Department of Environmental Conservation

Division of Environmental Remediation

Record of Decision

Sag Harbor Manufactured Gas Plant Site

Suffolk County, **New York**

Site Number 1-52-159

March 2006

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

DECLARATION STATEMENT - RECORD OF DECISION

Sag Harbor Manufactured Gas Plant Inactive Hazardous Waste Disposal Site
Suffolk County, New York
Site No. 1-52-159

Statement of Purpose and Basis

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

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

Assessment of the Site

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

Description of Selected Remedy

Based on the results of the Remedial Investigation and Feasibility Study (RI/FS) for the Sag Harbor Manufactured Gas Plant site and the criteria identified for evaluation of alternatives, the NYSDEC has selected excavation of on-site and off-site source material to a depth of tefeet, NAPL recovery, institutional controls and a site management plan. The components of the remedy are as follows:

- A remedial design program to provide the details necessary to implement the remedial program.

- Installation of an excavation support system; removal of the commercial building to the north of the property; excavation and off-site disposal of the top ten feet of contaminated soil; and backfilling of the excavated area with clean fill from an off-site source which has been approved by NYSDEC.

- Covering all vegetated areas with clean soil and all non-vegetated areas with either buildings or a paving system.
- Installation of passive NAPL recovery wells.
- Development of a site management plan to address residual contamination, evaluate buildings for soil vapor impacts, address any use restrictions, and provide for the operation, maintenance, and monitoring of components of the remedy.
- Imposition of an institutional control in the form of an environmental easement.
- Periodic certification of the institutional and engineering controls.

New York State Department of Health Acceptance

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

Declaration

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

MAR 3 1 2006

Date

Dale A. Desnoyers, Director
Division of Environmental Remediation

TABLE OF CONTENTS

SECTION **PAGE**

1: SUMMARY OF THE RECORD OF DECISION 1

2: SITE LOCATION AND DESCRIPTION 2

3: SITE HISTORY 2
- 3.1: Operational/Disposal History 2
- 3.2: Remedial History 2

4: ENFORCEMENT STATUS 3

5: SITE CONTAMINATION 3
- 5.1: Summary of the Remedial Investigation 3
- 5.2: Interim Remedial Measures 8
- 5.3: Summary of Human Exposure Pathways: 8
- 5.4: Summary of Environmental Impacts 9

6: SUMMARY OF THE REMEDIATION GOALS 10

7: SUMMARY OF THE EVALUATION OF ALTERNATIVES 10
- 7.1: Description of Remedial Alternatives 11
- 7.2 Evaluation of Remedial Alternatives 14

8: SUMMARY OF THE SELECTED REMEDY 15

9: HIGHLIGHTS OF COMMUNITY PARTICIPATION 18

Tables
- Table 1: Nature and Extent of Contamination 19
- Table 2: Remedial Alternative Costs 22

Figures
- Figure 1: Site Location Map 23
- Figure 2: Sample Locations 24
- Figure 3: NAPL Extent 25
- Figure 4: Cross-Section of the Extent of NAPL Contamination . . . 26
- Figure 5: Contaminant Impacts in Shallow Groundwater 27
- Figure 6: Remedial Alternatives 28
- Figure 7: Selected Remedy 29

Appendices
- Appendix A: Responsiveness Summary A-1
- Appendix B: Administrative Record B-1

RECORD OF DECISION

Sag Harbor Manufactured Gas Plant Site
Suffolk County, New York
Site No. 1-52-159
March 2006

SECTION 1: SUMMARY OF THE RECORD OF DECISION

The New York State Department of Environmental Conservation (NYSDEC), in consultation with the New York State Department of Health (NYSDOH), has selected this remedy for the Sag Harbor Manufactured Gas Plant. The presence of hazardous waste has created significant threats to human health and/or the environment that are addressed by this remedy. As more fully described in Sections 3 and 5 of this document, the use of the site as a manufactured gas plant has resulted in the disposal of hazardous wastes, including benzene, toluene, ethylbenzene, and xylene (BTEX) and polycylic aromatic hydrocarbons (PAHs). These wastes have contaminated the surface soil, subsurface soil, soil vapor and groundwater at the site, and have resulted in:

- a significant threat to human health associated with potential exposure to surface soil, subsurface soil, soil vapor and groundwater.
- a significant environmental threat associated with the impacts of contaminants to surface soil, subsurface soil, and groundwater.

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

- A remedial design program to provide the details necessary to implement the remedial program.
- Installation of an excavation support system; removal of the commercial building to the north of the property; excavation and off-site disposal of the top ten feet of contaminated soil; and backfilling of the excavated area with clean fill from an off-site source which has been approved by NYSDEC.
- Covering all vegetated areas with clean soil and all non-vegetated areas with either concrete or a paving system.
- Installation of several passive NAPL recovery wells.
- Development of a site management plan to address residual contamination, evaluate buildings for soil vapor impacts, address any use restrictions, and provide for the operation, maintenance, and monitoring of components of the remedy.

- Imposition of an institutional control in the form of an environmental easement.

- Periodic certification of the institutional and engineering controls.

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

SECTION 2: SITE LOCATION AND DESCRIPTION

The site occupies roughly 0.76 acres in the downtown section of the Village of Sag Harbor in Suffolk County. The site is adjacent to the intersection of Bridge Street and Long Island Avenue and is roughly 200 feet to the south of Sag Harbor Cove. The site's location is noted on Figure 1.

SECTION 3: SITE HISTORY

3.1: Operational/Disposal History

From 1859 to 1930 the site was operated as a manufactured gas plant. The plant originally produced gas from coal or wood rosin and was switched to a water gas process in 1892. The by-products of gas production that either spilled, leaked, or were disposed on the site are the source of the contamination.

3.2: Remedial History

In 1997 a preliminary site assessment was performed on the MGP site and, as a result, the NYSDEC listed the site as a Class 2 site in the Registry of Inactive Hazardous Waste Disposal Sites in New York in 1998. A Class 2 site is a site where hazardous waste presents a significant threat to the public health or the environment and action is required. Following that listing, an Interim Remedial Measure (IRM) was performed to remove and cap historic piping that was present at the site to prevent migration of MGP by-products through these pipes.

Originally the site was part of the Sag Harbor Bridge Street Site (Site Number 1-52-126) which was listed as a Class 2 site in the Registry of Inactive Hazardous Waste Disposal Sites in New York in 1987. This occurred after an incident when Suffolk County Water Authority workers were exposed to tar during an excavation on Bridge Street. It was then delisted in 1995 because investigations had failed to find hazardous wastes on the Bridge Street Site as defined by the contemporary edition of 6 NYCRR Part 375.

SECTION 4: ENFORCEMENT STATUS

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

The NYSDEC and KeySpan Corporation entered into a Consent Order on March 31, 1999. The Order obligates the responsible parties to implement a full remedial program.

SECTION 5: SITE CONTAMINATION

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

5.1: Summary of the Remedial Investigation

The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site. The RI was conducted between April 2000 and May 2004. The field activities and findings of the investigation are described in the RI report.

The following activities were conducted during the RI:

- Research of historical information;
- A survey of public and private water supply wells in the area around the site;
- Installation of 46 soil borings and 30 monitoring wells for analysis of soils and groundwater as well as physical properties of soil and hydrogeologic conditions;
- Multiple rounds of sampling of 32 new and existing monitoring wells;
- Collection of 29 surface soil samples for chemical analysis;
- Collection of 134 discrete groundwater samples using a direct push technique;
- Collection of 16 surface water samples;
- Collection of 18 aquatic sediment samples;
- Collection of 8 sediment pore water samples;
- Collection of 3 tap water samples;
- Collection of 4 storm water runoff samples;
- Collection of 13 soil vapor samples, 45 indoor air samples, and 27 outdoor air samples.

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

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

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

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

- Indoor air SCGs are based on the New York State Department of Health Database summary of indoor and outdoor air sample results in control homes collected and analyzed by NYSDOH from 1989 through 1996.

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

5.1.1: Site Geology and Hydrogeology

The site is located in an area that was a marine wetland before being filled in the 1800s. Today, the ground surface stands a few feet above sea level, with the uppermost soil layer made up of material (sandy soils, brick fragments, ash, etc.) used to fill the original wetland. The peat, silt and clay deposits which formed the original wetland bottom are still present at depths of 8 to 12 feet below the ground surface. Below these lie several hundred feet of unconsolidated sands.

The peat, silt, and clay layers are important because they are far less permeable than the predominantly sandy soils above and below. Groundwater and other liquids do not readily move through the peat, sand, and clay. In most areas, this has had the effect of limiting the degree to which MGP tar can move downward through the subsurface. However, these deposits are absent in some portions of the site, and MGP tar has moved downward into the underlying sands in these areas.

The water table at the site is very shallow. The depth to groundwater varies from about 6 inches to about 18 inches below grade. This high groundwater level leads to localized ponding during heavy rains. The groundwater is tidally influenced, but consistently flows in a northerly or northwesterly direction. The groundwater is brackish and discharges to Sag Harbor Cove.

5.1.2: Nature of Contamination

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

The principal human health and environmental risks posed by this site relate to the widespread distribution of MGP (coal) tar throughout the site and surrounding area. Understanding the physical and chemical behavior of coal tar is essential to proper characterization and clean up. The tar at this site does not have the sticky, viscous consistency of other materials commonly labeled as "tar." Instead, the coal tar found at this site has the consistency of motor oil, and is consequently able to move about as a liquid through the subsurface.

MGP tar belongs to a group of organic contaminants known as dense non-aqueous phase liquids, commonly abbreviated as DNAPLs. DNAPLs do not readily dissolve in water and tend to sink to the bottom of water bodies and aquifers. When released into the subsurface, these liquids can spread out in complex directions that may or may not be the same direction as groundwater flow. MGP tar is an unusual DNAPL, in that its density is only slightly greater than water. Although MGP tar does tend to sink, the relatively slight difference in density between tar and water makes this sinking effect somewhat unpredictable.
Two classes of chemical compounds contained in the tar are of concern:

Benzene, toluene, ethylbenzene, and xylenes (collectively known as the BTEX compounds) are volatile organic compounds, which are also commonly found in unleaded gasoline, paint thinners and other solvents. They are somewhat soluble in water; consequently, groundwater which comes into contact with MGP tar often becomes contaminated with these compounds. This contaminated groundwater is then free to move away from the site along with the ordinary groundwater flow through the subsurface.

The second class of compounds are known as polycyclic aromatic hydrocarbons, commonly abbreviated as PAH. This is a large group of semi-volatile organic compounds, with several hundred different individuals known to exist. They are far less soluble than the BTEX compounds, and consequently are far less likely to cause groundwater contamination. They are also far less likely to be digested by soil bacteria, and thus are very persistent in the environment. The United States Environmental Protection Agency has identified 17 of the PAHs as hazardous materials, and these are the ones used to define the extent of PAH contamination at this site.

An inorganic contaminant of concern is cyanide. Cyanide, bound to iron to form ferric-ferro-cyanide, is a component of some MGP tars. While it is not dangerous in its bound form, certain conditions can release free cyanide, causing an exposure risk both for humans and the environment.

5.1.3: Extent of Contamination

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

Chemical concentrations are reported in parts per billion (ppb) for water, parts per million (ppm) for waste, soil, and sediment, and micrograms per cubic meter (: g/m^3) for air samples. For comparison purposes, where applicable, SCGs are provided for each medium.

Table 1 summarizes the degree of contamination for the contaminants of concern in surface soil, subsurface soil, groundwater, indoor air, surface water, soil vapor, and sediment and compares the data with the SCGs for the site. The locations of all the samples are noted on Figure 2. The following are the media which were investigated and a summary of the findings of the investigation.

Waste Materials

The waste material associated with this site is coal tar. Coal tar has migrated to a depth of roughly 8-10 feet below the ground surface. At this level, it encountered a layer of peat, silt and clay which it could not readily penetrate, and spread laterally on top of this layer beneath the MGP site. It has also spread beyond the site boundaries, roughly 50 feet to the south and 80 feet to the north, where it is now found beneath a row of retail stores.

Near the center of the MGP site, the peat, silt and clay layer is absent, and the MGP tar has spread downward much further, to a total depth of roughly 90 feet. No deep penetration of tar has been found beyond the limits of the MGP site.

The tar now appears to be in a steady state, in which the overall limits of the tar migration should not change unless site conditions change significantly. However, within the area of tar contamination, some pockets of pooled, mobile tar may exist. This pooled tar can enter wells which are drilled nearby and could enter future excavations as well. The extent of the MGP tar contamination is shown on Figures 3 and 4. This material requires remediation, as it acts as a source for soil and groundwater contamination.

Surface Soil

Surface soil samples were collected from the upper 0-2 or 0-6 inches across the site, as well as off-site. All samples were analyzed for SVOCs, metals and cyanide. The off-site samples were also analyzed for VOCs.

Contaminated surface soil represents a potential exposure route through ingestion, dermal contact, or the breathing of dust or vapors coming from the surface soil. Although BTEX was detected in the off-site samples, all of the detections were below the New York State Recommended Soil Cleanup Objectives from Technical Administrative Guidance Memorandum 4046 (TAGM 4046).

PAHs were found in the majority of the surface soil samples across the site and in some off-site areas. The maximum detections of PAHs were, in the majority of samples, above the individual SCGs. The highest total PAHs in surface soil was 950 ppm and was found in the historic location of the southeastern gas holder.

Cyanide was identified in both on-site and off-site samples, with the maximum concentration found onsite in the location of the former gas holders. The cyanide is not above guidance levels and is, most likely, a constituent of the coal tar.

Subsurface Soil

PAH and BTEX contamination of subsurface soils was detected in several areas, with the highest contaminant concentrations found in areas where visible tar contamination was present. Thus, the highest levels of soil contamination are found in the shallow subsurface soils (generally less than 8 feet below the ground surface) in the eastern portion of the MGP site. Outside of the zones of tar contamination, PAH and BTEX concentrations decrease rapidly. Individual BTEX concentrations ranged from not detectable to 500 ppm, and PAH concentrations ranged from not detectable to 1,700 ppm.

Cyanide was detected in only a few subsurface samples, at low levels. The highest value, 4.8 ppm, was found in an area of shallow visible tar contamination, which also contained high levels of PAH and BTEX.

The contaminants in the subsurface are an environmental concern as they are a potential source of groundwater contamination.

Groundwater

Both PAH and BTEX compounds are found in on-site and off-site groundwater, with the highest contaminant levels found at shallow depths, in close proximity to the MGP tar. Groundwater flow direction is north toward Sag Harbor Cove.

BTEX compounds were found in the majority of the groundwater samples, both on site and off site. Benzene was the individual compound detected most frequently, and at the highest concentration, with values ranging from non detect to 8,700 ppb.
PAH compounds are less soluble than BTEX, but due to the extensive distribution of MGP tar, they were detected in most groundwater samples as well. Naphthalene is the PAH compound detected most frequently, and at the highest concentration, with values ranging from non-detect to 79,000 ppb.

The extent of groundwater contamination is shown on Figure 5.

Surface Water

Surface water and groundwater seep samples were collected. The only site-related contaminant detected was xylene at a concentration of 1 ppb in one of the 31 surface water samples, which is far below the SCG for xylene of 19 ppb.

Sediments

The sediments in Sag Harbor Cove were sampled for BTEX and PAHs. None of the samples indicate an impact from the MGP. The low levels of BTEX and PAH which were detected were distributed randomly across the survey area, which suggests that they represent general background conditions in the area and are not the result of MGP contamination.

Soil Vapor

Soil vapor samples were collected and analyzed for BTEX compounds and naphthalene. Naphthalene and other PAHs were not detected in any of the samples. BTEX was detected in samples collected above areas of MGP tars.

Indoor and Ambient Air

Indoor and ambient air samples were collected during two rounds of sampling from buildings surrounding the site. The samples were analyzed for VOCs, which included BTEX and naphthalene. Although some VOCs were detected in several samples, the NYSDOH has determined that these detections do not appear to be related to the MGP site. Further monitoring of soil vapor and air samples will be required to monitor for potential indoor air exposures.

5.2: Interim Remedial Measures

An interim remedial measure (IRM) is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before completion of the RI/FS. There were no IRMs performed at this site during the RI/FS.

5.3: Summary of Human Exposure Pathways:

This section describes the types of human exposures that may present added health risks to persons at or around the site. A more detailed discussion of the human exposure pathways can be found in Appendix G and E of the June 2002 and December 2003 RI reports, respectively.

An exposure pathway describes the means by which an individual may be exposed to contaminants originating from a site. An exposure pathway has five elements: [1] a contaminant source, [2] contaminant release and transport mechanisms, [3] a point of exposure, [4] a route of exposure, and [5] a receptor population.
The source of contamination is the location where contaminants were released to the environment (any waste disposal area or point of discharge). Contaminant release and transport mechanisms carry contaminants from the source to a point where people may be exposed. The

exposure point is a location where actual or potential human contact with a contaminated medium may occur. The route of exposure is the manner in which a contaminant actually enters or contacts the body (e.g., ingestion, inhalation, or direct contact). The receptor population is the people who are, or may be, exposed to contaminants at a point of exposure.

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

Potential exposure pathways at the Sag Harbor MGP site include the following:

- Direct contact with, incidental ingestion or inhalation of contaminated soil
- Direct contact with, or inhalation of vapors from contaminated groundwater
- Direct contact with or incidental ingestion of NAPL
- Inhalation of vapors in indoor air related to subsurface vapor intrusion

None of these pathways has been found to be complete at this site. The contamination (contaminated soil, groundwater, and NAPL) is below the ground surface, which minimizes the likelihood of incidental exposure. Two private water supply wells were identified in the area surrounding the site. Both were sampled, and neither contained site-related contamination. The rest of the area uses a public water supply, which is routinely tested to ensure that it meets drinking water standards for many chemicals, including the contaminants found at the Sag Harbor MGP site. KeySpan collected two rounds of indoor air samples from many of the buildings immediately surrounding the site, and the NYSDOH has determined that contamination from the site was not affecting the indoor air quality in the buildings.

5.4: Summary of Environmental Impacts

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

The Fish and Wildlife Impact Analysis, which is included in the RI report, presents a detailed discussion of the existing and potential impacts from the site to fish and wildlife receptors. The following environmental exposure pathways and ecological risks have been identified: Site contamination has impacted the groundwater resource in the upper glacial aquifer.

At this time, sediment sampling has not indicated any impacts to Sag Harbor Cove. However, contamination from the migration of DNAPL and groundwater from the site could potentially enter Sag Harbor Cove.

Sag Harbor Cove is an environmentally sensitive area which includes many species of flora and fauna. It is also a valuable recreational resource to the surrounding community. The potential for future contamination of the cove with MGP by-products could lead to a decrease in the cove's ability to support wildlife and could potentially lead to its devaluation as a recreational asset.

SECTION 6: SUMMARY OF THE REMEDIATION GOALS

Goals for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375-1.10. At a minimum, the remedy selected must eliminate or mitigate all significant threats to public health and/or the environment presented by the hazardous waste disposed at the site through the proper application of scientific and engineering principles.

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

- exposures of persons at or around the site to VOCs, SVOCs, and cyanide in surface soil, subsurface soil, groundwater and soil vapor;
- environmental exposures of flora or fauna to VOCs, SVOCs, and cyanide in surface soil, subsurface soil, and groundwater;
- the release of contaminants from soil into groundwater that may create exceedances of groundwater quality standards; and
- the release of contaminants from surface soil, subsurface soil, groundwater, sediment, and soil vapor into ambient air, indoor air, sediment, and surface water through desorption, storm water erosion, vaporization, wind borne dust and dissolution.

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

- ambient groundwater quality standards and
- recommended soil cleanup values for surface soils.

SECTION 7: SUMMARY OF THE EVALUATION OF ALTERNATIVES

The selected remedy must be protective of human health and the environment, be cost-effective, comply with other statutory requirements, and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. Potential remedial alternatives for the Sag Harbor Manufactured Gas Plant Site were identified, screened and evaluated in the FS report which is available at the document repositories identified in Section 1.

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

7.1: Description of Remedial Alternatives

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

Alternative 1: No Action

Present Worth: *$2,000,000*
Capital Cost: *$0*
Annual OM&M: *$180,000*

The No Action Alternative is evaluated as a procedural requirement and as a basis for comparison. It requires continued monitoring only, allowing the site to remain in an unremediated state. This alternative would leave the site in its present condition and would not provide any additional protection to human health or the environment.

Alternative 2A: Off-site excavation to a 10 foot depth, NAPL recovery, Engineered cap, On-site containment cells, Institutional controls, Groundwater and indoor air monitoring

Present Worth: *$6,100,000*
Capital Cost: *$3,200,000*
Annual OM&M: *$120,000*

This alternative would involve containment of the tar which remains on the MGP site, combined with limited excavation of neighboring properties where tar has spread. The overall approach would be to remove the tar which has already left the MGP site, and to immobilize the tar which remains on the Keyspan property (MGP site). The remedy is illustrated in Figure 6.

Subsurface barrier walls would be installed around the perimeter of the MGP site to prevent contaminant migration off-site. An impermeable engineered cap would be installed within the limits of the subsurface barrier walls to prevent rainwater infiltration through the contaminated soil and to prevent any direct exposures to contaminants. The barrier wall would extend downward far enough to reach the peat, silt, and clay unit beneath the site, thus reducing the impact of the tar as a groundwater contamination source. It should also be noted that some tar has been found below the peat, silt, and clay unit (which is absent in the central portion of the MGP site), and that the containment wall would not isolate this deeper contamination.

There would be two areas of off site excavation in the parking lots to the north and the south of the site. Excavation would proceed to a depth of approximately 10 feet, which should effectively remove all tar-impacted soil in these areas. The contamination underneath the retail stores adjacent to the north site boundary would not be addressed by this alternative.

NAPL collection wells would be installed in at least three locations within the limits of the barrier wall. The objective would be to reduce the volume of tar in the soil and to reduce the mobility of the tar that remains. These wells will collect tar passively (without pumping); however, provisions would be made to pump some or all of the wells at low flow rates if it

appears that this would improve tar removal. The number of wells could be increased, if collection from the initial wells proves successful.

An institutional control, in the form of an environmental easement on the MGP property, would be established to protect the integrity of the containment system. Groundwater and indoor air quality would be monitored.

Construction of the remedy would require approximately 1 season (October through April). These time restrictions reflect a long-standing agreement between Keyspan and the Village of Sag Harbor.

Alternative 2B: Off-site stabilization to a 10 foot depth, NAPL recovery, Engineered cap, On-site containment cells, Institutional controls, Sub-slab depressurization system, Groundwater and indoor air monitoring

Present Worth: *$7,500,000*
Capital Cost: *$5,500,000*
Annual OM&M: *$180,000*

This alternative would include the features of Alternative 2A, with the off-site excavation in the northern parking lot replaced by in-situ stabilization. Stabilization is a form of containment which involves the in-situ mixing of contaminants with a stabilizing agent such as cement. The overall approach is to make a large, solid mass of low-strength concrete whose low permeability would reduce contact with groundwater and thus reduce the amount of groundwater contamination being generated.

In addition, a sub-slab depressurization system would be installed beneath the block of retail stores to the north of the site, to provide an increased level of protection against potential vapor intrusion. This alternative is also illustrated on Figure 6.

Construction of the remedy would require approximately 1 season.

Alternative 3A: Excavation of on-site and off-site source material to a 10 foot depth, NAPL recovery, Institutional controls, Groundwater and indoor air monitoring

Present Worth: *$10,700,000*
Capital Cost: *$9,100,000*
Annual OM&M: *$100,000*

This alternative would include the excavation of tar-impacted soil up to a depth of 10 feet over the entire site as well as on the parcels to the north and south of the site. This would require the removal of the existing commercial buildings on the north parcel. As shown on Figure 7, the excavation limits would reach to Long Island Avenue on the north, into Bridge street on the west, east to the Post Office, and into the parking area for the commercial building to the south

This alternative would remove the majority of tar in the subsurface both on-site and off. The area of deep tar penetration in the center of the MGP site would be the only appreciable location of contamination to remain.

The NAPL recovery, institutional controls, groundwater monitoring, and indoor air monitoring would be similar to alternative 2A.

Construction of this remedy would require from1 to 2 seasons.

Alternative 3B: On-site and off-site excavation to a 10 foot depth, On-site and off-site stabilization to a 36 foot depth), NAPL recovery, Sub-slab depressurization system, Institutional controls, Groundwater and indoor air monitoring

Present Worth: *$12,300,000*
Capital Cost: *$10,400,000*
Annual OM&M: *$160,000*

The excavation proposed in this remedy would include most of the site as well as the parking lot area to the south to a depth of ten feet. The stabilization would occur in three areas both on and off-site, to a depth of 36 feet, to contain the remaining deeper DNAPL in these areas. This alternative, including the areas selected for excavation and deeper stabilization, is illustrated in Figure 6.

The sub-slab depressurization system would be installed beneath the retail building north of the site. The institutional controls and groundwater and indoor air monitoring aspects of the remedy would be similar to remedy 2A. The construction of the remedy would require from1 to 2 seasons.

Alternative 4: Excavation of on-site and off-site source material to a 10 foot depth, On-site stabilization to a 60 foot depth, Institutional controls, Sub-slab depressurization, Groundwater monitoring

Present Worth: *$33,300,000*
Capital Cost: *$31,600,000*
Annual OM&M: *$160,000*

This remedy would entail excavation of contaminants from the top ten feet of soil both on the site and off the site in the parking lot to the north and in the parking area for the commercial building south of the site. Following this, stabilization would be performed on the remaining contamination on-site to a depth of sixty feet below grade. The remedy is illustrated in Figure 6.

The sub-slab depressurization system would be installed beneath the retail store building north of the site. The institutional controls and groundwater and indoor air monitoring aspects of the remedy would be similar to remedy 2A.

Construction would require from 1 to 2 seasons.

Alternative 5: Excavation of the site to unrestricted levels

Present Worth: *$69,000,000*
Capital Cost: *$69,000,000*
Annual OM&M: *$0*

This alternative would excavate the entire mass of contaminated soil, regardless of depth, to provide the maximum extent of groundwater protection and direct exposure protection. Due to the great depth to which tars have penetrated in areas where the peat, silt, and clay layer is absent, the excavation would be quite deep and very expensive. With all contaminated soil removed, there would be no need for ongoing operation, monitoring, and maintenance.

Construction will require from 3 to 8 seasons.

7.2 Evaluation of Remedial Alternatives

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

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

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

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

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

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

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

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

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

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

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

8. Community Acceptance - Concerns of the community regarding the RI/FS reports and the PRAP have been evaluated. The responsiveness summary (Appendix A) presents the public comments received and the manner in which the NYSDEC addressed the concerns raised. In general, the public comments received were supportive of the selected remedy. Several comments were received, however, pertaining mainly to the dewatering plan and short-term impacts related to the construction. Many of these comments will be addressed during the design phase.

SECTION 8: SUMMARY OF THE SELECTED REMEDY

Based on the Administrative Record (Appendix B) and the discussion presented below, the NYSDEC has selected Alternative 3A: Excavation of on-site and off-site source material to a depth of 10 feet, NAPL recovery, Institutional controls, Sub-slab depressurization system, and groundwater and indoor air monitoring as the remedy for this site. The elements of this remedy are described at the end of this section and are shown on Figure 7.

The selected remedy is based on the results of the RI and the evaluation of alternatives presented in the FS.

Alternative 3A was selected because, as described below, it satisfies the threshold criteria and provides the best balance of the primary balancing criteria described in Section 7.2. It will achieve the remediation goals for the site by removing soils at or near the surface which are the most likely to expose human and wildlife receptors to PAHs, BTEX, and cyanide. This removal will also prevent the contamination of shallow groundwater and production of contaminated soil gas.

The proposed alternative is not expected to fully achieve groundwater SCGs on site. Tar has penetrated to depths beyond the limits that this Alternative will reach. This deeper tar will continue to remain in contact with groundwater moving beneath the site, and will continue to act as a source of groundwater contamination. However, with all of the shallow soil contamination removed, the shallow groundwater contaminant levels are expected to decline significantly. Transfer of volatile contaminants into soil gas is also expected to diminish greatly as the contaminant concentrations decline.

Alternative 1 was rejected because it did not meet either of the threshold criteria. Remedial Alternatives 2A, 2B, 3A, 3B, 4, and 5 all would meet the two threshold criteria, so the choice between these alternatives rests upon the remaining five balancing criteria.

Alternative 2B would require the least construction, with the shortest construction time, and would therefore have the fewest short-term impacts. Alternative 5, with its extended schedule and massive scale of construction, would present the most short term impacts, which would include increased noise and truck traffic for the entire duration of the construction. Alternatives 2A, 3A, 3B, and 4 would all have similar short-term impacts, since they involve similar shallow excavation and installation of similar remedial components. Of these, Alternatives 3A, 3B, and 4 would have the longest construction schedules at one to two years. These are still significantly less than the time required for Alternative 5.

Alternative 5 would have the greatest long-term effectiveness, since it would permanently remove all or nearly all of the source material. The long-term effectiveness of Alternatives 2A and 2B would rely heavily on institutional controls, which could be less certain in the long term. Alternatives 3A and 3B would offer proven long-term effectiveness due to the extent of the source removal and NAPL collection. Only routine ongoing maintenance procedures would be required. The containment remedies do not reduce the volume of waste, so their long-term effectiveness would depend on maintaining the integrity of the barrier wall and cap through institutional controls. Although the cap would divert rainwater away from the contamination, this does not prevent the tar from contacting the groundwater passing underneath the site. Thus, the tar would continue to act as a source of groundwater contamination.

Evaluating the long-term effectiveness of in-situ stabilization, called for in alternatives 2B, 3B, and 4 would require treatability testing during the remedial design phase of the project. The behavior of the stabilized cement/soil mixture when exposed to seasonal freeze/thaw cycles near the ground surface has not yet been established.

Alternative 5 would offer the greatest reduction of toxicity, mobility or volume, although the actual increased protection offered over the proposed Alternative is not significant. Alternative 2B would offer minimal reduction in mobility and no reduction in toxicity or volume. Alternatives 2A and 3B would provide more reduction in volume, with some reduction in mobility. The remaining active Alternatives (3A and 4) would have similar levels of reduction due to the source removal and NAPL collection. However, of those six alternatives, 3A would represent the most feasible and implementable overall reduction in mobility and volume due to the extent of the source removal combined with NAPL collection.

Alternative 2B would be the most easily implemented, since the limited off-site work would present few access issues. Alternatives 2A, 3A, 3B, and 4 would have comparable implementability, as the excavation in those options extends to the same level. However, Alternatives 3B and 4 both call for extensive in-situ stabilization, which would have more implementation issues to resolve than 2A and 3A. Alternative 5 would be extraordinarily difficult to implement, due to the depth of the required excavation. Extensive excavation support would be required to excavate to 90 or more feet. Moreover, the highly permeable subsurface soils would make dewatering of the excavation extremely difficult. Sea water would be expected to flow in from the adjacent Sag Harbor Cove at a very high rate.

Cost-effectiveness would vary greatly between the alternatives. Alternative 5 would be more than twice as costly than the next highest alternative, while not providing any appreciable increase in the level of protection from exposures. Alternative 2A would be the least costly, but would also provide the lowest level of protection from exposure. Alternatives 2B, 3B, and 4 would provide less protection, and with greater uncertainty in long-term effectiveness than 3A, at similar or greater cost. Alternative 3A, through source removal, NAPL collection, institutional controls, and long-term monitoring would address all of the readily accessible source material at this site and would be in the middle of the cost range.

The estimated present worth cost to implement the remedy is $10,700,000. The cost to construct the remedy is estimated to be $9,100,000 and the estimated average annual operation, maintenance, and monitoring costs for 30 years is $100,000.

The elements of the selected remedy are as follows:

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

2. An excavation support system to allow for shallow subsurface soil removal will be installed. The commercial building to the north will be removed. The top ten feet of contaminated soil will then be excavated. Soils will be dewatered and transported off-site for proper treatment and disposal. The excavated areas will be backfilled with clean soil materials from an off-site location. Demolished building materials determined to be free of contamination may be used to backfill the lower portion of the excavated areas.

3. All vegetated areas will be covered with one foot of clean soil and all non-vegetated areas with either concrete or a paving system.

4. Several passive NAPL recovery wells will be installed to collect NAPL remaining in the subsurface. The wells will collect tar passively (without pumping) at first. Additional wells will be installed if additional areas of mobile tar are identified. Low-flow pumping may be implemented if early results indicate that this will increase tar recovery.

5. A site management plan will be developed to: (a) address remaining contaminated soils that may be excavated during future redevelopment. The plan will note that soils beneath the remaining peat layer are considered contaminated; and will require soil characterization and, where applicable, disposal/reuse in accordance with NYSDEC regulations; (b) evaluate the potential for vapor intrusion for any buildings on or adjacent to the site, including provision for mitigation of any impacts identified; (c) identify any use restrictions; and (d) provide for the operation and maintenance of the components of the remedy.

6. Imposition of an institutional control in the form of an environmental easement that will (a) require compliance with the approved site management plan; (b) limit the use and development of the property to commercial uses only unless authorized by NYSDEC and NYSDOH; (c) restrict the use of groundwater as a source of potable water, without necessary water quality treatment as determined by NYSDOH; and (d) require the property owner to complete and submit to the NYSDEC a periodic certification.

7. The property owner will provide a periodic certification, prepared and submitted by a professional engineer or such other expert acceptable to the NYSDEC, until the NYSDEC notifies the property owner in writing that this certification is no longer needed. This submittal will contain certification that the institutional controls and engineering controls, are still in place, allow the NYSDEC access to the site, and that nothing has occurred that will impair the ability of the control to protect public health or the environment, or constitute a violation or failure to comply with the site management plan.

SECTION 9: HIGHLIGHTS OF COMMUNITY PARTICIPATION

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

- Repositories for documents pertaining to the site were established.
- A public contact list, which included nearby property owners, elected officials, local media and other interested parties, was established.
- A meeting was held with Village and Town officials on November 21 to present and receive comment on possible remedies.
- A fact sheet was sent to the public contact list once the PRAP was released.
- A public availability session was held on January 25, 2006 to present and receive comment on the PRAP.

- A public meeting was held on February 6, 2006 to present and receive comment on the PRAP.

- A responsiveness summary (Appendix A) was prepared to address the comments received during the public comment period for the PRAP.

TABLE 1
Nature and Extent of Contamination
{April, 2000-May, 2004}

SURFACE SOIL	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)	Total BTEX	ND[d] to 0.012	10	0 of 15
Semivolatile Organic Compounds (SVOCs)	Total PAHs	ND-950	500	2 of 29

SUBSURFACE SOIL	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)	Total BTEX	ND-1390	10	25 of 129
Semivolatile Organic Compounds (SVOCs)	Total PAHs	ND-6222	500	24 of 129

SEDIMENTS	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)	Total BTEX	ND-0.027	NA	NA
			NA	NA
Semivolatile Organic Compounds (SVOCs)	Total PAHs	ND-46.8	ER-L[c]= 4	7 of 18
			ER-M[c]=45	1 of 18

GROUNDWATER	Contaminants of Concern	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)[a]	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)	Total BTEX	ND-23900	NA	NA
	Benzene	ND-8700	1	109 of 240
	Toluene	ND-7900	5	41 of 240
	Ethylbenzene	ND-6900	5	84 of 240

GROUNDWATER	Contaminants of Concern	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)[a]	Frequency of Exceeding SCG
	Xylene	ND-4600	5	92 of 240
Semivolatile Organic Compounds (SVOCs)	Total PAHs	ND-580200	NA	NA

SURFACE WATER	Contaminants of Concern	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)[a]	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)	Total BTEX	ND-1	NA	NA
	Benzene	ND	10	0 of 16
	Toluene	ND	6000	0 of 16
	Ethylbenzene	ND	4.5	0 of 16
	Xylene	ND-1	19	0 of 16
Semivolatile Organic Compounds (SVOCs)	Total PAHs	ND	NA	NA

SOIL GAS	Contaminants of Concern	Concentration Range Detected (: g/m^3)[a]	SCG[b] (: g/m^3)[a]	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)	Benzene	ND-52	NA	NA
	Toluene	3.8-349	NA	NA
	Ethylbenzene	ND-39	NA	NA
	Xylene	ND-172	NA	NA
Semivolatile Organic Compounds (SVOCs)	Naphthalene	ND	NA	NA

INDOOR AND AMBIENT AIR	Contaminants of Concern	Concentration Range Detected (: g/m^3)[a]	SCG[b] (: g/m^3)[a]	Frequency of Detection
Volatile Organic Compounds (VOCs)	Benzene	ND-11.4	NA	8 of 63
	Toluene	ND-400	NA	39 of 63

INDOOR AND AMBIENT AIR	Contaminants of Concern	Concentration Range Detected (: g/m^3)[a]	SCG[b] (: g/m^3)[a]	Frequency of Detection
	Ethylbenzene	ND-14	NA	8 of 63
	Xylene	ND-122	NA	25 of 63
Semivolatile Organic Compounds (SVOCs)	Naphthalene	ND	NA	NA

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

[b] SCG = standards, criteria, and guidance values; {list SCGs for each medium}

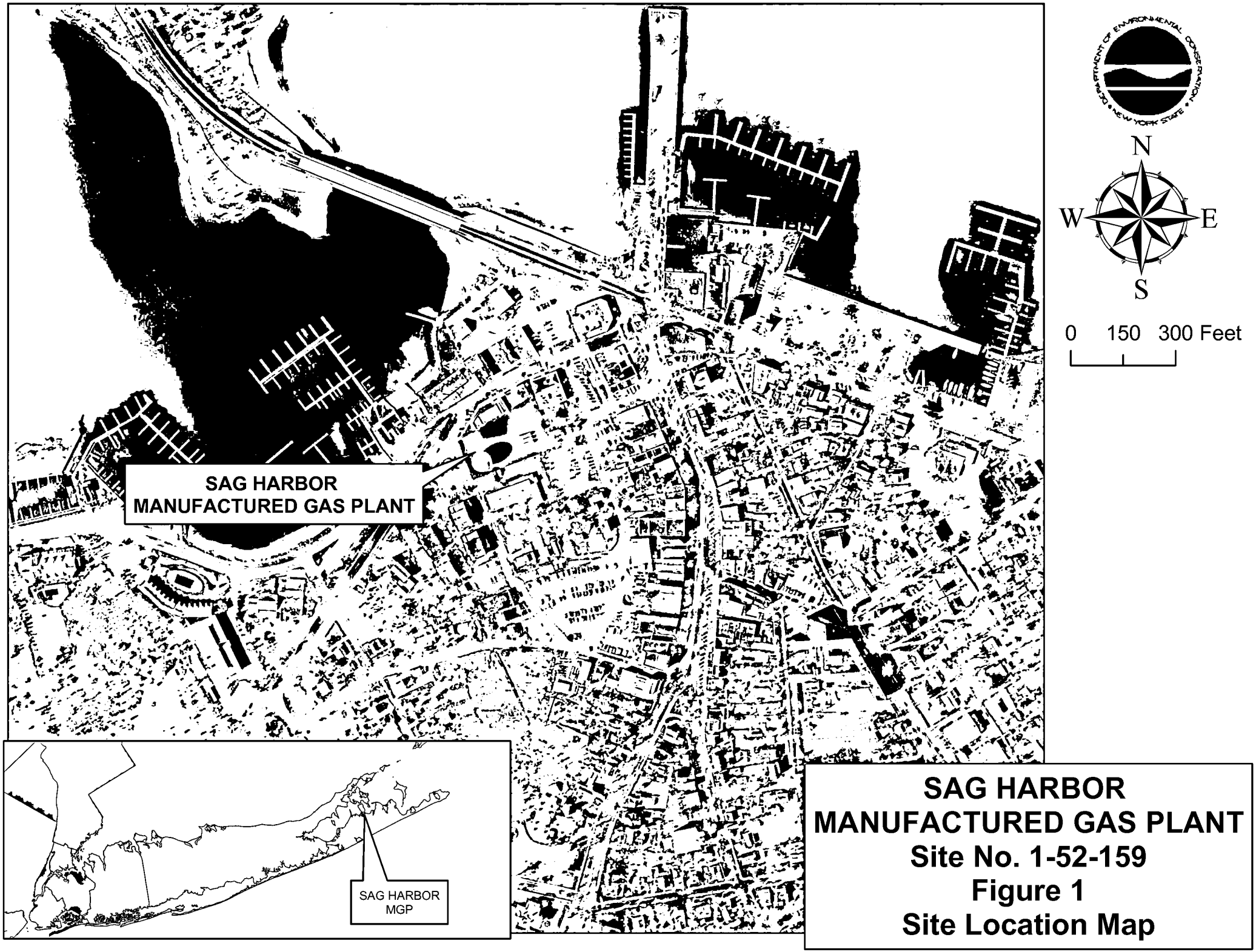
[c] ER-L = EffectRange - Low and ER-M = Effect Range - Moderate. A sediment is considered to be contaminated if either of these criteria is exceeded. If both criteria are exceeded, the sediment is severely impacted. If only the ER-L is exceeded, the impact is considered to be moderate.

[d] ND = Not Detected

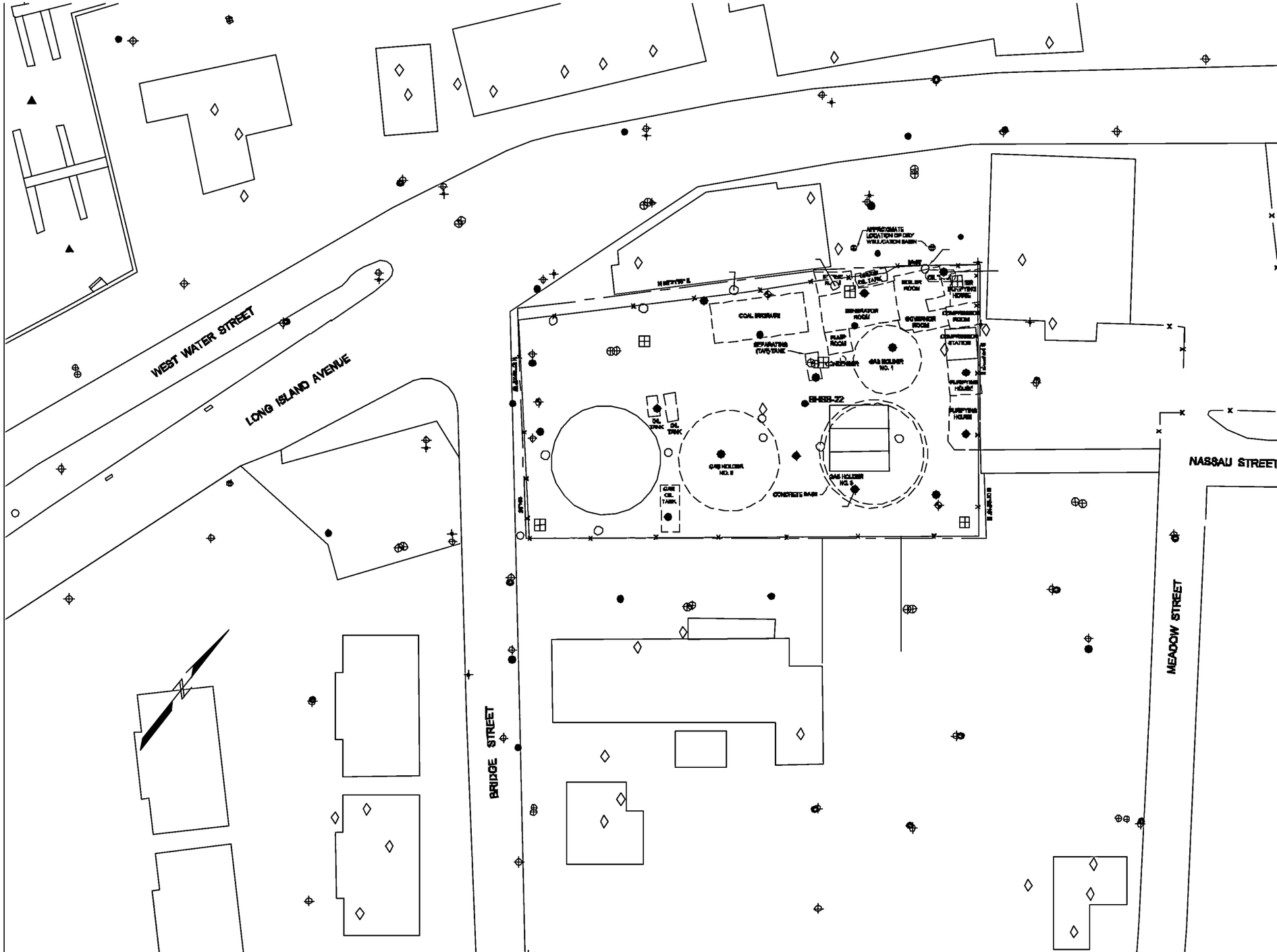
[e] NA = Not applicable

Table 2
Remedial Alternative Costs

Remedial Alternative	Capital Cost	Annual OM&M	Total Present Worth
Alternative 1: No Action	$0	$180,000	$2,000,000
Alternative 2A: Off-site excavation (10'), NAPL recovery, Engineered cap, On-site containment cells, Institutional controls, Groundwater and indoor air monitoring	$3,200,000	120,000	$6,100,000
Alternative 2B: Off-site stabilization (10'), NAPL recovery, Engineered cap, On-site containment cells, Institutional controls, Sub-slab depressurization system, Groundwater and indoor air monitoring	$5,500,000	$180,000	$7,500,000
Alternative 3A: Excavation of on-site and off-site source material (10'), NAPL recovery, Institutional controls, Groundwater and indoor air monitoring	$9,100,000	$100,000	$10,700,000
Alternative 3B: On-site and off-site excavation (10'), On-site and off-site stabilization (36'), NAPL recovery, Sub-slab depressurization system, Institutional controls, Groundwater and indoor air monitoring	$10,400,000	$160,000	$12,300,000
Alternative 4: Excavation of off-site source material (10'), On-site stabilization (60'), Institutional controls, Sub-slab depressurization, Groundwater monitoring	$31,600,000	$160,000	$33,300,000
Alternative 5: Restoration of the site to pre-release conditions	$69,000,000	$0	$69,000,000



SAG HARBOR
MANUFACTURED GAS PLANT
Site No. 1-52-159
Figure 1
Site Location Map



LEGEND:

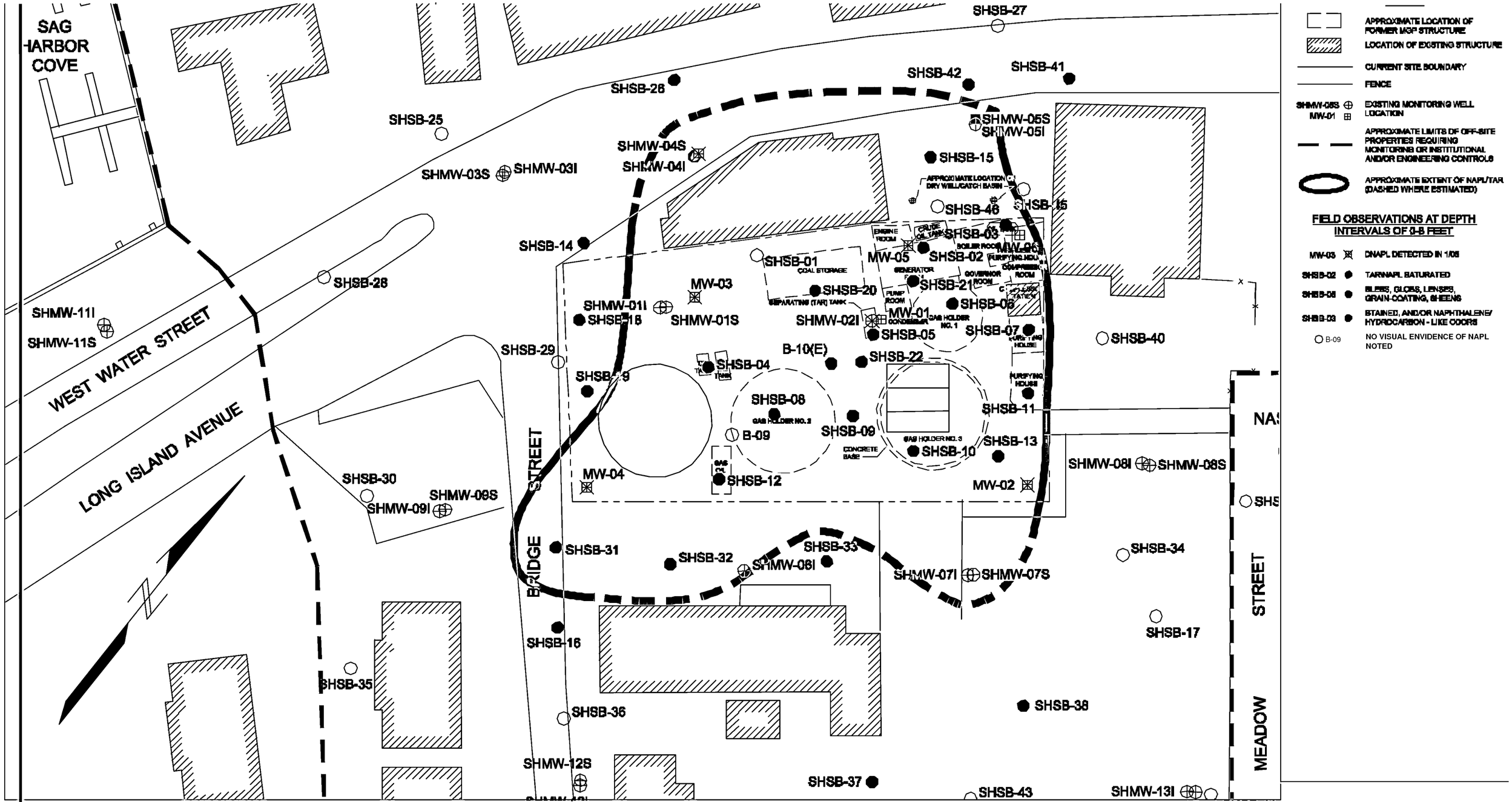
	CURRENT SITE BOUNDARY
	FENCE
	APPROXIMATE LOCATION OF FORMER MGP STRUCTURE
	LOCATION OF EXISTING STRUCTURE
MW-01	EXISTING PIEZOMETER/WELL LOCATION FROM PREVIOUS INVESTIGATION
SHSB-01	EXISTING SUBSURFACE SOIL SAMPLING LOCATION (CONTINUOUS SAMPLING)
SHSS-01	EXISTING SURFACE SOIL SAMPLING LOCATION
SHMW-01S	EXISTING GROUNDWATER MONITORING WELL LOCATION (SHALLOW ZONE)
SHMW-01I	EXISTING GROUNDWATER MONITORING WELL LOCATION (INTERMEDIATE ZONE)
SHMW-01D	EXISTING GROUNDWATER MONITORING WELL LOCATION (DEEP ZONE)
SHGP-01S	EXISTING GROUNDWATER PROBE LOCATION (SHALLOW ZONE)
SHGP-01I	EXISTING GROUNDWATER PROBE LOCATION (INTERMEDIATE ZONE)
SHGP-01D	EXISTING GROUNDWATER PROBE LOCATION (DEEP ZONE)
SHSV-01	EXISTING SOIL VAPOR/GAS PROBE LOCATION
SHAA-01	EXISTING AMBIENT AIR SAMPLING LOCATION
SHAA-03	APPROXIMATE LOCATION OF SUPPLEMENTAL INDOOR AIR SAMPLE
SHMW-10S	COMPLETED SUPPLEMENTAL GROUNDWATER MONITORING WELL LOCATION (SHALLOW ZONE)
SHMW-10I	COMPLETED SUPPLEMENTAL GROUNDWATER MONITORING WELL LOCATION (INTERMEDIATE ZONE)
SHGP-31S	COMPLETED SUPPLEMENTAL GROUNDWATER PROBE LOCATION (SHALLOW ZONE)
SHGP-31I	COMPLETED SUPPLEMENTAL GROUNDWATER PROBE LOCATION (INTERMEDIATE ZONE)
SHGP-34 D1,D2,D3	COMPLETED SUPPLEMENTAL GROUNDWATER PROBE LOCATION (DEEP ZONES)
SHSS-20	COMPLETED SUPPLEMENTAL SUBSURFACE SOIL SAMPLING LOCATION (CONTINUOUS SAMPLING)
SHSS-14	COMPLETED SUPPLEMENTAL SURFACE SOIL SAMPLE (0-2" BGS)
SHPW-01 SHSW-01 SHSD-01	COMPLETED PORE WATER, SURFACE WATER AND SEDIMENT SAMPLING LOCATION
SHCR-01	COMPLETED GROUNDWATER CONDUCTIVITY/RESISTIVITY PROBE LOCATION
SHSV-05	SURVEY DATA NOT AVAILABLE (LOCATION APPROXIMATE)
SH-ROSE	COMPLETED RUNOFF SAMPLE LOCATION
SHTW-01	COMPLETED TAP WATER SAMPLE LOCATION
SHSD-10	COMPLETED PORE WATER, SURFACE WATER AND SEDIMENT SAMPLING LOCATION

Not to Scale

SAG HARBOR MANUFACTURED GAS PLANT
SAG HARBOR (V), SUFFOLK COUNTY, NEW YORK

SAMPLE LOCATIONS

FIGURE 2

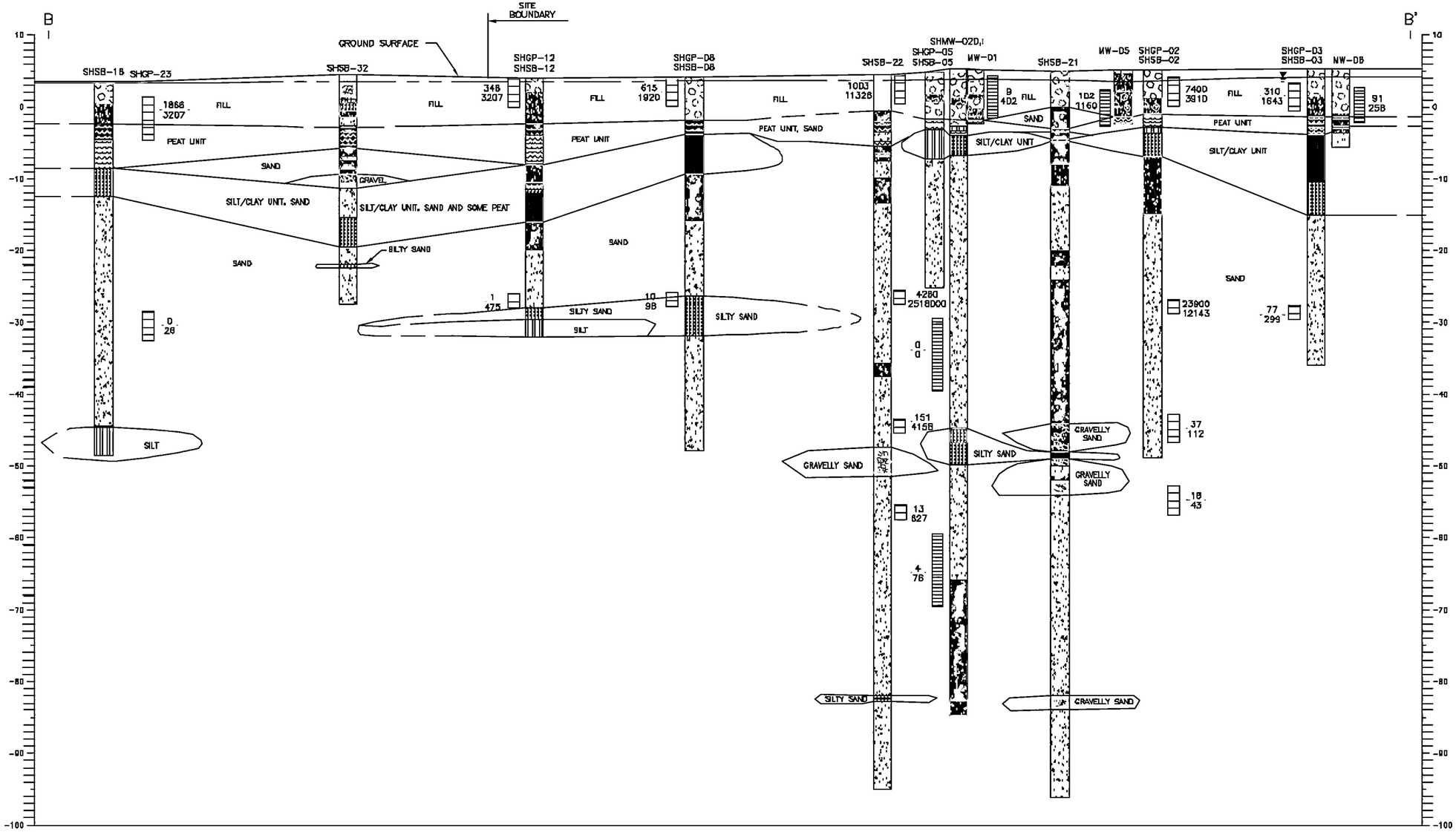


Not to Scale

SAG HARBOR MANUFACTURED GAS PLANT
SAG HARBOR (V), SUFFOLK COUNTY, NEW YORK

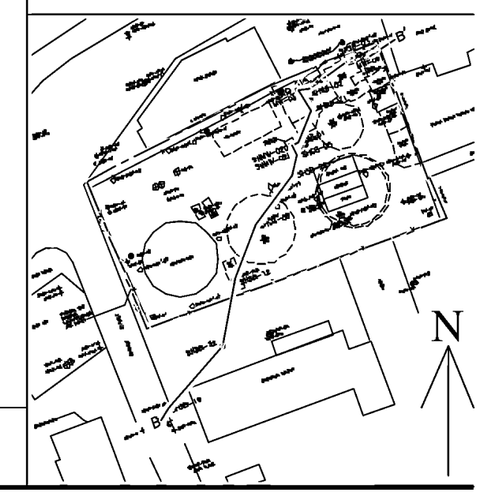
NAPL EXTENT

FIGURE 3



LEGEND

- FILL AND/OR TOPSOIL
- FINE, MED. TO COARSE SANDS TO FINE, MED. TO COARSE SANDS WITH GRAVEL
- SILT TO CLAY RICH SILT
- SILTY SAND TO SILT WITH SAND
- CLAY
- CLAY WITH SAND
- GRAVEL, GRAVEL WITH SAND
- MATERIAL NOT LOGGED
- PEAT
- NAPL/TAR SATURATED
- BLEBS, BLOBS, LENSES, BRAIN-COATING, SHEENS
- STAINING, AND/OR NAPHTHALENE/HYDROCARBON-LIKE ODORS
- SOLID TAR
- 153 / 2108 — TOTAL BTEX (ug/L) / TOTAL PAH (ug/L)
- SOIL BORING
- WELL SCREEN FOR MONITORING WELL
- SAMPLING INTERVAL FOR GROUNDWATER PROBE
- GROUND SURFACE
- STRATIGRAPHIC CONTACT, DASHED WHERE INFERRED
- ELEVATION OF WATER TABLE GIVEN IN FEET ABOVE MEAN SEA LEVEL

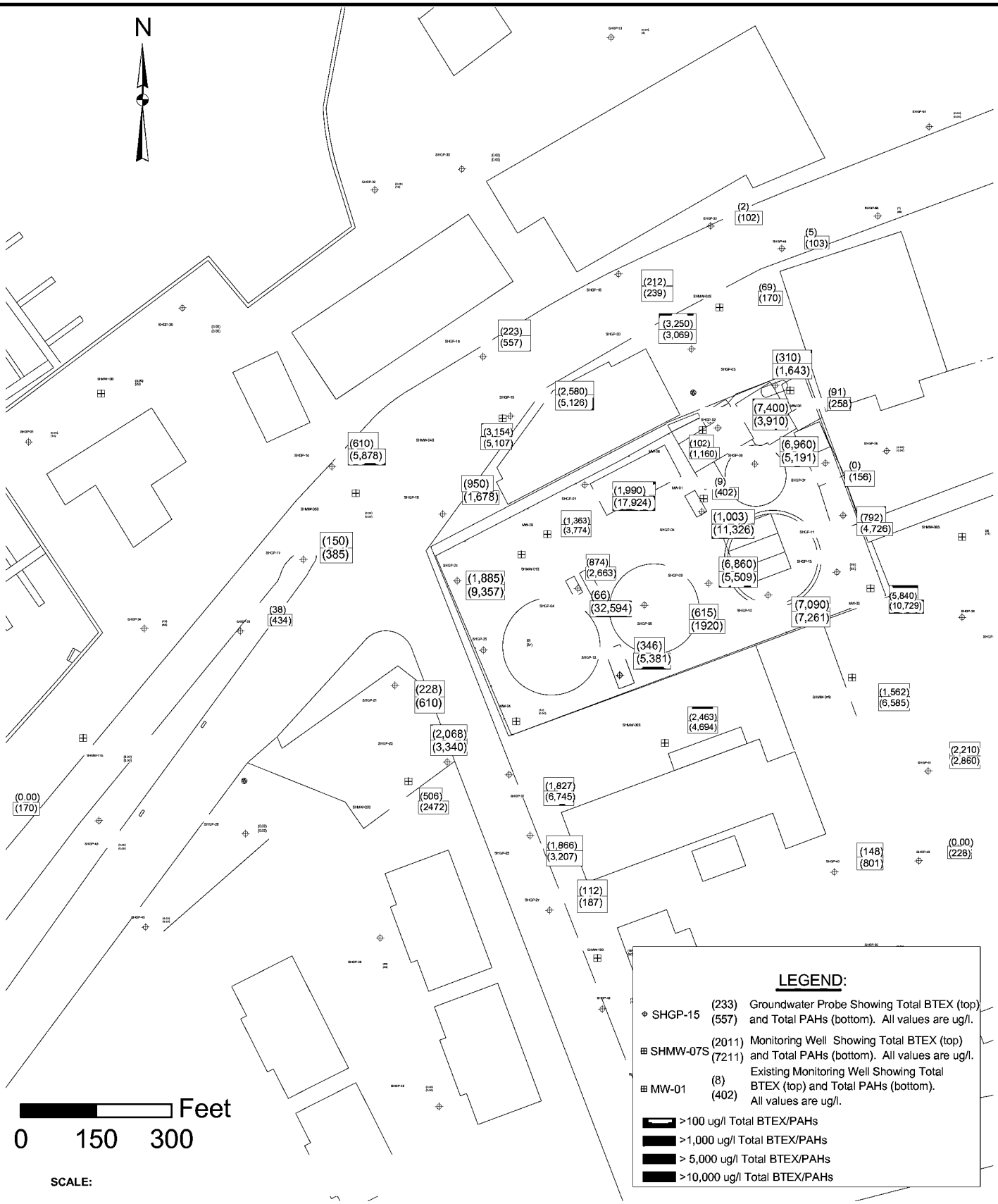


Not to Scale.

SAG HARBOR MANUFACTURED GAS PLANT
SAG HARBOR (V), SUFFOLK COUNTY, NEW YORK

CROSS-SECTION OF THE EXTENT OF NAPL CONTAMINATION

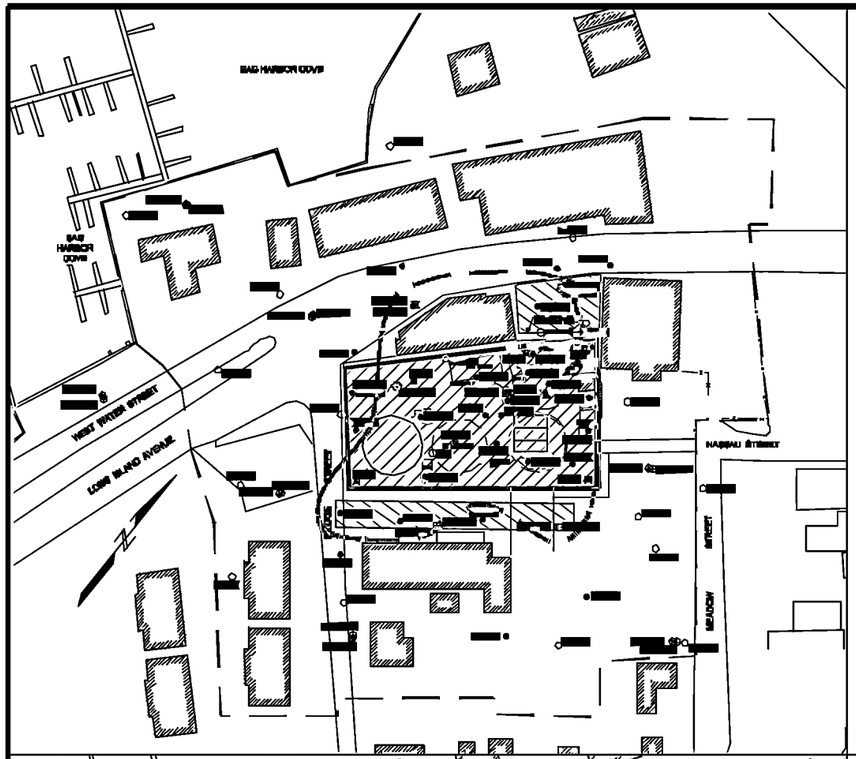
FIGURE 4



SAG HARBOR MANUFACTURED GAS PLANT
SAG HARBOR (V), SUFFOLK COUNTY NEW YORK

FIGURE 5

CONTAMINANT IMPACTS IN SHALLOW GROUNDWATER (0 TO 10 FEET)



Alternative 2a

LEGEND

- APPROXIMATE LOCATION OF FORMER MGP STRUCTURE
- LOCATION OF EXISTING STRUCTURE
- CURRENT SITE BOUNDARY
- FENCE
- EXISTING MONITORING WELL LOCATION
- APPROXIMATE LIMITS OF OFF-SITE PROPERTIES REQUIRING MONITORING OR INSTITUTIONAL AND/OR ENGINEERING CONTROLS
- APPROXIMATE LIMITS OF CONTAINMENT BARRIER AND ENGINEERED CAP
- OFF-SITE EXCAVATION AREA (10')

FIELD OBSERVATIONS AT DEPTH INTERVALS OF 0-8 FEET

- DNAPL DETECTED IN 1/08
- TAR/NAPL SATURATED
- SHEENS, GLOBS, LENSES, GRAIN-COATING, SHEENS
- STAINED, AND/OR NAPHTHALENE/ HYDROCARBON - LIKE ODORS

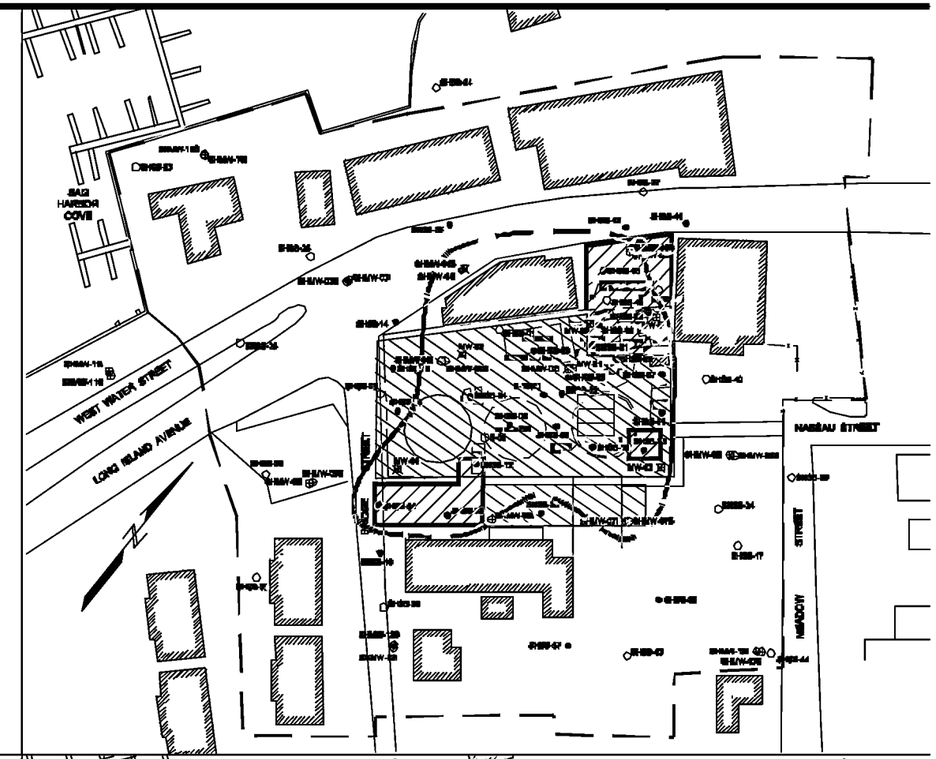
Alternative 3b

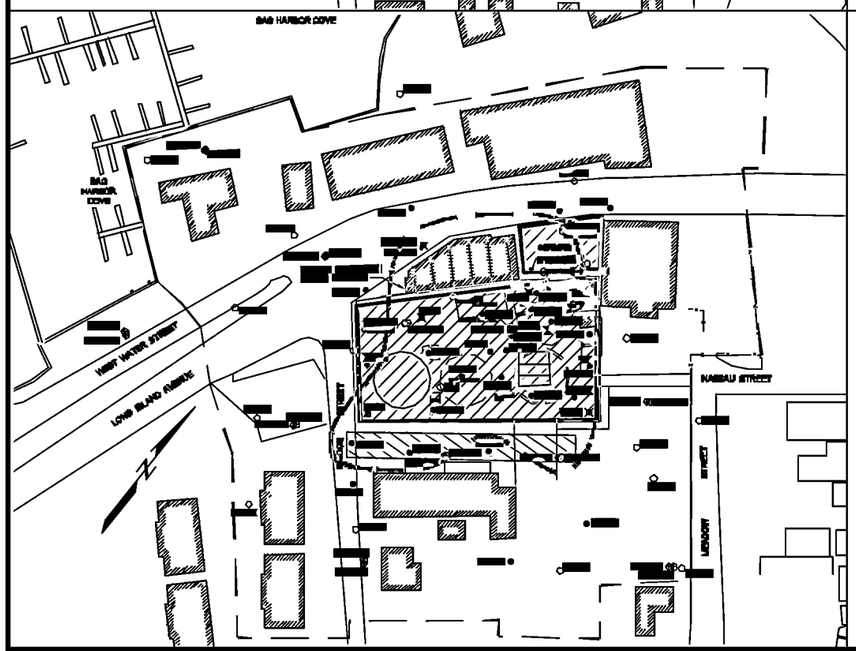
LEGEND

- APPROXIMATE LOCATION OF FORMER MGP STRUCTURE
- LOCATION OF EXISTING STRUCTURE
- CURRENT SITE BOUNDARY
- FENCE
- EXISTING MONITORING WELL LOCATION
- APPROXIMATE LIMITS OF OFF-SITE PROPERTIES REQUIRING MONITORING OR INSTITUTIONAL AND/OR ENGINEERING CONTROLS
- EXCAVATION AREA (10')
- IN-SITU STABILIZATION

FIELD OBSERVATIONS AT DEPTH INTERVALS OF 0-8 FEET

- DNAPL DETECTED IN 1/08
- TAR/NAPL SATURATED
- SHEENS, GLOBS, LENSES, GRAIN-COATING, SHEENS
- STAINED, AND/OR NAPHTHALENE/ HYDROCARBON - LIKE ODORS





Alternative 2b

LEGEND

- APPROXIMATE LOCATION OF FORMER MGP STRUCTURE
- LOCATION OF EXISTING STRUCTURE
- CURRENT SITE BOUNDARY
- FENCE
- EXISTING MONITORING WELL LOCATION
- APPROXIMATE LIMITS OF OFF-SITE PROPERTIES REQUIRING MONITORING OR INSTITUTIONAL AND/OR ENGINEERING CONTROLS
- APPROXIMATE LIMITS OF CONTAINMENT BARRIER AND ENGINEERED CAP
- OFF-SITE EXCAVATION AREA (10')
- OFF-SITE IN-SITU STABILIZATION

FIELD OBSERVATIONS AT DEPTH INTERVALS OF 0-8 FEET

- DNAPL DETECTED IN 1/08
- TAR/NAPL SATURATED
- SHEENS, GLOBS, LENSES, GRAIN-COATING, SHEENS
- STAINED, AND/OR NAPHTHALENE/ HYDROCARBON - LIKE ODORS

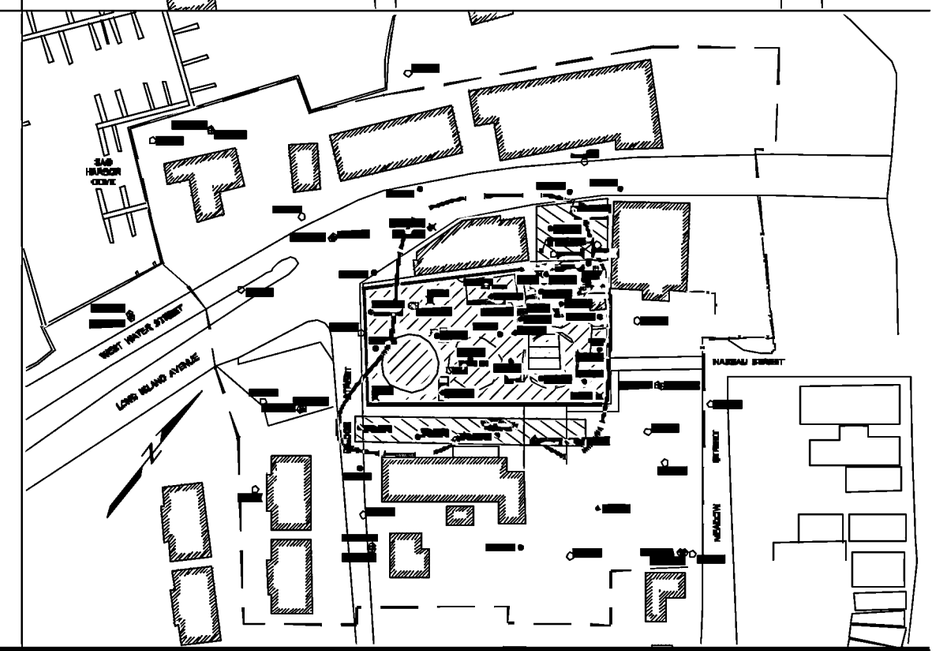
Alternative 4

LEGEND

- APPROXIMATE LOCATION OF FORMER MGP STRUCTURE
- LOCATION OF EXISTING STRUCTURE
- CURRENT SITE BOUNDARY
- FENCE
- EXISTING MONITORING WELL LOCATION
- APPROXIMATE EXTENT OF DEEP NAPHTH STABILIZATION WITH EXCAVATION OF TOP 10'
- APPROXIMATE EXTENT OF EXCAVATION TO 10'

FIELD OBSERVATIONS AT DEPTH INTERVALS OF 0-8 FEET

- DNAPL DETECTED IN 1/08
- TAR/NAPL SATURATED
- SHEENS, GLOBS, LENSES, GRAIN-COATING, SHEENS
- STAINED, AND/OR NAPHTHALENE/ HYDROCARBON - LIKE ODORS



Not to scale

SAG HARBOR MANUFACTURED GAS PLANT
SAG HARBOR (V), SUFFOLK COUNTY, NEW YORK

REMEDIAL ALTERNATIVES

FIGURE 6

Alternative 3a

LEGEND

- APPROXIMATE LOCATION OF FORMER MGP STRUCTURE
- LOCATION OF EXISTING STRUCTURE
- CURRENT SITE BOUNDARY
- FENCE
- SHMW-05S / MW-01 — EXISTING MONITORING WELL LOCATION
- APPROXIMATE LIMITS OF OFF-SITE PROPERTIES REQUIRING MONITORING OR INSTITUTIONAL AND/OR ENGINEERING CONTROLS
- EXCAVATION AREA (10')

FIELD OBSERVATIONS AT DEPTH INTERVALS OF 0-8 FEET

- MW-03 — DNAPL DETECTED IN 1/05
- SHSB-02 — TAR\NAPL SATURATED
- SHSB-08 — BLEBS, GLOBS, LENSES, GRAIN-COATING, SHEENS
- SHSB-03 — STAINED, AND/OR NAPHTHALENE/ HYDROCARBON - LIKE ODORS

Not to scale

SAG HARBOR MANUFACTURED GAS PLANT
SAG HARBOR (V), SUFFOLK COUNTY, NEW YORK

SELECTED REMEDY

FIGURE 7

APPENDIX A

Responsiveness Summary

RESPONSIVENESS SUMMARY

Sag Harbor Manufactured Gas Plant Site
Suffolk County, New York
Site No. 1-52-159

The Proposed Remedial Action Plan (PRAP) for the **Sag Harbor Manufactured Gas Plant Site** site, was prepared by the New York State Department of Environmental Conservation (NYSDEC) in consultation with the New York State Department of Health (NYSDOH) and was issued to the document repositories on January 13, 2006. The PRAP outlined the remedial measure proposed for the contaminated soil, groundwater, and soil vapor at the **Sag Harbor Manufactured Gas Plant Site** site.

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

A public meeting was held on February 6, 2006, which included a presentation of the Remedial Investigation (RI) and the Feasibility Study (FS) as well as a discussion of the proposed remedy. The meeting provided an opportunity for citizens to discuss their concerns, ask questions and comment on the proposed remedy. These comments have become part of the Administrative Record for this site. The public comment period was to have ended on February 17, however it was extended to March 10, at the request of the public.

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

The following comments were received during the public meeting on February 6, 2006:

COMMENT 1: Will the comment period be extended?

RESPONSE 1: The comment period was extended to March 10, 2006.

COMMENT 2: The village is concerned about short-term impacts (e.g. noise, dust, odor, truck traffic, etc.) and the impact that de-watering discharge will have in the cove.

RESPONSE 2: The short-term impacts will be minimized during design using mitigation systems and engineering controls. These plans will be made available for review by the Village and public during the design.

COMMENT 3: If only the top 10 feet is removed and deeper material remains, won't that mean the remaining material will re-contaminate the upper material and continue to contaminate the groundwater?

RESPONSE 3: By removing the top 10 feet, the majority of source material is being removed. The groundwater will become cleaner and the material in the deeper zone is a Dense NAPL (heavier than water)and is not expected to significantly re-contaminate the zone above it.

COMMENT 4: Was any radioactive material stored at this site?

RESPONSE 4: No.

COMMENT 5: Not even in the 1970's?

RESPONSE 5: No.

COMMENT 6: Have you looked at in-situ chemical oxidation for this site?

RESPONSE 6: It was examined as an alternative but was not found viable as it has not been found to be effective at treating large concentrations of NAPL such as are present at this site.

COMMENT 7: How is the plan to discharge treated water from this site different from the EPA's plan to discharge water from the Rowe Industries site?

RESPONSE 7: The plan to dewater the site and discharge that water into the cove is different in several aspects:

- The location of the water removed is much closer to the cove. This means this water was destined for the cove and was going to be naturally discharged much sooner than the water from the Rowe Industries site.

- The plan of the dewatering is much shorter than the proposed pump-and-treat system at Rowe Industries. This system would be running 16 months total in 2 eight month cycles, as opposed to continuously for many years at the Rowe Industries site.

- The contaminants in the groundwater under the Rowe Industries site are different in their nature and concentrations than those under this site.

- The discharge point selected for the Rowe Industries site was different than the one for this site. The Rowe Industries discharge would have been in a small creek in the back of the cove where minimal mixing took place. This discharge would be by the mouth of the cove where the mixing during tidal fluctuations is at a maximum.

- The Rowe Industries site had the necessary area available for a recharge basin. This site does not.

COMMENT 8: How will the discharge water be treated?

RESPONSE 8: The treatment system will be designed in detail during the design phase. It is likely to be a combination of systems (air stripping, GAC, and/or settling basins). The discharge requirements are those found in the Division of Water Technical and Operational Guidance Series (1.1.1). The monitoring

requirements during discharge will be determined in consultation with the Division of Water, but will follow requirements established for State Pollutant Discharge Elimination System (SPDES) permits.

COMMENT 9: What will the change in salinity be during dewatering?

RESPONSE 9: While a more complete analysis of the impacts of the discharge on the salinity of the cove will be performed during the design phase, a preliminary analysis shows a conservative estimate of 350 million gallons of water moved out of the cove each ebb (i.e. outgoing) tide (based on a tidal fluctuation of less than 2 feet and a total area of the cove of 575 acres). Assuming a worst case scenario that the million gallons of discharge is released into the bay as the tide is coming in and the discharge has a salinity of 0, the drop in salinity would be roughly .1%. Assuming a starting salinity 30 parts per thousand (ppt), this would mean a new salinity of approximately 29.97 ppt.

COMMENT 10: Is there an option of discharging the water outside the bay or onto a land-based facility like Cilli farms?

RESPONSE 10: The options for discharge will be more closely evaluated during the design phase.

COMMENT 11: How will the discharge affect the local marine life?

RESPONSE 11: The discharge should have no noticeable effects on the local marine life.

COMMENT 12: How will you be installing the steel sheets and how long will it take?

RESPONSE 12: The sheets will be vibrated into place. It is estimated to take about three weeks.

COMMENT 13: It appears the contamination is conveniently located close to the property lines.

RESPONSE 13: The contamination is not located within the limits of the property. It extends quite a bit to the north and to the south. The investigation moved outward from the center until multiple borings with no contamination demonstrated the limits of the contamination.

COMMENT 14: Why limit your excavation to ten feet?

RESPONSE 14: There is a peat/silt layer in the 8 to 12 foot zone beneath most of the site. This layer acts as a semi-permeable barrier which inhibits upward groundwater flow and thus limits how much water the dewatering system must remove. To increase the depth of the excavation below this layer would greatly increase dewatering flow rates. The additional time, labor, and cost is not justified by the small increase in material that would be removed.

COMMENT 15: Shouldn't the local community be involved with the remedial decision?

RESPONSE 15: The release of the Proposed Remedial Action Plan and the following comment period are the opportunity for the local community to be involved with the remedial decision.

COMMENT 16: Why can't you just pave over it or encapsulate it in some way or choose a No Further Action remedy?

RESPONSE 16: No further action is not protective of human health or the environment. The contamination still has the potential for migrating further off-site and could become a more significant exposure hazard at some time in the future. Further, it limits the potential future uses of the site and neighboring properties. Some excavation and dewatering would be necessary, even for a simple paving remedy. Finally, encapsulation at this site is contrary to the Superfund goal of achieving source removal to the extent practicable and the Superfund law's preference for remedies that permanently remove and/or destroy contaminants.

COMMENT 17: Won't driving the steel sheets move the tar further beyond it's current limits?

RESPONSE 17: Given the geology of the soils beneath the site, NYSDEC anticipates that the sheeting will be rapidly advanced into the ground. While driving the sheets may mobilize some tar it is not expected to be a significant migration and will likely be slow enough that the sheeting will be in place prior to any migration of material beyond the sheeting limit.

COMMENT 18: One of the contaminants is cyanide. Won't that corrode the steel sheets?

RESPONSE 18: The levels of cyanide are not sufficient at this site to corrode the sheets during the time they are to be in place for the remedial work.

COMMENT 19: Have neighborhood homes been tested for contamination due to the high water table?

RESPONSE 19: Yes, most of the adjacent residences have had air testing performed and a basement survey was performed to determine which homes had basements, and which ones had slabs or crawl spaces. Groundwater directly underneath the homes was not sampled, but groundwater in the area adjacent to the homes was sampled.

COMMENT 20: Will ratepayers be responsible for the cost of the cleanup?

RESPONSE 20: The question is beyond the scope of this ROD and should be posed to Keyspan.

COMMENT 21: Will excavated material have an odor?

RESPONSE 21: Yes, but the odor will be controlled using several different means, including the use of a tent to contain the odors and foam odor suppressants.

COMMENT 22: Will the full trucks be waiting on or offsite?

RESPONSE 22: The trucks will be leaving the site immediately after being loaded to travel to the disposal facility.

COMMENT 23: Will the empty trucks smell? Where will they park while waiting to load and will they be idling for a long time?

RESPONSE 23: The empty trucks should not have an odor. They will be decontaminated at the disposal facility. The waiting area for the empty trucks and acceptable idling times will be determined during design, in consultation with the village.

COMMENT 24: I am concerned that the water discharged into the bay will cause flooding and impact local wildlife.

RESPONSE 24: The discharged water will flow out of the cove and into the ocean and should not impact local wildlife.

COMMENT 25: What is going to happen to the Hortonsphere?

RESPONSE 25: The Hortonsphere is going to be dismantled and removed by Keyspan, most likely in the spring of 2006.

COMMENT 26: Who prepared the data and the reports? Under whose supervision were they?

RESPONSE 26: The data and reports were prepared by licensed private engineering firms on behalf of KeySpan under the review and oversight of NYSDEC and pursuant to NYSDEC-approved work plans.

COMMENT 27: Over a period of 30 days, how many days would you say that a DEC agent was observing the testing, the removal, disposal?

RESPONSE 27: On average about 20 days out of 30, we had onsite staff present observing testing, removal, and disposal.

COMMENT 28: Please be sure to consult with local community groups during design.

RESPONSE 28: The local community will be involved during the design phase.

COMMENT 29: Please try to prevent waiting trucks from idling on the street.

RESPONSE 29: NYSDEC will ensure the design includes appropriate controls on trucks idling while waiting to be loaded.

COMMENT 30: Can you tell us that absolutely the discharge will not affect the environment?

RESPONSE 30: The discharge will be monitored to ensure it does not affect the environment. Further modeling of the discharge effects in the cove will occur during the design phase.

COMMENT 31: Have you looked into local marine biologists other than your own staff? I think local marine biologists should be consulted.

RESPONSE 31: At this time, NYSDEC's Marine Resources Bureau on Long Island have been consulted. During design, other experts may be consulted, as needed.

COMMENT 32: I am concerned the investigation area is not big enough.

RESPONSE 32: The investigation started at the source area and moved out until the limits of contamination were defined.

COMMENT 33: Have you coordinated with clean-ups at the Mobil site, the old Mobil site?

RESPONSE 33: No. The groundwater contamination from the Mobil Site is not impacting the same area that the contamination from this site is impacting.

COMMENT 34: Will the building on the north side of Water Street need to be removed?

RESPONSE 34: No, only the Schiavoni building is proposed to be removed.

COMMENT 35: Please examine the affect truck traffic will have on the historic buildings around the town.

RESPONSE 35: That will be considered during the design phase.

COMMENT 36: If, during design, a major flaw is found in the selected remedial action is it too late to change it?

RESPONSE 36: No, the Record of Decision can be amended during the design process if changed conditions are encountered.

COMMENT 37: Is a bond put in place for road repair or remediation of somebody's basement?

RESPONSE 37: This could be raised by the Village with Keyspan during the design phase.

COMMENT 38: I take it you're going to monitor the discharge water and then monitor the effects on the cove?

RESPONSE 38: Yes. Regular monitoring will be part of the discharge plan.

COMMENT 39: I think another concern that everyone has is, you guys don't know with exact certainty what's going to happen to the water in the cove; that you should have an alternative plan should you guys be surprised and it ends up severely degrading the water quality. That you have a Plan B instead of A. Obviously, if that happens you're going to have to shut down the process, shut down the discharge. I don't think the public wants a situation where you're stuck and you don't know where to go from there.

RESPONSE 39: NYSDEC is confident the selected remedy is implementable. Should changed conditions be encountered another remedy could be considered. Also see Response 36.

COMMENT 40: Then also, how does the SEQRA process work? Wouldn't there be an EIS on the remediation plan that would have to be done?

RESPONSE 40: No. The plan is exempted from the SEQRA process under NYSDEC's enforcement authority.

COMMENT 41: Could you do an Environmental Impact Statement (EIS)? An EIS would be subject to an independent review.

RESPONSE 41: The work performed during the remedial investigation and feasibility study phase is much more detailed than an EIS. This PRAP was subject to multiple layers of review within NYSDEC and the NYSDOH, and is now open to public review. Also, see Response 40.

COMMENT 42: After the public comment period is over there's a chance that you will not have been able to respond to a lot of the questions that were raised tonight. Is there another mechanism by which the public will be able to review your responses before the close of public comment? In the past, Rowe Industries, when Rowe Industries happened, it was actually a governmental public committee that was set up to work with the State DEC, Department of Health, and at the time Nabisco, to negotiate the remediation plan. Is something like that possible with this? If in fact it gets that far.

RESPONSE 42: NYSDEC will address every comment received during the public meeting, as well as the comments received in writing. The responses to all the comments are found in the appendix of the Record of Decision (ROD). At this time, there is no plan to form a governmental/public committee.

COMMENT 43: The public will not have another opportunity to respond to your answers before the Record of Decision?

RESPONSE 43:. Correct. However, prior to the start of construction, there will be additional opportunity for the public to comment on the remediation, specifically a pre-construction meeting. Also, during design, NYSDEC and Keyspan will be consulting with the Village.

COMMENT 44: Did you take soil samples below the peat/silt layer?

RESPONSE 44: Yes. While some of those samples, on the site and just outside of the site boundary showed contamination, the majority of samples did not detect any contamination. Those that did have contamination were at levels much lower than those found above the peat/silt layer.

COMMENT 45: Isn't there a conflict of interest with you, the state, negotiating a voluntary cleanup agreement with Keyspan for sites owned by the Long Island Power Authority, also a state agency?

RESPONSE 45: No. The negotiations are strictly with Keyspan, a private entity. LIPA is a completely independent entity from NYSDEC and Keyspan.

COMMENT 46: I lived there, I was raised on this site all my life. I lived about a hundred yards from it. I was raised there. This was my playground and we gotta get it clean.

RESPONSE 46: Comment noted.

COMMENT 47: Would it be possible for Keyspan or the Department to fund an independent engineer to review the plan?

RESPONSE 47: The village has already retained an engineer to review the PRAP. However, qualifying community groups would be eligible for a technical assistant grant (TAG) from NYSDEC to to obtain technical assistance in interpreting information with regard to the nature of the hazard, to hire health and safety experts to advise affected residents on any health assessments, and for the training and education of interested affected community members. More information on the TAG program can be found in the new Draft NYCRR Part 375 regulations (375-2.10(g)) which can be found at http://www.dec.state.ny.us/website/der/superfund/375draft.pdf

COMMENT 48: Are there any sites similar to this one that you have already performed work on?

RESPONSE 48: There have been several sites, e.g. Rockaway Park, Hudson, and Haverstraw, which all have characteristics similar to the Sag Harbor site. The Records of Decision for many of these sites and other MGPs can be found on our website, http://www.dec.state.ny.us/website/der/mgp/mgp_rods.html.

COMMENT 49: Do you know how long it will take the discharge to mix with the water of the cove, to be assimilated into the cove?

RESPONSE 49: That is part of the modeling that will be undertaken during the design.

Brian Halweil submitted an email, dated February 7, 2006, with the following comment:

COMMENT 50: " Regarding alternative modes of discharge, I wanted to comment on a brief suggestion that a neighbor made about using the Cilli Farm as a possible recharge basin. I live on Glover St, and my home borders the Cilli Farm. Our property is several feet below the grade of the Cilli Farm and our property floods well before the farm floods. (During the October rains that several people mentioned, we had nearly 1 foot of water in our first floor--that is, our kitchen, bedroom and living room.)"

"We are currently in the process of raising our house to the recommended FEMA level, but we would have a concern about discharging large amounts of water onto the farm if there was any possibility of it moving onto our property before it moves to the bay. Again, I'm not sure the Cilli Farm idea is something that would even be considered as an alternative, but I plan to share my concerns with the Harbor Committee as well."

RESPONSE 50: At this time there is no plan to utilize the Cilli property. Your comment has been noted.

The Village Harbor Committee submitted a letter, dated February 16, 2006, which included the following comment:

COMMENT 51: " The committee feels that Key Span's proposal to pump a million gallons of water into the Sag Harbor Cove is inconsistent with Policy 3, Policy 4, and Policy 5 of the Local Water Revitalization Program (LWRP) of the Village of Sag Harbor."

RESPONSE 51: After review of the noted policies, NYSDEC does not agree that the dewatering program is inconsistent with these policies. The water will be treated, therefore it will not have an adverse impact on the marine resources in Sag Harbor (Policy 3). The system will not be in use during significant storm events and will not use any existing storm water outfalls. Therefore, it will not contribute to flooding or erosion (Policy 4). Finally, the plan will remove contaminated groundwater and treat it, removing a significant source of groundwater contamination, thereby actually protecting and improving the water quality in the waters of the Village of Sag Harbor (Policy 5).

The Suffolk County Department of Health Services submitted a letter, dated February 28, 2006, which included the following comments:

COMMENT 52: "Recent findings detailed in the SCDHS supplemental data report on the Sag Harbor MGP site indicate that a significant level of DNAPL (coal tar) has migrated off site upgradient along Bridge Street. As proposed at our meeting on Feb 6th, establishing an additional operative unit (OU2) to address this offsite contamination is warranted. This would allow the onsite remediation process to proceed without any additional delay. A timely investigation of the offsite contamination (OU2) along Bridge Street is critical. However, if OU1 proceeds without knowing the extent of offsite contamination then a strong possibility exists that the activities associated with the onsite remediation will further spread the off site DNAPL. The close proximity of the offsite DNAPL to offices and residences is already a concern and this additional influence may make matters worse. The OU2 study and a remediation proposal should be in place before actual operation of OU1 remediation."

RESPONSE 52: NYSDEC does not consider it necessary to create a second operable unit to address the possible contamination along Bridge Street at this time. During the design phase a supplemental investigation will determine the extent of this material. However, the data from the Remedial Investigations does not indicate a significant source area long Bridge Street and there is no reason to believe that the proposed remediation would cause a significant release or migration of the DNAPL not removed during the excavation, since if present this could be removed at the time of the ROD remediation.

COMMENT 53: "Since significant offsite contamination exists and the depth to groundwater is less than 2 feet, a program of routine indoor air sampling should be initiated as soon as possible. The indoor air sampling should be conducted seasonally and routinely as part of the required monitoring program in the PRAP. Samples should be split with SCDHS; analysis should include PAHs, BTEX and degradates associated with MGP contamination."

RESPONSE 53: Indoor air sampling will be routinely conducted as part of the monitoring program. However, most PAHs are not included in a standard air analysis and are not expected to be impacting indoor air due to

their semi-volatile nature. Naphthalene is included in the analysis and is an excellent indicator of a potential indoor air impact from MGP contamination.

COMMENT 54: "The proposed remediation calls for extensive dewatering of the aquifer in order to excavate the contamination. Several private wells are located within 300 ft of the site and the proposed dewatering volume of 1 million gallons per day will impact the local groundwater flow regime. The source area for these wells may potentially shift and impact the water quality of these shallow private wells. In order to assure that no detrimental impact will occur and to avoid extensive monitoring and impact modeling on these wells we recommend that the nearby public water service mains be extended to these two properties along Springs Street. contamination."

RESPONSE 54: NYSDEC has only located two wells, both of which are located roughly 450 feet from the site. An analysis of the dewatering's effect on local groundwater flow will be conducted during the design. NYSDEC will assure the water supply to these properties is maintained during the remediation.

COMMENT 55: "The borings indicate that the contamination has reached depths up to 90 feet below grade but the proposed remedy 3A only calls for the removal of the top ten feet of contaminated soils. We realize that it may not be feasible to remove contamination to these depths but we are concerned that the removal of the upper ten feet may not be adequate. Soil bores SHSB-02, SHSB-2, SHSB-06 and SHSB-21, all have significant contamination greater than the ten ft level but not much deeper than 15ft. Since significant effort will be made to sheet pile, encapsulate and dewater the area it would appear logical to extend the excavation an additional 5 to ten ft to remove these significant tar saturated areas."

RESPONSE 55: See Response 14.

COMMENT 56: "The installation of these passive collection wells should be in place before construction of the sheet pile wall in order to head off migration of the DNAPL further offsite. The location of these wells should be positioned to collect source material (DNAPL) in areas not included in the current excavation area, specifically the village parking area and Bridge street."

RESPONSE 56: The purpose of the passive collection wells is to collect material which remains behind after the excavation is complete. This includes material both beyond and beneath the identified excavation area. NYSDEC will consider the installation of at least some of the perimeter collection wells prior to the start of excavation. Some of these wells may be located in areas scheduled for excavation (to collect tar at depths beyond the excavation limits); such wells must wait for excavation to be finished, since they would be destroyed during excavation.

COMMENT 57: "The proposal calls for dewatering rates of approximately 1 million gallons of water per day to be discharged into Sag Harbor cove. The effect of the discharge on Sag Harbor cove is not well understood at this point and more detail is needed to assure the community that the proposed discharge will not impact the cove. The water quality and quantity of the discharge will vary during the operation, with significantly higher levels of contaminated water discharging during startup. The treatment of the discharge water should be designed with this in mind and routine and timely monitoring of the discharge should be in place to assure proper treatment."

RESPONSE 57: Those items will be considered during the design process.

COMMENT 58: "The possibility for an offshore groundwater discharge exists. Little is presently known about the offshore groundwater discharge zone in the cove. The contamination at the site has impacted groundwater at several depths and all groundwater will eventually discharge to the surface waters. It may be that natural attenuation or the lack of mobility of the plume may minimize the offshore effect but not enough sampling has been done to determine this presently. Additionally offshore migration and disposal of coal tar waste is not uncommon at MGP sites and a further look at this is needed. The county will take a preliminary look at these issues in the spring and if evidence of a significant discharge exists then additional investigation and remediation may be warranted."

RESPONSE 58: No such discharge as hypothesized by this comment has been identified by the investigations to date. NYSDEC however will consider any new data which may be obtained..

The Village of Sag Harbor submitted a letter, dated March 1, 2006, which included the following comments:

COMMENT 59: "The Village of Sag Harbor has had our consultant P.W. Grosser Consulting review the documentation provided by you relative to the Sag Harbor Former MGP Site. This documentation includes the "Sag Harbor June 2002 RI", the "Sag Harbor December 2003 RI", the "Sag Harbor FS" and the "Sag Harbor Supplemental Report". In general, we concur with the findings of the RI and Supplemental reports that there is significant soil and groundwater contamination by BTEX and PAHs in and around the Keyspan Former MGP site. We believe that it is in everyone's interest to treat and/or remove these contaminants from the area."

RESPONSE 59: Comment noted. NYSDEC appreciates the Village's support of the remedy.

COMMENT 60: "Based upon the information provided, we cannot accept the conclusion that, "Sag Harbor Cove is not currently impacted by site related constituents". The data shows that there are elevated levels of PAHs in the sediments of Sag Harbor Cove in the area where contaminated groundwater discharges to the cove. Background sediments samples show the presence of PAHs at only one tenth the concentrations of sediments in the contaminated groundwater discharge area. This information is significant in that these contaminated sediments can impact shellfish (particularly clams and scallops) that are an economically important harvest in the area. There has been no significant analysis of this potential impact in the RI, FS or Supplemental Report. We request that additional investigation be performed as an exposure assessment of contaminated sediments on shellfish in Sag Harbor Cove."

RESPONSE 60: While SHSD-01 and SHSD-08 have elevated PAH levels, they do not however represent a trend of higher levels in that area of the cove, as the other 6 sample locations along the area of the suspected groundwater discharge are in line with the background samples. Also, if these "hot spots" were attributable to groundwater discharge from the site, it would be expected that the deeper sediments at these locations would contain higher levels of PAHs, however these deeper samples exhibit levels in line with or below the remaining samples. This indicates the contaminants are likely settling from above, not being pushed from below.
Also, these PAHs can be attributed to other sources known to exist in the area, notably storm water runoff from the developed area and gasoline and diesel engines in use in water craft using the cove.

COMMENT 61: "Generally we need more description of the selected alternative to determine if impacts to the Village are acceptable or not."

RESPONSE 61: Further detail on these aspects of the execution of the remedy will be provided during the design phase.

COMMENT 62: "Trucking routes, truck weights and expected number of trucks each day during peak remediation periods should be provided, so that the Village can ascertain the suitability of the roads over which the trucks will pass."

RESPONSE 62: These transportation details will be developed, in consultation with the Village, during the design.

COMMENT 63: "Was the use of barges to remove the excavated material from the Village and transport it to Philadelphia considered? This would reduce the length of haul for truck traffic and the number of tractors required. The material could be placed in roll offs that would then be placed on a barge."

RESPONSE 63: The use of barges was initially considered and was not specifically included during the development of the remedy due to many uncertainties and logistical unknowns. However, the use of water transport will be evaluated during the design.

COMMENT 64: "What will be done if during excavation significant quantities of product are encountered right up to the sheet piling?"

RESPONSE 64: Prior to the start of construction, a pre-design round of sampling will take place to more accurately determine the best path for the sheet piling. This work should identify the condition you note. Should significant contamination exist at the sheeting limits, the possibility of moving beyond the sheeting line will be evaluated at that time. The decision would consider each of the following: either the contamination would be removed at that time; it would be removed later; or it could be left in place. The factors that will affect the decision will include the location of the contamination on the site; its depth; its proximity to municipal infrastructure; the amount of contamination at the sheeting; and the project's progress at that time.

COMMENT 65: "We recommend that soil vapor sampling be performed underneath the slabs of the Post Office and the L.I. Fisherman buildings to determine the potential for vapor intrusion into these buildings and if a control system is necessary."

RESPONSE 65: Soil vapor sampling will be considered. However, the high groundwater table makes the collection of sub-slab soil vapor samples problematic. Indoor air samples have already been collected at both locations and no impacts to indoor air have been identified.

COMMENT 66: "What type of treatment will be placed on the water to be discharged to Sag Harbor Cove and what will be the discharge requirements for that water? We have heard several conflicting descriptions of the treatment system including various combinations of air stripping, GAC and settling basins."

RESPONSE 66: See Response 8.

COMMENT 67: "There is no discussion of the impacts on the salinity of Sag Harbor Cove from the discharge of fresh water from the dewatering system. The Cove has a tidal range of only 2 feet with a maximum of 2.5 feet during spring tides."

RESPONSE 67: See Response 9.

COMMENT 68: "There is no discussion of the procedures to be used to remove soil and product from the source area, such as type of equipment, control of odors, etc."

RESPONSE 68: The exact equipment and procedures will be determined during the design phase. However, a general procedure would be as follows:

1. Prepare the site by leveling it off, preparing equipment pads, staging working areas, and staging support facilities.
2. Drive the steel sheeting using a crane with a vibratory hammer.
3. Erect an enclosure over the first area to be excavated.
4. Install dewatering wells pumping and the treatment system.
5. Begin dewatering. Once dewatering has sufficiently lowered the water level, excavation begins. During excavation, air is withdrawn through a treatment system in the enclosure to create a negative pressure environment and prevent vapors from leaving the enclosure. Material is removed using excavators and staged, if necessary, within the enclosure until being loaded into outbound trucks. Odor is controlled with the use of the enclosure and with odor suppressing foams and sprays when necessary.
6. The outbound trucks are decontaminated and covered prior to leaving the enclosure.
7. Once the first area is completely excavated to specifications, confirmatory samples are taken.
8. The area is backfilled with clean material.
9. The dewatering wells and the enclosure are moved to the next excavation area and the process repeats steps 3 through 8.
10. When the entire site is excavated and backfilled, the sheets are removed, again using a crane with a vibratory hammer.
11. The DNAPL collection wells are installed and the site is regraded and prepared for its future use.

Assemblyman Fred W. Thiele Jr. submitted a letter, dated March 7, 2006, with the following comments:

COMMENT 69: "I understand the geographical constraints facing the DEC in its attempt to resolve this matter in an environmentally sound manner however; I remain troubled over the fact that the treated water will be potentially pumped back into the cove."

RESPONSE 69: NYSDEC appreciates your concerns and will be designing the dewatering systems to minimize its impact to all local surface water bodies.

COMMENT 70: "In addition to the above, I am also concerned about the possible effects truck traffic will

have on the community. Although I understand the exact number of trucks being utilized and their routes will be determined during the design phase, I feel particular attention should be paid to this matter. The Sag Harbor community should in no way suffer adverse impacts to their quality of life while the remediation project is ongoing. Further, it is my hope that local road infrastructure does not suffer any impacts due to substantially increased traffic. I would urge the DEC to carefully consider any alternative means to transport such materials or create a mutually acceptable transport schedule for all parties involved."

RESPONSE 70: NYSDEC will work with the Village to minimize the short-term impacts of the remediation work, especially the truck traffic, on the surrounding community.

COMMENT 71: "Coinciding with these concerns, are those relating to noise while remediation work is being performed. It is my understanding that most of the noise will occur when the steel sheets are vibrated into the ground and that after this is completed, noise will be mitigated onsite under a tent. The DEC must ensure there are suitable noise controls in place throughout the project's duration."

RESPONSE 71: NYSDEC will review the design and will ensure the noise mitigation is in place to minimize the short-term impact on the surrounding community.

The Group for the South Fork submitted a letter, dated March 9, 2006, with the following comments:

COMMENT 72: "We suggest that the DEC take a "hard look" at an alternative to discharging processed water into the Cove. The risk is simply too great to chance, especially if there exists an alternative method of hauling out processed water and disposing of it in a catch basin a safe distance from any surface waters. In the event that the DEC determines that the risk to the health of the Cove is negligible, the DEC must use a water quality standard that takes into account all of the factors that could effect the biological integrity of the immediate and surrounding water bodies. It is important to distinguish between drinking water standards and marine habitat safety standards. Factors such as salinity and temperature may not affect a drinking water quality standard; yet have significant adverse impacts on the health of a marine habitat. We suggest that the latter be the principal consideration when measuring the discharge against a standard that would ensure a "no impact" result on the surrounding environment."

RESPONSE 72:. Salinity and temperature will be monitored if discharge does occur. Also see Responses 8, 9, 30, 38, and 57.

COMMENT 73: "We would also like to see an independent third party assessment of all relevant scientific conclusions by DEC and for the entire remedial plan to receive an "endorsement" from that entity."

RESPONSE 73: NYSDEC has subjected the plan to multiple levels of review in the Division of Environmental Remediation and the Bureau of Marine Resources, as well as NYSDOH. There is no need for further third party review of the plan.

COMMENT 74: "The DEC should also maintain a website that is regularly updated regarding the progress of the remedial plan and the latest water quality test results."

RESPONSE 74: Comment noted. Keyspan has used similar web sites at other sites.

APPENDIX B

Administrative Record

Administrative Record

Sag Harbor Manufactured Gas Plant Site
Site No. 1-52-159

1.Proposed Remedial Action Plan for the Sag Harbor Manufactured Gas Plant Site, dated January 2006, prepared by the NYSDEC.

2.Order on Consent, Index No. D1-0002-98-11, between NYSDEC and KeySpan Gas East Corporation, executed on March 31, 1999.

3."Sag Harbor Former Manufactured Gas Plant Site Remedial Investigation Report", June 2002, prepared by Dvirka and Bartilucci Consulting Engineers

4."Sag Harbor Former Manufactured Gas Plant Site, Site ID 1-52-159, Final Remedial Investigation Report", December 2003, prepared by Dvirka and Bartilucci Consulting Engineers

5."Supplemental Field Program Report", February 2005, prepared by GEI Consultants, Inc.

6."Feasibility Study", September 2005, prepared by GEI Consultants, Inc.

7.Fact sheet, January 2006

8.Transcript of public meeting on February 6, 2006

9.Letter, dated February 16, 2006 from the Village Harbor Committee

10.Letter, dated February 28, 2006 from Suffolk County Department of Health Services

11.Letter, dated March 1, 2006, from the Village of Sag Harbor

12.Letter, dated March 7, 2006, from Assemblyman Fred W. Thiele Jr.

13.Letter, dated March 9, 2006, from The Group for the South Fork