12

ENGINEERING INVESTIGATIONS AT INACTIVE HAZARDOUS WASTE SITES

VOLUME I

PRELIMINARY SITE ASSESSMENT

Sag Harbor -
Bridge Street Site
Village of Sag Harbor

Including
Site No. 152126
Suffolk County

Prepared for:

New York State
Department of
Environmental Conservation
50 Wolf Road, Albany, New York 12233
Thomas C. Jorling, Commissioner

Division of Hazardous Waste Remediation
Michael J. O'Toole, Jr., P.E., Director

BY:

ENGINEERING-SCIENCE, INC.
LIVERPOOL, NEW YORK

SEPTEMBER 1993

FINAL REPORT - VOLUME I

SAG HARBOR-BRIDGE STREET SITE
INCLUDING
LONG ISLAND FISHERMAN SITE - NYSDEC SITE NO. 152126
SUFFOLK COUNTY, NEW YORK

PRELIMINARY SITE ASSESSMENTS
WORK ASSIGNMENT NO. D002478-11.2
NEW YORK STATE SUPERFUND STANDBY CONTRACT

Prepared for

DIVISION OF HAZARDOUS WASTE REMEDIATION
NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
50 WOLF ROAD
ALBANY, NEW YORK

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290 Elwood Davis Road
Liverpool, N.Y. 13088

SEPTEMBER 1993

SY230.02.03

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September 3, 1993

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NOTICE

This Preliminary Site Assessment report about the Sag Harbor-Bridge Street Site (including the Long Island Fisherman site, NYSDEC Site No. 152126), located in Sag Harbor Village, Suffolk County, New York, was prepared by Engineering-Science, Inc. (ES) for the New York State Department of Environmental Conservation (NYSDEC) under a Superfund Standby Contract (No. D002478, Work Assignment No. 11). The purpose of this report is to provide information necessary for NYSDEC to classify the site according to the Classes 2, 3, and D described in Section 2 of this report.

To achieve the study objectives stated in this report, ES was required to base conclusions on the best information available during the period of this investigation and within the limits prescribed by NYSDEC in the contract agreement.

No investigative method can completely eliminate the possibility of obtaining partially imprecise or incomplete information. Thus, ES cannot guarantee that the investigation completely defined the degree or extent of any contamination by hazardous or otherwise harmful substances described in the report or, if no such contamination was found, its absolute absence. Professional judgment was exercised in gathering and analyzing the information obtained, and ES is committed to the usual care, thoroughness, and competence of the engineering profession.

Conclusions in this report are based on record reviews, interviews, site walkover inspections, environmental data gathered on-site, and analysis of environmental samples collected from the site. The health-based regulatory standards discussed in this report may change in the future. Levels of environmental contamination that are "acceptable" by current standards may not be so in the future.

Information contained in this report may not be suitable for any other use without adaptation for the specific purpose intended. Any such reuse of or reliance on the information, assessments, or conclusions in this report without adaptation will be at the sole risk and liability of the party undertaking the reuse.

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EXECUTIVE SUMMARY

1.1 BACKGROUND SUMMARY

The Sag Harbor-Bridge Street (SHBS) Site is located on Bridge Street in the Village of Sag Harbor, Suffolk County, New York (Figure 1.1). This site is not currently listed on the New York State Registry of Inactive Hazardous Waste Sites; however, the SHBS site includes the Long Island Fisherman (LIF) property (NYSDEC Site No. 152126, a Class 2 site). The SHBS site also includes a Long Island Lighting Company (LILCO) gas storage facility, the Harbor Close condominium complex, the Suffolk Electric Motor property, and six adjoining private residences (Figure 1.2). The properties on the site have previously been investigated by the Village of Sag Harbor, the U.S. Environmental Protection Agency (USEPA), the Suffolk County Department of Health Services (SCDHS), and the New York State Department of Environmental Conservation (NYSDEC).

Information gathered during PSA Task 1 indicates the LIF property was used for industrial and commercial purposes, including flexible magnet manufacturing and newspaper publishing, during 1967 through 1988. No documentation identifying specific materials used on the LIF property was obtained during the PSA Task 1 record search. In 1987, Suffolk County Water Authority employees reported skin irritation while excavating soil for a sewer pipeline on Bridge Street opposite to the LIF property (Figure 1.2). No first-hand accounts of this incident were obtained during the PSA Task 1 record search. A coal gasification plant was operated on the LILCO property between 1859 and 1929. The plant included two gas storage tanks, two purifying houses, a crude oil tank, and several other production buildings. LILCO subsequently converted the property to a gas storage and distribution facility. No evidence that the other properties on the SHBS site had previous industrial uses was found during the PSA Task 1 record search.

1.2 PRESENCE OF HAZARDOUS WASTE

The data collected during this investigation indicate that wastes containing lead, silver, mercury, and numerous organic chemicals, including PCBs are present on the site; however, the wastes are not classified as hazardous under NYSDEC regulations, specifically Title 6 of the New York Code of Rules and Regulations Part 371 (6NYCRR Part 371). Wastes are defined as hazardous in one of two ways: (1) based on specific categories listed in 6NYCRR Part 371 (listed wastes), or (2) based on certain characteristics determined by analytical methods specified in 6NYCRR Part 371 (characteristic wastes). The hazardous waste characteristics include Extraction Procedure (EP) Toxicity (determined by the EP Tox analytical method), reactivity, corrosivity, and ignitability.

For the purpose of classifying sites for listing on the NYSDEC Registry, the presence of hazardous waste on a site is determined by either analytically confirming the presence of a listed hazardous waste, or demonstrating that the material on-site contains a characteristic hazardous waste in excess of standards in a minimum of two samples.

In this investigation, soil samples were analyzed for total metals by analytical methods specified in the project Quality Assurance Plan (QAP). Selected samples, which contained the highest concentrations of lead or were located in areas where groundwater samples contained elevated concentrations of lead, were then analyzed by the EP Tox method to determine whether a characteristic hazardous waste may be present.

During this investigation, lead was detected in seven soil samples at concentrations exceeding the maximum estimated naturally occurring concentration of 700 milligrams per kilogram (mg/kg). Four of these samples were collected from the LILCO property, two of the samples were collected from the Casman property, and one of the samples was collected from the Suffolk Electric Motors property. The maximum lead concentration in the seven soil samples was 2,160 mg/kg in Sample SS-07 (Figure 1.2). Five of these samples and three other samples located in the vicinity of monitoring wells AST-1 and AST-2 were subsequently analyzed for EP Tox lead to determine whether the soil samples are a characteristic hazardous waste. Lead was detected in the extract from one of the samples, Sample SS-34. The reported concentration in the extract, 53.4 micrograms per liter (ug/l), is less than the regulatory limit of 5,000 ug/l specified by 6NYCRR Part 371.3(e).

Silver and mercury were detected at concentrations exceeding the maximum natural concentration in sediment Sample SS-69 and duplicate sample, Sample SS-69A, which were collected from a concrete pit located along the north wall of the building on the LIF property. Silver was reported in the samples with estimated concentrations of 161 mg/kg and 234 mg/kg, exceeding the maximum natural concentration of 5 mg/kg. Mercury was reported in the samples with concentrations of 0.56 mg/kg and 0.93 mg/kg, exceeding the maximum natural concentration of 0.5 mg/kg. Although these results indicate that wastes containing silver and mercury may be present on-site, the reported concentrations indicate that such wastes are unlikely to be hazardous wastes because the samples are unlikely to fail EP Tox analysis, based on USEPA guidance.

PCBs were detected in two samples: Sample SS-61, collected from the LIF property, with a concentration of 0.14 mg/kg, and in Sample SS-58, collected from the Greenberg property with a concentration of 0.015 mg/kg. The maximum known concentration of PCBs on-site, 1.4 mg/kg for a sample collected on the LILCO property during a previous investigation, is well below the 50 mg/kg regulatory limit for hazardous waste under 6NYCRR Part 371.4(e).

Based on the results for over 150 soil samples gathered during this investigation and previous investigations, the presence of hazardous waste is not likely to be established by additional sampling for the following reasons:

(1) The known potential waste disposal areas on-site have been sampled.

(2) EP Tox tests for lead have been conducted in over 10 percent of the soil samples collected during the PSA Task 3 investigation. These samples

contained either the highest concentrations of total lead or were in locations which potentially had elevated lead concentrations, as indicated by groundwater analytical results. Only one sample contained leachable lead. The concentration of lead in the leachate was 53.4 ug/l, almost 100 times lower than the regulatory standard of 5,000 ug/l.

(3) Analytical concentrations of silver and mercury in soil would have to be at least several times greater than the maximum detected concentration to be likely to equal or exceed the regulatory standard using the EP Tox method.

(4) The maximum detected concentration of PCBs in soil, 1.4 mg/kg for a sample collected on the LILCO property during a previous investigation, is well below the 50 mg/kg regulatory limit for hazardous waste under 6NYCRR Part 371.4(e).

(5) None of the listed compounds which have been detected in soil and groundwater can be attributed to the disposal of specific, regulated hazardous wastes attributable to documented past activities on-site, as required by 6NYCRR Part 371.

1.3 PRESENCE OF SIGNIFICANT THREAT

The data gathered during this investigation indicate that hazardous substances at the site may potentially pose public health or environmental risks; however, the data are insufficient to establish the presence of a significant threat at the site as defined by the NYSDEC Part 375 regulations (6NYCRR Part 375). These regulations define a significant threat on the basis of the presence of hazardous waste, as defined in the Part 371 regulations, discussed above. Without documented presence of listed or characteristic hazardous waste, the presence of a significant threat cannot be established under the NYSDEC's program of evaluating potential inactive hazardous waste sites.

1.4 RECOMMENDED CLASSIFICATION AND ACTION

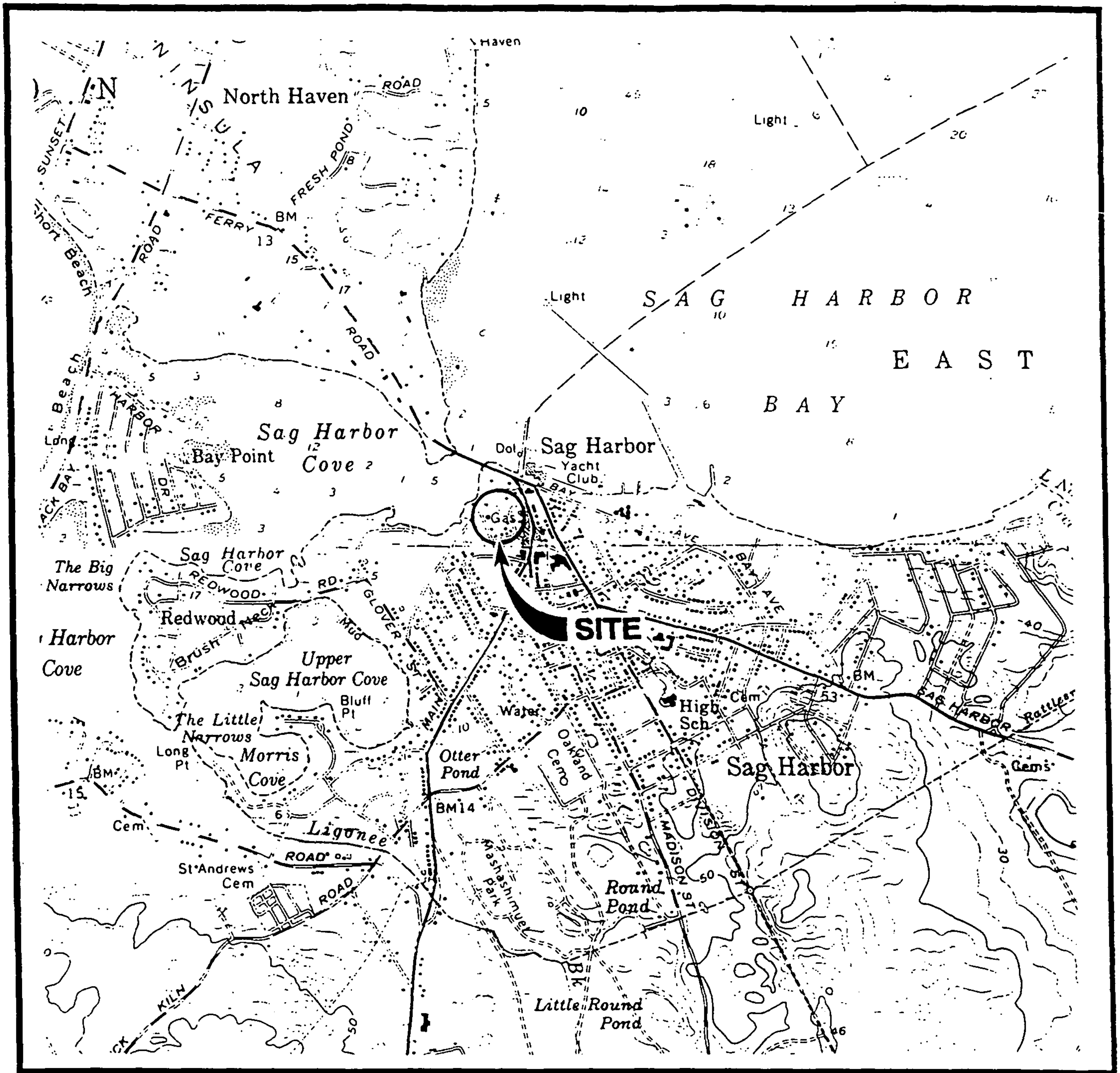
ES recommends that:

(1) New York State Department of Health (NYSDOH) and SCDHS personnel review the sample results generated and compiled during this investigation to determine whether hazardous substances detected on-site could pose health risks to persons on and near the site.

(2) The SHBS site not be nominated for listing on the New York State Registry of Inactive Hazardous Waste Sites because listed or characteristic hazardous waste, as defined under 6NYCRR Part 371 has not been determined to be present on-site.

(3) The LIF property (NYSDEC Site No. 152126) be delisted from the Registry due to the lack of documented hazardous waste.

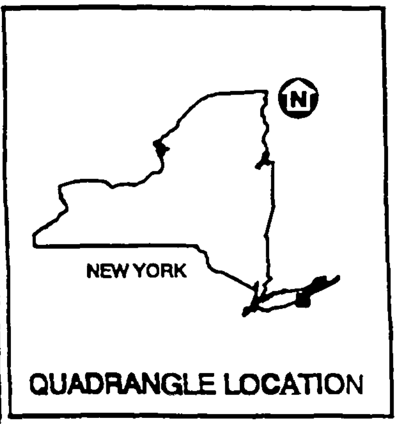
FIGURE 1.1



SOURCE: U.S.G.S. 7.5 MINUTE SERIES TOPOGRAPHIC MAPS, GREENPORT AND SAG HARBOR, N.Y. 1956.

SCALE

0 2000 4000 FT.



QUADRANGLE LOCATION

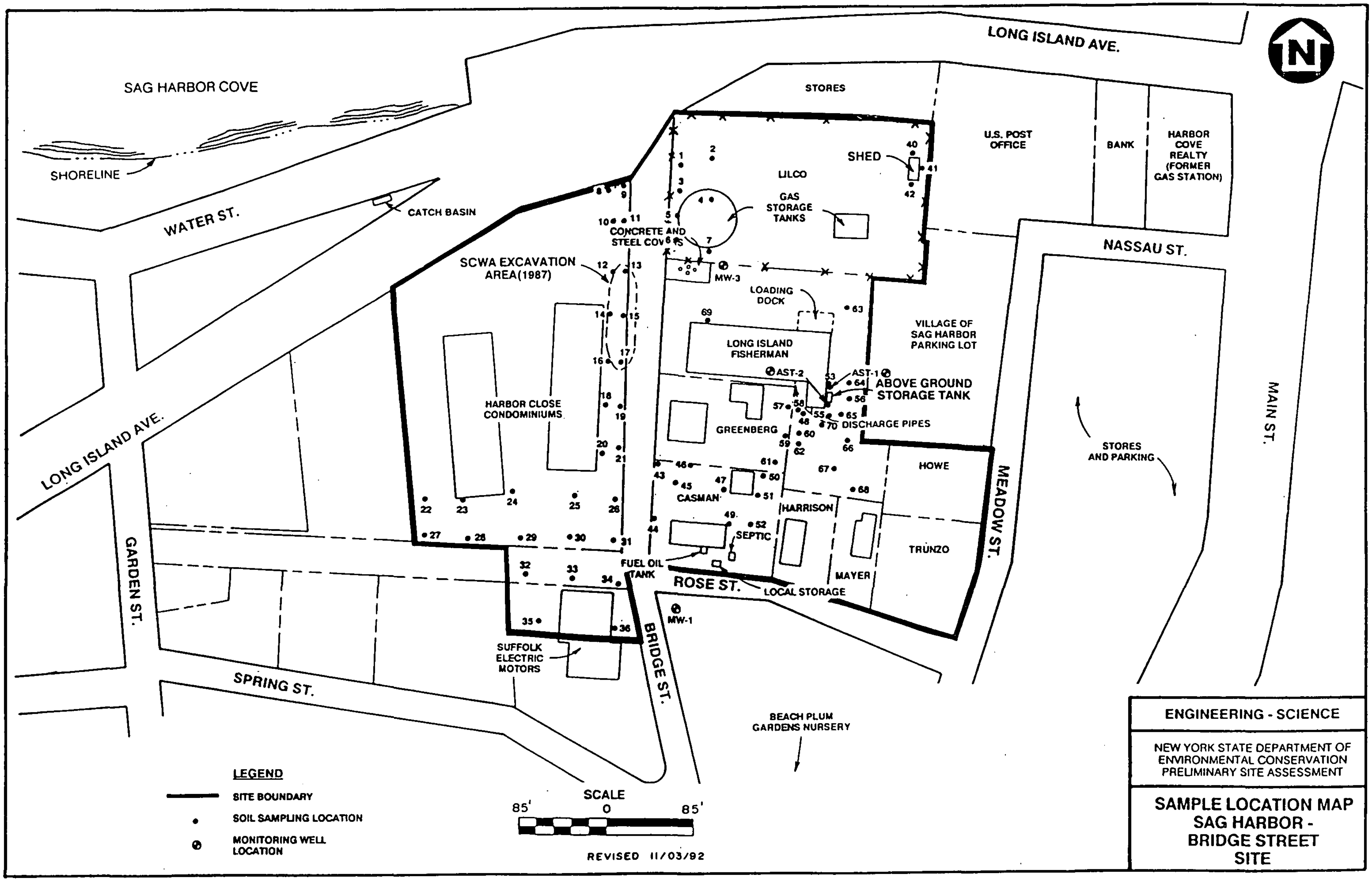
LATITUDE: 41°00'05"
LONGITUDE: 72°17'40"

ENGINEERING-SCIENCE

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION PRELIMINARY SITE ASSESSMENT

SITE LOCATION MAP SAG HARBOR - BRIDGE STREET SITE

FIGURE 1.2



LEGEND

- SITE BOUNDARY
- ● SOIL SAMPLING LOCATION
- ⊗ MONITORING WELL LOCATION

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SAMPLE LOCATION MAP SAG HARBOR - BRIDGE STREET SITE

SECTION 2

SECTION 2

SECTION 2

INTRODUCTION

2.1 PSA INVESTIGATION

This document presents the results of the Task 3 - Surface Field Investigation for the Preliminary Site Assessment (PSA) of the Sag Harbor-Bridge Street (SHBS) site. The SHBS site includes the Long Island Fisherman (LIF) site, a Class 2 site listed on the NYSDEC's Registry of Inactive Hazardous Waste Disposal Sites (NYSDEC Site No. 152126).

The surface field investigation is the third of six tasks which may be completed during a PSA investigation. The six PSA tasks are:

- Task 1 - Records Search, Site Inspection, and Assessment;
- Task 2 - Site Work Plan Development;
- Task 3 - Surface Field Investigation;
- Task 4 - Subsurface Field Investigation;
- Task 5 - Draft PSA Report; and
- Task 6 - Revised PSA Report.

Engineering-Science, Inc. (ES) completed PSA Task 1 for the SHBS site in May 1992 under Work Assignment No. D002478-11 of a Superfund Standby Contract with NYSDEC. In June 1992, the NYSDEC recommended that ES proceed with PSA Task 2, preparing a Site Work Plan for the PSA Task 3 - Surface Field Investigation. A draft Site Work Plan was submitted to the NYSDEC in August 1992, and subsequently finalized based NYSDEC comments. PSA Task 3 field work was completed during September 1992.

2.2 PSA TASK 3 OBJECTIVE

The primary purpose of the PSA Task 3 - Surface Field Investigation was to assign one of the following three site classifications provided by Article 27, Title 13 of the New York Environmental Conservation Law (ECL) to the site:

- Class 2 - Significant threat to public health or environment - action required;
- Class 3 - Does not present a significant threat to public health or environment - action may be deferred; or
- Class D - Site delisted from Registry of Inactive Hazardous Waste Sites.

Based on NYSDEC Part 375 regulations, classification will be based on a determination of:

1. The documented presence of listed or characteristic hazardous waste, as defined under 6NYCRR Part 371; and
2. The presence of a significant threat posed to the public health and the environment by listed or characteristic hazardous waste on-site, as defined by 6NYCRR Part 375.

PSA investigations are intended to be completed with the minimum number of tasks required to generate sufficient information for classification under the ECL. Figure 2.1 provides a decision tree used for classification of sites. In the event that insufficient data are developed during PSA Task 3 for the determination of the presence or threat posed by hazardous waste at the site, recommendations for further work (PSA Tasks 4 through 6) would be made to obtain sufficient data.

2.3 SITE BACKGROUND

2.3.1 Summary of Site History (ES, 1992)

The SHBS site is located on Bridge Street in the Village of Sag Harbor, Suffolk County, New York (Figure 2.2). The SHBS site consists of the LIF property (NYSDEC Site No. 152126), a Long Island Lighting Company (LILCO) gas storage facility, the Harbor Close condominium complex, Suffolk Electric Motor, and six adjoining private residences (Figure 2.3).

The properties on the site have been investigated by the Village of Sag Harbor, the USEPA, the SCDHS, and NYSDEC. A summary of previous investigations is provided by Table 2.1.

Information gathered during PSA Task 1 indicates the LIF property was used for industrial and commercial purposes, including flexible magnet manufacturing and newspaper publishing, from 1967 through 1988. No documentation identifying specific materials used on the LIF property was obtained during the Task 1 record search. A coal gasification plant was operated on the LILCO property between 1859 and 1929. The plant included two gas storage tanks, two purifying houses, a crude oil tank, and several other production buildings. LILCO subsequently converted the property to a gas storage and distribution facility. No evidence that the other properties on the SHBS site had previous industrial uses was found during the PSA Task 1 record search.

In 1987, Suffolk County Water Authority employees reported skin irritation while excavating soil for a sewer pipeline on Bridge Street opposite to the LIF property (Figure 2.3) (NUS, 1990). No first-hand accounts of this incident were obtained during the PSA Task 1 record search.

Storch Associates completed a follow-up investigation for the Village of Sag Harbor during 1987 (SA, 1987a and 1987b). The investigation focused on the LIF property. Two monitoring wells, MW-1 and MW-2, were installed and sampled during the investigation. MW-1 is shown in Figure 2.3, MW-2 is not shown because it is not accessible. Reportedly, the area where this well was located has been paved over. Volatile organic compounds (VOCs), phenols, polynuclear aromatic hydrocarbons (PAHs), petroleum hydrocarbons, and pesticides were detected in samples collected from the two wells.

The USEPA subsequently conducted three field investigations following a request from the Village of Sag Harbor (NUS, 1989a, 1989b, and 1990). These investigations enlarged the area of concern to include all the properties currently included in the SHBS site. Groundwater samples collected from on-site monitoring wells, and approximately 60 shallow soil samples were analyzed. Results are summarized below.

2.3.2 Summary of PSA Task 1 Results (ES, 1992)

Presence of Hazardous Waste

Information gathered during PSA Task 1 indicated that characteristic hazardous waste could be present on the SHBS site. However, the actual presence of listed or characteristic hazardous waste could not be determined from the available data. The potential characteristic hazardous wastes included lead, cadmium, and PCBs. Lead had been detected in soil samples collected during previous investigations at concentrations exceeding the maximum natural concentration (700 mg/kg) from three of the site properties. These concentrations were 2,620 mg/kg, 1,870 mg/kg, and 1,770 mg/kg on the Gasman, Harbor Close, and LILCO properties, respectively. Cadmium was detected on the LIF property with a concentration of 531 mg/kg, exceeding the maximum natural concentration (7 mg/kg).

PCBs were detected in soil samples collected at three of the site properties: 1.4 mg/kg on the LILCO property in 1989; 1 mg/kg and 0.6 mg/kg on the Greenberg property in 1988; and an undetermined concentration in a puddle of "motor lubricant" on the LIE property (NUS, 1989a and 1989b; and Pednault, 1984). The reported concentrations of PCBs are below the regulatory limit of 50 mg/kg for hazardous waste regulated under 6NYCRR Part 371.4(e)(1).

Presence of Significant Threat

A significant threat to public health or the environment, as defined by 6NYCRR Part 375, could not be established with the data gathered during the PSA Task 1 investigation. The presence of regulated, listed or characteristic hazardous waste was not established on-site, as required by the ECL and 6NYCRR Part 375.

Although such regulated hazardous wastes have not been documented, certain of the detected substances may pose potential health effects. Benzene is a known human carcinogen, as determined by the USEPA. Lead, PCBs, and the PAHs benzo(a)pyrene and dibenz(a,h)anthracene are probable human carcinogens, as determined by the USEPA. Persons on-site might be exposed to these substances by inhalation or ingestion of contaminated dust, or direct skin contact with contaminated dust or soil.

2.4 TASK 3 REPORT ORGANIZATION

This report consists of six sections and four appendices Section 1 presents an executive summary of the PSA Task 3 investigation. Section 2 presents an introduction to the NYSDEC's PSA program, the Task 3 Surface Field Investigation objectives, site background information, and describes the organization of the work plan. Section 3 presents the scope of work for the Task 3 field effort. Section 4 presents the results of the Task 3 investigation, including supplemental background information, and an assessment of the presence of hazardous waste, as defined by 6NYCRR Part 371, and presence of significant threat at the site, as defined by 6NYCRR Part 375. Section 5 contains recommendations for classification of the site and for future work at the site. Section 6 is a list of cited references.

Three additional project documents were prepared for the Surface Field Investigation: (1) the Site Work Plan (SWP), (2) the project Quality Assurance Plan (QAP), and (3) the project Health and Safety Plan (HASP). These documents present the scope of work for the investigation, and contain the specific procedures which were used by ES personnel and subcontractors during field activities and for the analysis of environmental samples. The SWP provides a detailed description of the specific tasks planned for the investigation and the project management plan. The QAP is divided into two sections: the Field Sampling Plan (FSP) and the Laboratory Quality Assurance Plan (LQAP). The LQAP presents specific procedures that were used to ensure that all laboratory data generated during PSA Task 3 met specified data quality objectives. The HASP contains procedures that were followed by on-site personnel to ensure their health and safety. Procedures for conducting these field activities, as well as procedures for collecting environmental samples are presented in the FSP.

TABLE 2.1

SUMMARY OF PAST SITE INVESTIGATIONS AND SAMPLING EFFORTS
SAG HARBOR–BRIDGE STREET SITE
SUFFOLK COUNTY, NEW YORK

INVESTIGATING PARTY	DATE	PURPOSE/REASON	COMMENTS
Suffolk County Department of Health Services	April 1981	Response to complaint about sump pump discharge from LIF building to exterior soil.	Notice of Violation issued for iron concentration exceedence in discharge to surface soils.
Suffolk County Department of Health Services	November 1984	Sampling of private wells to test water quality.	Only iron and manganese exceeded Class GA standards.
New York State Department of Transportation/ Department of Environmental Conservation	November 1984	Response to fuel oil release from above–ground storage tank.	Cleanup of fuel oil consisted of removal of 35 cubic yards of soil. At least three monitoring wells installed. Case closed in 1986.
Village of Sag Harbor/Storch Associates	April/May 1987	Site inspection and soil sampling effort to facilitate sewer line installation.	Petroleum hydrocarbons, volatile organics, and phenols detected in soil samples.
Village of Sag Harbor/Storch Associates	June 1987	Followup groundwater study to April/May study.	Two monitoring wells installed on Bridge Street. PAHs, VOCs, phenols, petroleum hydrocarbons arsenic, copper, lead, zinc and pesticides detected in groundwater samples.
United States Environmental Protection Agency	December 1988	Response to Superfund site investigation request by Village of Sag Harbor (preliminary).	Eleven soil samples collected. Metals, phenols, phthalates, pesticides, and VOCs detected.
United States Environmental Protection Agency	June 1989	National Priorities Listing Site Inspection Report.	29 soil and 2 surface water samples collected. Metals, PAHs, VOCs, phthalates, and pesticides detected the soil samples. Only metals were detected in the surface water samples.
United States Environmental Protection Agency	April 1990	To determine qualifications for nomination to NPL.	37 soil samples collected for total lead analysis (3020/239.2). Results ranged from 1.3 to 975 ppm. Concluded lead concentration not a significant threat. Site not eligible for NPL.

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FIGURE 2.1

SITE CLASSIFICATION DECISION TREE

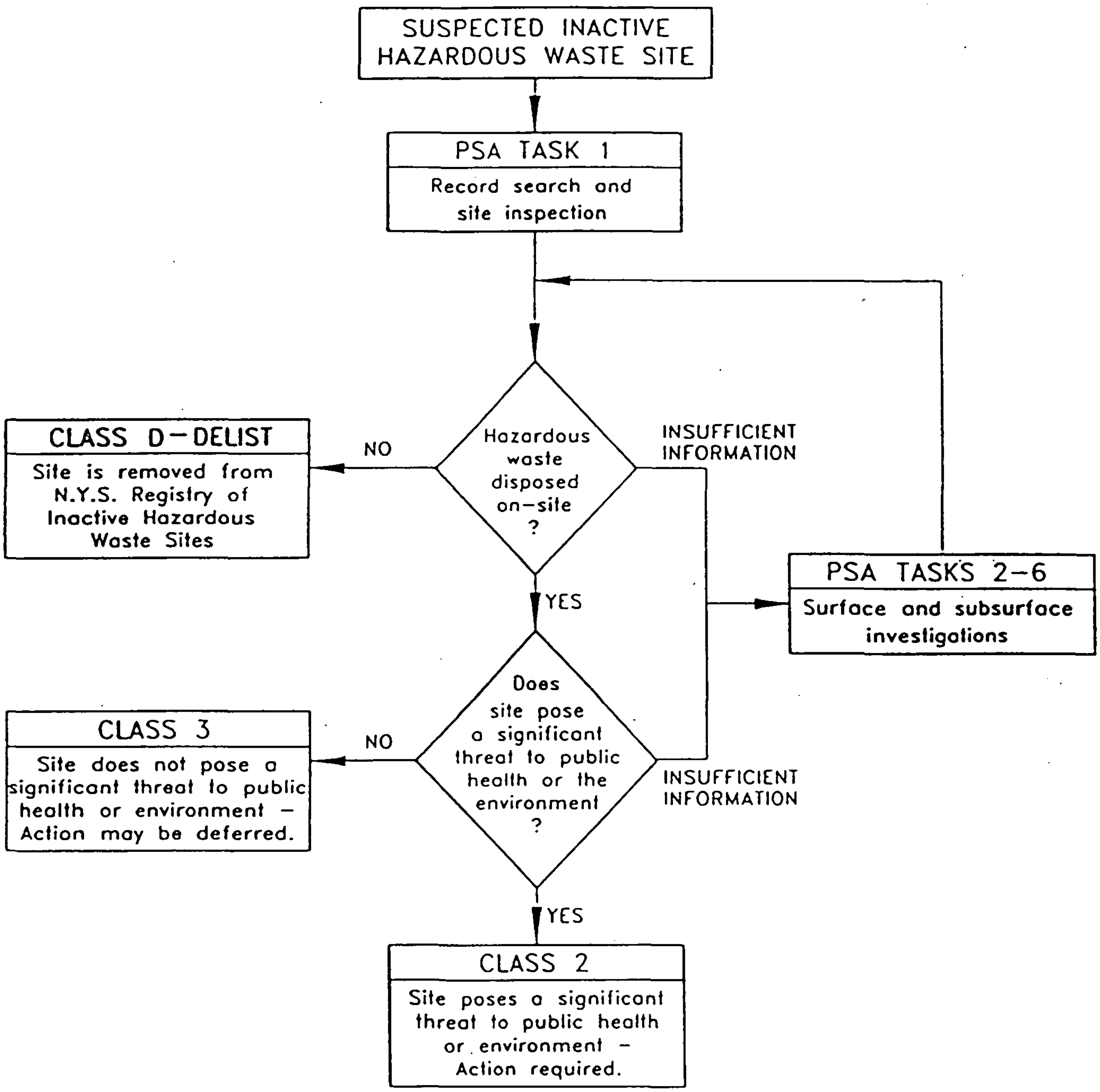
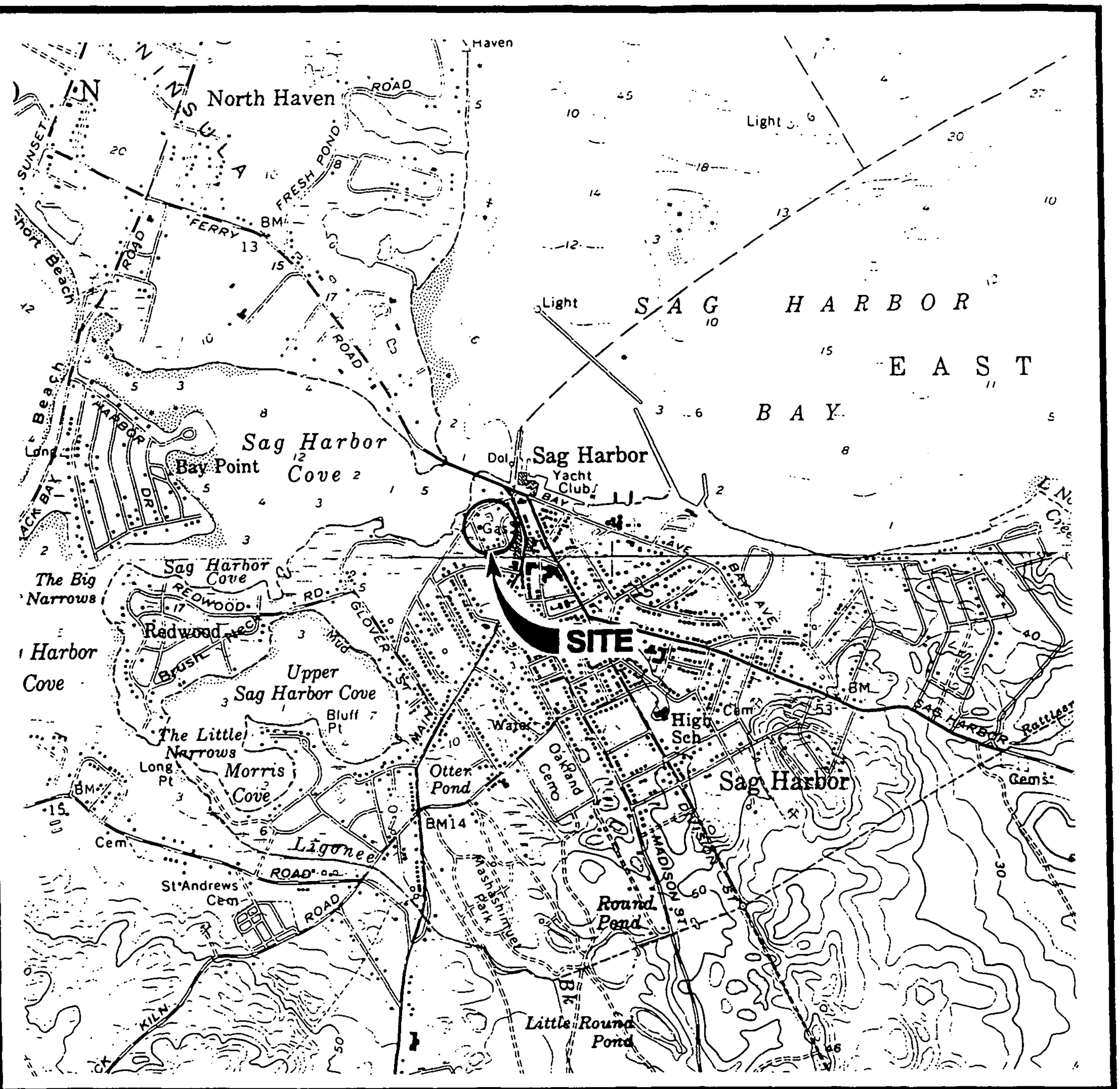
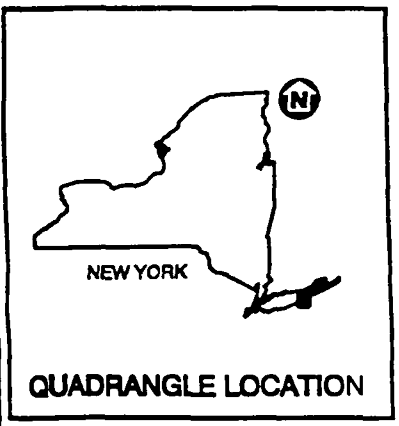


FIGURE 2.2



SOURCE: U.S.G.S. 7.5 MINUTE SERIES TOPOGRAPHIC MAPS, GREENPORT AND SAG HARBOR, N.Y. 1956.



QUADRANGLE LOCATION

N

LATITUDE: 41°00'05"
LONGITUDE: 72°17'40"

SCALE

0 2000 4000 FT.

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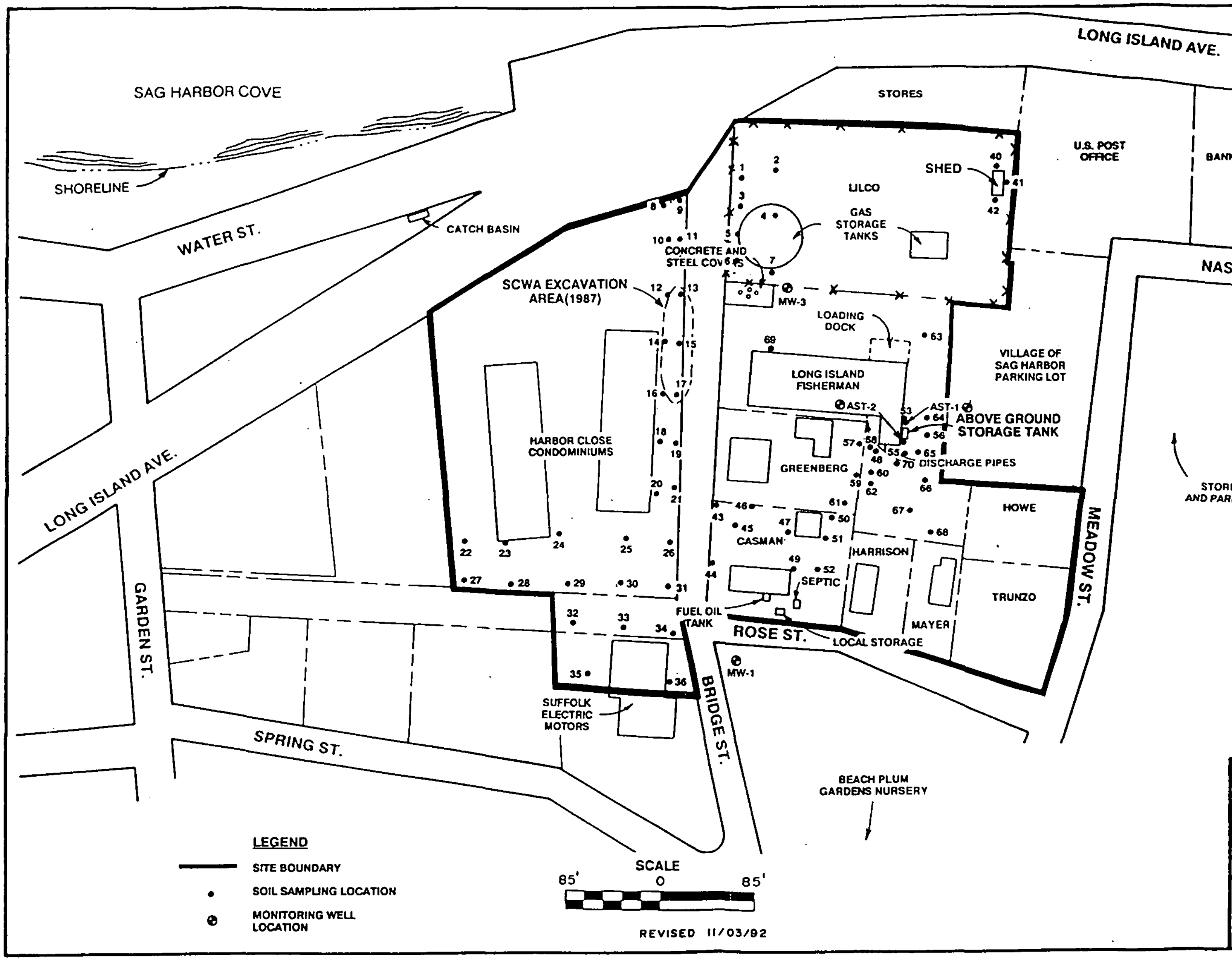
SITE LOCATION MAP
SAG HARBOR - BRIDGE STREET SITE

FIGURE 2.3



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**SAMPLE LOCATION MAP
SAG HARBOR -
BRIDGE STREET
SITE**

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SECTION 3

SECTION 3

SECTION 3

SCOPE OF WORK

3.1 INTRODUCTION

The PSA Task 3 investigation of the Sag Harbor-Bridge Street site included six technical tasks: (1) Environmental Sample Collection, (2) Environmental Sample Analysis, (3) Data Validation, (4) Sample Location Survey, (5) Sample Results Report preparation, and (6) Task 3 Report preparation. The conduct of these tasks is described in this section, and summarized in Table 3.1. The data gathered and generated during these tasks, and conclusions drawn from them are presented in Section 4 and Appendices A through C.

The Task 3 investigation was completed in accordance with the NYSDEC-approved Site Work Plan (SWP) dated September 1992. The SWP was modified in the field, under the direction of the NYSDEC Project Manager, Ms. Cynthia Whitfield. Modifications are noted below. Field procedures and laboratory quality assurance and quality control procedures were specified in the NYSDEC-approved project QAP, dated August 1992.

3.2 ENVIRONMENTAL SAMPLE COLLECTION

Sixty-six (66) soil samples and four (4) groundwater samples were collected at the site during the week of September 4, 1992. The soil samples were collected to determine whether hazardous waste is present on-site. Soil sample analytical results were evaluated for their potential to contain concentrations of characteristic hazardous waste (as determined by the EP Tox method). Samples with elevated metals were then analyzed by the EP Tox method to determine extractable concentrations. Based on preliminary metals results, lead was the only characteristic hazardous waste of concern of the four characteristic wastes initially analyzed (arsenic, cadmium, chromium, and lead).

The groundwater samples were collected to investigate the possibility that hazardous substances are being released to groundwater from hazardous wastes which may be present at the site. To ensure the precision and accuracy of the analytical data, quality control (QC) samples (duplicates, matrix spikes, matrix spike duplicates, and field blanks) were collected at a ratio of one (1) QC sample of each type per twenty (20) environmental samples for both soils and groundwater.

3.2.1 Soil Sampling

Sixty-six (66) shallow (0.5 to 1 feet deep) soil samples were collected from the site between September 1 and 3, 1992.

- Samples SS-01 through SS-07 and SS-40 through SS-42 were collected from the LILCO property on the north side of the site (Figure 3.1).

- Samples SS-08 through SS-31 were collected from the Harbor Close Condominiums property, including the Suffolk County Water Authority excavation area discussed in Section 2.
- Samples SS-32 through SS-36 were collected on or near the Suffolk Electric Motors property.
- Samples SS-43 through SS-47 and SS-49 through SS-52 were collected from the Casman residential property.
- Samples SS-57, SS-59, and SS-61 were collected from the Greenberg property.
- Remaining samples: SS-48, SS-53, SS-55, SS-56, SS-58, SS-60, and SS-62 through SS-70, were collected from the LIF property.
- The SWP included two samples for collection at locations to be determined in the field. The two samples, SS-69 and SS-70, were collected on the LIF property at the following locations:
    - Sample SS-69 was collected from a concrete pit located along the north wall of the structure on the Long Island Fisherman property. The pit is connected to an interior drain by a drainage pipe.
    - Sample SS-70 was collected near the southeast corner of the LIF property in the apparent discharge area for a pipe exiting the structure.

Four (4) samples that were specified in the SWP were not collected, and one sample location was changed. The following modifications to the SWP were made in the field, under the direction of the NYSDEC Project Manager, based on current site information and field conditions:

- Samples SS-37 through SS-39, located south of the structure on the Suffolk Electric Motors property, were not collected because they were determined to be located off-site.
- Sample SS-48, specified in the SWP to be collected on the Casman property, was relocated to the LIF property because sample coverage on the Casman property was deemed adequate without the sample, and to obtain a sample from the LIF property near sample location SS-58 for lead analysis.
- Sample SS-54, specified in the SWP to be collected adjacent to the above-ground storage tank (AST) on the LIF property, was not collected because a cement pad covered soil at the location.

All soil samples were grab samples (samples collected from a single location and specific depth). The samples were collected with a decontaminated stainless-steel spoon and bowl, in accordance with the QAP. Sample containers were provided by the analytical laboratory, NYTEST Environmental, Inc., Port Washington, New York (NYTEST). Additional soil samples (duplicate, matrix spike, matrix spike duplicate, and a field blank) were collected for laboratory quality control purposes. Sampling records are provided in Appendix A. Following collection, soil samples and QC samples were packed with ice in coolers under chain-of-custody procedures specified in the QAP, and transported to NYTEST by laboratory courier. Copies of the chain-of-custody records are provided in Appendix B.

3.2.2 Groundwater Sampling

Groundwater samples were collected on September 2, 1992 from four monitoring wells at the Sag Harbor-Bridge Street site: MW-1, MW-3, AST-1, and AST-2 (Figure 3.1). The monitoring wells were installed during previous investigations, and little is known about their construction (Table 3.2). The SWP specified the collection of a groundwater sample from MW-2 which was reportedly located on the Greenberg property. The sample could not be collected because the well is now inaccessible; the location was recently paved, covering the well cap.

The monitoring wells appeared to be in poor condition. None of the wells were secured by locked caps. Screens were observed to extend above the ground surface in wells AST-1 and AST-2. In addition, a slime was observed in wells AST-1 and AST-2, which may indicate biological activity.

Groundwater samples were collected in accordance with the QAP using disposable polyethylene bailers and new polypropylene lines which were dedicated to each well. All monitoring wells were purged to remove at least three times the volume of water standing in the casings or, in the case of wells with low recharge, to evacuate the well casings prior to sampling. Decontamination of the bailers was unnecessary because they were decontaminated by the manufacturer, sealed in plastic, and unsealed immediately prior to use.

Samples were collected in the following manner. Sample water was first poured into a 500-milliliter glass beaker for measurement of field parameters (temperature, conductivity, and pH). Field measurements are summarized in Table 3.3. Sample containers were provided by the analytical laboratory. QC samples (duplicate, matrix spike, matrix spike duplicate, and field blank) were collected from monitoring well MW-3. Sample records are provided in Appendix A. Following collection, groundwater samples and QC samples were packed with ice in coolers under chain-of-custody procedures specified in the QAP, and transported to an analytical laboratory by laboratory courier. Copies of the chain-of-custody records are provided in Appendix B.

3.2.3 Sample Quality Assurance/Quality Control

The field sampling procedures used during this investigation were selected to satisfy the quality control objectives specified in the NYSDEC-approved QAP dated August 1992. These objectives included representativeness, completeness, comparability, precision, and accuracy.

Representativeness was ensured in the field by use of the equipment decontamination procedures specified in the QAP, including the collection of field blank samples. Decontamination procedures were designed to prevent the introduction of contaminants to the site, to prevent cross-contamination of environmental samples and wells, and to prevent inadvertent removal of hazardous substances from the site. The stainless-steel bowls and spoons used to collect soil samples were decontaminated prior to collecting each sample by washing with an Alconox detergent solution, rinsing with commercially obtained distilled water, rinsing with reagent-grade methanol, and rinsing again with distilled water. Groundwater samples were collected with disposable polyethylene bailers and new polypropylene lines which were dedicated to each well. Decontamination of the bailers was unnecessary because they were decontaminated by the manufacturer, sealed in plastic, and unsealed immediately prior to use.

Field instruments, including the water level indicator, and pH-temperature-conductivity meter, were decontaminated by thoroughly rinsing them with commercially obtained distilled water prior to lowering them into the well or sample water used for field parameter measurements. Water used for field measurements was discarded, and not included with samples submitted for laboratory analysis. In addition, new Nitrile outer gloves and PVC inner gloves were used by personnel at each sample location to prevent cross-contamination, and to ensure personal safety.

Representativeness was assessed using data obtained from analyses of duplicate samples collected on-site (4 soils and 1 groundwater), field blanks (3 for soils and 1 for groundwater) which were prepared on-site, and laboratory-prepared trip blanks which accompanied samples analyzed for volatile organic compounds (VOCs) in the sample coolers delivered to the laboratory.

The duplicate samples also provided data for the assessment of precision. Matrix spike (MS) and matrix spike duplicate (MSD) samples (4 soil and 1 groundwater sample) were collected in the field so that the laboratory could generate data for the assessment of accuracy. Completeness (the percentage of the data which is judged to be "useable") was assessed during data validation based on the analytical results for the environmental samples. Comparability (the degree to which one set of data may be compared to another), though not assessed directly by analysis of field samples, was ensured by use of the standardized field and laboratory procedures specified in the QAP.

Duplicate soil samples were collected from sample locations SS-13 (SS-13DUP), SS-36 (designated as SS-71), SS-58 (designated as SS-72), and SS-69 (designated as SS-69A). A duplicate groundwater sample was collected from monitoring well MW-3 (designated as MW-3A). The field blanks were prepared by passing laboratory-prepared deionized water through a new disposable bailer or the decontaminated stainless-steel bowl that was used to collect soil samples. Soil MS and MSD samples were taken at locations SS-13, SS-36, SS-58, and SS-69. Groundwater MS and MSD samples were collected from monitoring well MW-3. Trip blanks consisting of laboratory prepared deionized water in 40-milliliter vials were prepared by NYTEST and shipped with the field samples submitted for analysis of VOCs.

3.2.4 Water Level Measurements

Fourteen rounds of water level measurements were completed on two days, September 1 and September 3, 1992. The water levels in monitoring wells MW-1, MW-3, AST-1, and AST-2 were measured in order to determine the tidal influence of the nearby marine waters on groundwater flow. Results are presented and assessed in Section 4.

The SWP was modified in the field with the concurrence of the NYSDEC Project Manager. The SWP specified measurements to be taken during the three days personnel were on-site. Hourly measurements were to be taken from monitoring well MW-3 during the first day, and compared to published tide data to establish the time relationship between tides and groundwater level variations in MW-3. During the second and third days, water levels were to be taken in the all monitoring wells in two rounds per day: a round when groundwater levels in MW-3 are expected to be highest, based on the measurements obtained from during the first day, and a round when water levels in MW-3 are expected to be lowest.

3.2.5 Air Monitoring

Air monitoring for VOCs was performed using a Photovac MicroTip HL-2000 photoionization detector (PID), primarily for health and safety purposes. Headspace in the wells was also monitored for preliminary indications of organic groundwater contamination. The PID was calibrated at the beginning and at the end of each day of use with a standard calibration gas containing isobutylene at a concentration of 100 parts per million (ppm). No significant PID readings were noted during sampling activities.

3.3 ENVIRONMENTAL SAMPLE ANALYSIS

Environmental samples were analyzed by NYTEST, in accordance with the NYSDEC Analytical Services Protocol (ASP) dated December 1991 (NYSDEC, 1991). Analytical methods and the contract required quantitation limits (CRQLs) are identified in Section B6 of the QAP. Methods 91-1, 91-2, and 91-3 were used for analysis of organic compounds. Various CLP-M methods were selected by the laboratory for analysis of inorganics. The analytical parameters selected for each sample were specified in the SWP, based on results of previous sampling events. The analytical program, including field modifications, is summarized in Table 3.4.

Samples were tracked by ES from the time of sample collection through delivery of the data packages. Sample tracking began with the assignment of sequentially numbered chain-of-custody forms (COCs) to field personnel prior to sample collection, and included confirmation of laboratory sample receipt, a determination of the condition of samples, and confirmation of delivery dates for analytical results. A computer database was used to generate a sample tracking report every two weeks, or at shorter intervals, as required, to monitor the progress of sample analysis and reporting. Several technical problems occurred during analysis, and corrective action was immediately initiated by ES as discussed in Section 3.4.

3.3.1 Soil Samples

The soil samples were analyzed for one or more of the following four groups of analytes: (1) selected metals including one or more of the following metals at each location: arsenic, cadmium, chromium, and lead; (2) Target Compound List (TCL) VOCs and semivolatile organic compounds (SVOCs); (3) PCBs; and (4) all TCL organic compounds (including VOCs, SVOCs, PCBs, and pesticides) and Target Analyte List (TAL) metals (Table 3.4). Eight (8) samples were reanalyzed for EP Tox lead, based on preliminary laboratory results. Analytical data are presented in Appendix C, and are assessed in Section 4.

Soil samples collected on the LILCO, Harbor Close, Suffolk Electric Motors, Casman, and LIF properties were analyzed for one or more metals for the following reasons:

- Lead concentrations exceeding draft NYSDEC guidance values were detected at three locations on-site: (1) near the intersection of Bridge Street and Long Island Avenue on the Harbor Close property, (2) adjacent to a shed located near the eastern property line of the LILCO property, and (3) on the Casman property;
- Cadmium was detected at elevated concentrations adjacent to an above-ground fuel oil tank located east of the LIF building and in the northwestern corner of the LILCO property;
- Arsenic and chromium were detected in composite soil samples at slightly elevated concentrations collected from the Harbor Close Condominium property; and
- Insufficient sample data were available for the Suffolk Electric Motor property; only two composite samples were collected, in the northern portion of the property, during previous investigations.

Soil samples collected on and near the Greenberg property were analyzed for PCBs, because PCBs were detected in a composite sample collected at the eastern edge of the Greenberg property with a total concentration of 1.4 (mg/kg) during a previous investigation (ES, 1992).

Soil samples collected on the LIF and Harbor Close properties were analyzed for VOCs and/or SVOCs based on results of previous investigations:

- VOCs were detected in groundwater samples collected from a monitoring well that was located on the Greenberg property (now inaccessible) and from the Mayer residential well,
- SVOCs were detected in soil samples collected from the LIF property, and
- In 1987, Suffolk County Water Authority employees reported skin irritations while excavating soils on the west side of Bridge Street opposite to the LIF property (ES, 1992).

Soil samples SS-69 and SS-70, collected on the LIF property, were analyzed for TCL VOCs, TCL SVOCs, TCL pesticides and PCBs, and TAL metals and cyanide for the reasons described above, and to scan for analytes that might not have been identified during previous investigations.

Based on preliminary total metals analyses, eight (8) soil samples were selected for EP Tox lead analysis. Five samples were selected because of elevated total lead concentrations: SS-04 (697 mg/kg), SS-05 (1,140 mg/kg), SS-06 (632 mg/kg), SS-07 (1,810 mg/kg), and SS-34 (604 mg/kg). Samples SS-53, SS-55, and SS-56 were selected because high lead concentrations were reported in groundwater samples collected from monitoring wells AST-1 and AST-2 (the SWP did not include analysis of nearby soil samples SS-53, SS-55, and SS-56 for total lead).

The SWP called for analysis of five (5) samples for EP Tox arsenic, cadmium, chromium and lead; two (2) samples for EP Tox lead only; and one (1) sample for EP Tox chromium. The SWP was modified with respect to the number of EP Tox analyses, with the approval of the NYSDEC Project Manager, after reviewing preliminary total metals analyses.

3.3.2 Groundwater Samples

Three groundwater samples (MW-1, AST-1, and AST-2) were analyzed for TCL VOCs, SVOCs, TAL Metals and cyanide (Table 3.4). The groundwater sample collected from monitoring well MW-3 was analyzed for all TCL organics (including VOCs, SVOCs, PCBs, and pesticides) and TAL metals and cyanide to scan for contaminants, and identify potential releases of hazardous waste constituents. Analytical data are presented in Appendix C, and assessed in Section 4.

3.3.3 QA/QC Samples

The duplicate samples were analyzed for the same parameters as the environmental samples at each duplicate location. Field blank SS-13 was analyzed for the selected metals (arsenic, cadmium, chromium, and lead). Field blank SS-36 was analyzed for arsenic, cadmium, copper, and lead (the sample was submitted for analysis of the selected metals; however, chromium was not analyzed due to a laboratory error). Field blank SS-69 was analyzed for TCL organic compounds, including VOCs, SVOCs, pesticides and PCBs, and TAL metals and cyanide. The MS and MSD samples were analyzed for the same parameters as the environmental sample at the location where each was collected. Trip blanks were analyzed for TCL VOCs only. Analytical results for the QA/QC samples are included with the analytical data provided in Appendix C.

3.4 DATA VALIDATION

ES validated analytical data generated by the laboratory. Data validation was performed following USEPA guidelines adapted to the QC criteria in the NYSDEC ASP dated December 1991, in accordance with the scope of work specified by the Standby Contract (Work Element VI, Schedule 1) and project QAP. Procedures are described in Section B7 of the QAP.

Validation included assessment of:

- Holding times;
- Instrument tuning;
- Instrument calibrations;
- Method Blanks;
- System monitoring compounds and internal standard recoveries or interference check samples;
- MS, MSD, and MSB or LCS results;
- Field duplicate sample results;
- Target Compound identification;
- Recalculations of raw data for 10 percent of reported results;
- Compound quantitation and reported detection limits; and
- System performance.

A validation report which presents a detailed assessment of the validity and usability of the sample analyses performed by NYTEST is provided in Appendix C. The assessment is based on an evaluation of the data quality objectives for precision, accuracy, representativeness, completeness, and comparability, as specified in the QAP and ASP. Generally, the data packages generated by NYTEST were deemed 100 percent complete, and valid and useable within the qualifiers listed on the Form I reports (Appendix C) and summary tables presented in Section 4. There were two exceptions:

- The data package identified as Laboratory Log In No. 13935 was deemed 78 percent complete because soil samples 69 and 70 were not analyzed for pesticides and PCBs due to a laboratory oversight.
- Field blank sample SS-36 was submitted for analysis of arsenic, cadmium, chromium, and lead metals; however, chromium was not analyzed due to a laboratory error.

3.5 SAMPLE LOCATION SURVEY

The horizontal positions of all soil sample locations and sampled monitoring wells were determined by a New York State-licensed land surveyor: Modi Associates, of Cicero, New York. Horizontal locations were tied to a nearby U.S. Geological Survey benchmark and five permanent markers which were installed on-site (railroad spikes and nails). In addition, the well casing and ground surface elevation of each monitoring well was marked and surveyed to the nearest 0.01 foot (Table 3.2). (None of the wells had protective outer casings). Elevations were tied to at least one permanent reference point, and were measured relative to a mean sea level datum determined at a U.S. Geological Survey benchmark. The surveyor's map was used to prepare the site maps presented in this report.

3.6 SAMPLE RESULTS REPORT

A Sample Results Report was transmitted to the NYSDEC Project Manager, NYSDEC-Region 1 staff, and a NYSDOH representative on February 4, 1993. The report contained a full set of summary tables showing validated concentrations of detected analytes in environmental samples collected during PSA Task 3. These results were compared with applicable New York State environmental standards or guidelines.

TABLE 3.1

TASK DESCRIPTIONS
SAG HARBOR-BRIDGE STREET SITE
SUFFOLK COUNTY, NEW YORK

TASK	DESCRIPTION
Environmental Sample Collection	66 soil samples and 4 groundwater samples were collected from locations shown in Figure 3.1 during September 1 to 3, 1992.
Environmental Sample Analysis	NYTEST Environmental, Inc., of Port Washington, New York, analyzed field samples for the parameters specified in Table 3.4.
Data Validation	Data validation was performed by ES.
Sample Location Survey	Modi Associates of Cicero, New York, a New York State-licensed surveyor, completed a survey of sample locations and monitoring well locations and elevations.
Sample Results Report	A letter report containing a summary of environmental sample results was transmitted to the NYSDEC Project Manager, NYSDEC-Region 1 staff, and a NYSDOH representative.
PSA Task 3 Report	This report was prepared.

TABLE 3.2

MONITORING WELL CONSTRUCTION DATA
SAG HARBOR-BRIDGE STREET SITE
SUFFOLK COUNTY, NEW YORK

Well No.	T-PVC Elevation (Feet)(1)	Screen Diameter (Inches)	Screen Setting (Feet)(2)	Screened Formation(s)
AST-1 (3)	5.43	4.0	-0.5 - 4.2	NA(5)
AST-2 (3)	5.15	4.0	-0.5 - 4.1	NA
MW-1 (4)	2.56	4.0	0 - 9.1	NA
MW-3 (4)	5.51	4.0	NA - 10.6	NA

(1) Elevation above Mean Sea Level (USGS, 1956). Well casing elevations surveyed by Modi Associates, September 1992.

(2) Depth below ground surface. Negative numbers indicate screened interval extended above ground surface

(3) Data based on field observations by ES personnel.

(4) SA, 1987a.

(5) NA - Information not available

TABLE 3.3

FIELD PARAMETER MEASUREMENTS
SEPTEMBER 2, 1992
SAG HARBOR-BRIDGE STREET SITE
SUFFOLK COUNTY, NEW YORK

Sample	Temperature (Degrees F)	pH	Conductivity (uS/cm)
AST-1	69.2	6.7	840
AST-2	66.9	6.6	745
MW-1	77.5	6.6	1,546
MW-3	73.1	6.4	780

TABLE 3.4

SAMPLE ANALYSIS SUMMARY
SAG HARBOR-BRIDGE STREET SITE
SUFFOLK COUNTY, NEW YORK

Sample Designation	Analytical Parameters*	Rationale
<u>Soil Samples</u>		
1-12,14,16-36	As, Cd, Cr, and Pb	Elevated concentrations detected in previous investigations on LILCO and Harbor Close properties. Insufficient data available for Suffolk Electric Motors property.
13,15	As, Cd, Cr, and Pb; VOCs, and SVOCs	As above. In addition, organic analysis to investigate SCWA excavation.
37-39	Not Sampled	SWP revised in field.
40-52	Pb	Elevated concentrations detected during previous investigations on Casman and LILCO properties.
53, 55, 56	Cd	Elevated concentrations detected on LIF property during previous investigations.
54	Not Sampled	SWP revised in field.
57, 59-62	Pesticides, PCBs	PCBs detected in previous investigations on Greenberg property (pesticide analysis included for same cost with PCB analysis).
58	Pesticides, PCBs, VOCs, and SVOCs	As above. In addition, investigate potential disposal via discharge pipes on LIF property.
63	VOCs, SVOCs	Elevated concentrations on LIF property.
64, 65	SVOCs	Elevated concentrations on LIF property.
66-68	VOCs	Elevated concentrations in Mayer residential well.
69, 70	VOCs, SVOCs, TAL Metals and CN**	Full scan. Locations to be determined in field.

TABLE 3.4 (CONTINUED)

SAMPLE ANALYSIS SUMMARY
SAG HARBOR-BRIDGE STREET SITE
SUFFOLK COUNTY, NEW YORK

Sample Designation	Analytical Parameters *	Rationale
<u>EP Tox Analyses</u>		
4-7, 34, 53, 55, and 56	EP Tox Pb	Determine whether soil samples with high lead concentrations are hazardous waste.
<u>Groundwater Samples</u>		
AST 1, AST-2, MW-1	VOCs, SVOCs, TAL Metals and CN	Preliminary investigation of releases from potential hazardous wastes on-site.
MW-3	TCL Organics, TAL Metals and CN	Preliminary investigation of releases from potential hazardous wastes on-site.

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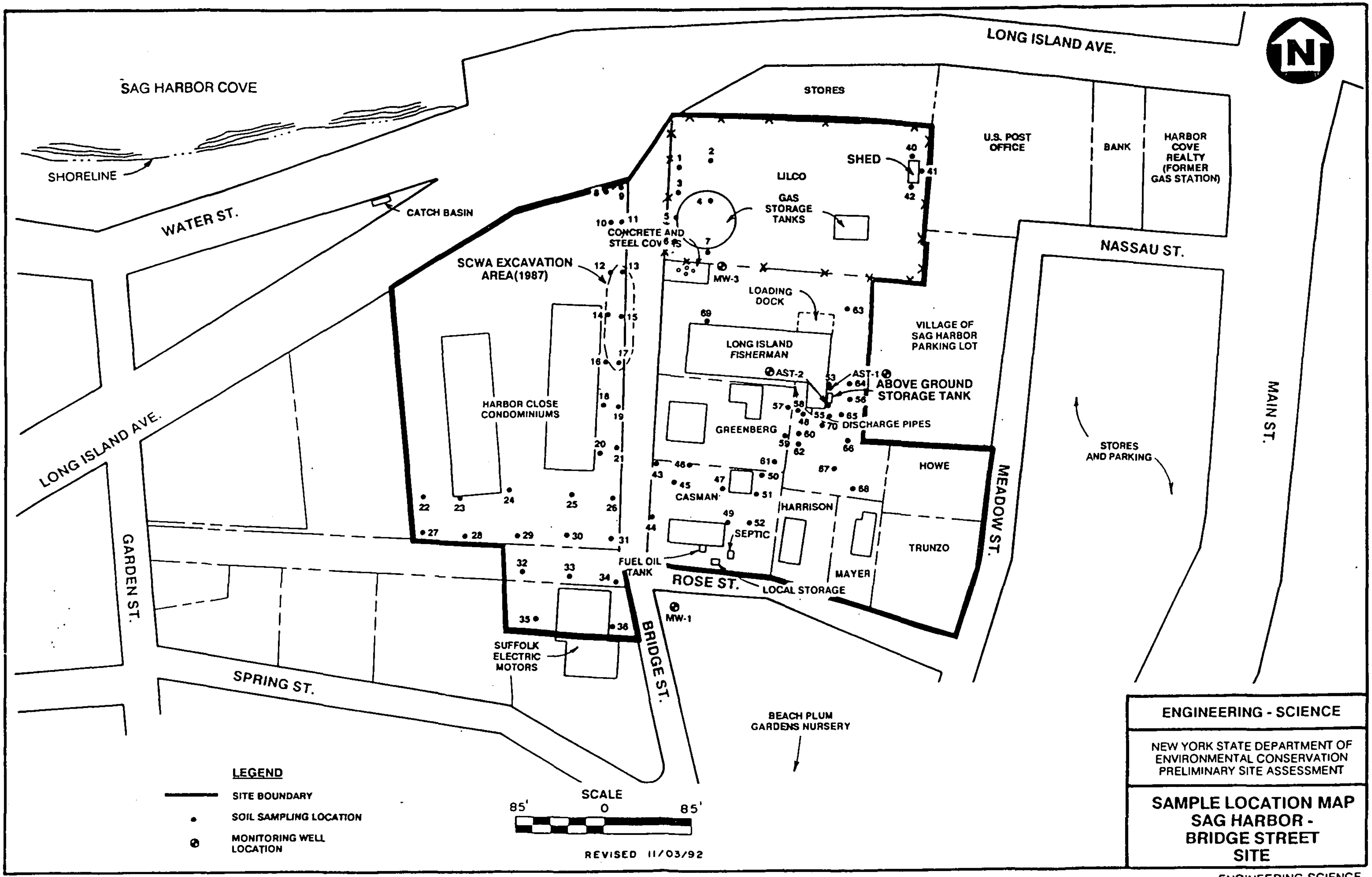
* As = Arsenic, Cd = Cadmium, Cr = Chromium, Pb = Lead. TCL Organics = VOCs, SVOCs, and Pesticides, and PCBs. CN = Cyanide.

** Pesticides and PCBs not analyzed due to laboratory oversight.

FIGURE 3.1



ENGINEERING - SCIENCE

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION PRELIMINARY SITE ASSESSMENT

SAMPLE LOCATION MAP SAG HARBOR - BRIDGE STREET SITE

SY 230. 02

ENGINEERING-SCIENCE

SECTION 4

SECTION 4

SECTION 4

SITE ASSESSMENT

4.1 INTRODUCTION

The data generated during the PSA Task 3 investigation are presented and assessed in this section. Subsection 4.2 presents background information developed after completion of PSA Task 1. Subsection 4.3 presents an evaluation of groundwater flow based on water level measurements taken during PSA Task 3. Subsections 4.4 and 4.5 provide an assessment of the presence of hazardous waste on-site and significant threat, as defined by 6NYCRR Parts 371 and 375, respectively.

In this section, certain organic and inorganic chemicals are followed by hazardous waste listing numbers in parentheses. The listing numbers actually only apply to these chemicals if the chemicals have certain hazardous waste characteristics, or are a waste product of certain processes specified in the 6NYCRR Part 371 regulations. For certain chemicals which have more than one listing number, only the most general listing category number has been used. Many of the analytes detected during the PSA Task 3 investigation are not listed wastes as defined by these regulations. None of the unlisted analytes can be used to determine the presence of hazardous waste, assess significant threat, or classify the site according to NYSDEC hazardous waste regulations.

4.2 TASK 3 BACKGROUND INFORMATION

Additional background information obtained during PSA Task 3 included the following:

1. The SHBS site boundary was changed to exclude the southern side of the structure shown on the Suffolk Electric Motors property because the excluded area is located on a separate property (Figure 4.1).
2. A drainage pipe connecting an interior floor drain in the LIF building to the concrete pit located along the north wall of the building was discovered during PSA Task 3. The presence or absence of an impermeable floor or drain in the pit could not be determined. The material in the pit was sampled during PSA Task 3; results are included in this report.
3. One of the on-site monitoring wells observed during PSA Task 1: MW-2, located on the Greenberg property, is now inaccessible because the well location is presently covered by pavement.

4.3 WATER LEVEL MEASUREMENTS

Fourteen rounds of water level measurements were taken in monitoring wells MW-1, MW-3, AST-1, and AST-2 on September 1 and September 3, 1992 to investigate the tidal influence of nearby marine waters on groundwater flow. Water levels were measured to the nearest 0.01 foot. Nine hourly measurements were taken in each well on September 1, and five hourly measurements were taken in each well on September 3. Well locations are shown in Figure 4.1. Results are presented in Table 4.1 and Figure 4.2. Figure 4.3 shows groundwater elevations measured at approximately 13:40 on September 2, 1992, and approximate groundwater elevation contour lines derived by linear interpolation between the wells.

The following generalizations can be made regarding groundwater flow and the potential influence of nearby marine waters at the time of the PSA Task 3 investigation:

1. Groundwater beneath the site was flowing west or west-southwest toward surface waters west of the site (Figure 4.3). Water level elevations in monitoring wells AST-1 and AST-2 were consistently higher than elevations in wells MW-1 and MW-3. Water level elevations in well MW-1 were consistently lower than elevations in the other wells.
2. Groundwater flow at the SHBS site is slightly influenced by tidal variations (Table 4.1 and Figure 4.2). The variation is most apparent in MW-1 which is consistent with its apparent closer proximity, with respect to the other wells, to a discharge area. The lowest measurement in MW-1 on September 1 occurred approximately 2.5 hours after local low tide. Measurements were concluded before a similar lag could be confirmed for local high tide; however, the data indicate that the water level may have reached a maximum approximately 2.5 hours after local high tide. The September 3 water levels steadily increase, reflecting a rainfall event which began at approximately 08:30.
3. The tidal influence did not reverse the groundwater flow direction on the two days measured, indicating that any hazardous substances being released to groundwater from the site generally migrate west or southwestward. A comparison of the maximum and minimum differences in measurements taken in AST-1 and MW-1 on September 1 suggests that, under dry weather conditions, the tidal influence is limited to changing the westerly gradient between the wells from approximately 0.003 feet per foot to 0.002 feet per foot.
4. The measured electrical conductivity of groundwater in MW-1 (1,546 microsiemens per centimeter (uS/cm) (Table 3.3) was well under the value associated with sea water (approximately 50,000 uS/cm; Hem, 1989), indicating that the water in Sag Harbor Cove does not greatly influence the water quality of shallow groundwater on the site.

4.4 PRESENCE OF HAZARDOUS WASTE

The data collected during this investigation indicate that wastes containing lead, silver, mercury, and numerous organic chemicals, including PCBs, are present on the SHBS site; however, the wastes are not classified as hazardous under 6NYCRR Part 371.

These regulations establish two categories of hazardous wastes: (1) listed hazardous wastes which are assigned USEPA hazardous waste numbers with "F", "K", "P", or "U" prefixes; and (2) characteristic hazardous wastes which are assigned USEPA hazardous waste numbers with "D" and "B" prefixes. Characteristic hazardous wastes are identified using specified analytical methods to determine if concentrations of specific chemicals in the waste exceed regulatory limits. The EP Tox method is used to identify certain characteristic hazardous wastes with waste number beginning with "D". Solid waste samples (samples with at least 0.5 percent solids) are first extracted in a specified manner to generate a "leachate" which is then analyzed for the EP Tox parameters of interest. Liquid samples are directly analyzed without extraction.

4.4.1 Metals in Soil

Lead was detected at concentrations exceeding the maximum natural concentration of 700 mg/kg in seven (7) soil samples collected from the SHBS site (Table 4.2). Four (4) of the soil samples with the highest lead concentrations were collected from the LILCO property: SS-04 (869 mg/kg), SS-05 (1,310 mg/kg), SS-06 (749 mg/kg), and SS-07 (2,160 mg/kg). Sample SS-07 contained the highest lead concentration detected during PSA Task 3. Two (2) soil samples containing elevated lead concentrations were collected from the Casman property: SS-46 (712 mg/kg) and SS-51 (832 mg/kg). The seventh sample with an elevated lead concentration was collected from the Suffolk Electric Motors property: SS-34 (746 mg/kg). Lead is often associated with coal tar wastes, and past gas plant operations on the LILCO property may be a source of the lead on-site (Mohammadi, 1992).

Although soil lead concentrations exceeded the maximum natural concentration for this metal in many locations, the lead does not occur in a form that exceeds regulatory standards for characteristic hazardous waste under current NYSDEC regulations. Eight (8) soil samples collected from the site during PSA Task 3 were analyzed for leachable lead by the EP Tox analytical method to determine whether the soil samples are a characteristic hazardous waste. These samples included five (5) of the seven (7) previously noted samples which contained the highest concentrations of total lead. In addition, three (3) soil samples which had not been analyzed for total lead were selected to be analyzed by EP Tox. These three (3) samples were collected adjacent to two monitoring wells, AST-1 and AST-2, in which groundwater samples contained elevated lead concentrations. Lead was detected in the extract from only one (1) of the eight (8) samples, Sample SS-34 (Table 4.3). The lead concentration of 53.4 ug/l measured in the leachate from this sample is well below the regulatory limit of 5,000 ug/l specified by 6NYCRR Part 371.3(e).

The EP Tox results indicate that soil from the SHBS site is unlikely to contain leachable lead which will exceed the regulatory limit for characteristic hazardous waste. These eight (8) samples represent over 10 percent of the samples collected from the SHBS site, and contain either the highest concentrations of total lead or were collected from areas where elevated lead concentrations in soil are likely, based on groundwater analytical data. The only lead detected by the EP Tox method was almost 100 times lower than the regulatory limit.

Silver and mercury were detected at concentrations exceeding the maximum natural concentration in Sample SS-69 and a duplicate sample, Sample SS-69A. These samples were collected from sediment accumulated in the concrete pit located along the north wall of the building on the LIF property (Table 4.3). Silver was detected in the samples at estimated concentrations of 161 mg/kg and 234 mg/kg, exceeding the maximum natural concentration of 5 mg/kg (USEPA, 1983). Mercury was reported in the samples with concentrations of 0.56 mg/kg and 0.93 mg/kg, exceeding the maximum natural concentration of 0.5 mg/kg (Shacklette and Boerngen, 1984).

The presence of a discharge pipe connecting the interior drain of the building on the LIF property to the concrete pit suggests that the elevated concentrations of these metals result from past operations in the LIF building. Silver may be associated with the photographic printing operations which occurred in the LIF building during the years 1977 through 1988 (ES, 1992). No documentation suggesting an association of mercury with those operations has been found to date.

Based on the USEPA assumption that the EP Tox dilution attenuation factor is 100, the sample results indicate that silver and mercury concentrations in the soils are unlikely to exceed the regulatory limit for these metals in EP Tox leachate (USEPA, 1990). The dilution attenuation factor means that the concentration of the metal(s) in soil must be at least 100 times higher than the regulatory limit in the leachate for there to be at least an 85 percent likelihood for the actual metal concentration in the leachate to exceed the EP Tox limit. For silver, this regulatory limit is 5.0 mg/l for the liquid extract, and for mercury the limit is 0.2 mg/l. The respective concentrations of silver or mercury in soil samples would therefore have to exceed 500 mg/kg and 20 mg/kg for silver and mercury, respectively, for EP Tox failure to be greater than 85 percent likely.

Analytical results for over 150 soil samples gathered during this investigation and previous investigations indicate that additional sampling is not likely to establish the presence of hazardous silver or mercury waste on-site. The only potential silver or mercury disposal areas identified on-site are the concrete pit along the north wall of the LIF building and soils near the discharge pipe south of the building. These areas were sampled during the PSA Task 3 investigation, and the results, as previously noted, indicate the areas are unlikely to contain hazardous waste, as defined by 6NYCRR Part 371.

Additionally, in previous samples collected prior to this investigation, the maximum concentrations of mercury and silver were not high enough to be at least 85 percent likely to result in EP Tox test failure. The maximum concentration of silver reported in the samples collected during previous investigations was 24.9 mg/kg for a sample collected on the LIF property near the northeast corner of the Greenberg property (ES, 1992). The maximum concentration of mercury reported in the samples collected during previous investigations was 3.2 mg/kg for a sample collected from the southeast corner of the LILCO property by NUS Corporation in 1989.

Concentrations of the other characteristic metals: arsenic (D004), cadmium (D006), chromium (D007), and selenium (D010), were less than the maximum natural concentration (Table 4.4), indicating that the presence of these metals is not likely to be attributable to the disposal of hazardous waste.

4.4.2 Organic Compounds in Soil

Twenty-two (22) potential listed hazardous wastes (listed organic compounds) were detected in the soil samples collected during PSA Task 3 (Table 4.5). The mere presence of these compounds does not establish the presence of hazardous waste at the site for one or more of the following reasons, pursuant to 6NYCRR Parts 371: (1) they cannot be attributed to the documented disposal of solid waste on-site; (2) they cannot be attributed to the disposal of certain commercial chemical products as specified by Part 371.4 for U- and P-listed wastes; (3) for soils contaminated by PCBs (B007), concentrations do not exceed the regulatory limit of 50 mg/kg specified by Part 371.4(e); or (4) for pentachlorophenol, the compound cannot be attributed to the disposal of unused formulations, as required by Part 371.4(b).

PCBs were detected in two (2) samples collected during PSA Task 3. However, results for the soil samples gathered during this investigation and previous investigations indicate that additional sampling will not establish the presence of hazardous PCB waste on-site, as defined by 6NYCRR Part 371. During PSA Task 3, PCBs were detected in two samples: SS-61, collected from the LIF property (at a concentration of 0.14 mg/kg) and SS-58 collected from the Greenberg property (at a concentration of 0.015 mg/kg). The maximum concentration of PCBs detected on-site is 1.4 mg/kg from a sample collected on the LILCO property during a previous investigation. This concentration is well below the 50 mg/kg regulatory limit for hazardous waste under Part 371.4(e).

Nine (9) of the listed compounds detected in the soil samples are PAHs or phenolic compounds. However, for the reasons noted previously, these compounds are not present on-site in a form that constitutes a listed hazardous waste. Sample SS-63 contained the highest concentrations of a listed PAH, chrysene (U050) with a concentration of 9.8 mg/kg and phenol (U188) with a concentration 0.078 mg/kg. PAHs and phenolic compounds are components of coal tars which are associated with gas plant operations. Thus, past gas plant operations on the LILCO property, as described in the Task 1 Report, may be a likely source of these compounds.

Six (6) of the listed compounds detected in the soil samples are pesticides. The listed pesticide with the highest concentration was 4-4'-DDD (U060) with a concentration of 11 mg/kg in SS-60DL. As noted in the Task 1 Report, these compounds may be attributable to past insect control applications in the site vicinity, rather than hazardous waste disposal.

Three (3) listed phthalates were detected in the soil samples. The phthalate with the maximum concentration is bis(2-ethylhexyl)phthalate (U028) at a concentration of 46 mg/kg in SS-64 collected from the LIF property. As noted in the Task 1 Report, the presence of phthalates on-site, may be related to flexible magnet manufacturing operations on the LIF property between 1967 and 1976, but documentation gathered to date does not confirm this.

Two (2) other listed organic compounds were detected in the soil samples collected during PSA Task 3: acetone (U002) with a concentration of 0.030 mg/kg and 1,4-dichlorobenzene (U072) at a concentration of 0.48 mg/kg. Both compounds were detected in soil sample SS-69 which was collected from the concrete pit which received discharges from the interior of the LIF building. The presence of these compounds may be related to past printing activities in the LIF structure. 1,4-Dichlorobenzene and acetone are common industrial solvents that could have been used to clean printing equipment. 1,4-Dichlorobenzene is also an intermediate in dyes (Hawley, 1981). However, documentation gathered to date is insufficient to link the compounds to those operations.

4.4.3 Inorganic Compounds in Groundwater

Cyanide (P030) and five characteristic metals were detected in the groundwater samples at concentrations exceeding NYSDEC Class GA standards (Table 4.6). Class GA groundwater is intended to be suitable for use as a source of drinking water. Two of the analytes were previously identified as potential hazardous wastes based on the soil sample results: lead (D008) and mercury (D009). The other three metals are arsenic (D004), barium (D005), and chromium (D007). Cyanide may be related to past gas plant operations on the LILCO property (Mohammadi, 1992). Potential sources of arsenic, barium, chromium, and mercury have not been identified. None of the concentrations in the groundwater samples exceeded applicable EP Tox extract limits for characteristic hazardous waste.

4.4.4 Organic Compounds in Groundwater

Groundwater samples collected during PSA Task 3 indicate that hazardous material containing organic compounds may have been disposed on or near the site. However, because no documentation of this disposal has been obtained during background information searches, the detection of organic compounds in the groundwater at the SHBS site can not be attributed to NYSDEC-regulated hazardous waste.

Seventeen (17) listed organic compounds were detected in the groundwater samples (Table 4.7). Nine (9) of these compounds were also detected in the soil samples collected from the site. The remaining eight (8) analytes include fuel-related compounds: benzene (U019), ethylbenzene (F003), toluene (U220), and xylene (U239); solvents: chlorobenzene (U037) and methylene chloride (U080); a pesticide: Endrin (P051); and 2,4-dimethylphenol (U101).

Potential sources of solvents, pesticides, and phenolic compounds were noted in Section 4.4.2. Potential sources of fuel-related compounds include: coal tar wastes related to gas plant operations on the LILCO property, petroleum product spills on the LIF property, a former gas station site located northeast of the LIF property, and vehicle emissions, as noted in the PSA Task 1 Report.

4.5 PRESENCE OF SIGNIFICANT THREAT

The data gathered during this investigation indicate that hazardous substances at the site might pose risks to public health and the environment, but are insufficient to establish the presence of a significant threat at the site as defined by the ECL and NYSDEC regulations pursuant to the ECL. The primary reason that significant threat cannot be established is that the presence of hazardous waste (as defined by NYSDEC regulations, 6NYCRR Part 371) has not been established at the site.

Analytical results for soil samples collected during PSA Task 3 indicate that seven (7) potential hazardous wastes at the site might pose a significant threat to health or the environment; the hazardous substances are present at concentrations exceeding the maximum natural concentration or applicable guidance values: lead (D008), mercury (D009), silver (D011), benzo(a)pyrene (U022), dibenz(a,h)anthracene (U063), 4,4'-DDD (U060), and Dieldrin (P037) (Tables 4.2, 4.4, and 4.5).

Significant threat via the groundwater route cannot be assessed completely using the existing monitoring wells for two main reasons:

1. The monitoring well locations do not allow an assessment of releases from the site. None of the wells is located upgradient of the site, based on the estimated west or southwestward groundwater flow direction (Section 4.3). In addition, the monitoring wells are only downgradient of small portions of the site, and thus provide poor coverage of potential releases to groundwater from the site.
2. Field observations indicate that the construction of two of the monitoring wells is so poor that the data obtained from these locations may not be representative of ambient groundwater conditions in the vicinity. Wells AST-1 and AST-2 have screens which extend above the ground surface, permitting entrance of surface water into the groundwater. In addition, none of the four monitoring wells is secured by a locking cap, allowing unrestricted access to the wells.

Analytical results for groundwater samples collected during this investigation indicate that 19 characteristic or listed hazardous substances, consisting of five (5) metals (including lead and mercury), cyanide, and 13 organic compounds potentially pose a significant threat to health or the environment via the groundwater route. These substances were detected in the groundwater samples at concentrations exceeding Class GA groundwater standards or guidance values (Tables 4.6 and 4.7). Six (6) analytes exceed the applicable Class GA groundwater standard or guidance value by a factor of 100 or greater: lead (D008), benzene (U019), naphthalene (U165), chrysene (U050), benzo(a)pyrene (U022), and indeno(1,2,3-cd)pyrene (U137).

A full assessment of potential health risks is beyond the scope of the PSA investigation. However, available analytical data indicate that soils and groundwater on-site are contaminated with metals and organic compounds which could pose health risks to persons exposed to them. Some of the detected analytes are known or probable human carcinogens. The USEPA has identified arsenic and benzene as known human carcinogens (USEPA, 1991). The following analytes, detected in one or more environmental samples collected during PSA Task 3, are identified as probable human carcinogens: lead, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, 4,4'-DDD, dibenz(a,h)anthracene, Dieldrin, fluorene, indeno(1,2,3-c,d)pyrene, and PCBs.

Persons on-site might be exposed to hazardous substances in soils on-site by inhalation or ingestion of contaminated dust, or direct skin contact with contaminated dust or soil. Exposure to contaminated soil is apparently limited by ground covers such as pavement and vegetation. Water level measurements indicate that groundwater discharges to Sag Harbor Cove, located less than 500 feet west of the site, suggesting that there are few, if any, potential downgradient groundwater users that might be exposed to groundwater potentially contaminated by releases from the site (Subsection 4.3).

TABLE 4.1

WATER LEVEL MEASUREMENTS (1)
SEPTEMBER 2, 1992
SAG HARBOR-BRIDGE STREET SITE
SUFFOLK COUNTY, NEW YORK

		Water Level (Elevation in feet above Mean Sea Level)(1)			
Date	Time	AST-1	AST-2	MW-1	MW-3
9/1/92	0830-0850(2)	3.09	3.13	2.35	3.01
	0930-0950	3.09	3.11	2.31	3.01
	1030-1050	3.07	3.11	2.26	2.99
	1130-1150	3.07	3.10	2.28	2.98
	1230-1250	3.06	3.09	2.30	2.98
	1330-1350	3.07	3.09	2.34	2.95
	1430-1450(3)	3.06	3.08	2.37	2.98
	1530-1550	3.05	3.07	2.43	2.97
	1630-1650	3.05	3.05	2.47	2.98
9/3/92	0830-0845(4)	2.95	2.95	2.29	2.84
	0930-0945	2.95	2.96	2.29	2.85
	1030-1045	2.99	2.98	2.31	2.85
	1130-1145	3.05	3.03	2.34	2.87
	1230(5)	ND	ND	ND	ND
	1330-1345	3.59	3.45	Flowing	3.15

ND = No data.

1. Elevation in feet above mean sea level (USGS, 1956). Well casing elevations surveyed by Modi Associates, September 1992.
2. Approximate local low tide (Sag Harbor Gazette, September 1992).
3. Approximate local high tide (Sag Harbor Gazette, September 1992).
4. Approximate rainfall start time.
5. Approximate start time of heavy rainfall.

TABLE 4.2
METALS ANALYSIS (MG/KG)
SHALLOW SOIL SAMPLES – SEPTEMBER 1992
SAG HARBOR – BRIDGE STREET SITE
SUFFOLK COUNTY, NEW YORK

	ANALYTE (1)			
	ARSENIC (D004)	CADMIUM (D006)	CHROMIUM (D007)	LEAD (D008)
NATURAL RANGE IN SOILS (2)	0.1 – 100	0.01 – 7 (3)	1 –2,000	<10 – 700
SAMPLE LOCATION				
SS01	7.9	–	20	596 J
SS01DUP	14.1	–	28.9	41.9
SS02	5.7	–	9.2	284 J
SS03	7.6	–	16.1	319 J
SS04	11.5	–	12.4	869 J
SS05	4.1	–	19.3	1310 J
SS06	3.0	–	13.3	749 J
SS07	5.9	–	24.9	2160 J
SS08	44.9	–	13.4	48.1
SS09	41.9	–	13.3	74.5 J
SS10	2.2	–	6.7	16.6
SS11	1.6 J	–	7.5	25.2
SS12	10.3	–	41.3	26.4
SS13	11.9	–	29.2	43.2
SS13DUP	14.1	–	28.9	41.9
SS14	22.8	–	60.3	32.1
SS15	25.4	–	28.2	39.7
SS16	27.1	–	40.2	30.2
SS17	24.1	–	28.8	57.6
SS18	33.8	–	36.2	37.4
SS19	40.6	–	48.5	36.6
SS20	45.5	–	50.4	30.8
SS21	6.8	–	9.8	20.6
SS22	23.8	–	9.2	25.6 J
SS23	9.6	–	26.6 J	32.9 J
SS24	11.9	–	69.9 J	30.9 J
SS25	47.5	–	12.2 J	47.8 J
SS26	25.1	–	53.7 J	46.3 J
SS27	8.7	–	39.6 J	27.8 J
SS28	5.0	–	18.9 J	10.2 J
SS29	1.8 J	–	8.8 J	12.9 J
SS30	1.5 J	–	8.9 J	26.5 J
SS31	20.6	–	10 J	17.5 J
SS32	20.0	–	26.3 J	32.9 J
SS33	2.6	–	–	217 J
SS34	4.7	–	–	746 J
SS35	–	–	–	21.0 J
SS36	–	–	2.3	17.8 J

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TABLE 4.2 – continued
METALS ANALYSIS (MG/KG)
SHALLOW SOIL SAMPLES – SEPTEMBER 1992
SAG HARBOR – BRIDGE STREET SITE
SUFFOLK COUNTY, NEW YORK

	ANALYTE (1)			
	ARSENIC (D004)	CADMIUM (D006)	CHROMIUM (D007)	LEAD (D008)
NATURAL RANGE IN SOILS (2)	0.1 – 100	0.01 – 7 (3)	1 –2,000	<10 – 700
SAMPLE LOCATION				
SS40	NA	NA	NA	24.2
SS41	NA	NA	NA	166
SS42	NA	NA	NA	105
SS43	NA	NA	NA	184 J
SS44	NA	NA	NA	116 J
SS45	NA	NA	NA	490 J
SS46	NA	NA	NA	712 J
SS47	NA	NA	NA	138 J
SS48	NA	NA	NA	282 J
SS49	NA	NA	NA	237 J
SS50	NA	NA	NA	471 J
SS51	NA	NA	NA	832 J
SS52	NA	NA	NA	131 J
SS53	NA	–	NA	NA
SS55	NA	–	NA	NA
SS56	NA	–	NA	–
SS71	–	–	–	21.1 J
SS13WB	–	–	–	–
SS36WB	–	–	–	–

1. Analysis by NYTEST Labs, Port Washington, New York.
2. Schacklette and Boerngen, 1984.
3. Booz, Allen, and Hamilton, Inc., 1983.

DUP = Field duplicate sample.
WB = Field blank analysis.
J = Estimated value.
– = Not detected above required quantitation limit.
NA = Not Analyzed.

TABLE 4.3
EPTOX LEAD ANALYSIS (UG/L)
SHALLOW SOIL SAMPLES – SEPTEMBER 1992
SAG HARBOR – BRIDGE STREET SITE
SUFFOLK COUNTY, NEW YORK

ANALYTE (1)	NYSDEC REGULATORY LIMIT (2)	SAMPLE							
		04	05	06	07	34	53	55	56
EPTOX LEAD (D008)	5,000	–	–	–	–	53.4	–	–	–

1. Analysis by NYTEST Labs, Port Washington, New York.
2. Regulatory limits for EPTOX analysis provided by Part 371.3 (e).
– = Not detected.

TABLE 4.4
INORGANICS ANALYSIS (MG/KG)
SHALLOW SOIL SAMPLES – SEPTEMBER 1992
SAG HARBOR – BRIDGE STREET SITE
SUFFOLK COUNTY, NEW YORK

ANALYTE (1)	NATURAL RANGE IN SOILS (2)	SAMPLE			
		SS–69	SS–69A (3)	SS–70	SS–69WB (4)
Aluminum	700–>100,000	2,630	6,050	6,940	–
Antimony	<1–10	–	–	–	–
Arsenic (D004)	0.1–100	3.7 J	7.7	4.5	–
Barium (D005)	10–500	114	272	89.2	–
Beryllium	<1–15	–	–	–	–
Cadmium (D006)	0.01–7 (5)	–	5.1 J	–	–
Calcium	130–333,000	–	12,800 J	–	–
Chromium (D007)	1–2,000	–	24.1 J	–	–
Cobalt	<3–70	–	–	–	–
Copper	1–700	204	280	18.4	–
Cyanide (P030)	ND	–	–	–	–
Iron	100–>100,000	5,810 J	12,300 J	7,930 J	–
Lead (D008)	<10–700	69.3 J	349 J	167 J	–
Magnesium	50–50,000	1,090 J	1,400 J	949 J	–
Manganese	<2–7,000	44.6 J	97.3 J	157 J	–
Mercury (D009)	0.02–0.5	0.56	0.93	0.37	–
Nickel	<5–7,000	16.7	30.9	–	–
Potassium	2,200–65,000	718 J	1,450 J	558 J	–
Selenium (D010)	<0.1–5	–	–	–	–
Silver (D011)	0.01–5 (6)	161 J	234 J	–	–
Sodium	<500–100,000	–	–	–	–
Thallium	ND	–	–	–	–
Vanadium	20–500	12.0 J	27.0	13.9	–
Zinc	<5–3,500	667	1,560	129	–

1. Analysis by NYTEST Labs, Port Washington, New York.
2. Schacklette and Boerngen, 1984.
3. Field duplicate sample.
4. Field blank analysis.
5. Booz, Allen, and Hamilton, 1983.
6. USEPA, 1983.

ND = No data. Natural ranges not published in cited references.

J = Estimated value.

– = Not detected.

TABLE 4.5
DETECTED ORGANIC COMPOUNDS (MG/KG)
SHALLOW SOIL SAMPLES - SEPTEMBER 1992
SAG HARBOR - BRIDGE STREET SITE
SUFFOLK COUNTY, NEW YORK

ANALYTE (1)	USEPA Health-Based Criteria (2)	SAMPLE																																
		13	13RE(3)	13DUP(4)	13DP -RE	15	15RE	57	58	58RE	59	60	60DL (5)	61	62	62DL	63	63RE	63DL RE	64	64RE	64DL RE	65	65RE	66	67	68	69	69RE	69A (4)	70	72	Trip Blank (6)	Wash Blank (6)
VOCs																																		
Acetone (U002)	8,000	-	NA	-	NA	-	NA	NA	-	NA	NA	NA	NA	NA	NA	NA	-	NA	NA	NA	NA	NA	NA	NA	-	-	-	0.03 J	NA	NA	-	-	-	-
Methylene Chloride (U080)	93	-	NA	-	NA	-	NA	NA	-	NA	NA	NA	NA	NA	NA	NA	-	NA	NA	NA	NA	NA	NA	NA	-	-	-	-	NA	NA	-	-	0.001 J	0.002 J
Toluene (U220)	20,000	-	NA	-	NA	-	NA	NA	-	NA	NA	NA	NA	NA	NA	NA	-	NA	NA	NA	NA	NA	NA	NA	-	-	-	-	NA	NA	-	-	-	0.01
SVOCs																																		
Acenaphthene	5,000	0.06 J	-	R	-	R	-	NA	0.011 J	0.011 J	NA	NA	NA	NA	NA	NA	R	0.28 J	0.34 J	R	0.1 J	0.12 J	R	0.022 J	NA	NA	NA	R	0.032 J	NA	0.27 J	-	NA	-
Acenaphthylene	*	0.06 J	0.089 J	0.098 J	0.1 J	0.047 J	0.036 J	NA	0.047 J	0.47 J	NA	NA	NA	NA	NA	NA	0.57 J	3.4 J	5.1 J	0.28 J	1.9 J	3 J	0.063 J	0.5 J	NA	NA	NA	R	0.28 J	NA	1.8	0.036 J	NA	-
Anthracene	20,000	0.035 J	0.082 J	0.086 J	0.071 J	0.033 J	0.029 J	NA	0.015 J	0.022 J	NA	NA	NA	NA	NA	NA	R	1.2 J	2.7 J	R	0.64 J	1.6 J	R	0.17 J	NA	NA	NA	R	0.05 J	NA	0.5 J	0.014 J	NA	-
Benzo(a)anthracene	0.22	R	0.15 J	R	0.14 J	R	0.074 J	NA	-	-	NA	NA	NA	NA	NA	NA	R	5.6 J	5.2 J	R	-	3 J	R	-	NA	NA	NA	R	-	NA	2.8 J	-	NA	-
Benzo(a)pyrene (U022)	0.061	R	0.1 J	-	0.073 J	R	0.044 J	NA	-	-	NA	NA	NA	NA	NA	NA	R	7.5 J	6 J	R	3.7 J	3.9 J	R	0.64 J	NA	NA	NA	R	0.028 J	NA	0.84 J	-	NA	-
Benzo(b)fluoranthene	*	R	0.18 J	-	0.18 J	R	0.096 J	NA	-	-	NA	NA	NA	NA	NA	NA	R	6.3 J	6.3 J	R	3.5 J	3.5 J	R	0.79 J	NA	NA	NA	R	0.029 J	NA	1.8	-	NA	-
Benzo(k)fluoranthene	*	R	0.19 J	-	0.15 J	R	0.076 J	NA	-	-	NA	NA	NA	NA	NA	NA	R	6.4 J	6.7 J	R	4 J	3.8 J	R	0.77 J	NA	NA	NA	R	0.029 J	NA	1.8	-	NA	-
Benzo(g,h,i)perylene	*	R	-	-	-	R	-	NA	-	-	NA	NA	NA	NA	NA	NA	R	1.8 J	1.7 J	R	-	0.89 J	R	-	NA	NA	NA	R	0.003 J	NA	-	-	NA	-
bis(2-ethylhexyl)phthalate(U028)	50	-	-	-	-	-	-	NA	-	-	NA	NA	NA	NA	NA	NA	-	5.1 J	3.3 J	-	46 J	28 J	-	7.5 J	NA	NA	NA	R	3.2 J	NA	-	-	NA	-
Butylbenzylphthalate	20,000	R	-	0.025 J	-	0.019 J	0.02 J	NA	0.95 J	0.86 J	NA	NA	NA	NA	NA	NA	R	0.18 J	0.045 J	R	-	0.16 J	R	-	NA	NA	NA	R	-	NA	-	0.75 J	NA	-
Carbazole	*	R	0.009 J	-	0.007 J	R	0.004 J	NA	-	-	NA	NA	NA	NA	NA	NA	R	0.024 J	0.047 J	R	0.015 J	0.033 J	R	-	NA	NA	NA	R	-	NA	-	-	NA	-
4-Chloroaniline	200	R	-	R	-	R	-	NA	-	-	NA	NA	NA	NA	NA	NA	R	-	-	R	-	-	R	-	NA	NA	NA	R	3.2 J	NA	-	-	NA	-
Chrysene (U050)	*	R	0.32 J	R	0.27 J	R	0.12 J	NA	-	0.18 J	NA	NA	NA	NA	NA	NA	R	9.8 J	9.4 J	R	-	5.4 J	R	1.1 J	NA	NA	NA	R	0.048 J	NA	3.1	-	NA	-
Dibenz(a,h)anthracene(U063)	.014	R	-	-	-	R	-	NA	-	-	NA	NA	NA	NA	NA	NA	R	1.5 J	1.8 J	R	0.66 J	0.96 J	R	-	NA	NA	NA	R	-	NA	-	-	NA	-
Dibenzofuran	*	R	-	R	0.003 J	R	-	NA	-	-	NA	NA	NA	NA	NA	NA	0.051 J	0.23 J	0.098 J	R	-	-	R	-	NA	NA	NA	R	-	NA	0.097 J	-	NA	-
1,4-Dichlorobenzene (U072)	*	R	-	R	-	R	-	NA	-	-	NA	NA	NA	NA	NA	NA	R	-	-	R	-	-	R	-	NA	NA	NA	R	0.48 J	NA	-	-	NA	-
Diethylphthalate (U088)	60,000	R	-	R	-	0.018 J	-	NA	0.037 J	0.041 J	NA	NA	NA	NA	NA	NA	R	-	-	R	-	-	R	-	NA	NA	NA	R	0.008 J	NA	0.083 J	-	NA	0.001 J
Di-n-Butylphthalate	8,000	0.53 J	-	1.8 J	-	0.22 J	-	NA	1.5	1.5	NA	NA	NA	NA	NA	NA	R	-	-	R	0.031 J	-	R	0.022 J	NA	NA	NA	R	0.31 J	NA	-	3.8	NA	0.001 J
Di-n-octylphthalate (U107)	2,000	-	0.008 J	-	0.006 J	-	0.004 J	NA	0.12 J	-	NA	NA	NA	NA	NA	NA	R	0.01 J	0.093 J	R	0.014 J	0.058 J	0.009 J	0.008 J	NA	NA	NA	R	-	NA	-	-	NA	-
Fluoranthene (U120)	3,000	0.022 J	0.32 J	0.039 J	0.32 J	0.017 J	0.15 J	NA	0.19 J	0.2 J	NA	NA	NA	NA	NA	NA	0.14 J	3.7 J	6.8 J	0.056 J	2.6 J	6.3 J	R	0.84 J	NA	NA	NA	R	0.28 J	NA	1.4	0.13 J	NA	-
Fluorene	3,000	R	0.007 J	R	0.009 J	R	-	NA	0.01 J	-	NA	NA	NA	NA	NA	NA	0.081 J	0.62 J	0.69 J	R	0.21 J	0.35 J	R	0.064 J	NA	NA	NA	R	0.027J	NA	0.39 J	-	NA	-
Indeno(1,2,3-cd)pyrene(U137)	*	R	0.12 J	-	0.068 J	R	-	NA	-	-	NA	NA	NA	NA	NA	NA	R	6.8 J	7.8 J	R	3.9 J	4.2 J	R	-	NA	NA	NA	R	-	NA	0.73 J	-	NA	-
2-Methylnaphthalene	*	R	0.007 J	R	-	R	0.003 J	NA	0.013 J	0.013 J	NA	NA	NA	NA	NA	NA	0.076 J	0.37 J	0.4 J	0.03 J	0.23 J	0.27 J	0.007 J	0.08 J	NA	NA	NA	R	0.032 J	NA	0.38 J	0.008J	NA	-
4-Methylphenol (UO52)	4,000	R	-	R	-	R	-	NA	-	-	NA	NA	NA	NA	NA	NA	R	0.038 J	-	R	-	-	R	-	NA	NA	NA	R	-	NA	-	-	NA	-
Naphthalene (U165)	300	R	0.018 J	R	0.019 J	R	0.011 J	NA	0.032 J	0.031 J	NA	NA	NA	NA	NA	NA	R	0.91 J	1 J	0.014 J	0.54 J	0.84 J	R	0.16 J	NA	NA	NA	R	0.1 J	NA	0.71 J	0.027 J	NA	-
Pentachlorophenol (F027)	2,000	R	-	R	-	R	-	NA	0.029 J	-	NA	NA	NA	NA	NA	NA	R	-	-	R	-	-	R	-	NA	NA	NA	R	-	NA	-	-	NA	-
Phenanthrene	*	R	0.11 J	R	0.075 J	R	0.034 J	NA	0.086 J	0.086 J	NA	NA	NA	NA	NA	NA	0.15 J	2.6 J	3.1 J	0.091 J	1.3 J	1.6 J	0.002 J	0.28 J	NA	NA	NA	R	0.089 J	NA	1.3	0.53 J	NA	-
Phenol (U188)	50,000	R	-	R	-	R	-	NA	-	-	NA	NA	NA	NA	NA	NA	R	0.076 J	-	R	-	-	R	-	NA	NA	NA	R	-	NA	-	-	NA	-
Pyrene	2,000	0.013 J	0.31 J	0.028 J	0.25 J	0.012 J	0.11 J	NA	0.22 J	0.17 J	NA	NA	NA	NA	NA	NA	0.047 J	4.4 J	12 J	0.021 J	3.7 J	10 J	R	1.3 J	NA	NA	NA	R	0.35 J	NA	0.87 J	0.14 J	NA	-
PESTICIDES																																		
alpha-Chlordane (U036)	0.54	NA	NA	NA	NA	NA	NA	-	-	NA	-	-	-	0.011	0.13	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	-	NA	NA	NA	-
4,4'-DDD (U060)	2.9	NA	NA	NA	NA	NA	NA	-	0.042	NA	-	-	11 J	0.035	-	1.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.016	NA	NA	NA	-
4,4'-DDE	2.1	NA	NA	NA	NA	NA	NA	0.0027 J	0.0073	NA	-	0.31 J	-	-	0.91	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0071	NA	NA	NA	-
4,4'-DDT (U061)	2.1	NA	NA	NA	NA	NA	NA	0.0067	0.014	NA	0.0029 J	0.23 J	-	0.023	0.63	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	-	NA	NA	NA	-
Dieldrin (P037)	0.044	NA	NA	NA	NA	NA	NA	-	-	NA	-	0.067 J	-	-	0.034	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	-	NA	NA	NA	-
Endosulfan II (P050)	*	NA	NA	NA	NA	NA	NA	-	0.0044 J	NA	-	0.061 J	-	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	-	NA	NA	NA	-
Endosulfan sulfate	*	NA	NA	NA	NA	NA	NA	0.01	0.031	NA	0.0046 J	-	-	0.066	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	-	NA	NA	NA	-
Endrin aldehyde	NA	NA	NA	NA	NA	NA	NA	-	-	NA	-	0.1 J	-	-	0.69	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.018	NA	NA	NA	-
Endrin ketone	*	NA	NA	NA	NA	NA	NA	-	-	NA	-	0.054 J	-	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	-	NA	NA	NA	-
gamma-Chlordane (U036)	0.54	NA	NA	NA	NA	NA	NA	-	-	NA	-	-	-	-	0.059	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	-	NA	NA	NA	-
PCBs																																		
Arochlor 1254 (B007)	1.0	NA	NA	NA	NA	NA	NA	-	0.015 J	NA	-	-	-	-	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	-	NA	NA	NA	-
Arochlor 1260 (B007)	1.0	NA	NA	NA	NA	NA	NA	-	-	NA	-	-	-	0.14	-	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	-	NA	NA	NA	-

1. Analysis by NYTEST Labs, Port Washington, New York.
2. NYSDEC, 1992.
3. RE = Sample reanalyzed.
4. Field duplicate sample.
5. DL = Sample reanalyzed with different dilution factor.
6. Concentrations in mg/L.

* = No guidance value published.
\- = Not detected above required quantitation limits.
NA = Not Analyzed.
J = Estimated value.
R = Unusable data.

TABLE 4.6
INORGANIC ANALYSIS (UG/L)
GROUNDWATER SAMPLES - SEPTEMBER 1992
SAG HARBOR - BRIDGE STREET SITE
SUFFOLK COUNTY, NEW YORK

ANALYTE (1)	CLASS GA GROUNDWATER STANDARDS AND GUID. VAL. (2)	SAMPLE					
		MW-1	MW-3	MW-3A (3)	AST-1	AST-2	FIELD BLANK
ALUMINUM	100	1,490 J	5,120 J	4,470 J	48,800 J	31,400 J	-
ANTIMONY	3 G	-	-	-	93.0 J	84.2 J	-
ARSENIC (D004)	25	-	8.5 J	5.4 J	36.3 J	20.1 J	-
BARIUM (D005)	1000	179 J	210	230	1,250	875	-
BERYLLIUM	3 G	-	-	-	4.0 J	1.7 J	-
CADMIUM (D006)	10	-	-	-	-	-	-
CALCIUM	NV	64,300	79,600	100,000	123,000	73,600	-
CHROMIUM (D007)	50	-	-	-	66.0	35.2	-
COBALT	NV	-	9.3 J	9.3 J	40.0 J	27.2 J	-
COPPER	200	602	28.2	19.2 J	797	440	-
CYANIDE (P030)	100	-	80.0 J	70.0 J	110 J	260 J	-
IRON	300	38,700	24,600	24,200	143,000	87,000	-
LEAD (D008)	25	173	374	373	4,060	1,870	-
MAGNESIUM	35,000	35,200	18,800	24,000	15,200	12,200	-
MANGANESE	300	244	497	616	2,440	1,830	-
MERCURY (D009)	2	0.31	0.42	0.34	6.0	4.8	-
NICKEL	NV	17.7 J	-	-	60.8	19.2 J	-
POTASSIUM	NV	19,000	15,100	17,900	10,100	8,100	-
SELENIUM	10	-	-	-	5.1	-	-
SILVER	50	-	-	-	11.0 J	-	-
SODIUM	20,000	81,500	87,200	115,000	42,500	38,400	-
THALLIUM	4 G	-	-	-	-	-	-
VANADIUM	NV	6.6 J	25.9 J	17.4 J	154	84.7	-
ZINC	300	2,580	722	598	3,110	1,640	-

1. Analysis by NYTEST Labs Port Washington, New York.
2. NYSDEC, 1991b.
3. Field duplicate sample.

NV = No standard or guidance value.
G = Guidance value.
\- = Not detected.
J = Estimated value.

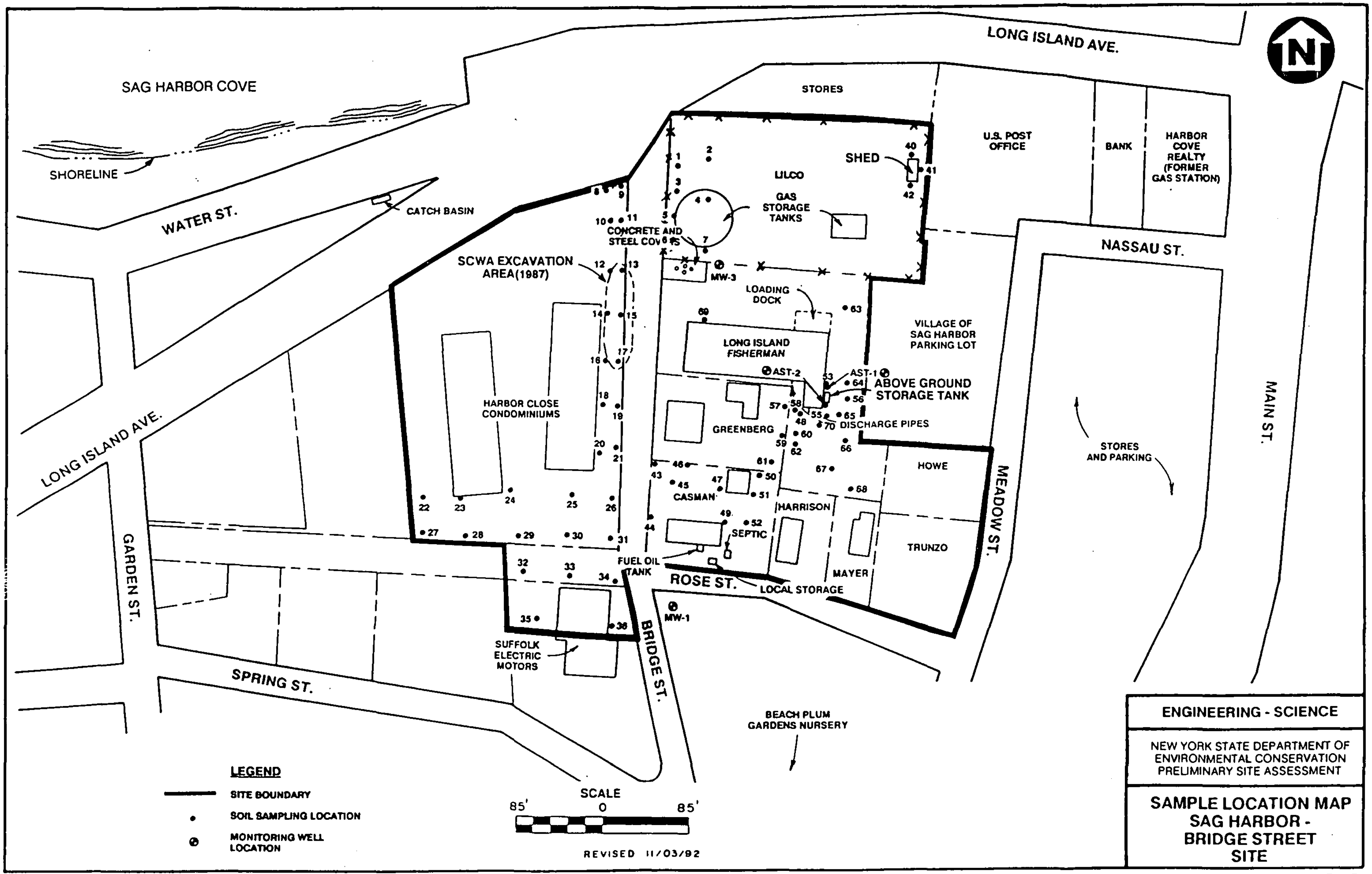
TABLE 4.7
DETECTED ORGANIC COMPOUNDS (UG/L)
GROUNDWATER SAMPLES – SEPTEMBER 1992
SAG HARBOR – BRIDGE STREET SITE
SUFFOLK COUNTY, NEW YORK

ANALYTE (1)	CLASS GA GROUNDWATER STANDARDS AND GUID VAL (2)	SAMPLE											
		MW–1	MW–3	MW–3DL(3)	MW–3A (4)	MW–3ADL	AST–1	AST–1DL	AST–2	AST–2RE (5)	AST–2DL	FIELD BLANK	TRIP BLANK
VOCs													
Acetone (U002)	NV	–	–	–	27 J	–	10 J	–	–	NA	–	6 J	–
Benzene (U019)	0.7	–	910 J	870	1,100 J	1000	290 J	160	270 J	NA	240	–	–
Chlorobenzene (U037)	5	–	10 J	–	–	–	–	–	–	NA	–	–	–
Chloromethane	5	–	10 J	–	–	–	–	–	–	NA	–	–	–
1,1–Dichloroethane	5	–	–	–	–	–	–	–	–	NA	40 J	–	–
Ethylbenzene (F003)	5	–	360 J	260	330	320	34 J	–	53 J	NA	40 J	–	–
Methylene Chloride (U080)	5	2J	–	17 J	22 J	–	–	22 J	–	NA	25 J	–	1 J
Toluene (U220)	5	–	25 J	16 J	24 J	20 J	2 J	–	3 J	NA	5 J	–	–
Xylene (Total) (U239)	5	–	190 J	150	170	200	18 J	4 J	48 J	NA	40 J	–	–
SVOCs													
Acenaphthene	20 G	–	190 J	600	110	180	10	NA	1 J	–	NA	–	NA
Acenaphthylene	NV	–	23 J	38 J	7 J	8 J	–	NA	R	2 J	NA	–	NA
Anthracene	50 G	–	130 J	240 J	27	33 J	–	NA	R	2 J	NA	–	NA
Benzo(a)anthracene	0.002 G	–	60 J	94 J	5 J	6 J	3 J	NA	R	2 J	NA	–	NA
Benzo(a)pyrene (U022)	ND	–	50 J	–	–	–	3 J	NA	R	–	NA	–	NA
Benzo(b)fluoranthene	0.002 G	–	22 J	–	–	–	2 J	NA	R	–	NA	–	NA
Benzo(g,h,i)perylene	NV	–	30 J	–	–	–	4 J	NA	R	–	NA	–	NA
Benzo(k)fluoranthene	0.002 G	–	33 J	–	–	–	3 J	NA	R	–	NA	–	NA
bis(2–Ethylhexyl)phthalate (U028)	50	–	–	51 J	–	–	–	NA	R	2 J	NA	–	NA
Butylbenzylphthalate	50 G	–	1 J	–	–	–	–	NA	R	–	NA	–	NA
Carbazole	NV	–	1 J	5 J	1 J	2 J	1 J	NA	R	–	NA	–	NA
Chrysene (U050)	0.002 G	–	95 J	100 J	7 J	8 J	5 J	NA	1 J	4 J	NA	–	NA
Dibenz(a,h)anthracene (U063)	NV	–	5 J	–	–	–	–	NA	R	–	NA	–	NA
Dibenzofuran	NV	–	18 J	27 J	7 J	7 J	–	NA	R	–	NA	–	NA
2,4–Dimethylphenol (U101)	NV	–	6 J	–	13	–	–	NA	R	–	NA	–	NA
Fluoranthene (U120)	50 G	–	44 J	260 J	12	24 J	5 J	NA	1 J	2 J	NA	–	NA
Fluorene	50 G	–	120 J	270 J	55	74	9 J	NA	2 J	4 J	NA	–	NA
Indeno(1,2,3–cd) pyrene (U137)	0.002 G	–	27 J	–	–	–	–	NA	R	–	NA	–	NA
2–Methylnaphthalene	NV	–	450 J	650	60	76	15	NA	13 J	10 J	NA	–	NA
Naphthalene (U165)	10 G	–	810 J	2400	190 J	320	8 J	NA	10	4 J	NA	–	NA
N–Nitrosodiphenylamine	NV	–	–	–	–	–	11	NA	R	–	NA	–	NA
Phenanthrene	50 G	–	290 J	690	80	110	16	NA	5 J	9 J	NA	–	NA
Phenol (U188)	1	–	18	23 J	20	23 J	12	NA	R	8 J	NA	–	NA
Pyrene	50 G	–	43 J	260 J	14	–	9 J	NA	3 J	4 J	NA	–	NA
PESTICIDES													
Endrin (P051)	ND	NA	–	NA	0.14 J	NA	NA	NA	NA	NA	NA	–	NA

1. Analysis by NYTEST Labs, Port Washington, New York.
2. NYSDEC, 1991b.
3. DL = Sample analyzed with different dilution factor.
4. Field duplicate sample.
5. RE = Sample reanalyzed

NV = No standard or guidance value.
ND = Not detectable.
G = Guidance value.
– = Not detected above required quantitation limits.
J = Estimated value.
R = Unusable data.

FIGURE 4.1



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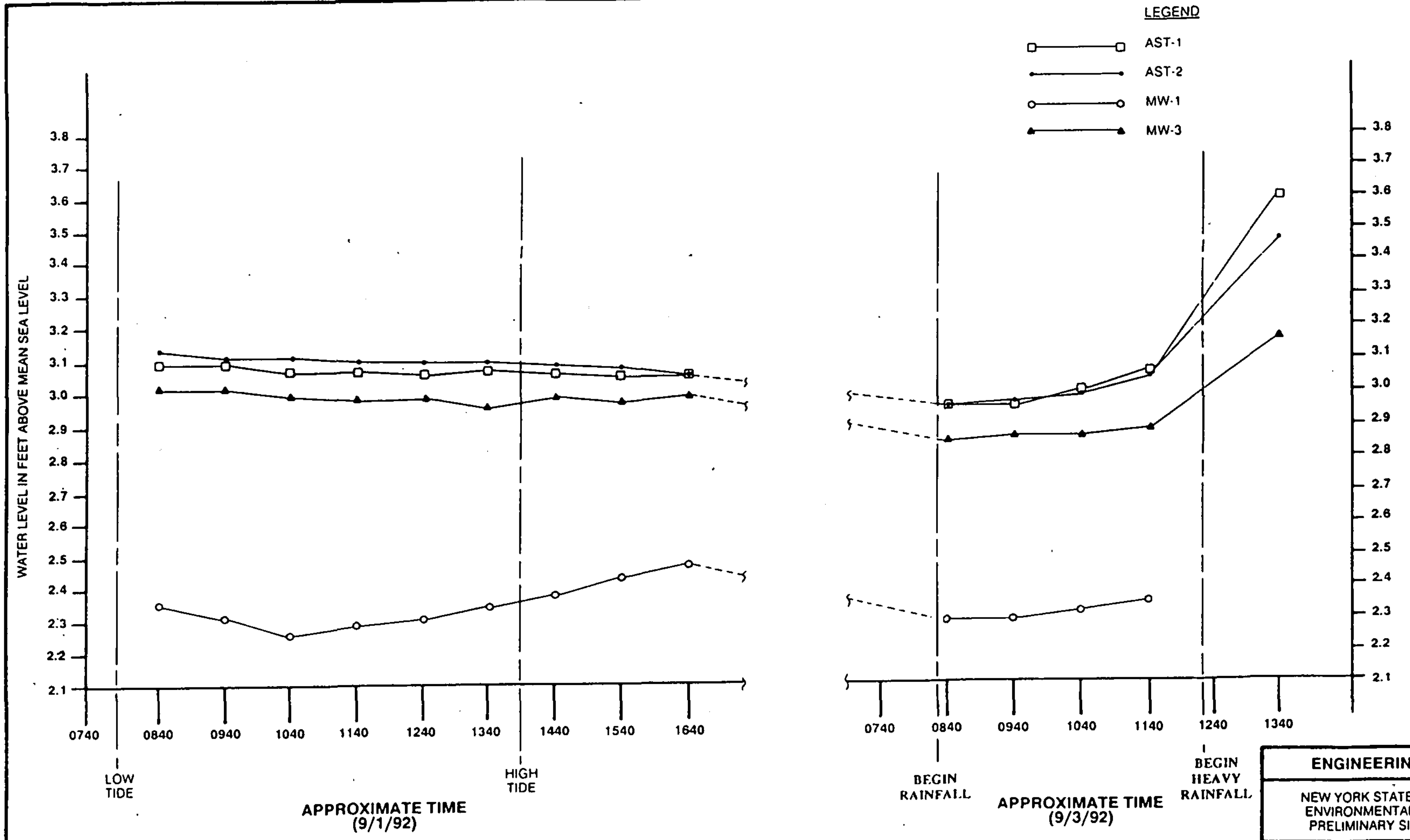
PRELIMINARY SITE ASSESSMENT

**SAMPLE LOCATION MAP
SAG HARBOR -
BRIDGE STREET
SITE**

FIGURE 4.2



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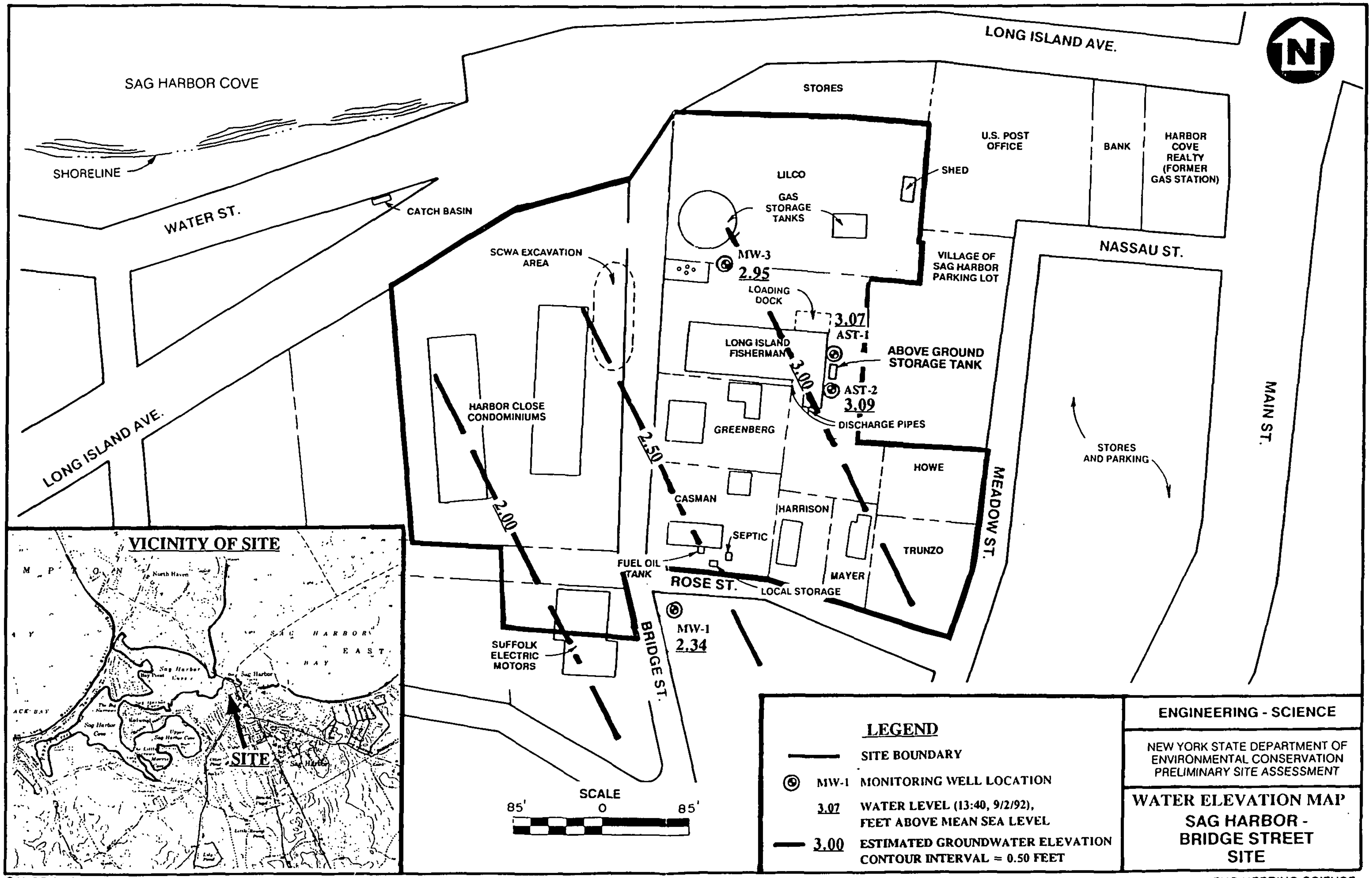
PRELIMINARY SITE ASSESSMENT

**WATER LEVEL MEASUREMENTS
SAG HARBOR-
BRIDGE STREET
SITE**

SY 230.02

FIGURE 4.3



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WATER ELEVATION MAP
SAG HARBOR - BRIDGE STREET SITE

SY 230. 02

ENGINEERING-SCIENCE

SECTION 5

SECTION 5

SECTION 5

RECOMMENDATIONS

5.1 RECOMMENDED SITE CLASSIFICATION

Based on the data gathered during this investigation, ES recommends that:

(1) The SHBS site not be nominated for listing on the New York State Registry of Inactive Hazardous Waste Sites because neither listed or characteristic hazardous waste, as defined under 6NYCRR Part 371, have been determined to be present on-site, and

(2) The LIF property (NYSDEC Site No. 152126) be delisted from the Registry due to the lack of documented hazardous waste.

These recommendations are based on the following key results of the assessment presented in Section 4:

(1) The data gathered during this investigation do not establish the presence of regulated hazardous waste on-site, as defined by 6NYCRR Parts 371. Analytical results indicate that wastes containing lead, silver, mercury, and numerous organic chemicals including PCBs are present on the site, but these substances do not satisfy the regulatory definition of hazardous waste.

(2) Based on the results for over 150 soil samples, gathered during this investigation and previous investigations, the presence of hazardous waste is not likely to be established by additional sampling:

   a. The known potential waste disposal areas on-site have been sampled.

   b. EP Tox tests for lead have been conducted in over 10 percent of the soil samples collected during the PSA Task 3 investigation. These samples contained either the highest concentrations of total lead or were in locations which potentially had elevated lead concentrations, as indicated by groundwater analytical results. Leachable lead was detected in only one sample. The concentration of lead in the leachate obtained from the sample was 53.4 ug/l, almost 100 times lower than the regulatory standard of 5,000 ug/l.

   c. Concentrations of lead, silver, and mercury in soil would have to be at least several times greater than the maximum detected concentration to be likely to equal or exceed the regulatory standard using the EP Tox method.

   d. The maximum detected concentration of PCBs in soil, 1.4 mg/kg for a sample collected on the LILCO property during a previous investigation, is well below the 50 mg/kg regulatory limit for hazardous waste under 6NYCRR Part 371.4(e).

e. None of the listed compounds which have been detected in soil and groundwater can be attributed to the disposal of specific, regulated hazardous wastes attributable to documented past activities on-site, as required by 6NYCRR Part 371.

5.2 FUTURE WORK

ES recommends that the New York State Department of Health (NYSDOH) and SCDHS personnel review the sample results generated and compiled during this investigation to determine whether hazardous substances detected on-site could pose health risks to persons on and near the site.

SECTION 6

SECTION 6

SECTION 6

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