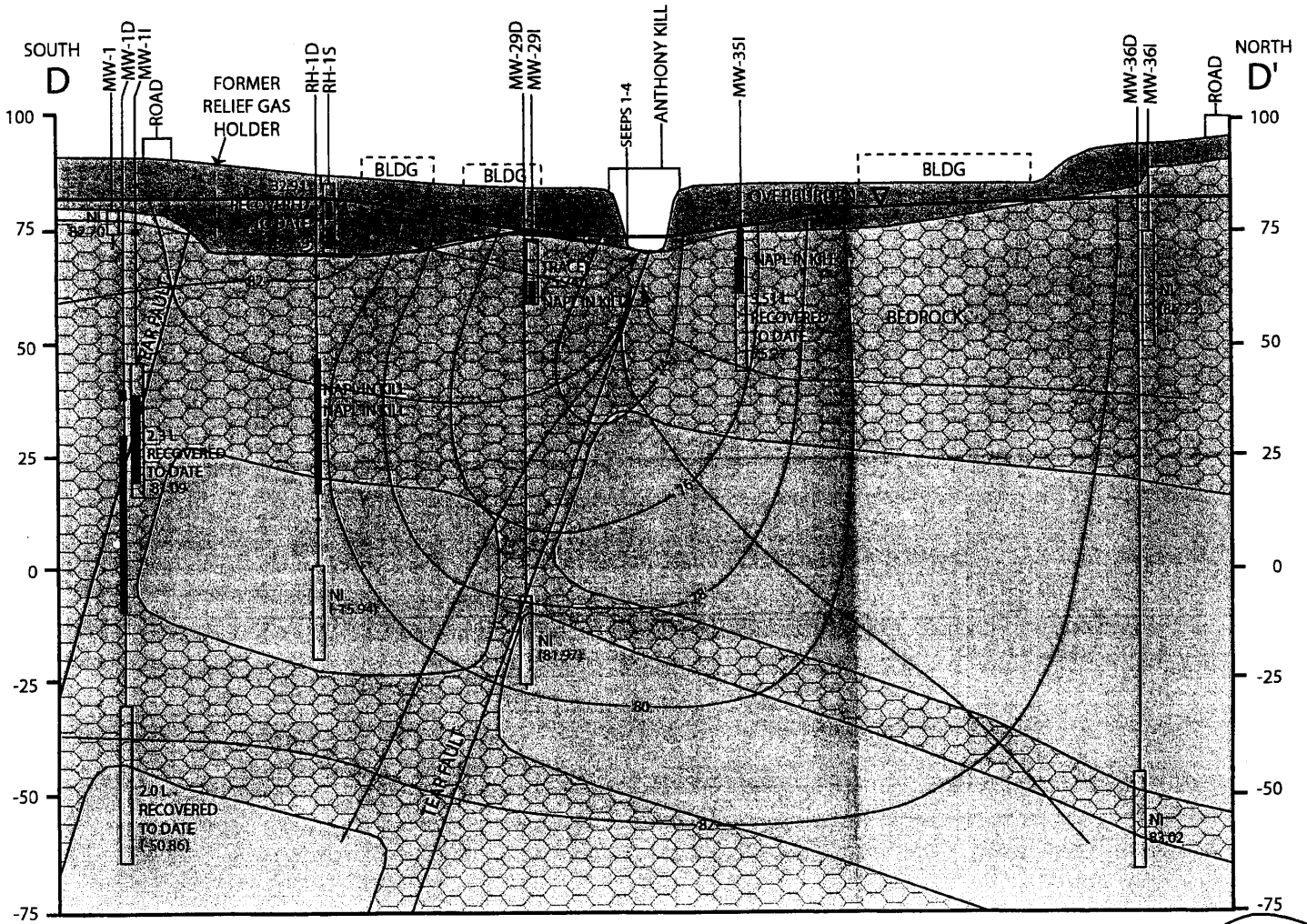
GRAPHIC SCALE

0 50 100 150 200 Feet

FIGURE 6-2	TOP OF BEDROCK MAP
NYSEG	NEW YORK STATE ELECTRIC AND GAS FORMER COAL GASIFICATION SITE MECHANICVILLE, NEW YORK
URS	URS CORPORATION 646 PLANK ROAD SUITE 202 CLIFTON PARK, NEW YORK 12065

Pl 12 of 15

DRAFT



LEGEND:

- MW-2 — WELL DESIGNATION AND APPROXIMATE LOCATION GENERALIZED GROUND SURFACE SCREENED INTERVAL
- NAPL OBSERVED
- TRACE — TRACE NAPL (NOT RECOVERABLE)
- NI — NO INDICATION OF NAPL
- OVERBURDEN
- BEDROCK - SNAKE HILL SHALE
- ZONE OF INTENSE PENCIL CLEAVAGE
- WATER TABLE - MAY 9, 2003 (): INDICATES WATER LEVEL THAT HAS NOT STABILIZED
- –79– EQUIPOTENTIAL CONTOUR (FEET MSL)
- ASH LAYER

NOTES:

1. REFER TO FIGURE 6-3 FOR THE ORIENTATION OF THE LINE OF SECTION.
2. REFER TO THE BORING LOGS AND BEDROCK CORE LOGS IN APPENDIX E FOR DETAILED LITHOLOGIC DESCRIPTIONS.
3. NAPL OBSERVATIONS THROUGH JULY 18, 2003.

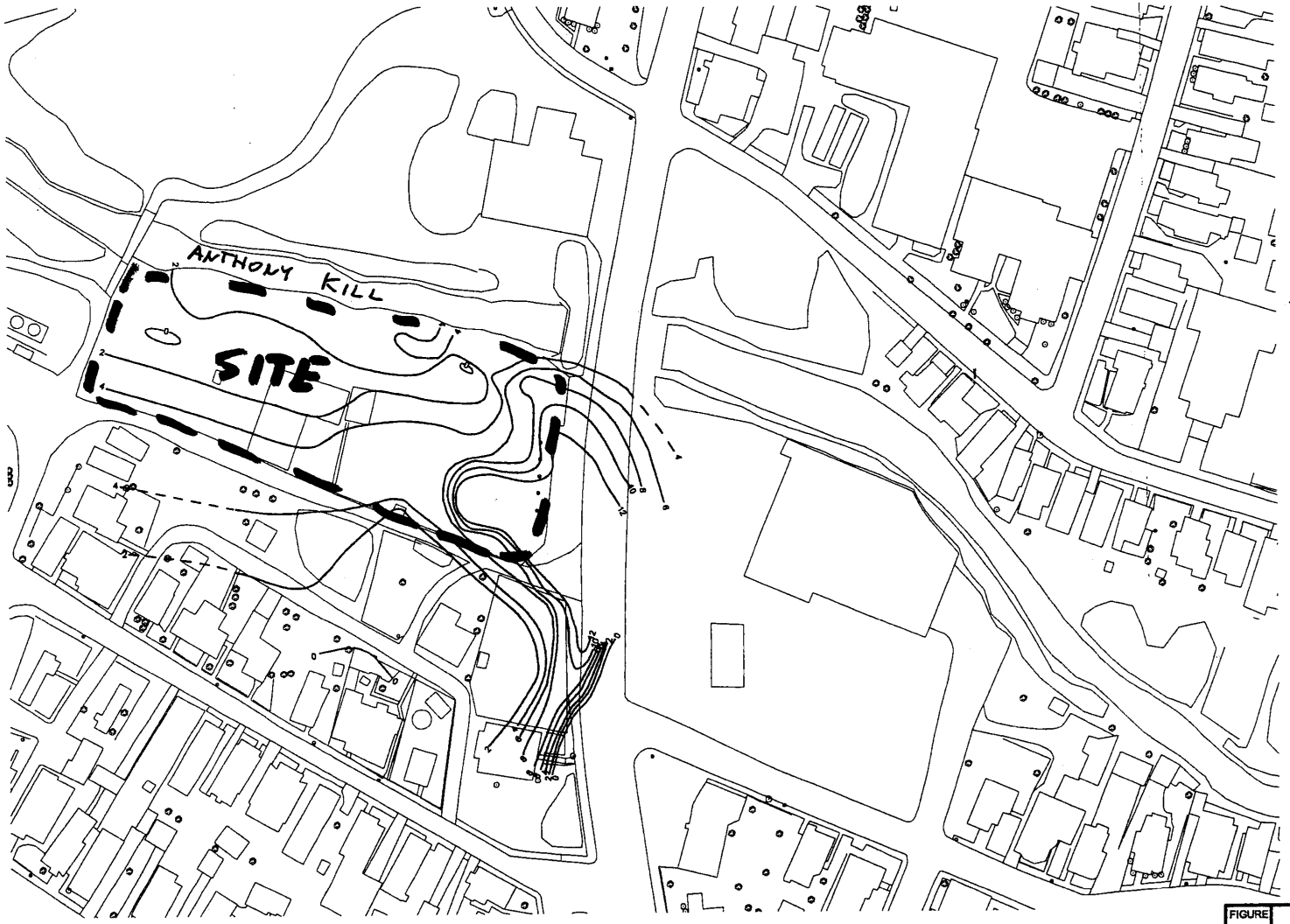
HORIZONTAL SCALE (IN FEET)
0 50 100
VERTICAL EXAGGERATION = 2X

FIGURE 6-7	GEOLOGIC CROSS-SECTION D-D'

NYSEG NEW YORK STATE ELECTRIC AND GAS
FORMER COAL GASIFICATION SITE
MECHANICVILLE, NEW YORK

URS CORPORATION
646 PLANK ROAD SUITE 202
CLIFTON PARK, NEW YORK 12065

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DRAFT

LEGEND:

SATURATED THICKNESS OF OVERBURDEN CONTOURS (FEET)

UNSATURATED OVERBURDEN

GRAPHIC SCALE

0 50 100 150 200 Feet

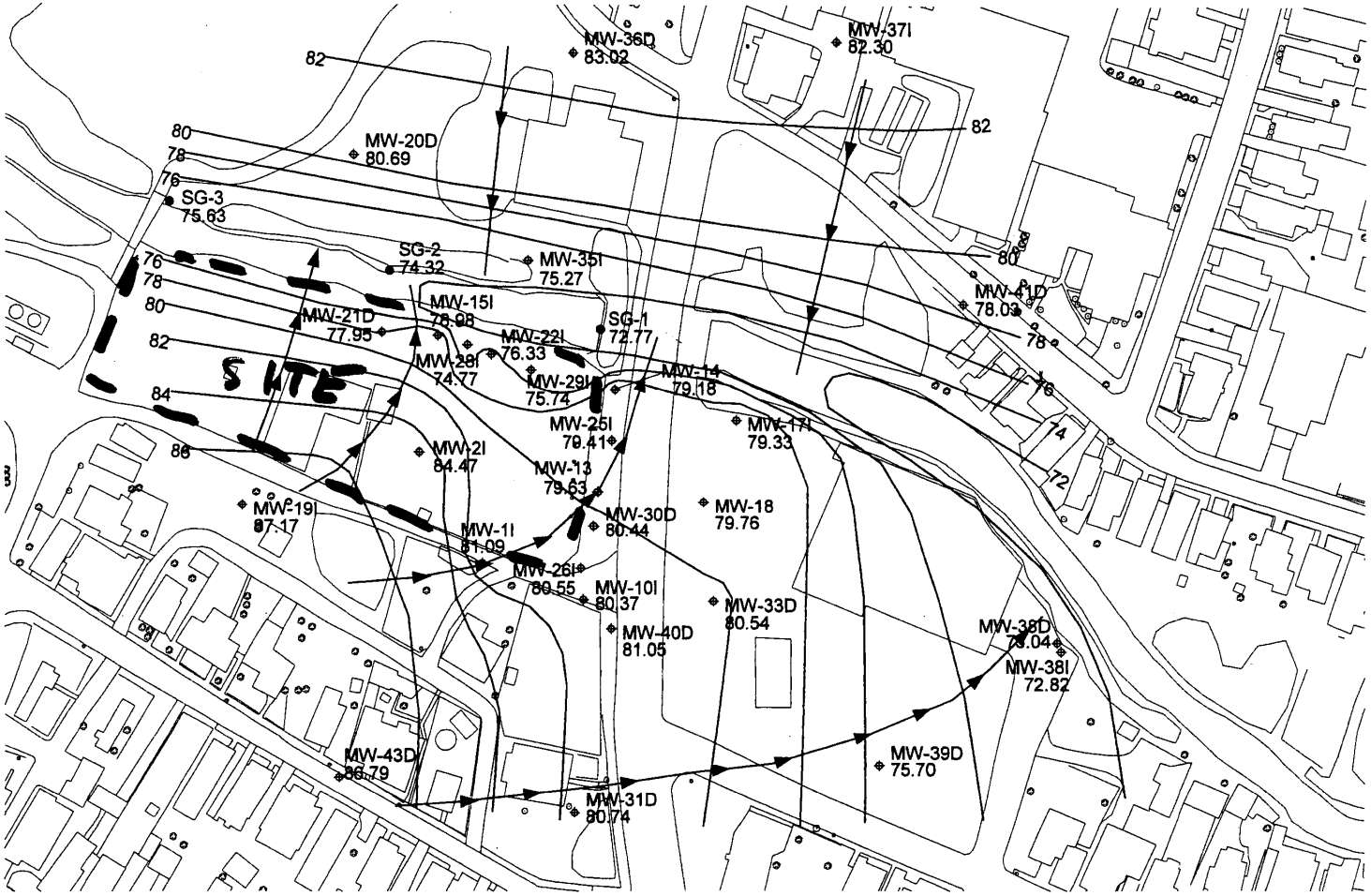
FIGURE 6-10

SATURATED THICKNESS OF OVERBURDEN

NYSEG NEW YORK STATE ELECTRIC AND GAS FORMER COAL GASIFICATION SITE MECHANICVILLE, NEW YORK

URS CORPORATION
646 PLANK ROAD SUITE 202
CLIFTON PARK, NEW YORK 12065

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LEGEND:

- BEDROCK MONITORING WELL LOCATION
  POTENTIOMETRIC SURFACE ELEVATION - MAY 9, 2003
- STAFF GAUGE LOCATION
- POTENTIOMETRIC SURFACE ELEVATION CONTOURS (FEET MSL)
- FLOW LINES

NOTE: BEDROCK WELLS AT WHICH WATER LEVELS HAVE NOT STABILIZED ARE NOT SHOWN.

GRAPHIC SCALE

0 50 100 150 200 Feet

FIGURE 6-11 POTENTIOMETRIC SURFACE ELEVATION MAP

NYSEG NEW YORK STATE ELECTRIC AND GAS
FORMER COAL GASIFICATION SITE
MECHANICVILLE, NEW YORK

URS CORPORATION
646 PLANK ROAD SUITE 202
CLIFTON PARK, NEW YORK 12065

APPENDIX D

COST ESTIMATES

NEW YORK STATE ELECTRIC AND GAS
MECHANICVILLE SITE
ENGINEER'S COST ESTIMATE

Client:	NYSEG	Project Number:	11173501		
Project:	Mechanicville Site	Calculated By:	PB	Date:	17-Feb-05
Description:	Cost Summary	Checked By:	JRS	Date:	17-Feb-05

SUMMARY OF CAPITAL COSTS

DESCRIPTION	ESTIMATED COST ($-2005)
Alternative 1 - No Further Action	$15,000
Alternative 2a - Source Area Containment, Soil Excavation & NAPL Recovery	$2,522,703
Alternative 2b - Containment Around Entire Site & NAPL Recovery	$4,143,594
Alternative 3a - Excavation of Contaminated Soil >SCGs & Off-Site Disposal, NAPL Recovery	$8,124,082
Alternative 3b - Excavation of Contaminated Soil TPAHs >1000 ppm & Off-Site Disposal, NAPL Recovery	$4,200,771
Alternative 3c - Excavation of Contaminated Soil TPAHs >500 ppm & Off-Site Disposal, NAPL Recovery	$4,470,987
Alternative 4 - Excavation and Off-Site Disposal of Source Area, In-Situ Stabilization of Remaining Site, NAPL Recovery	$4,419,253

NEW YORK STATE ELECTRIC AND GAS
MECHANICVILLE SITE
ENGINEER'S COST ESTIMATE

Client:	NYSEG	Project Number:	11173501		
Project:	Mechanicville Site	Calculated By:	PB	Date:	25-Oct-05
Description:	Cost Summary	Checked By:	JL	Date:	26-Oct-05

SUMMARY OF ANNUAL O&M COSTS

DESCRIPTION	ANNUAL COST ($-2005)
Alternative 1 - No Further Action	$45,600
Alterantive 2a - Source Area Containment, Soil Excavation & NAPL Recovery	$230,671
Alternative 2b - Containment Around Entire Site & NAPL Recovery	$386,080
Alternative 3a - Excavation of Contaminated Soil >SCGs & Off-Site Disposal, NAPL Recovery	$64,770
Alternative 3b - Excavation of Contaminated Soil TPAHs >1000 ppm & Off-Site Disposal, NAPL Recovery	$64,770
Alternative 3c - Excavation of Contaminated Soil TPAHs >500 ppm & Off-Site Disposal, NAPL Recovery	$64,770
Alternative 4 - Excavation and Off-Site Disposal of Source Area, In-Situ Stabilization of Remaining Site, NAPL Recovery	$64,770

NEW YORK STATE ELECTRIC AND GAS
MECHANICVILLE SITE
ENGINEER'S COST ESTIMATE

Client:	NYSEG	Project Number:	11173501		
Project:	Mechanicville Site	Calculated By:	PB	Date:	25-Oct-05
Description:	Cost Summary	Checked By:	JL	Date:	26-Oct-05

SUMMARY OF PRESENT WORTH O&M COSTS

DESCRIPTION	PRESENT WORTH COST ($-2005)
Alternative 1 - No Further Action	$565,850
Alterantive 2a - Source Area Containment, Soil Excavation & NAPL Recovery	$2,862,401
Alternative 2b - Containment Around Entire Site & NAPL Recovery	$4,790,870
Alternative 3a - Excavation of Contaminated Soil >SCGs & Off-Site Disposal, NAPL Recovery	$803,733
Alternative 3b - Excavation of Contaminated Soil TPAHs >1000 ppm & Off-Site Disposal, NAPL Recovery	$803,733
Alternative 3c - Excavation of Contaminated Soil TPAHs >500 ppm & Off-Site Disposal, NAPL Recovery	$803,733
Alternative 4 - Excavation and Off-Site Disposal of Source Area, In-Situ Stabilization of Remaining Site, NAPL Recovery	$803,733

NEW YORK STATE ELECTRIC AND GAS
MECHANICVILLE SITE
ALTERNATIVE 1 - NO FURTHER ACTION
ENGINEER'S COST ESTIMATE

Client:	NYSEG	Project Number:	11173501		
Project:	Mechanicville Site	Calculated By:	PB	Date:	17-Feb-05
Description:	Alternative 1	Checked By:	JRS	Date:	17-Feb-05

SUMMARY OF CAPITAL COSTS

DESCRIPTION	ESTIMATED COST
Institutional Controls	$10,000
	$10,000

STANDARD SUPPLEMENTAL PROJECT COSTS

Overhead and Profit	**20%**	**$2,000**
SUBTOTAL - CONSTRUCTION COSTS		**$12,000**
Contingency	**25%**	**$3,000**
TOTAL		**$15,000**
TOTAL CAPITAL COST		**$15,000**

NEW YORK STATE ELECTRIC AND GAS
MECHANICVILLE SITE
ALTERNATIVE 1 - NO FURTHER ACTION
ENGINEER'S COST ESTIMATE

Client:	NYSEG	Project Number:	11173501		
Project:	Mechanicville Site	Calculated By:	PB	Date:	25-Oct-05
Description:	Alternative 1	Checked By:	JL	Date:	26-Oct-05

SUMMARY OF ANNUAL O&M COSTS

DESCRIPTION	ANNUAL COST ($-2005)
Operations & Maintenance	$45,600
	$45,600

NEW YORK STATE ELECTRIC AND GAS
MECHANICVILLE SITE
ALTERNATIVE 1 - NO FURTHER ACTION
ENGINEER'S COST ESTIMATE

Client:	NYSEG	Project Number:	11173501		
Project:	Mechanicville Site	Calculated By:	PB	Date:	25-Oct-05
Description:	Alternative 1	Checked By:	JL	Date:	26-Oct-05

SUMMARY OF PRESENT WORTH O&M COSTS

DESCRIPTION	PRESENT WORTH COST ($-2005)
Operations & Maintenance	$565,850
	$565,850

URS CORPORATION
ENGINEER'S COST ESTIMATE
ESTIMATED UNIT COST

Client:	NYSEG	Project Number:	11173501		
Project:	Mechanicville Site	Calculated By:	PB	Date:	17-Feb-05
Title:	Alternative 1 - Institutional Controls	Checked By:	JRS	Date:	17-Feb-05

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
1	Deed Restrictions (one time legal cost): Allowance***	1	ls	$10,000	$10,000
2					
3					
4					
5					
6					
7					
8					
9					
10	Reference:				
11	* R.S.Means Cost Data - 2004				
12	** Vendor Quote				
13	*** Engineer's previous project experience				
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					
36					
37					
	TOTAL COST:				**$10,000**

URS CORPORATION
ENGINEER'S COST ESTIMATE
ESTIMATED UNIT COST

Client:	NYSEG	Project Number:	11173501		
Project:	Mechanicville Site	Calculated By:	PB	Date:	25-Oct-05
Title:	Alternative 1 - Annual Operation and Maintenance	Checked By:	JL	Date:	26-Oct-05

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
1	Monitoring Well Sampling - Labor: 4 wells / day @ 20 mhr	100	man hour	$60	$6,000
2	Sample Analysis: Annual ***	20	each	$600	$12,000
	Visual Inspection and SW / Sediment Sampling	40	man hour	$60	$2,400
1	Reports***	1	ls	$5,000	$5,000
2	Repair Security Fence - Allowance***	1	ls	$800	$800
4	Bail recovery wells (4 each at two times per year)***	8	each	$450	$3,600
5	NAPL transport and disposal (in 55 gallon drum)***	2	drum	$300	$600
6					
7	Reference:				
8	* R.S.Means Cost Data - 2004				
9	** Vendor Quote				
10	*** Engineer's previous project experience				
11					
12	Notes:				
13	1 Present worth cost reflects 30-yr period at 7% discount rate.				
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30				**Subtotal**	**$30,400**
31	**Contractors Overhead and Profit**			**20%**	**$6,080**
32				**Subtotal**	**$36,480**
33	**Contingency**			**25%**	**$9,120**
34	**Annual O&M**				**$45,600**
35	**Present Worth (1)**				**$565,850**
36					
	TOTAL PRESENT WORTH COST:				**$565,850**

NEW YORK STATE ELECTRIC AND GAS
MECHANICVILLE SITE
ALTERNATIVE 2a - CONTAINMENT OF SOURCE AREA, SOIL EXCAVATION AND NAPL RECOVERY
ENGINEER'S COST ESTIMATE

Client:	NYSEG	Project Number:	11173501		
Project:	Mechanicville Site	Calculated By:	PB	Date:	17-Feb-05
Description:	Alternative 2a	Checked By:	JRS	Date:	17-Feb-05

SUMMARY OF CAPITAL COSTS

DESCRIPTION	ESTIMATED COST
Institutional Controls	$10,000
Mobilization / Demobilization	$71,400
NAPL Recovery Well Installation	$212,606
NAPL Recovery Pumping System	$193,899
Vertical Cutoff Wall, Soil Excavation, Transport, Disposal and Groundwater Treatment	$811,024
Low Permeability Barrier	$382,873
	$1,681,802

STANDARD SUPPLEMENTAL PROJECT COSTS

Overhead and Profit	**20%**	**$336,360**
SUBTOTAL - CONSTRUCTION COSTS		**$2,018,162**
Contingency	**25%**	**$504,541**
TOTAL		**$2,522,703**

NEW YORK STATE ELECTRIC AND GAS
MECHANICVILLE SITE
ALTERNATIVE 2a - CONTAINMENT OF SOURCE AREA, SOIL EXCAVATION AND NAPL RECOVERY
ENGINEER'S COST ESTIMATE

Client:	NYSEG	Project Number:	11173501		
Project:	Mechanicville Site	Calculated By:	PB	Date:	25-Oct-05
Description:	Alternative 2a	Checked By:	JL	Date:	26-Oct-05

SUMMARY OF ANNUAL O&M COSTS

DESCRIPTION	ESTIMATED COST
Annual Operation and Maintenance	$230,671

NEW YORK STATE ELECTRIC AND GAS
MECHANICVILLE SITE
ALTERNATIVE 2a - CONTAINMENT OF SOURCE AREA, SOIL EXCAVATION AND NAPL RECOVERY
ENGINEER'S COST ESTIMATE

Client:	NYSEG	Project Number:	11173501		
Project:	Mechanicville Site	Calculated By:	PB	Date:	25-Oct-05
Description:	Alternative 2a	Checked By:	JL	Date:	26-Oct-05

SUMMARY OF PRESENT WORTH O&M COSTS

DESCRIPTION	ESTIMATED COST
Present Worth Operation and Maintenance	$2,862,401

URS CORPORATION
ENGINEER'S COST ESTIMATE
ESTIMATED UNIT COST

Client:	NYSEG	Project Number:	11173501		
Project:	Mechanicville Site	Calculated By:	PB	Date:	17-Feb-05
Title:	Alternative 2a - Institutional Controls	Checked By:	JRS	Date:	17-Feb-05

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
1	Deed Restrictions (one time legal cost): Allowance***	1	ls	$10,000	$10,000
2					
3					
4					
5					
6					
7					
8					
9					
10					
11	Reference:				
12	* R.S.Means Cost Data - 2004				
13	** Vendor Quote				
14	*** Engineer's previous project experience				
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32					
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34					
35					
36					
37					
38					
	TOTAL COST:				**$10,000**

URS CORPORATION
ENGINEER'S COST ESTIMATE
ESTIMATED UNIT COST

Client:	NYSEG	Project Number:	11173501		
Project:	Mechanicville Site	Calculated By:	PB	Date:	17-Feb-05
Title:	Alternative 2a - Mobilization / Demobilization and Construction Support Facilities	Checked By:	JRS	Date:	17-Feb-05

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
1	Submittals				
2	Health and Safety Plan***	1	ls	$2,500	$2,500
3	Sediment and Erosion Control Plan***	1	ls	$2,250	$2,250
4	Shop Drawings***	1	ls	$2,500	$2,500
5	Schedules***	1	ls	$3,000	$3,000
6	Record Drawings***	1	ls	$2,500	$2,500
7	Survey*	10	day	$800	$8,000
8	Security Fence - Upgrade existing***	1,545	lf	$10.00	$15,450
9	Mob/Demob Support Equipment: Allowance***	1	ls	$5,000	$5,000
10	Permits: Allowance***	1	ls	$5,000	$5,000
11	Trailers (3)*	4	mo	$1,500	$6,000
12	Portable Toilets (2)***	4	mo	$250	$1,000
13	Utilities (consumption)***	4	mo	$800	$3,200
14	Utilities installation - Allowance:***	1	ls	$15,000	$15,000
15					
16					
17					
18	Reference:				
19	* R.S.Means Cost Data - 2004				
20	** Vendor Quote				
21	*** Engineer's previous project experience				
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	TOTAL COST:				**$71,400**

URS CORPORATION
ENGINEER'S COST ESTIMATE
ESTIMATED UNIT COST

Client: NYSEG
Project: Mechanicville Site
Title: Alternative 2a - NAPL Recovery Well Installation
Project Number: 11173501
Calculated By: PB Date: 17-Feb-05
Checked By: JRS Date: 17-Feb-05

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
1	**NAPL Recovery Well Installation (Ref: RS Means - 2004)**				
2	**Vertical Wells**				
3	**Overburden Well: 4" diameter x 40 lf**				
4	Hollow stem auger drilling - 6" ID	40	lf	$24.69	$988
5	Well Screen - stainless steel - 4" diameter	10	lf	$41.36	$414
6	Well Riser - stainless steel - 4" diameter	33	lf	$41.36	$1,365
7	Grout Annulus - 4" diameter well	30	lf	$120.64	$3,619
8	Filter Pack - 4" diameter screen	10	lf	$18.79	$188
9	Bentonite seal	1	each	$157.17	$157
10	Well concrete slab cap - Allow	1	ls	$350	$350
11	Drilling spoils disposal - Allow:	2	drums	$300	$600
12	**Rock Well: 6" diameter < 100 lf**				
13	Rotary air drill - 8 " diameter borehole	60	lf	$47.84	$2,870
14	Well Casing - 6" diameter steel	30	lf	$183.42	$5,503
15	Well Riser - stainless steel - 4" diameter	50	lf	$41.36	$2,068
16	Well Screen - stainless steel - 4" diameter	10	lf	$41.36	$414
17	Grouting	30	lf	$160.86	$4,826
18	Well Cap - Allow:	1	ls	$350.00	$350
19	Drilling spoils disposal - Allow:	2	drums	$300	$600
20	**Rock Well: 6" diameter >100 lf < 500 lf**				
21	Rotary air drill - 8 " diameter borehole	510	lf	$41.66	$21,247
22	Well Casing - 6" diameter steel	90	lf	$183.42	$16,508
23	Well Riser - stainless steel - 4" diameter	480	lf	$41.36	$19,853
24	Well Screen - stainless steel - 4" diameter	30	lf	$41.36	$1,241
25	Grouting	90	lf	$160.86	$14,477
26	Well concrete slab cap - Allow	3	ls	$350.00	$1,050
27	Drilling spoils disposal - Allow:	6	drums	$300	$1,800
28	**Horizontal Wells - 20 degrees from vertical**				
29	**Overburden Well: 4" diameter x 40 lf**				
30	Hollow stem auger drilling - 6" diameter borehole	40	lf	$32.10	$1,284
31	Well Screen - stainless steel - 4" diameter	10	lf	$41.36	$414
32	Well Riser - stainless steel - 4" diameter	33	lf	$41.36	$1,365
33	Grout Annulus - 4" diameter well	30	lf	$120.64	$3,619
34	Filter Pack - 4" diameter screen	10	lf	$18.79	$188
35	Bentonite seal	1	each	$157.17	$157
36	Well concrete slab cap - Allow	1	ls	$350	$350
37	Drilling spoils disposal - Allow:	2	drums	$300	$600
38	**Rock Well: 6" diameter >100 lf < 500 lf**				
39	Rotary air drill - 8 " diameter borehole	60	lf	$62.20	$3,732
40	Well Casing - 6" diameter steel	30	lf	$183.42	$5,503
41	Well Riser - stainless steel - 4" diameter	50	lf	$41.36	$2,068
42	Well Screen - stainless steel - 4" diameter	10	lf	$41.36	$414
43	Grouting	30	lf	$160.86	$4,826
44	Well concrete slab cap - Allow	1	ls	$350.00	$350
45	Drilling spoils disposal - Allow:	2	drums	$300	$600
46	**Rock Well: 6" diameter >100 lf < 500 lf**				
47	Rotary air drill - 8 " diameter borehole	510	lf	$62.20	$31,722
48	Well Casing - 6" diameter steel	90	lf	$183.42	$16,508
49	Well Riser - stainless steel - 4" diameter	480	lf	$41.36	$19,853
50	Well Screen - stainless steel - 4" diameter	30	lf	$41.36	$1,241
51	Grouting	90	lf	$160.86	$14,477
52	Well concrete slab cap - Allow	3	ls	$350.00	$1,050
53	Drilling spoils disposal - Allow:	6	drums	$300	$1,800
	TOTAL COST:				**$212,606**

URS CORPORATION
ENGINEER'S COST ESTIMATE
ESTIMATED UNIT COST

Client:	NYSEG	Project Number:	11173501		
Project:	Mechanicville Site	Calculated By:	PB	Date:	17-Feb-05
Title:	Alternative 2a - NAPLRecovery Pumping System	Checked By:	JRS	Date:	17-Feb-05

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
	Blackhawk NAPL Recovery System**				
1	Anchor down hole pump**	14	each	$1,343.00	$18,802
2	Electric anchor drive motor / activator**	14	each	$4,378.00	$61,292
3	Pump motor auto restart control**	14	each	$2,292.00	$32,088
4	Fiberglass drive rod**	1600	lf	$3.00	$4,800
5	L- NAPL recovery tip**	14	each	$366.00	$5,124
6	Control panel alarms - Allow:***	14	each	$400.00	$5,600
7	Pipe - steel with NTP threaded couplings - Allow:***	600	lf	$15.00	$9,000
8	Electrical wiring and connections - Allow:***	14	each	$1,200.00	$16,800
9	Pump installation - Allow:***	14	each	$800.00	$11,200
10	NAPL Storage Vessel - Polyethelene - 250 gallon cap.-Allow: ***	1	each	$350.00	$350
11	Hazardous Material Storage Building - 10' x 12' x 8'-8"**	1	each	$11,216.00	$11,216
12					
13					
14	Reference:				
15	* R.S.Means Cost Data - 2004				
16	** Vendor Quote				
17	*** Engineer's previous project experience				
18					
19					
20				**Subtotal**	$176,272
21					
22			**Engineering**	**10%**	$17,627
23					
24					
25					
26					
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	TOTAL COST:				**$193,899**

URS CORPORATION
ENGINEER'S COST ESTIMATE
ESTIMATED UNIT COST

Client: NYSEG
Project: Mechanicville Site
Title: Alternative 2a - Vertical Cutoff Wall, Soil Excavation, Transport and Disposal and Groundwater Treatment

Project Number: 11173501
Calculated By: PB
Checked By: JRS

Date: 17-Feb-05
Date: 17-Feb-05

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
1	Soil-cement barrier wall **(4' wide x 20' depth - 20% Portland cement)	490	lf	$836.00	$409,640
2	Mobilization / demobilization of equipment - Allow:	1	ls	$50,000	$50,000
3	**Groundwater Treatment System (2-8 GPM Max. flow)**				
4	Oil water separator unit * - 50 GPM with controls	1	each	$6,779	$6,779
5	Activated carbon filtration unit - 50 GPM, 880 lbs. Fill, st. steel*	1	each	$6,902	$6,902
6	Pumps*** - Allow:	1	ls	$12,000	$12,000
7	Pipe, valves fittings*** - Allow:	1	ls	$15,000	$15,000
8	Utility connections*** - Allow:	1	ls	$7,500	$7,500
9	Enclosure building* - Allow:	1	ls	$11,216	$11,216
10	Groundwater extraction wells	6	each	$8,000	$48,000
11	Temporary decontamination pad***	1	each	$6,500	$6,500
12	Excavate / load contaminated soil***	445	cy	$10.00	$4,450
13	Transport contaminated soil to TSDF***	780	ton	$26.00	$20,280
14	Treatment / disposal of contaminated soil***	445	cy	$65.23	$29,027
15	Air Monitoring***	4	month	$25,000	$100,000
16	Health and Safety***	4	month	$2,500	$10,000
17					
18	**Reference:**				
19	* R.S.Means Cost Data - 2004				
20	** Vendor Quote				
21	*** Engineer's previous project experience				
22					
23					
24					
25				**Subtotal**	**$737,294**
26					
27			**Engineering**	**10%**	**$73,729**
28					
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	TOTAL COST:				**$811,024**

URS CORPORATION
ENGINEER'S COST ESTIMATE
ESTIMATED UNIT COST

Client: NYSEG
Project: Mechanicville Site
Title: Alternative 2a - Low Permeability Surface Barrier

Project Number: 11173501
Calculated By: PB
Checked By: JRS

Date: 17-Feb-05
Date: 17-Feb-05

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
1	Health and Safety***	2	mo	$2,500	$5,000
2	Clear and Grub*	2	acre	$800.00	$1,360
3	Silt fence with staked hay bales*	1,545	lf	$3.00	$4,635
4	Grading fill - 6" ***	1,372	cy	$11.50	$15,778
5	Geotextile fabric *	8,650	sy	$2.27	$19,636
6	HDPE liner - 60 mil*	77,700	sf	$2.03	$157,731
7	Clay - 10^{-7} cm/sec, 6" lifts, from offsite (18" compacted depth)*	4707	cy	$21.56	$101,483
8	Topsoil - 6" - (+/- 1.7 acres) - Placed and Raked*	1438	cy	$26.00	$37,388
9	Seeding - (+/- 1.7 acres)*	71	msf	$36.00	$2,556
10	Report***	1	ls	$2,500	$2,500
11					
12					
13	Reference:				
14	* R.S.Means Cost Data - 2004				
15	** Vendor Quote				
16	*** Engineer's previous project experience				
17					
18				**Subtotal**	$348,066
19					
20			**Engineering**	10%	$34,807
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	TOTAL COST:				**$382,873**

URS CORPORATION
ENGINEER'S COST ESTIMATE
ESTIMATED UNIT COST

Client:	NYSEG	Project Number:	11173501	
Project:	Mechanicville Site	Calculated By:	PB	Date: 25-Oct-05
Title:	Alternative 2a - Annual Operation and Maintenance	Checked By:	JL	Date: 26-Oct-05

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
1	Monitoring Well Sampling - Labor: 4 wells / day @ 20 mhr	100	man hour	$60	$6,000
2	Sample Analysis: Annual ***	20	each	$600	$12,000
3	Visual Inspection and SW / Sediment Sampling	40	man hour	$60	$2,400
4	Reports***	1	ls	$5,000	$5,000
5	Repair Security Fence - Allowance***	1	ls	$800	$800
6	Grass Mowing - Allow: 5 months x twice per month *	710	msf	$6.31	$4,480
7	Groundwater treatment plant operation - Allow:***	12	month	$5,500	$66,000
8	Recovered product transport and disposal - Allow:***	10	drums	$300	$3,000
9	Pumping system repairs / maintenance - Allow***	1	ls	$5,000	$5,000
10	Utilities - Allow:***	12	month	$375	$4,500
11	Discharge Monitoring***	12	each	$300	$3,600
12	Discharge to POTW***				
13	POTW sewer use fee	12	month	$2,800.00	$33,600
14	POTW disposal fee (@ 8 gpm)	4,205	M gal	$1.76	$7,401
15	Reference:				
16	* R.S.Means Cost Data - 2004				
17	** Vendor Quote				
18	*** Engineer's previous project experience				
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24	Notes:				
25	1 Present worth cost reflects 30-yr period at 7% discount rate.				
26					
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33				**Subtotal**	**$153,781**
34	**Contractors Overhead and Profit**			**20%**	**$30,756**
35				**Subtotal**	**$184,537**
36	**Contingency**			**25%**	**$46,134**
37	**Annual O&M**				**$230,671**
38	**Present Worth (1)**				**$2,862,401**
39					
	TOTAL COST:				**$2,862,401**

NEW YORK STATE ELECTRIC AND GAS

MECHANICVILLE SITE

ALTERNATIVE 2b - CONTAINMENT - ENTIRE SITE, NAPL RECOVERY ENGINEER'S COST ESTIMATE

Client:	NYSEG	Project Number:	11173501		
Project:	Mechanicville Site	Calculated By:	PB	Date:	17-Feb-05
Description:	Alternative 2b	Checked By:	JRS	Date:	17-Feb-05

SUMMARY OF CAPITAL COSTS

DESCRIPTION	ESTIMATED COST
Institutional Controls	$10,000
Mobilization / Demobilization - Support Facilities	$66,300
NAPL Recovery Well Installation	$212,606
NAPL Recovery Pumping System	$193,899
Soil-cement Barrier Wall and Groundwater Treatment System	$1,896,718
Low Permeability Barrier	$382,873
	$2,762,396

STANDARD SUPPLEMENTAL PROJECT COSTS

Overhead and Profit	**20%**	**$552,479**
SUBTOTAL - CONSTRUCTION COSTS		**$3,314,875**
Contingency	**25%**	**$828,719**
	TOTAL	**$4,143,594**

NEW YORK STATE ELECTRIC AND GAS
MECHANICVILLE SITE

ALTERNATIVE 2b - CONTAINMENT - ENTIRE SITE, NAPL RECOVERY

ENGINEER'S COST ESTIMATE

Client:	NYSEG	Project Number:	11173501		
Project:	Mechanicville Site	Calculated By:	PB	Date:	25-Oct-05
Description:	Alternative 2b	Checked By:	JL	Date:	26-Oct-05

SUMMARY OF ANNUAL O&M COSTS

DESCRIPTION	ESTIMATED COST
Annual Operation and Maintenance	$386,080

NEW YORK STATE ELECTRIC AND GAS
MECHANICVILLE SITE

ALTERNATIVE 2b - CONTAINMENT - ENTIRE SITE, NAPL RECOVERY

ENGINEER'S COST ESTIMATE

Client:	NYSEG	Project Number:	11173501		
Project:	Mechanicville Site	Calculated By:	PB	Date:	25-Oct-05
Description:	Alternative 2b	Checked By:	JL	Date:	26-Oct-05

SUMMARY OF PRESENT WORTH O&M COSTS

DESCRIPTION	ESTIMATED COST
Present Worth Operation and Maintenance	$4,790,870

URS CORPORATION
ENGINEER'S COST ESTIMATE
ESTIMATED UNIT COST

Client:	NYSEG	Project Number:	11173501		
Project:	Mechanicville Site	Calculated By:	PB	Date:	17-Feb-05
Title:	Alternative 2b - Institutional Controls	Checked By:	JRS	Date:	17-Feb-05

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
1	Deed Restrictions (one time legal cost): Allowance***	1	ls	$10,000	$10,000
2					
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10					
11	Reference:				
12	* R.S.Means Cost Data - 2004				
13	** Vendor Quote				
14	*** Engineer's previous project experience				
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	TOTAL COST:				**$10,000**

URS CORPORATION
ENGINEER'S COST ESTIMATE
ESTIMATED UNIT COST

Client:	NYSEG	Project Number:	11173501		
Project:	Mechanicville Site	Calculated By:	PB	Date:	17-Feb-05
Title:	Alternative 2b - Mobilization / Demobilization and Construction Support Facilities	Checked By:	JRS	Date:	17-Feb-05

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
1	Submittals				
2	Health and Safety Plan***	1	ls	$2,500	$2,500
3	Sediment and Erosion Control Plan***	1	ls	$2,250	$2,250
4	Shop Drawings***	1	ls	$2,500	$2,500
5	Schedules***	1	ls	$3,000	$3,000
6	Record Drawings***	1	ls	$2,500	$2,500
7	Survey*	10	day	$800	$8,000
8	Security Fence - upgrade existing ***	1,545	lf	$10.00	$15,450
9	Mob/Demob Support Equipment: Allowance***	1	ls	$5,000	$5,000
10	Permits: Allowance***	1	ls	$5,000	$5,000
11	Trailers (3)*	2	mo	$1,500	$3,000
12	Portable Toilets (2)***	2	mo	$250	$500
13	Utilities (consumption)***	2	mo	$800	$1,600
14	Utilities installation - Allowance:***	1	ls	$15,000	$15,000
15					
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17					
18	Reference:				
19	* R.S.Means Cost Data - 2004				
20	** Vendor Quote				
21	*** Engineer's previous project experience				
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	TOTAL COST:				**$66,300**

URS CORPORATION
ENGINEER'S COST ESTIMATE
ESTIMATED UNIT COST

Client: NYSEG
Project: Mechanicville Site
Title: Alternative 2b - NAPL Recovery Well Installation

Project Number: 11173501
Calculated By: PB Date: 17-Feb-05
Checked By: JRS Date: 17-Feb-05

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
1	**NAPL Recovery Well Installation (Ref: RS Means - 2004)**				
2	**Vertical Wells**				
3	**Overburden Well: 4" diameter x 40 lf**				
4	Hollow stem auger drilling - 6" ID	40	lf	$24.69	$988
5	Well Screen - stainless steel - 4" diameter	10	lf	$41.36	$414
6	Well Riser - stainless steel - 4" diameter	33	lf	$41.36	$1,365
7	Grout Annulus - 4" diameter well	30	lf	$120.64	$3,619
8	Filter Pack - 4" diameter screen	10	lf	$18.79	$188
9	Bentonite seal	1	each	$157.17	$157
10	Well concrete slab cap - Allow	1	ls	$350	$350
11	Drilling spoils disposal - Allow:	2	drums	$300	$600
12	**Rock Well: 6" diameter < 100 lf**				
13	Rotary air drill - 8 " diameter borehole	60	lf	$47.84	$2,870
14	Well Casing - 6" diameter steel	30	lf	$183.42	$5,503
15	Well Riser - stainless steel - 4" diameter	50	lf	$41.36	$2,068
16	Well Screen - stainless steel - 4" diameter	10	lf	$41.36	$414
17	Grouting	30	lf	$160.86	$4,826
18	Well Cap - Allow:	1	ls	$350.00	$350
19	Drilling spoils disposal - Allow:	2	drums	$300	$600
20	**Rock Well: 6" diameter >100 lf < 500 lf**				
21	Rotary air drill - 8 " diameter borehole	510	lf	$41.66	$21,247
22	Well Casing - 6" diameter steel	90	lf	$183.42	$16,508
23	Well Riser - stainless steel - 4" diameter	480	lf	$41.36	$19,853
24	Well Screen - stainless steel - 4" diameter	30	lf	$41.36	$1,241
25	Grouting	90	lf	$160.86	$14,477
26	Well concrete slab cap - Allow	3	ls	$350.00	$1,050
27	Drilling spoils disposal - Allow:	6	drums	$300	$1,800
28	**Horizontal Wells - 20 degrees from vertical**				
29	**Overburden Well: 4" diameter x 40 lf**				
30	Hollow stem auger drilling - 6" diameter borehole	40	lf	$32.10	$1,284
31	Well Screen - stainless steel - 4" diameter	10	lf	$41.36	$414
32	Well Riser - stainless steel - 4" diameter	33	lf	$41.36	$1,365
33	Grout Annulus - 4" diameter well	30	lf	$120.64	$3,619
34	Filter Pack - 4" diameter screen	10	lf	$18.79	$188
35	Bentonite seal	1	each	$157.17	$157
36	Well concrete slab cap - Allow	1	ls	$350	$350
37	Drilling spoils disposal - Allow:	2	drums	$300	$600
38	**Rock Well: 6" diameter >100 lf < 500 lf**				
39	Rotary air drill - 8 " diameter borehole	60	lf	$62.20	$3,732
40	Well Casing - 6" diameter steel	30	lf	$183.42	$5,503
41	Well Riser - stainless steel - 4" diameter	50	lf	$41.36	$2,068
42	Well Screen - stainless steel - 4" diameter	10	lf	$41.36	$414
43	Grouting	30	lf	$160.86	$4,826
44	Well concrete slab cap - Allow	1	ls	$350.00	$350
45	Drilling spoils disposal - Allow:	2	drums	$300	$600
46	**Rock Well: 6" diameter >100 lf < 500 lf**				
47	Rotary air drill - 8 " diameter borehole	510	lf	$62.20	$31,722
48	Well Casing - 6" diameter steel	90	lf	$183.42	$16,508
49	Well Riser - stainless steel - 4" diameter	480	lf	$41.36	$19,853
50	Well Screen - stainless steel - 4" diameter	30	lf	$41.36	$1,241
51	Grouting	90	lf	$160.86	$14,477
52	Well concrete slab cap - Allow	3	ls	$350.00	$1,050
53	Drilling spoils disposal - Allow:	6	drums	$300	$1,800
	TOTAL COST:				**$212,606**

URS CORPORATION
ENGINEER'S COST ESTIMATE
ESTIMATED UNIT COST

Client:	NYSEG	Project Number:	11173501		
Project:	Mechanicville Site	Calculated By:	PB	Date:	17-Feb-05
Title:	Alternative 2b - NAPLRecovery Pumping System	Checked By:	JRS	Date:	17-Feb-05

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
	Blackhawk NAPL Recovery System**				
1	Anchor down hole pump**	14	each	$1,343.00	$18,802
2	Electric anchor drive motor / activator**	14	each	$4,378.00	$61,292
3	Pump motor auto restart control**	14	each	$2,292.00	$32,088
4	Fiberglass drive rod**	1600	lf	$3.00	$4,800
5	L- NAPL recovery tip**	14	each	$366.00	$5,124
6	Control panel alarms - Allow:***	14	each	$400.00	$5,600
7	Pipe - steel with NTP threaded couplings - Allow:***	600	lf	$15.00	$9,000
8	Electrical wiring and connections - Allow:***	14	each	$1,200.00	$16,800
9	Pump installation - Allow:***	14	each	$800.00	$11,200
10	NAPL Storage Vessel - Polyethelene - 250 gallon cap.-Allow: ***	1	each	$350.00	$350
11	Hazardous Material Storage Building - 10' x 12' x 8'-8"**	1	each	$11,216.00	$11,216
12					
13					
14	Reference:				
15	* R.S.Means Cost Data - 2004				
16	** Vendor Quote				
17	*** Engineer's previous project experience				
18					
19					
20				**Subtotal**	$176,272
21					
22			**Engineering**	**10%**	$17,627
23					
24					
25					
26					
27					
28					
29					
30					
31					
32					
33					
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35					
36					
	TOTAL COST:				**$193,899**

URS CORPORATION
ENGINEER'S COST ESTIMATE
ESTIMATED UNIT COST

Client:	NYSEG	Project Number:	11173501		
Project:	Mechanicville Site	Calculated By:	PB	Date:	17-Feb-05
Title:	Alternative 2b - Soil-Cement Barrier Wall and Groundwater Treatment	Checked By:	JRS	Date:	17-Feb-05

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
1	Soil-cement barrier wall **(4' wide x 20' depth - 20% Portland cement)	1,545	lf	$836	$1,291,620
2	Mobilization / demobilization of equipment - Allow:	1	ls	$50,000	$50,000
3	Groundwater Treatment System (120 GPM Max. flow)				
4	Oil water separator unit - 200 GPM, with controls *	1	each	$12,918	$12,918
5	Activated carbon filtration unit - 6,000 lb. Fill, st. steel *	1	each	$23,180	$23,180
6	Pumps*** - Allow:	1	ls	$24,000	$24,000
7	Pipe, valves fittings*** - Allow:	1	ls	$20,000	$20,000
8	Utility connections*** - Allow:	1	ls	$7,500	$7,500
9	Enclosure building*** - Allow:	1	ls	$25,000	$25,000
10	Groundwater extraction wells	32	each	$8,000	$256,000
11	Temporary decontamination pad	1	each	$6,500	$6,500
12	Air Monitoring***	6	month	$25,000	$150,000
13	Health and Safety***	6	month	$5,000.00	$30,000
14					
15					
16	Reference:				
17	* R.S.Means Cost Data - 2004				
18	** Vendor Quote				
19	*** Engineer's previous project experience				
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	TOTAL COST:				**$1,896,718**

URS CORPORATION
ENGINEER'S COST ESTIMATE
ESTIMATED UNIT COST

Client: NYSEG
Project: Mechanicville Site
Title: Alternative 2b - Low Permeability Barrier

Project Number: 11173501
Calculated By: PB
Checked By: JRS

Date: 17-Feb-05
Date: 17-Feb-05

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
1	Health and Safety***	2	mo	$2,500.00	$5,000
2	Clear and Grub*	2	acre	$800.00	$1,360
3	Silt fence with staked hay bales	1,545	lf	$3.00	$4,635
4	Grading fill - 6" ***	1,372	cy	$11.50	$15,778
5	Geotextile fabric *	8,650	sy	$2.27	$19,636
6	HDPE liner - 60 mil*	77,700	sf	$2.03	$157,731
7	Clay - 10^{-7}, 6" lifts, from offsite (18" compacted depth)*	4707	cy	$21.56	$101,483
8	Topsoil - 6" - (+/- 1.7 acres) - Placed and Raked*	1438	cy	$26.00	$37,388
9	Seeding - (+/- 1.7 Acres)*	71	msf	$36.00	$2,556
10					
11	Report***	1	ls	$2,500.00	$2,500
12					
13					
14	**Reference:**				
15	* R.S.Means Cost Data - 2004				
16	** Vendor Quote				
17	*** Engineer's previous project experience				
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22					
23				**Subtotal**	$348,066
24					
25			**Engineering**	10%	$34,807
26					
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	TOTAL COST:				**$382,873**

URS CORPORATION
ENGINEER'S COST ESTIMATE
ESTIMATED UNIT COST

Client:	NYSEG	Project Number:	11173501		
Project:	Mechanicville Site	Calculated By:	PB	Date:	25-Oct-05
Title:	Alternative 2b - Annual Operation and Maintenance	Checked By:	JL	Date:	26-Oct-05

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
1	Monitoring Well Sampling - Labor: 4 wells / day @ 20 mhr	100	man hour	$60.00	$6,000
2	Sample Analysis: Annual ***	20	each	$600	$12,000
3	Visual Inspection and SW / Sediment Sampling	40	man hour	$60	$2,400
4	Reports***	1	ls	$5,000	$5,000
5	Repair Security Fence - Allowance***	1	ls	$800	$800
6	Grass Mowing - Allow: 5 months x twice per month *	710	msf	$6.31	$4,480
7	Groundwater treatment plant operation - Allow:***	12	month	$5,500	$66,000
8	Recovered product transport and disposal - Allow:***	10	drums	$300	$3,000
9	Pumping system repairs / maintenance - Allow***	1	ls	$5,000	$5,000
10	Utilities - Allow:***	12	month	$375	$4,500
11	Discharge Monitoring***	12	each	$300	$3,600
12	POTW Discharge				
13	POTW sewer use fee	12	month	$2,800.00	$33,600
14	POTW disposal fee (@ 120 gpm)	63,072	M gpm	$1.76	$111,007
15					
16	Reference:				
17	* R.S.Means Cost Data - 2004				
18	** Vendor Quote				
19	*** Engineer's previous project experience				
20					
21	Notes:				
22	1 Present worth cost reflects 30-yr period at 7% discount rate.				
23					
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33				**Subtotal**	**$257,387**
34	**Contractors Overhead and Profit**			**20%**	**$51,477**
35				**Subtotal**	**$308,864**
36	**Contingency**			**25%**	**$77,216**
37				**Annual O&M**	**$386,080**
38		**Present Worth (1)**			**$4,790,870**
39					
	TOTAL COST:				**$4,790,870**

NEW YORK STATE ELECTRIC AND GAS
MECHANICVILLE SITE
ALTERNATIVE 3a - EXCAVATION OF CONTAMINATED SOIL > SCGS AND OFF-SITE DISPOSAL, NAPL RECOVERY
ENGINEER'S COST ESTIMATE

Client:	NYSEG	Project Number:	11173501		
Project:	Mechanicville Site	Calculated By:	PB	Date:	17-Feb-05
Description:	Alternative 3a	Checked By:	JRS	Date:	17-Feb-05

SUMMARY

DESCRIPTION	ESTIMATED COST
Institutional Controls	$10,000
Mobilization / Demobilization and /support Facilities	$112,500
NAPL Recovery Well Installation	$212,606
NAPL Recovery Pumping System	$193,899
Soil-cement Barrier Wall	$1,475,782
Soil Excavation, Transport and Disposal	$3,411,268
	$5,416,055

STANDARD SUPPLEMENTAL PROJECT COSTS		
Overhead and Profit	**20%**	**$1,083,211**
SUBTOTAL - CONSTRUCTION COSTS		**$6,499,266**
Contingency	**25%**	**$1,624,816**
TOTAL		**$8,124,082**

NEW YORK STATE ELECTRIC AND GAS
MECHANICVILLE SITE
ALTERNATIVE 3a - EXCAVATION OF CONTAMINATED SOIL > SCGS AND OFF-SITE DISPOSAL, NAPL RECOVERY
ENGINEER'S COST ESTIMATE

Client:	NYSEG	Project Number:	11173501		
Project:	Mechanicville Site	Calculated By:	PB	Date:	25-Oct-05
Description:	Alternative 3a	Checked By:	JL	Date:	26-Oct-05

SUMMARY OF ANNUAL O&M COSTS

DESCRIPTION	ESTIMATED COST
Annual Operation and Maintenance	$64,770

NEW YORK STATE ELECTRIC AND GAS
MECHANICVILLE SITE
ALTERNATIVE 3a - EXCAVATION OF CONTAMINATED SOIL > SCGS AND OFF-SITE DISPOSAL, NAPL RECOVERY
ENGINEER'S COST ESTIMATE

Client:	NYSEG	Project Number:	11173501		
Project:	Mechanicville Site	Calculated By:	PB	Date:	25-Oct-05
Description:	Alternative 3a	Checked By:	JL	Date:	26-Oct-05

SUMMARY OF PRESENT WORTH O&M COSTS

DESCRIPTION	ESTIMATED COST
Present Worth Operation and Maintenance	$803,733

URS CORPORATION
ENGINEER'S COST ESTIMATE
ESTIMATED UNIT COST

Client:	NYSEG	Project Number:	11173501		
Project:	Mechanicville Site	Calculated By:	PB	Date:	17-Feb-05
Title:	Alternative 3a - Institutional Controls	Checked By:	JRS	Date:	17-Feb-05

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
1	Deed Restrictions (one time legal cost): Allowance***	1	ls	$10,000	$10,000
2					
3					
4					
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6					
7	Reference:				
8	* R.S.Means Cost Data - 2004				
9	** Vendor Quote				
10	*** Engineer's previous project experience				
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	TOTAL COST:				**$10,000**

URS CORPORATION
ENGINEER'S COST ESTIMATE
ESTIMATED UNIT COST

Client:	NYSEG	Project Number:	11173501		
Project:	Mechanicville Site	Calculated By:	PB	Date:	17-Feb-05
Title:	Alternative 3a - Mobilization / Demobilization and Construction Support Facilities	Checked By:	JRS	Date:	17-Feb-05

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
1	Submittals				
2	Health and Safety Plan***	1	ls	$2,500	$2,500
3	Sediment and Erosion Control Plan***	1	ls	$2,250	$2,250
4	Shop Drawings***	1	ls	$2,500	$2,500
5	Schedules***	1	ls	$3,000	$3,000
6	Record Drawings***	1	ls	$2,500	$2,500
7	Survey*	10	day	$800	$8,000
8	Security Fence - Up Grade Existing***	1,545	lf	$10.00	$15,450
9	Mobe/Demob Support Equipment: Allowance***	1	ls	$5,000	$5,000
10	Temporary Utilities Installation: Allowance***	1	ls	$15,000	$15,000
11	Permits: Allowance***	1	ls	$5,000	$5,000
12	Trailers (5)*	6	mo	$2,500	$15,000
13	Portable Toilets (2)*	6	mo	$250	$1,500
14	Utilities (consumption)***	6	mo	$800	$4,800
15	Truck Scale*	6	mo	$5,000	$30,000
16					
17	Reference:				
18	* R.S.Means Cost Data - 2004				
19	** Vendor Quote				
20	*** Engineer's previous project experience				
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	TOTAL COST:				**$112,500**

URS CORPORATION
ENGINEER'S COST ESTIMATE
ESTIMATED UNIT COST

Client: NYSEG
Project Number: 11173501
Project: Mechanicville Site
Calculated By: PB
Date: 17-Feb-05
Title: Alternative 3a - NAPL Recovery Well Installation
Checked By: JRS
Date: 17-Feb-05

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
1	**NAPL Recovery Well Installation (Ref: RS Means - 2004)**				
2	**Vertical Wells**				
3	**Overburden Well: 4" diameter x 40 lf**				
4	Hollow stem auger drilling - 6" ID	40	lf	$24.69	$988
5	Well Screen - stainless steel - 4" diameter	10	lf	$41.36	$414
6	Well Riser - stainless steel - 4" diameter	33	lf	$41.36	$1,365
7	Grout Annulus - 4" diameter well	30	lf	$120.64	$3,619
8	Filter Pack - 4" diameter screen	10	lf	$18.79	$188
9	Bentonite seal	1	each	$157.17	$157
10	Well concrete slab cap - Allow	1	ls	$350	$350
11	Drilling spoils disposal - Allow:	2	drums	$300	$600
12	**Rock Well: 6" diameter < 100 lf**				
13	Rotary air drill - 6 " diameter borehole	60	lf	$47.84	$2,870
14	Well Casing - 6" diameter steel	30	lf	$183.42	$5,503
15	Well Riser - stainless steel - 4" diameter	50	lf	$41.36	$2,068
16	Well Screen - stainless steel - 4" diameter	10	lf	$41.36	$414
17	Grouting	30	lf	$160.86	$4,826
18	Well Cap - Allow:	1	ls	$350.00	$350
19	Drilling spoils disposal - Allow:	2	drums	$300	$600
20	**Rock Well: 8" diameter >100 lf < 500 lf**				
21	Rotary air drill - 8 " diameter borehole	510	lf	$41.66	$21,247
22	Well Casing - 6" diameter steel	90	lf	$183.42	$16,508
23	Well Riser - stainless steel - 4" diameter	480	lf	$41.36	$19,853
24	Well Screen - stainless steel - 4" diameter	30	lf	$41.36	$1,241
25	Grouting	90	lf	$160.86	$14,477
26	Well concrete slab cap - Allow	3	ls	$350.00	$1,050
27	Drilling spoils disposal - Allow:	6	drums	$300	$1,800
28	**Horizontal Wells - 20 degrees from vertical**				
29	**Overburden Well: 4" diameter x 40 lf**				
30	Hollow stem auger drilling - 6" diameter borehole	40	lf	$32.10	$1,284
31	Well Screen - stainless steel - 4" diameter	10	lf	$41.36	$414
32	Well Riser - stainless steel - 4" diameter	33	lf	$41.36	$1,365
33	Grout Annulus - 4" diameter well	30	lf	$120.64	$3,619
34	Filter Pack - 4" diameter screen	10	lf	$18.79	$188
35	Bentonite seal	1	each	$157.17	$157
36	Well concrete slab cap - Allow	1	ls	$350	$350
37	Drilling spoils disposal - Allow:	2	drums	$300	$600
38	**Rock Well: 6" diameter >100 lf < 500 lf**				
39	Rotary air drill - 8" diameter borehole	60	lf	$62.20	$3,732
40	Well Casing - 6" diameter steel	30	lf	$183.42	$5,503
41	Well Riser - stainless steel - 4" diameter	50	lf	$41.36	$2,068
42	Well Screen - stainless steel - 4" diameter	10	lf	$41.36	$414
43	Grouting	30	lf	$160.86	$4,826
44	Well concrete slab cap - Allow	1	ls	$350.00	$350
45	Drilling spoils disposal - Allow:	2	drums	$300	$600
46	**Rock Well: 6" diameter >100 lf < 500 lf**				
47	Rotary air drill - 8" diameter borehole	510	lf	$62.20	$31,722
48	Well Casing - 6" diameter steel	90	lf	$183.42	$16,508
49	Well Riser - stainless steel - 4" diameter	480	lf	$41.36	$19,853
50	Well Screen - stainless steel - 4" diameter	30	lf	$41.36	$1,241
51	Grouting	90	lf	$160.86	$14,477
52	Well concrete slab cap - Allow	3	ls	$350.00	$1,050
53	Drilling spoils disposal - Allow:	6	drums	$300	$1,800
	TOTAL COST:				**$212,606**

URS CORPORATION
ENGINEER'S COST ESTIMATE
ESTIMATED UNIT COST

Client:	NYSEG	Project Number:	11173501		
Project:	Mechanicville Site	Calculated By:	PB	Date:	17-Feb-05
Title:	Alternative 3a - NAPLRecovery Pumping System	Checked By:	JRS	Date:	17-Feb-05

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
	Blackhawk NAPL Recovery System**				
1	Anchor down hole pump**	14	each	$1,343.00	$18,802
2	Electric anchor drive motor / activator**	14	each	$4,378.00	$61,292
3	Pump motor auto restart control**	14	each	$2,292.00	$32,088
4	Fiberglass drive rod**	1600	lf	$3.00	$4,800
5	L- NAPL recovery tip**	14	each	$366.00	$5,124
6	Control panel alarms - Allow:***	14	each	$400.00	$5,600
7	Pipe - steel with NTP threaded couplings - Allow:***	600	lf	$15.00	$9,000
8	Electrical wiring and connections - Allow:***	14	each	$1,200.00	$16,800
9	Pump installation - Allow:***	14	each	$800.00	$11,200
10	NAPL Storage Vessel - Polyethelene - 250 gallon cap.-allow: ***	1	each	$350.00	$350
11	Hazardous Material Storage Building - 10' x 12' x 8'-8"**	1	each	$11,216.00	$11,216
12					
13					
14	Reference:				
15	* R.S.Means Cost Data - 2004				
16	** Vendor Quote				
17	*** Engineer's previous project experience				
18					
19					
20				**Subtotal**	$176,272
21					
22			**Engineering**	**10%**	$17,627
23					
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	TOTAL COST:				**$193,899**

URS CORPORATION
ENGINEER'S COST ESTIMATE
ESTIMATED UNIT COST

Client:	NYSEG	Project Number:	11173501		
Project:	Mechanicville Site	Calculated By:	PB	Date:	17-Feb-05
Title:	Alternative 3a - Soil-Cement Barrier Wall	Checked By:	JRS	Date:	17-Feb-05

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
1	Soil-cement barrier wall **(4' wide x 20' depth - 20% Portland cement)	1,545	lf	$836	$1,291,620
2	Mobilization / demobilization of equipment - Allow:	1	ls	$50,000	$50,000
3					
4					
5					
6	Reference:				
7	* R.S.Means Cost Data - 2004				
8	** Vendor Quote				
9	*** Engineer's previous project experience				
10					
11					
12				**Subtotal**	$1,341,620
13					
14			**Engineering**	10%	$134,162
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36					
	TOTAL COST:				**$1,475,782**

URS CORPORATION
ENGINEER'S COST ESTIMATE
ESTIMATED UNIT COST

Client:	NYSEG	Project Number:	11173501		
Project:	Mechanicville Site	Calculated By:	PB	Date:	14-Jan-05
Title:	Alternative 3a - Soil Excavation, Transport and Disposal	Checked By:	JRS	Date:	17-Feb-05

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
1	Mobilize/Demobilize Equipment***	1	ls	$12,000	$12,000
2	Temporary Equipment Decontamination Pad***	1	ls	$6,500	$6,500
3	Air monitoring***	6	mo	$25,000	$150,000
4	Health and Safety***	6	mo	$5,000	$30,000
5	Pumps*** - Allow:	1	ls	$28,000	$28,000
6	Utility connections*** - Allow:	1	ls	$7,500	$7,500
7	Clear and Grub*	2	acre	$800	$1,600
8	Excavate / Load - Hazardous Contaminated Soil ***	15,441	cy	$10.00	$154,410
9	Transport contaminated soil to TSDF***	23,162	ton	$26.00	$602,212
10	Treatment / disposal of contaminated soil***	15,441	cy	$65.23	$1,007,216
11	Site Restoration: (+/- 2 acres)				
12	Imported Clean Unclassified Fill - placed and compacted***	15,441	cy	$12.00	$185,292
13	Topsoil - 4" - Placed and Raked*	890	cy	$26.00	$23,140
14	Seeding*	71	msf	$36.00	$2,556
15	Well point system *	6	mo	$37,700	$226,200
16	Groundwater treatment system - temporary - 430 gpm	1	ls	$500,000	$500,000
17	Temporary water impoundment tanks - Allow:***	1	ls	$20,000	$20,000
18	POTW sewer use fee	4	month	$2,800	$11,200
19	POTW discharge fee	74,333	M gal	$1.76	$130,826
20	**Offsite transport/dispose collected ground water to commercial treatment facility***(430 gpm @ 4 months = 74,300,000 gal @ $0.30 / gal = $22,290,000)**				
21	Report***	1	ls	$2,500	$2,500
22					
23	Reference:				
24	* R.S.Means Cost Data - 2004				
25	** Vendor Quote				
26	*** Engineer's previous project experience				
27					
28				**Subtotal**	$3,101,153
29					
30			**Engineering**	10%	$310,115
31					
32					
33					
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35					
36					
37					
38					
39					
40					
	TOTAL COST:				**$3,411,268**

URS CORPORATION
ENGINEER'S COST ESTIMATE
ESTIMATED UNIT COST

Client: NYSEG | Project Number: 11173501
Project: Mechanicville Site | Calculated By: PB | Date: 25-Oct-05
Title: Alternative 3a - Annual Operation and Maintenance | Checked By: JL | Date: 26-Oct-05

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
1	Monitoring Well Sampling - Labor: 4 wells / day @ 20 mhr	100	man hour	$60	$6,000
2	Sample Analysis: Annual ***	20	each	$600	$12,000
3	Visual Inspection and SW / Sediment Sampling	40	man hour	$60	$2,400
4	Reports***	1	ls	$5,000	$5,000
5	Repair Security Fence - Allowance***	1	ls	$800	$800
6	Grass Mowing - Allow: 5 months x twice per month *	710	msf	$6.31	$4,480
7	Recovered product transport and disposal - Allow:***	10	drums	$300	$3,000
8	Pumping system repairs / maintenance - Allow***	1	ls	$5,000	$5,000
9	Utilities - Allow:***	12	month	$375	$4,500
10					
11					
12					
13					
14	Reference:				
15	* R.S.Means Cost Data - 2004				
16	** Vendor Quote				
17	*** Engineer's previous project experience				
18					
19					
20	Note:				
21	(1) Present worth cost reflects 30 yr period @ 7% discount rate.				
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33					
34				**Subtotal**	**$43,180**
35	**Contractors Overhead and Profit**			**20%**	**$8,636**
36				**Subtotal**	**$51,816**
37	**Contingency**			**25%**	**$12,954**
38	**Annual O&M**				**$64,770**
39	**Present Worth (1)**				**$803,733**
40					
	TOTAL COST:				**$803,733**

NEW YORK STATE ELECTRIC AND GAS
MECHANICVILLE SITE
ALTERNATIVE 3b - EXCAVATION OF CONTAMINATED SOIL TPAHs > 1,000 ppm AND OFF-SITE DISPOSAL, NAPL RECOVERY
ENGINEER'S COST ESTIMATE

Client:	NYSEG	Project Number:	11173501		
Project:	Mechanicville Site	Calculated By:	PB	Date:	17-Feb-05
Description:	Alternative 3b	Checked By:	JRS	Date:	17-Feb-05

SUMMARY

DESCRIPTION	ESTIMATED COST
Institutional Controls	$10,000
Mobilization / Demobilization and Support Facilities	$95,400
NAPL Recovery Well Installation	$212,606
NAPL Recovery Pumping System	$193,899
Soil-Cement Barrier Wall	$505,604
Soil Excavation, Transport and Disposal	$1,783,005
	$2,800,514

STANDARD SUPPLEMENTAL PROJECT COSTS		
Overhead and Profit	**20%**	**$560,103**
SUBTOTAL - CONSTRUCTION COSTS		**$3,360,617**
Contingency	**25%**	**$840,154**
TOTAL		**$4,200,771**

NEW YORK STATE ELECTRIC AND GAS
MECHANICVILLE SITE
ALTERNATIVE 3b - EXCAVATION OF CONTAMINATED SOIL TPAHs > 1,000 ppm AND OFF-SITE DISPOSAL, NAPL RECOVERY
ENGINEER'S COST ESTIMATE

Client:	NYSEG	Project Number:	11173501		
Project:	Mechanicville Site	Calculated By:	PB	Date:	25-Oct-05
Description:	Alternative 3b	Checked By:	JL	Date:	26-Oct-05

SUMMARY OF ANNUAL O&M COSTS

DESCRIPTION	ESTIMATED COST
Annual Operation and Maintenance	$64,770

NEW YORK STATE ELECTRIC AND GAS
MECHANICVILLE SITE
ALTERNATIVE 3b - EXCAVATION OF CONTAMINATED SOIL TPAHs > 1,000 ppm AND OFF-SITE DISPOSAL, NAPL RECOVERY
ENGINEER'S COST ESTIMATE

Client:	NYSEG	Project Number:	11173501		
Project:	Mechanicville Site	Calculated By:	PB	Date:	25-Oct-05
Description:	Alternative 3b	Checked By:	JL	Date:	26-Oct-05

SUMMARY OF PRESENT WORTH O&M COSTS

DESCRIPTION	ESTIMATED COST
Present Worth Operation and Maintenance	$803,733

URS CORPORATION
ENGINEER'S COST ESTIMATE
ESTIMATED UNIT COST

Client:	NYSEG	Project Number:	11173501		
Project:	Mechanicville Site	Calculated By:	PB	Date:	17-Feb-05
Title:	Alternative 3b - Institutional Controls	Checked By:	JRS	Date:	17-Feb-05

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
1	Deed Restrictions (one time legal cost): Allowance***	1	ls	$10,000	$10,000
2					
3					
4					
5					
6					
7	Reference:				
8	* R.S.Means Cost Data - 2004				
9	** Vendor Quote				
10	*** Engineer's previous project experience				
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	TOTAL COST:				**$10,000**

URS CORPORATION
ENGINEER'S COST ESTIMATE
ESTIMATED UNIT COST

Client:	NYSEG	Project Number:	11173501		
Project:	Mechanicville Site	Calculated By:	PB	Date:	17-Feb-05
Title:	Alternative 3b - Mobilization / Demobilization and Construction Support Facilities	Checked By:	JRS	Date:	17-Feb-05

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
1	Submittals				
2	Health and Safety Plan***	1	ls	$2,500	$2,500
3	Sediment and Erosion Control Plan***	1	ls	$2,250	$2,250
4	Shop Drawings***	1	ls	$2,500	$2,500
5	Schedules***	1	ls	$3,000	$3,000
6	Record Drawings***	1	ls	$2,500	$2,500
7	Survey*	10	day	$800	$8,000
8	Security Fence - Up Grade Existing***	1,545	lf	$10.00	$15,450
9	Mob/Demob Support Equipment: Allowance***	1	ls	$5,000	$5,000
10	Temporary Utilities Installation: Allowance***	1	ls	$15,000	$15,000
11	Permits: Allowance***	1	ls	$5,000	$5,000
12	Trailers (5)*	4	mo	$2,500	$10,000
13	Portable Toilets (2)*	4	mo	$250	$1,000
14	Utilities (consumption)***	4	mo	$800	$3,200.00
15	Truck Scale*	4	mo	$5,000	$20,000.00
16					
17	Reference:				
18	* R.S.Means Cost Data - 2004				
19	** Vendor Quote				
20	*** Engineer's previous project experience				
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	TOTAL COST:				**$95,400**

URS CORPORATION
ENGINEER'S COST ESTIMATE
ESTIMATED UNIT COST

Client: NYSEG
Project Number: 11173501
Project: Mechanicville Site
Calculated By: PB
Date: 17-Feb-05
Title: Alternative 3b - NAPL Recovery Well Installation
Checked By: JRS
Date: 17-Feb-05

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
1	**NAPL Recovery Well Installation (Ref: RS Means - 2004)**				
2	**Vertical Wells**				
3	**Overburden Well: 4" diameter x 40 lf**				
4	Hollow stem auger drilling - 6" IDle	40	lf	$24.69	$988
5	Well Screen - stainless steel - 4" diameter	10	lf	$41.36	$414
6	Well Riser - stainless steel - 4" diameter	33	lf	$41.36	$1,365
7	Grout Annulus - 4" diameter well	30	lf	$120.64	$3,619
8	Filter Pack - 4" diameter screen	10	lf	$18.79	$188
9	Bentonite seal	1	each	$157.17	$157
10	Well concrete slab cap - Allow	1	ls	$350	$350
11	Drilling spoils disposal - Allow:	2	drums	$300	$600
12	**Rock Well: 6" diameter < 100 lf**				
13	Rotary air drill - 8 " diameter borehole	60	lf	$47.84	$2,870
14	Well Casing - 6" diameter steel	30	lf	$183.42	$5,503
15	Well Riser - stainless steel - 4" diameter	50	lf	$41.36	$2,068
16	Well Screen - stainless steel - 4" diameter	10	lf	$41.36	$414
17	Grouting	30	lf	$160.86	$4,826
18	Well Cap - Allow:	1	ls	$350.00	$350
19	Drilling spoils disposal - Allow:	2	drums	$300	$600
20	**Rock Well: 8" diameter >100 lf < 500 lf**				
21	Rotary air drill - 6" diameter borehole	510	lf	$41.66	$21,247
22	Well Casing - 6" diameter steel	90	lf	$183.42	$16,508
23	Well Riser - stainless steel - 4" diameter	480	lf	$41.36	$19,853
24	Well Screen - stainless steel - 4" diameter	30	lf	$41.36	$1,241
25	Grouting	90	lf	$160.86	$14,477
26	Well concrete slab cap - Allow	3	ls	$350.00	$1,050
27	Drilling spoils disposal - Allow:	6	drums	$300	$1,800
28	**Horizontal Wells - 20 degrees from vertical**				
29	**Overburden Well: 4" diameter x 40 lf**				
30	Hollow stem auger drilling - 6" diameter borehole	40	lf	$32.10	$1,284
31	Well Screen - stainless steel - 4" diameter	10	lf	$41.36	$414
32	Well Riser - stainless steel - 4" diameter	33	lf	$41.36	$1,365
33	Grout Annulus - 4" diameter well	30	lf	$120.64	$3,619
34	Filter Pack - 4" diameter screen	10	lf	$18.79	$188
35	Bentonite seal	1	each	$157.17	$157
36	Well concrete slab cap - Allow	1	ls	$350	$350
37	Drilling spoils disposal - Allow:	2	drums	$300	$600
38	**Rock Well: 6" diameter >100 lf < 500 lf**				
39	Rotary air drill - 6 " diameter borehole	60	lf	$62.20	$3,732
40	Well Casing - 8" diameter steel	30	lf	$183.42	$5,503
41	Well Riser - stainless steel - 4" diameter	50	lf	$41.36	$2,068
42	Well Screen - stainless steel - 4" diameter	10	lf	$41.36	$414
43	Grouting	30	lf	$160.86	$4,826
44	Well concrete slab cap - Allow	1	ls	$350.00	$350
45	Drilling spoils disposal - Allow:	2	drums	$300	$600
46	**Rock Well: 6" diameter >100 lf < 500 lf**				
47	Rotary air drill - 6 " diameter borehole	510	lf	$62.20	$31,722
48	Well Casing - 6" diameter steel	90	lf	$183.42	$16,508
49	Well Riser - stainless steel - 4" diameter	480	lf	$41.36	$19,853
50	Well Screen - stainless steel - 4" diameter	30	lf	$41.36	$1,241
51	Grouting	90	lf	$160.86	$14,477
52	Well concrete slab cap - Allow	3	ls	$350.00	$1,050
53	Drilling spoils disposal - Allow:	6	drums	$300	$1,800
	TOTAL COST:				**$212,606**

URS CORPORATION
ENGINEER'S COST ESTIMATE
ESTIMATED UNIT COST

Client:	NYSEG	Project Number:	11173501		
Project:	Mechanicville Site	Calculated By:	PB	Date:	17-Feb-05
Title:	Alternative 3b - NAPLRecovery Pumping System	Checked By:	JRS	Date:	17-Feb-05

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
	Blackhawk NAPL Recovery System**				
1	Anchor down hole pump**	14	each	$1,343.00	$18,802
2	Electric anchor drive motor / activator**	14	each	$4,378.00	$61,292
3	Pump motor auto restart control**	14	each	$2,292.00	$32,088
4	Fiberglass drive rod**	1600	lf	$3.00	$4,800
5	L- NAPL recovery tip**	14	each	$366.00	$5,124
6	Control panel alarms - Allow:***	14	each	$400.00	$5,600
7	Pipe - steel with NTP threaded couplings - Allow:***	600	lf	$15.00	$9,000
8	Electrical wiring and connections - Allow:***	14	each	$1,200.00	$16,800
9	Pump installation - Allow:***	14	each	$800.00	$11,200
10	NAPL Storage Vessel - Polyethelene - 250 gallon cap.-Allow: ***	1	each	$350.00	$350
11	Hazardous Material Storage Building - 10' x 12' x 8'-8"**	1	each	$11,216.00	$11,216
12					
13					
14	Reference:				
15	* R.S.Means Cost Data - 2004				
16	** Vendor Quote				
17	*** Engineer's previous project experience				
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20				**Subtotal**	$176,272
21					
22			**Engineering**	**10%**	$17,627
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	TOTAL COST:				**$193,899**

URS CORPORATION
ENGINEER'S COST ESTIMATE
ESTIMATED UNIT COST

Client:	NYSEG	Project Number:	11173501		
Project:	Mechanicville Site	Calculated By:	PB	Date:	17-Feb-05
Title:	Alternative 3b - Soil-Cement Barrier Wall	Checked By:	JRS	Date:	17-Feb-05

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
1	Soil-cement barrier wall **(4' wide x 20' depth - 20% Portland cement)	490	lf	$836	$409,640
2	Mobilization / demobilization of equipment - Allow:	1	ls	$50,000	$50,000
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6	Reference:				
7	* R.S.Means Cost Data - 2004				
8	** Vendor Quote				
9	*** Engineer's previous project experience				
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12				**Subtotal**	$459,640
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14			**Engineering**	10%	$45,964
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	TOTAL COST:				**$505,604**

URS CORPORATION
ENGINEER'S COST ESTIMATE
ESTIMATED UNIT COST

Client:	NYSEG	Project Number:	11173501		
Project:	Mechanicville Site	Calculated By:	PB	Date:	15-Jan-05
Title:	Alternative 3b - Soil Excavation, Transport and Disposal	Checked By:	JRS	Date:	17-Feb-05

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
1	Mobilize/Demobilize Equipment***	1	ls	$12,000	$12,000
2	Temporary Equipment Decontamination Pad***	1	ls	$6,500	$6,500
3	Air monitoring***	4	mo	$25,000	$100,000
4	Health and Safety***	4	mo	$5,000	$20,000
5	Pumps*** - Allow:	1	ls	$28,000	$28,000
6	Utility connections*** - Allow:	1	ls	$7,500	$7,500
7	Clear and Grub*	2	acre	$800	$1,600
8	Excavate / Load - Hazardous Contaminated Soil ***	5,350	cy	$10.00	$53,500
9	Transport contaminated soil to TSDF***	8,025	ton	$26.00	$208,650
10	Treatment / disposal of contaminated soil***	5,350	cy	$65.23	$348,981
11	Site Restoration: (+/- 2 acres)				
12	Imported Clean Unclassified Fill - placed and compacted***	5,350	cy	$12.00	$64,200
13	Topsoil - 4" - Placed and Raked*	890	cy	$26.00	$23,140
14	Seeding*	71	msf	$36.00	$2,556
15	Well point system *	4	mo	$37,700	$150,800
16	POTW sewer use fee	2	month	$2,800	$5,600
17	POTW discharge fee	37,152	M gal	$1.76	$65,388
18	Temporary water impoundment tanks - Allow:***	1	ls	$20,000	$20,000
19	Groundwater treatment system - temporary - 430 gpm	1	ls	$500,000.00	$500,000
20	Report***	1	ls	$2,500	$2,500
21					
22	Reference:				
23	* R.S.Means Cost Data - 2004				
24	** Vendor Quote				
25	*** Engineer's previous project experience				
26					
27				**Subtotal**	$1,620,914
28	**Offsite transport/dispose collected ground water to commercial treatment facility***(430 gpm @ 2 months =37,152,000 gal @ $0.30 / gal = $11,145,600)**				
29			**Engineering**	10%	$162,091
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	TOTAL COST:				**$1,783,005**

URS CORPORATION
ENGINEER'S COST ESTIMATE
ESTIMATED UNIT COST

Client:	NYSEG	Project Number:	11173501		
Project:	Mechanicville Site	Calculated By:	PB	Date:	25-Oct-05
Title:	Alternative 3b - Annual Operation and Maintenance	Checked By:	JL	Date:	26-Oct-05

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
1	Monitoring Well Sampling - Labor: 4 wells / day @ 20 mhr	100	man hour	$60.00	$6,000
2	Sample Analysis: Annual ***	20	each	$600	$12,000
3	Visual Inspection and SW / Sedimwent Sampling	40	man hour	$60	$2,400
4	Reports***	1	ls	$5,000	$5,000
5	Repair Security Fence - Allowance***	1	ls	$800	$800
6	Grass Mowing - Allow: 5 months x twice per month *	710	msf	$6.31	$4,480
7	Recovered product transport and disposal - Allow:***	10	drums	$300	$3,000
8	Pumping system repairs / maintenance - Allow***	1	ls	$5,000	$5,000
9	Utilities - Allow:***	12	month	$375	$4,500
10	Reference:				
11	* R.S.Means Cost Data - 2004				
12	** Vendor Quote				
13	*** Engineer's previous project experience				
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15	Note:				
16	[1] Present worth cost reflects 30 yr period @ 7% discount rate.				
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33				**Subtotal**	**$43,180**
34	**Contractors Overhead and Profit**			**20%**	**$8,636**
35				**Subtotal**	**$51,816**
36	**Contingency**			**25%**	**$12,954**
37	**Annual O&M**				**$64,770**
38	**Present Worth [1]**				**$803,733**
39					
	TOTAL COST:				**$803,733**

NEW YORK STATE ELECTRIC AND GAS
MECHANICVILLE SITE
ALTERNATIVE 3c - EXCAVATION OF CONTAMINATED SOIL TPAHs > 500 ppm AND OFF-SITE DISPOSAL, NAPL RECOVERY
ENGINEER'S COST ESTIMATE

Client:	NYSEG	Project Number:	11173501		
Project:	Mechanicville Site	Calculated By:	PB	Date:	17-Feb-05
Description:	Alternative 3c	Checked By:	JRS	Date:	17-Feb-05

SUMMARY

DESCRIPTION	ESTIMATED COST
Institutional Controls	$10,000
Mobilization / Demobilization and Support Facilities	$95,400
NAPL Recovery Well Installation	$212,606
NAPL Recovery Pumping System	$193,899
Soil-Cement Barrier Wall	$560,780
Soil Excavation, Transport and Disposal	$1,907,973
	$2,980,658

STANDARD SUPPLEMENTAL PROJECT COSTS		
Overhead and Profit	**20%**	**$596,132**
SUBTOTAL - CONSTRUCTION COSTS		**$3,576,790**
Contingency	**25%**	**$894,197**
TOTAL		**$4,470,987**

NEW YORK STATE ELECTRIC AND GAS
MECHANICVILLE SITE
ALTERNATIVE 3c - EXCAVATION OF CONTAMINATED SOIL TPAHs > 500 ppm AND OFF-SITE DISPOSAL, NAPL RECOVERY
ENGINEER'S COST ESTIMATE

Client:	NYSEG	Project Number:	11173501		
Project:	Mechanicville Site	Calculated By:	PB	Date:	25-Oct-05
Description:	Alternative 3c	Checked By:	JL	Date:	26-Oct-05

SUMMARY OF ANNUAL O&M COSTS

DESCRIPTION	ESTIMATED COST
Annual Operation and Maintenance	$64,770

NEW YORK STATE ELECTRIC AND GAS
MECHANICVILLE SITE
ALTERNATIVE 3c - EXCAVATION OF CONTAMINATED SOIL TPAHs > 500 ppm AND OFF-SITE DISPOSAL, NAPL RECOVERY
ENGINEER'S COST ESTIMATE

Client:	NYSEG	Project Number:	11173501		
Project:	Mechanicville Site	Calculated By:	PB	Date:	25-Oct-05
Description:	Alternative 3c	Checked By:	JL	Date:	10/'26/05

SUMMARY OF PRESENT WORTH O&M COSTS

DESCRIPTION	ESTIMATED COST
Present Worth Operation and Maintenance	$803,733

URS CORPORATION
ENGINEER'S COST ESTIMATE
ESTIMATED UNIT COST

Client:	NYSEG	Project Number:	11173501		
Project:	Mechanicville Site	Calculated By:	PB	Date:	17-Feb-05
Title:	Alternative 3c - Institutional Controls	Checked By:	JRS	Date:	17-Feb-05

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
1	Deed Restrictions (one time legal cost): Allowance***	1	ls	$10,000	$10,000
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7	Reference:				
8	* R.S.Means Cost Data - 2004				
9	** Vendor Quote				
10	*** Engineer's previous project experience				
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	TOTAL COST:				**$10,000**

URS CORPORATION
ENGINEER'S COST ESTIMATE
ESTIMATED UNIT COST

Client:	NYSEG	Project Number:	11173501	
Project:	Mechanicville Site	Calculated By:	PB	Date: 17-Feb-05
Title:	Alternative 3c - Mobilization / Demobilization and Construction Support Facilities	Checked By:	JRS	Date: 17-Feb-05

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
1	Submittals				
2	Health and Safety Plan***	1	ls	$2,500	$2,500
3	Sediment and Erosion Control Plan***	1	ls	$2,250	$2,250
4	Shop Drawings***	1	ls	$2,500	$2,500
5	Schedules***	1	ls	$3,000	$3,000
6	Record Drawings***	1	ls	$2,500	$2,500
7	Survey*	10	day	$800	$8,000
8	Security Fence - Up Grade Existing***	1,545	lf	$10.00	$15,450
9	Mob/Demob Support Equipment: Allowance***	1	ls	$5,000	$5,000
10	Temporary Utilities Installation: Allowance***	1	ls	$15,000	$15,000
11	Permits: Allowance***	1	ls	$5,000	$5,000
12	Trailers (5)*	4	mo	$2,500	$10,000
13	Portable Toilets (2)*	4	mo	$250	$1,000
14	Utilities (consumption)***	4	mo	$800	$3,200
15	Truck Scale*	4	mo	$5,000	$20,000
16					
17	Reference:				
18	* R.S.Means Cost Data - 2004				
19	** Vendor Quote				
20	*** Engineer's previous project experience				
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37					
	TOTAL COST:				**$95,400**

URS CORPORATION
ENGINEER'S COST ESTIMATE
ESTIMATED UNIT COST

Client: NYSEG
Project Number: 11173501
Project: Mechanicville Site
Calculated By: PB
Date: 17-Feb-05
Title: Alternative 3c - NAPL Recovery Well Installation
Checked By: JRS
Date: 17-Feb-05

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
1	**NAPL Recovery Well Installation (Ref: RS Means - 2004)**				
2	**Vertical Wells**				
3	**Overburden Well: 4" diameter x 40 lf**				
4	Hollow stem auger drilling - 6" ID	40	lf	$24.69	$988
5	Well Screen - stainless steel - 4" diameter	10	lf	$41.36	$414
6	Well Riser - stainless steel - 4" diameter	33	lf	$41.36	$1,365
7	Grout Annulus - 4" diameter well	30	lf	$120.64	$3,619
8	Filter Pack - 4" diameter screen	10	lf	$18.79	$188
9	Bentonite seal	1	each	$157.17	$157
10	Well concrete slab cap - Allow	1	ls	$350	$350
11	Drilling spoils disposal - Allow:	2	drums	$300	$600
12	**Rock Well: 6" diameter < 100 lf**				
13	Rotary air drill - 8 " diameter borehole	60	lf	$47.84	$2,870
14	Well Casing - 6" diameter steel	30	lf	$183.42	$5,503
15	Well Riser - stainless steel - 4" diameter	50	lf	$41.36	$2,068
16	Well Screen - stainless steel - 4" diameter	10	lf	$41.36	$414
17	Grouting	30	lf	$160.86	$4,826
18	Well Cap - Allow:	1	ls	$350.00	$350
19	Drilling spoils disposal - Allow:	2	drums	$300	$600
20	**Rock Well: 8" diameter >100 lf < 500 lf**				
21	Rotary air drill - 6" diameter borehole	510	lf	$41.66	$21,247
22	Well Casing - 6" diameter steel	90	lf	$183.42	$16,508
23	Well Riser - stainless steel - 4" diameter	480	lf	$41.36	$19,853
24	Well Screen - stainless steel - 4" diameter	30	lf	$41.36	$1,241
25	Grouting	90	lf	$160.86	$14,477
26	Well concrete slab cap - Allow	3	ls	$350.00	$1,050
27	Drilling spoils disposal - Allow:	6	drums	$300	$1,800
28	**Horizontal Wells - 20 degrees from vertical**				
29	**Overburden Well: 4" diameter x 40 lf**				
30	Hollow stem auger drilling - 6" diameter borehole	40	lf	$32.10	$1,284
31	Well Screen - stainless steel - 4" diameter	10	lf	$41.36	$414
32	Well Riser - stainless steel - 4" diameter	33	lf	$41.36	$1,365
33	Grout Annulus - 4" diameter well	30	lf	$120.64	$3,619
34	Filter Pack - 4" diameter screen	10	lf	$18.79	$188
35	Bentonite seal	1	each	$157.17	$157
36	Well concrete slab cap - Allow	1	ls	$350	$350
37	Drilling spoils disposal - Allow:	2	drums	$300	$600
38	**Rock Well: 6" diameter >100 lf < 500 lf**				
39	Rotary air drill - 8" diameter borehole	60	lf	$62.20	$3,732
40	Well Casing - 6" diameter steel	30	lf	$183.42	$5,503
41	Well Riser - stainless steel - 4" diameter	50	lf	$41.36	$2,068
42	Well Screen - stainless steel - 4" diameter	10	lf	$41.36	$414
43	Grouting	30	lf	$160.86	$4,826
44	Well concrete slab cap - Allow	1	ls	$350.00	$350
45	Drilling spoils disposal - Allow:	2	drums	$300	$600
46	**Rock Well: 6" diameter >100 lf < 500 lf**				
47	Rotary air drill - 8" diameter borehole	510	lf	$62.20	$31,722
48	Well Casing - 6" diameter steel	90	lf	$183.42	$16,508
49	Well Riser - stainless steel - 4" diameter	480	lf	$41.36	$19,853
50	Well Screen - stainless steel - 4" diameter	30	lf	$41.36	$1,241
51	Grouting	90	lf	$160.86	$14,477
52	Well concrete slab cap - Allow	3	ls	$350.00	$1,050
53	Drilling spoils disposal - Allow:	6	drums	$300	$1,800
	TOTAL COST:				**$212,606**

URS CORPORATION
ENGINEER'S COST ESTIMATE
ESTIMATED UNIT COST

Client:	NYSEG	Project Number:	11173501		
Project:	Mechanicville Site	Calculated By:	PB	Date:	17-Feb-05
Title:	Alternative 3c - NAPLRecovery Pumping System	Checked By:	JRS	Date:	17-Feb-05

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
	Blackhawk NAPL Recovery System**				
1	Anchor down hole pump**	14	each	$1,343.00	$18,802
2	Electric anchor drive motor / activator**	14	each	$4,378.00	$61,292
3	Pump motor auto restart control**	14	each	$2,292.00	$32,088
4	Fiberglass drive rod**	1600	lf	$3.00	$4,800
5	L- NAPL recovery tip**	14	each	$366.00	$5,124
6	Control panel alarms - Allow:***	14	each	$400.00	$5,600
7	Pipe - steel with NTP threaded couplings - Allow:***	600	lf	$15.00	$9,000
8	Electrical wiring and connections - Allow:***	14	each	$1,200.00	$16,800
9	Pump installation - Allow:***	14	each	$800.00	$11,200
10	NAPL Storage Vessel - Polyethelene - 250 gallon cap.-Allow: ***	1	each	$350.00	$350
11	Hazardous Material Storage Building - 10' x 12' x 8'-8"**	1	each	$11,216.00	$11,216
12					
13					
14	Reference:				
15	* R.S.Means Cost Data - 2004				
16	** Vendor Quote				
17	*** Engineer's previous project experience				
18					
19					
20				**Subtotal**	$176,272
21					
22			**Engineering**	**10%**	$17,627
23					
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	TOTAL COST:				**$193,899**

URS CORPORATION
ENGINEER'S COST ESTIMATE
ESTIMATED UNIT COST

Client:	NYSEG	Project Number:	11173501		
Project:	Mechanicville Site	Calculated By:	PB	Date:	17-Feb-05
Title:	Alternative 3c - Soil-Cement Barrier Wall	Checked By:	JRS	Date:	17-Feb-05

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
1	Soil-cement barrier wall **(4' wide x 20' depth - 20% Portland cement)	550	lf	$836	$459,800
2	Mobilization / demobilization of equipment - Allow:	1	ls	$50,000	$50,000
3					
4					
5					
6	Reference:				
7	* R.S.Means Cost Data - 2004				
8	** Vendor Quote				
9	*** Engineer's previous project experience				
10					
11					
12				**Subtotal**	$509,800
13					
14			**Engineering**	10%	$50,980
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	TOTAL COST:				**$560,780**

URS CORPORATION
ENGINEER'S COST ESTIMATE
ESTIMATED UNIT COST

Client:	NYSEG	Project Number:	11173501		
Project:	Mechanicville Site	Calculated By:	PB	Date:	17-Feb-05
Title:	Alternative 3c - Soil Excavation, Transport and Disposal	Checked By:	JRS	Date:	17-Feb-05

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
1	Mobilize/Demobilize Equipment***	1	ls	$12,000	$12,000
2	Temporary Equipment Decontamination Pad***	1	ls	$6,500	$6,500
3	Air monitoring***	4	mo	$25,000	$100,000
4	Health and Safety***	4	mo	$5,000	$20,000
5	Pumps*** - Allow:	1	ls	$28,000	$28,000
6	Utility connections*** - Allow:	1	ls	$7,500	$7,500
7	Clear and Grub*	2	acre	$800	$1,600
8	Excavate / Load - Hazardous Contaminated Soil ***	6,250	cy	$10.00	$62,500
9	Transport contaminated soil to TSDF***	9,375	ton	$26.00	$243,750
10	Treatment / disposal of contaminated soil***	6,250	cy	$65.23	$407,688
11	Site Restoration: (+/- 2 acres)				
12	Imported Clean Unclassified Fill - placed and compacted***	6,250	cy	$12.00	$75,000
13	Topsoil - 4" - Placed and Raked*	890	cy	$26.00	$23,140
14	Seeding*	71	msf	$36.00	$2,556
15	Well point system *	4	mo	$37,700	$150,800
16	POTW sewer use fee	2	month	$2,800	$5,600
17	POTW discharge fee	37,152	M gal	$1.76	$65,388
18	Groundwater treatment system - temporary - 430 gpm	1	ls	$500,000	$500,000
19	Temporary water impoundment tanks - Allow:***	1	ls	$20,000	$20,000
20	Report***	1	ls	$2,500	$2,500
21					
22	Reference:				
23	* R.S.Means Cost Data - 2004				
24	** Vendor Quote				
25	*** Engineer's previous project experience				
26					
27	**Offsite transport/dispose collected ground water to commercial treatment facility***(430 gpm @ 2 months =37,152,000 gal @ $0.30 / gal = $11,145,600)**			**Subtotal**	$1,734,521
28					
29			**Engineering**	10%	$173,452
30					
31					
32					
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39					
	TOTAL COST:				**$1,907,973**

URS CORPORATION
ENGINEER'S COST ESTIMATE
ESTIMATED UNIT COST

Client: NYSEG | Project Number: 11173501
Project: Mechanicville Site | Calculated By: PB | Date: 25-Oct-05
Title: Alternative 3c - Annual Operation and Maintenance | Checked By: JL | Date: 26-Oct-05

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
1	Monitoring Well Sampling - Labor: 4 wells / day @ 20 mhr	100	man hour	$60	$6,000
2	Sample Analysis: Annual ***	20	each	$600	$12,000
3	Visual Inspection and SW / Sediment Sampling	40	man hour	$60	$2,400
4	Reports***	1	ls	$5,000	$5,000
5	Repair Security Fence - Allowance***	1	ls	$800	$800
6	Grass Mowing - Allow: 5 months x twice per month *	710	msf	$6.31	$4,480
7	Recovered product transport and disposal - Allow:***	10	drums	$300	$3,000
8	Pumping system repairs / maintenance - Allow***	1	ls	$5,000	$5,000
9	Utilities - Allow:***	12	month	$375	$4,500
10	Reference:				
11	* R.S.Means Cost Data - 2004				
12	** Vendor Quote				
13	*** Engineer's previous project experience				
14					
15	Note:				
16	(1) Present worth cost reflects 30 yr period @ 7% discount rate.				
17					
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28					
29				**Subtotal**	**$43,180**
30	**Contractors Overhead and Profit**			**20%**	**$8,636**
31				**Subtotal**	**$51,816**
32	**Contingency**			**25%**	**$12,954**
33	**Annual O&M**				**$64,770**
34	**Present Worth (1)**				**$803,733**
35					
	TOTAL COST:				**$803,733**

NEW YORK STATE ELECTRIC AND GAS
MECHANICVILLE SITE
ALTERNATIVE 4 - EXCAVATION AND OFF-SITE DISPOSAL OF SOURCE AREA, IN SITU STABILIZATION / SOLIDIFICATION OF REMAINING SITE AREA, NAPL RECOVERY
ENGINEER'S COST ESTIMATE

Client:	NYSEG	Project Number:	11173501		
Project:	Mechanicville Site	Calculated By:	PB	Date:	17-Feb-05
Description:	Alternative 4	Checked By:	JRS	Date:	17-Feb-05

SUMMARY

DESCRIPTION	ESTIMATED COST
Institutional Controls	$10,000
Mobilization / Demobilization and Support Facilities	$92,500
NAPL Recovery Well Installation	$212,606
NAPL Recovery Pumping System	$193,899
In Situ Stabilization / Solidification	$807,400
Soil Excavation, Transport and Disposal	$1,629,764
	$2,946,169

STANDARD SUPPLEMENTAL PROJECT COSTS

Overhead and Profit	**20%**	**$589,234**
SUBTOTAL - CONSTRUCTION COSTS		**$3,535,403**
Contingency	**25%**	**$883,851**
TOTAL		**$4,419,253**

NEW YORK STATE ELECTRIC AND GAS
MECHANICVILLE SITE
ALTERNATIVE 4 - EXCAVATION AND OFF-SITE DISPOSAL OF SOURCE AREA, IN SITU STABILIZATION / SOLIDIFICATION OF REMAINING SITE AREA, NAPL RECOVERY
ENGINEER'S COST ESTIMATE

Client:	NYSEG	Project Number:	11173501		
Project:	Mechanicville Site	Calculated By:	PB	Date:	26-Oct-05
Description:	Alternative 4	Checked By:	JL	Date:	26-Oct-05

SUMMARY OF ANNUAL O&M COSTS

DESCRIPTION	ESTIMATED COST
Annual Operation and Maintenance	$64,770

NEW YORK STATE ELECTRIC AND GAS
MECHANICVILLE SITE
ALTERNATIVE 4 - EXCAVATION AND OFF-SITE DISPOSAL OF SOURCE AREA, IN SITU STABILIZATION / SOLIDIFICATION OF REMAINING SITE AREA, NAPL RECOVERY
ENGINEER'S COST ESTIMATE

Client:	NYSEG	Project Number:	11173501		
Project:	Mechanicville Site	Calculated By:	PB	Date:	26-Oct-05
Description:	Alternative 4	Checked By:	JL	Date:	26-Oct-05

SUMMARY OF PRESENT WORTH O&M COSTS

DESCRIPTION	ESTIMATED COST
Present Worth Operation and Maintenance	$803,733

URS CORPORATION
ENGINEER'S COST ESTIMATE
ESTIMATED UNIT COST

Client:	NYSEG	Project Number:	11173501		
Project:	Mechanicville Site	Calculated By:	PB	Date:	17-Feb-05
Title:	Alternative 4 - Institutional Controls	Checked By:	JRS	Date:	17-Feb-05

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
1	Deed Restrictions (one time legal cost): Allowance***	1	ls	$10,000	$10,000
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3					
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5					
6					
7	Reference:				
8	* R.S.Means Cost Data - 2004				
9	** Vendor Quote				
10	*** Engineer's previous project experience				
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	TOTAL COST:				**$10,000**

URS CORPORATION
ENGINEER'S COST ESTIMATE
ESTIMATED UNIT COST

Client:	NYSEG	Project Number:	11173501		
Project:	Mechanicville Site	Calculated By:	PB	Date:	17-Feb-05
Title:	Alternative 4 - Mobilization / Demobilization and Construction Support Facilities	Checked By:	JRS	Date:	17-Feb-05

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
1	Submittals				
2	Health and Safety Plan***	1	ls	$2,500	$2,500
3	Sediment and Erosion Control Plan***	1	ls	$2,250	$2,250
4	Shop Drawings***	1	ls	$2,500	$2,500
5	Schedules***	1	ls	$3,000	$3,000
6	Record Drawings***	1	ls	$2,500	$2,500
7	Survey*	10	day	$800	$8,000
8	Security Fence - Up Grade Existing***	1,545	lf	$10.00	$15,450
9	Mob/Demob Support Equipment: Allowance***	1	ls	$5,000	$5,000
10	Temporary Utilities Installation: Allowance***	1	ls	$15,000	$15,000
11	Permits: Allowance***	1	ls	$5,000	$5,000
12	Trailers (5)*	6	mo	$2,500	$15,000
13	Portable Toilets (2)*	6	mo	$250	$1,500
14	Utilities (consumption)***	6	mo	$800	$4,800
15	Truck Scale*	2	mo	$5,000	$10,000
16					
17	Reference:				
18	* R.S.Means Cost Data - 2004				
19	** Vendor Quote				
20	*** Engineer's previous project experience				
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	TOTAL COST:				**$92,500**

URS CORPORATION
ENGINEER'S COST ESTIMATE
ESTIMATED UNIT COST

Client: NYSEG
Project: Mechanicville Site
Title: Alternative 4 - NAPL Recovery Well Installation
Project Number: 11173501
Calculated By: PB
Checked By: JRS
Date: 17-Feb-05
Date: 17-Feb-05

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
1	**NAPL Recovery Well Installation (Ref: RS Means - 2004)**				
2	**Vertical Wells**				
3	**Overburden Well: 4" diameter x 40 lf**				
4	Hollow stem auger drilling - 6" ID	40	lf	$24.69	$988
5	Well Screen - stainless steel - 4" diameter	10	lf	$41.36	$414
6	Well Riser - stainless steel - 4" diameter	33	lf	$41.36	$1,365
7	Grout Annulus - 4" diameter well	30	lf	$120.64	$3,619
8	Filter Pack - 4" diameter screen	10	lf	$18.79	$188
9	Bentonite seal	1	each	$157.17	$157
10	Well concrete slab cap - Allow	1	ls	$350	$350
11	Drilling spoils disposal - Allow:	2	drums	$300	$600
12	**Rock Well: 6" diameter < 100 lf**				
13	Rotary air drill - 6" diameter borehole	60	lf	$47.84	$2,870
14	Well Casing - 6" diameter steel	30	lf	$183.42	$5,503
15	Well Riser - stainless steel - 4" diameter	50	lf	$41.36	$2,068
16	Well Screen - stainless steel - 4" diameter	10	lf	$41.36	$414
17	Grouting	30	lf	$160.86	$4,826
18	Well Cap - Allow:	1	ls	$350.00	$350
19	Drilling spoils disposal - Allow:	2	drums	$300	$600
20	**Rock Well: 8" diameter >100 lf < 500 lf**				
21	Rotary air drill - 8 " diameter borehole	510	lf	$41.66	$21,247
22	Well Casing - 6" diameter steel	90	lf	$183.42	$16,508
23	Well Riser - stainless steel - 4" diameter	480	lf	$41.36	$19,853
24	Well Screen - stainless steel - 4" diameter	30	lf	$41.36	$1,241
25	Grouting	90	lf	$160.86	$14,477
26	Well concrete slab cap - Allow	3	ls	$350.00	$1,050
27	Drilling spoils disposal - Allow:	6	drums	$300	$1,800
28	**Horizontal Wells - 20 degrees from vertical**				
29	**Overburden Well: 4" diameter x 40 lf**				
30	Hollow stem auger drilling - 6" diameter borehole	40	lf	$32.10	$1,284
31	Well Screen - stainless steel - 4" diameter	10	lf	$41.36	$414
32	Well Riser - stainless steel - 4" diameter	33	lf	$41.36	$1,365
33	Grout Annulus - 4" diameter well	30	lf	$120.64	$3,619
34	Filter Pack - 4" diameter screen	10	lf	$18.79	$188
35	Bentonite seal	1	each	$157.17	$157
36	Well concrete slab cap - Allow	1	ls	$350	$350
37	Drilling spoils disposal - Allow:	2	drums	$300	$600
38	**Rock Well: 6" diameter >100 lf < 500 lf**				
39	Rotary air drill - 8" diameter borehole	60	lf	$62.20	$3,732
40	Well Casing - 6" diameter steel	30	lf	$183.42	$5,503
41	Well Riser - stainless steel - 4" diameter	50	lf	$41.36	$2,068
42	Well Screen - stainless steel - 4" diameter	10	lf	$41.36	$414
43	Grouting	30	lf	$160.86	$4,826
44	Well concrete slab cap - Allow	1	ls	$350.00	$350
45	Drilling spoils disposal - Allow:	2	drums	$300	$600
46	**Rock Well: 6" diameter >100 lf < 500 lf**				
47	Rotary air drill - 8" diameter borehole	510	lf	$62.20	$31,722
48	Well Casing - 6" diameter steel	90	lf	$183.42	$16,508
49	Well Riser - stainless steel - 4" diameter	480	lf	$41.36	$19,853
50	Well Screen - stainless steel - 4" diameter	30	lf	$41.36	$1,241
51	Grouting	90	lf	$160.86	$14,477
52	Well concrete slab cap - Allow	3	ls	$350.00	$1,050
53	Drilling spoils disposal - Allow:	6	drums	$300	$1,800
	TOTAL COST:				**$212,606**

URS CORPORATION
ENGINEER'S COST ESTIMATE
ESTIMATED UNIT COST

Client:	NYSEG	Project Number:	11173501		
Project:	Mechanicville Site	Calculated By:	PB	Date:	17-Feb-05
Title:	Alternative 4 - NAPLRecovery Pumping System	Checked By:	JRS	Date:	17-Feb-05

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
	Blackhawk NAPL Recovery System**				
1	Anchor down hole pump**	14	each	$1,343.00	$18,802
2	Electric anchor drive motor / activator**	14	each	$4,378.00	$61,292
3	Pump motor auto restart control**	14	each	$2,292.00	$32,088
4	Fiberglass drive rod**	1600	lf	$3.00	$4,800
5	L- NAPL recovery tip**	14	each	$366.00	$5,124
6	Control panel alarms - Allow:***	14	each	$400.00	$5,600
7	Pipe - steel with NTP threaded couplings - Allow:***	600	lf	$15.00	$9,000
8	Electrical wiring and connections - Allow:***	14	each	$1,200.00	$16,800
9	Pump installation - Allow:***	14	each	$800.00	$11,200
10	NAPL Storage Vessel - Polyethelene - 250 gallon cap.-Allow: ***	1	each	$350.00	$350
11	Hazardous Material Storage Building - 10' x 12' x 8'-8"**	1	each	$11,216.00	$11,216
12					
13					
14	Reference:				
15	* R.S.Means Cost Data - 2004				
16	** Vendor Quote				
17	*** Engineer's previous project experience				
18					
19					
20				**Subtotal**	$176,272
21					
22			**Engineering**	**10%**	$17,627
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	TOTAL COST:				**$193,899**

URS CORPORATION
ENGINEER'S COST ESTIMATE
ESTIMATED UNIT COST

Client:	NYSEG	Project Number:	11173501		
Project:	Mechanicville Site	Calculated By:	PB	Date:	17-Feb-05
Title:	Alternative 4 - In Situ Stabilization / Solidification	Checked By:	JRS	Date:	17-Feb-05

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
1	In Situ Stabilization / Solidification ***	11,400	cy	$60	$684,000
2	Mobilization / demobilization of equipment - Allow:	1	ls	$50,000	$50,000
3					
4					
5	Reference:				
6	* R.S.Means Cost Data - 2004				
7	** Vendor Quote				
8	*** Engineer's previous project experience				
9					
10					
11				**Subtotal**	$734,000
12					
13			**Engineering**	10%	$73,400
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34					
	TOTAL COST:				**$807,400**

URS CORPORATION
ENGINEER'S COST ESTIMATE
ESTIMATED UNIT COST

Client:	NYSEG	Project Number:	11173501		
Project:	Mechanicville Site	Calculated By:	PB	Date:	17-Jan-05
Title:	Alternative 4 - Soil Excavation, Transport and Disposal	Checked By:	JRS	Date:	17-Feb-05

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
1	Mobilize/Demobilize Equipment***	1	ls	$12,000	$12,000
2	Temporary Equipment Decontamination Pad***	1	ls	$6,500	$6,500
3	Air monitoring***	6	mo	$25,000	$150,000
4	Health and Safety***	6	mo	$5,000	$30,000
5	Pumps*** - Allow:	1	ls	$28,000	$28,000
6	Clear and Grub*	4	acre	$800	$3,200
7	Excavate / Load - Hazardous Contaminated Soil (TPAHs > 1,000 ppm)***	4,000	cy	$10.00	$40,000
8	Transport contaminated soil to TSDF***	6,000	ton	$26.00	$156,000
9	Treatment / disposal of contaminated soil***	4,000	cy	$65.28	$261,120
10	Site Restoration				
11	Imported Clean Unclassified Fill - placed and compacted***	8,350	cy	$12.00	$100,200
12	Topsoil - 4" - Placed and Raked*	890	cy	$26.00	$23,140
13	Seeding*	71	msf	$36.00	$2,556
14	Well point system *	2	mo	$37,700	$75,400
15	Temporary water impoundment tanks - Allow:***	1	ls	$20,000	$20,000
16	Groundwater treatment system - temporary - 430 gpm	1	ls	$500,000	$500,000
17	POTW sewer use fee	2	month	$2,800	$5,600
18	POTW discharge fee	37,152	M gal	$1.76	$65,388
19	Report***	1	ls	$2,500	$2,500
20					
21	Reference:				
22	* R.S.Means Cost Data - 2004				
23	** Vendor Quote				
24	*** Engineer's previous project experience				
25					
26	**Offsite transport/dispose collected ground water to commercial treatment facility***(430 gpm @ 2 months =37,152,000 gal @ $0.30 / gal = $11,145,600)**			**Subtotal**	$1,481,604
27					
28			**Engineering**	10%	$148,160
29					
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31					
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40					
	TOTAL COST:				**$1,629,764**

URS CORPORATION
ENGINEER'S COST ESTIMATE
ESTIMATED UNIT COST

Client: NYSEG Project Number: 11173501
Project: Mechanicville Site Calculated By: PB Date: 25-Oct-05
Title: Alternative 4 - Annual Operation and Maintenance Checked By: JL Date: 26-Oct-05

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
1	Monitoring Well Sampling - Labor: 4 wells / day @ 20 mhr	100	man hour	$60	$6,000
2	Sample Analysis: Annual ***	20	each	$600	$12,000
3	Visual Inspection and SW / Sediment Sampling	40	man hour	$60	$2,400
4	Reports***	1	ls	$5,000	$5,000
5	Repair Security Fence - Allowance***	1	ls	$800	$800
6	Grass Mowing - Allow: 5 months x twice per month *	710	msf	$6.31	$4,480
7	Recovered product transport and disposal - Allow:***	10	drums	$300	$3,000
8	Pumping system repairs / maintenance - Allow***	1	ls	$5,000	$5,000
9	Utilities - Allow:***	12	month	$375	$4,500
10	Reference:				
11	* R.S.Means Cost Data - 2004				
12	** Vendor Quote				
13	*** Engineer's previous project experience				
14					
15	Note:				
16	(1) Present worth cost reflects 30 yr period @ 7% discount rate.				
17					
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28					
29					
30					
31				**Subtotal**	**$43,180**
32	**Contractors Overhead and Profit**			**20%**	**$8,636**
33				**Subtotal**	**$51,816**
34	**Contingency**			**25%**	**$12,954**
35	**Annual O&M**				**$64,770**
36	**Present Worth (1)**				**$803,733**
37					
	TOTAL COST:				**$803,733**