NEW YORK STATE
DEPARTMENT OF

ENVIRONMENTAL
CONSERVATION
Denise M. Sheehan,
Commissioner

Proposed Remedial Action Plan
for
the Gladsky Marine an Environmental Restoration Project
NYS Site No. 1-30-152

Main Document Repository
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Proposed Remedial Action Plan

Presented on

January 31, 2006
7:00 p.m.

at

Glen Cove City Hall Chambers
9 Glen Street
Glen Cove, Nassau County

Notice for Gladsky Marine Environmental Restoration Project

The New York State Department of Environmental Conservation (NYSDEC) is holding a **Public Meeting at 7:00 p.m. on January 31, 2006 at the City of Glen Cove City Hall Chambers** to present an update on Gladsky Marine, an environmental restoration project, located on Garvies Point Road, Glen Cove, Nassau County, New York (see map). A snow date of February 6, 2006 has been scheduled. The New York State Department of Environmental Conservation, the New York State Department of Health (NYSDOH), and the City of Glen Cove Community Development Agency (GCCDA) are pleased to announce the completion of the Proposed Remedial Action Plan.

Site History And Description

The site, which is currently leased to a fishing tour company, was previously home to Gladsky Marine, a marina and marine repair facility. From the early 1970's until 1999, Gladsky's primary function was as marina and boat repair operation. Anecdotal evidence suggests that historical activities at the site may have attributed to the semivolatile organic compound (SVOC) and inorganic (metals) contamination in the site soil. This site is currently slated for redevelopment as an esplanade and inter-tidal wetland as part of the Glen Cove Creek Waterfront Revitalization Area.

Under a grant from the US Environmental Protection Agency Brownfields Program, a Phase I, Phase II, and Supplement Phase Site Assessment have been performed. Site data, collected during these assessments, indicates that SVOCs and metals are present in the site soil.

A threat to human health may be associated with the potential for exposure to contaminated surface and subsurface soil at the site. To eliminate or mitigate this threat the following proposed remedial action plan has been prepared.

Proposed Remedial Action Plan

The NYSDEC proposes the following remedy to allow for redevelopment of the site as an esplanade and inter-tidal wetland. Contaminated soil above NYSDEC TAGM 4046 will be excavated and appropriately disposed at an off-site facility. A minimum of 2-feet of soil will be removed across the site, with excavation limited to above the groundwater table. An environmental easement will be imposed that will require compliance with the site management plan. The site management plan will address any residual contaminated soils that may be encountered during future redevelopment, evaluate the potential for vapor intrusion for any building that may be erected during future redevelopment, and identify any use restrictions if needed.

Citizen Participation Summary

As part of its responsibility to inform and involve the public, the NYSDEC is and will continue to carry out citizen participation measures at this site. This meeting is the first step to keep the public informed.

Repositories: Below are listed the places where the public can review relevant public documents regarding information about this site:

GCCDA
City Hall
9 Glen Street
Glen Cove, New York 11542
Attn. Danielle Oglesby
(516) 676-1625

NYSDEC Region 1 Headquarters
SUNY Campus
Loop Road Building 40
Stony Brook, NY 11790-2356
Attn: William Fonda
(631) 444-0350

NYSDEC Central Office
11th Floor, 625 Broadway
Albany, NY 12233-7015
Attn: Heide-Marie Dudek, P.E.
(518) 402-9622

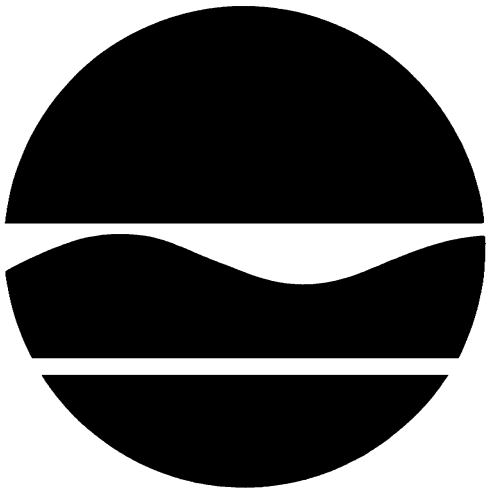
Site Location Map

PROPOSED REMEDIAL ACTION PLAN
GLADSKY

Environmental Restoration Project

Nassau County, New York
Site No. E1-30-152

January, 2006



Prepared by:

Division of Environmental Remediation
New York State Department of Environmental Conservation

A 1996 Clean Water/Clean Air Bond Act
Environmental Restoration Project

PROPOSED REMEDIAL ACTION PLAN

GLADSKY

Nassau County, New York
Site No. E1-30-152
January, 2006

SECTION 1: SUMMARY AND PURPOSE OF THE PROPOSED PLAN

The New York State Department of Environmental Conservation (NYSDEC), in consultation with the New York State Department of Health (NYSDOH), is proposing a remedy for the Gladsky Site. The presence of hazardous substances has created threats to human health and/or the environment that are addressed by this proposed remedy.

The 1996 Clean Water/ Clean Air Bond Act provides funding to municipalities for the investigation and cleanup of brownfields. Brownfields are abandoned, idled or under-used properties where redevelopment is complicated by real or perceived environmental contamination. They typically are former industrial or commercial properties where operations may have resulted in environmental contamination. Brownfields often pose not only environmental, but legal and financial burdens on communities. Under the Environmental Restoration (Brownfields) Program, the state provides grants to municipalities to reimburse up to 90 percent of eligible costs for site investigation and remediation activities. Once remediated the property can then be reused.

As more fully described in Sections 3 and 5 of this document, boat maintenance and repair activities have resulted in the disposal of hazardous substances, including polycyclic aromatic hydrocarbons (PAHs) and metals.. These hazardous substances have contaminated the surface and subsurface soil at the site, and have resulted in:

- a threat to human health associated with potential exposure to contaminated surface and subsurface soil.

To eliminate or mitigate these threats, the NYSDEC proposes the following remedy to allow for redevelopment of the site as an esplanade and inter-tidal wetland:

- Excavation of contaminated soil above NYSDEC TAGM 4046, with a minimum of 2-feet of soil removed across the site. Excavation will be limited to above the groundwater table. If backfill is needed to achieve proper post-excavation grading, the backfill will constitute soil with no analytes in exceedance of NYSDEC TAGM 4046 soil cleanup objectives or local site background. Excavated soil will be appropriately disposed at an off-site facility.

- Development of a site management plan to: (i) address residual contaminated soils that may be excavated from the site during future redevelopment; (ii) evaluate the potential for vapor intrusion for any building that may be erected during future

redevelopment; and (iii) identify any use restrictions.

- An environmental easement will be imposed, that will require compliance with the site management plan.

- Institutional controls will be imposed on the use of groundwater. Since there is existing groundwater contamination migrating on-site from an off-site source, institutional controls will be imposed in the form of use and development restrictions preventing the use of groundwater as a source of potable or process water without necessary water quality treatment as determined by the Nassau County Department of Health.

- A periodic certification will be prepared and submitted by a professional engineer or environmental professional acceptable to the NYSDEC, which will certify that the institutional and environmental controls put in place are unchanged from the previous certification and nothing has occurred that would impair the ability of the controls to protect public health or the environment or constitute a violation or failure to comply with any operation and maintenance or site management plan.

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

This Proposed Remedial Action Plan (PRAP) identifies the preferred remedy, summarizes the other alternatives considered, and discusses the reasons for this preference. The NYSDEC will select a final remedy for the site only after careful consideration of all comments received during the public comment period.

The NYSDEC has issued this PRAP as a component of the Citizen Participation Plan developed pursuant to the New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) Part 375. This document is a summary of the information that can be found in greater detail in the December 2000 "Phase II Environmental Site Assessment Report" (ESA), the September 2002 "Phase II Supplemental Environmental Site Assessment Report", and other relevant documents. The public is encouraged to review the project documents, which are available at the:

- City of Glen Cove Community Development Agency. The City of Glen Cove Community Development Agency is located at City Hall - 9 Glen Cove Street, Glen Cove New York 11542

- NYSDEC Central Office. Please contact Heide-Marie Dudek at the NYSDEC - 625 Broadway, Albany New York 12233-7015

The NYSDEC seeks input from the community on all PRAPs. A public comment period has been set from January 13 to February13 , 2006 to provide an opportunity for public participation in the remedy selection process. A public meeting is scheduled for January 31, 2006 at the City of Glen Cove City Hall Chambers beginning at 7:00 p.m.

At the meeting, the results of the ESAs will be presented along with a summary of the proposed remedy. After the presentation, a question-and-answer period will be held, during which verbal or written comments may be submitted on the PRAP. Written comments may also be sent to Ms. Heide-Marie Dudek at the above address through February 13, 2006.

The NYSDEC may modify the proposed remedy or select another of the alternatives presented in this PRAP, based on new information or public comments. Therefore, the public is encouraged to review and comment on all of the alternatives identified here.

Comments will be summarized and addressed in the responsiveness summary section of the Record of Decision (ROD). The ROD is the NYSDEC's final selection of the remedy for this site.

SECTION 2: SITE LOCATION AND DESCRIPTION

The Gladsky Site, located in Nassau County at Garvies Point Road in Glen Cove, New York (Figure 1, Site Location) is a 0.78 acre rectangular lot located on the northern side of Glen Cove Creek. The site, which is currently leased to a fishing tour company on a month-to-month basis, was previously home to Gladsky Marine, a marina and marine repair facility (Figure 2, Site Map). The topography of the site is relatively flat with steep slopes or bulkheads on the Glen Cove Creek embankment. The site is bounded by Garvies Point Road to the north and Glen Cove Creek to the south. This site is currently slated for redevelopment as an esplanade and inter-tidal wetland as part of the Glen Cove Creek Waterfront Revitalization Area.

The following National Priority List (NPL) sites and New York State Inactive Hazardous Waste Disposal Sites (SHWS) are located within one and one quarter mile of the Gladsky Site.

Li Tungsten Corporation (NPL) - Garvies Point Road - approximately 1/8 mile east of the site. (NYS Site No. 1-30-046)

Mattiace Petrochemical Company (NPL) - Garvies Point Road - approximately 1/4 mile northeast of the site. (NYS Site No. 1-30-017)

Captain's Cove Condominiums (SHWS) - Garvies Point Road - approximately 1/8 mile west of the site. (NYS Site No. 1-30-032)

Crown Dykman (SHWS) - 66 Herb Hill Road - approximately 1/4 mile northeast of the site. (NYS Site No. 1-30-054)

Powers Chemco (SHWS) - Charles Street - approximately ½ mile northeast of the site. (NYS Site No. 1-30-028)

Slater Electric (SHWS) - 45 Sea Cliff Avenue - approximately 1 mile southeast of the site. (NYS Site No. 1-30-053A)

Pall Corporation (SHWS) - 30 - 36 Sea Cliff Avenue - approximately 1 mile southeast of the site. (NYS Site No. 1-30-053B)

Photocircuits Corporation (SHWS) - 31 Sea Cliff Avenue - approximately 1 mile southeast of the site. (NYS Site No. 1-30-009)

RonHill Cleaners (SHWS) - 71 Forest Avenue - approximately 1 mile northeast of the site. (NYS Site No. 1-30-071)

SECTION 3: SITE HISTORY

3.1: Operational/Disposal History

Review of historical documents and maps, as presented in the Phase I Environmental Site Assessment dated May 2000, indicates that the Gladsky site was not developed until the late 1950's when it appears that the site may have housed a concrete plant or sand and gravel facility. By the early 1960's, it appears that the site was no longer used as a concrete plant or sand and gravel facility. According to available records, Gladsky Marine occupied the site from the early 1970's until 1999. Gladsky's primary function was as marina and boat repair operation.

3.2: Remedial History

Prior to the current Phase II and Supplemental Phase II Environmental Site Assessment, the only other investigation performed at the Gladsky site was a 1993 Environmental Assessment performed on the behalf of Gladsky Marine. This report only identified non-friable transit asbestos material in the surface soil.

SECTION 4: ENFORCEMENT STATUS

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

Since no viable PRPs have been identified, there are currently no ongoing enforcement actions. However, legal action may be initiated at a future date by the State to recover state response costs should PRPs be identified. The City of Glen Cove will assist the state in its efforts by providing all information to the State which identifies PRPs. The City of Glen Cove will also not enter into any agreement regarding response costs without the approval of the NYSDEC.

SECTION 5: SITE CONTAMINATION

The City of Glen Cove Community Development Agency has recently completed an Environmental Site Assessment (ESA) to determine the nature and extent of any contamination by hazardous substances at this environmental restoration site.

5.1: Summary of the Site Investigation

The purpose of the ESA was to define the nature and extent of any contamination resulting from previous activities at the site. The ESA was conducted between April 2000 and March 2002. The field activities and findings of the investigation are described in the SI report.

The following activities were conducted during the ESA:

- Research of historical information;
- Installation of 11 soil borings for analysis of soils;
- Collection of 5 discrete groundwater samples using a direct push technique;
- Collection of 9 surface soil samples;

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

- Groundwater, drinking water, and surface water SCGs are based on NYSDEC "Ambient Water Quality Standards and Guidance Values" and Part 5 of the New York State Sanitary Code.
- Soil SCGs are based on the NYSDEC "Technical and Administrative Guidance Memorandum (TAGM) 4046; Determination of Soil Cleanup Objectives and Cleanup Levels".

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

5.1.1: Site Geology and Hydrogeology

Soils observed at the Gladsky site are similar to those observed at the Captain's Cove Condominium Superfund site located approximately 900 feet west of the site and the Li Tungsten Superfund site located approximately 500 feet east of the site. In general the vadose zone geology consists of silt or silt and fine grained sand, while the saturated zone consists of sand underlain by an extensive and thick clay layer (observed off-site at 12- to 16-feet below ground surface).

Groundwater, which varies with tidal cycles, was encountered at the site between 5.5 and 7.5-feet below ground surface. Based on data presented in the Captain's Cove and Li Tungsten Remedial Investigations, groundwater flows in a southerly direction towards Glen Cove Creek.

5.1.2: Nature of Contamination

As described in the Phase II and Supplemental Phase II ESA reports, soil and groundwater samples were collected to characterize the nature and extent of contamination. As summarized in Table 1, semivolatile organic compounds (SVOCs) and inorganics (metals) were detected at concentrations exceeding their SCGs in surface and subsurface soils across the site. Volatile organic compounds (VOCs) and metals were detected in the groundwater at concentrations

exceeding their respective SCGS. Review of the ESA data indicates the site contamination is possibly attributable to historic activities at the site.

The SVOCs of concern in soil are benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, and dibenzo(a,h)anthracene. These SVOCs are classified as polycyclic aromatic hydrocarbons (PAHs). The metals of concern in the soil are arsenic, cadmium, chromium, lead, nickel, and zinc. The VOCs of concern in groundwater are trichloroethene, 1,2-dichloroethene, and vinyl chloride.

5.1.3: Extent of Contamination

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

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

Table 1 summarizes the degree of contamination for the contaminants of concern in soil and groundwater and compares the data with the SCGs for the site. The following is a summary of the findings of the investigations.

Surface Soil

Nine surface soil samples were collected and analyzed for SVOCs, PCBs, pesticides, and metals. Aroclor 1254 was detected at 1.1 ppm, slightly above its TAGM 4046 soil cleanup objective of 1 ppm, in one sample. Pesticides were not detected in any surface soil sample.

Several SVOC PAHs were detected above their respective TAGM 4046 soil cleanup objective across the site (Figure 3, Surface Soil PAH Distribution). PAHs detected above their clean up objective include: benzo(a)anthracene at non-detect (ND) to 12 ppm; chrysene at ND to 11 ppm; benzo(b)fluoranthene at ND to 18 ppm; benzo(k)fluoranthene at ND to 4.3 ppm; benzo(a)pyrene at ND to 8.2 ppm; indeno(1,2.3-cd)pyrene at ND to 3.4 ppm; and dibenzo(a,h)anthracene at ND to 1.9 ppm.

Seven metals were detected, above their TAGM 4046 soil cleanup objectives, across the site. Arsenic, copper, and zinc were detected at all sample locations above their respective cleanup objectives; concentration ranged from 14.4 to 3380 ppm, 95.2 to 10,000 ppm, and 121 to 3,250 ppm respectively. Nickel was detected above its cleanup objective in 7 of the nine sample locations, with concentrations ranging from 12 to 107 ppm. Chromium and lead were detected above their respective cleanup objectives in 4 out of 9 sample locations with concentrations ranging from 16.6 to 674 ppm and 132 to 7590 ppm, respectively. Cadmium, detected at two locations above its cleanup objective, had concentrations ranging from 1.4 to 17.1 ppm.

In general, the highest concentrations of PAHs and metals detected were located in central portion of the site in the area of SS-2, SS-3, and SS-4.

Subsurface Soil

Nineteen subsurface soil samples were collected at depths ranging from 6-inches below ground surface (bgs) and 7-feet bgs. Samples collected were analyzed for SVOCs and metals. A comparison of subsurface soil data versus surface soil data were similar to a depth of 18-inches bgs. At depths greater than 4-feet bgs PAH and metal concentrations reduced significantly (Figure 4, Subsurface Soil PAH distribution). PAHs detected in the subsurface included benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(a)pyrene, indeno(c,d)pyrene, and dibenzo(a,h)anthracene. Table 1 presents a summary of the PAH concentrations detected.

Seven metals were detected in the subsurface soils at concentrations above their TAGM 4046 cleanup objectives. These metals included arsenic, cadmium, chromium, copper, lead, nickel,

and zinc. Table 1 provides a summary of metals detected in the subsurface soils.

As would be expected, the highest concentrations of PAHs and metals detected were located in central portion of the site in the area of SS-2, SS-3 and SS-4.

Groundwater

During the initial Phase II ESA, five groundwater samples were collected and analyzed for VOCs, SVOCs, PCBs, pesticides, and metals. PCBs and pesticides were not detected at any concentration in the groundwater samples. SVOCs were not detected at a concentration that was above the New York State (NYS) Class GA Standards. This would indicate that the PAHs detected in the surface and subsurface soil are not migrating to the groundwater.

The upgradient groundwater sample collected at G-P-3 contained four VOCs (vinyl chloride, 1,1-dichloroethene, 1,2-dichloroethene, and trichloroethene) at concentrations above the NYS Class GA standards. Based on other work performed in the area of the Gladsky site, it is believed that this contamination is emanating from the upgradient Mattiace Petrochemical Site.

Total and dissolved metal concentrations were reported for each of the 5 groundwater samples. A side-by-side comparison of the total versus dissolved metal concentrations indicates that more than 80% of the concentrations of metals detected in the total metals samples is attributable to suspended solids in the groundwater samples. With the exception of naturally occurring minerals iron, magnesium, manganese, and sodium; only antimony and thallium were detected above their respective NYS Class GA Standards in total and filtered samples.

5.2: Interim Remedial Measures

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

There were no IRMs performed at this site during the Phase II and Supplemental Phase II ESA.

5.3: Summary of Human Exposure Pathways:

This section describes the types of human exposures that may present added health risks to persons at or around the site.

An exposure pathway describes the means by which an individual may be exposed to contaminants originating from a site. An exposure pathway has five elements: [1] a contaminant source, [2] contaminant release and transport mechanisms, [3] a point of exposure, [4] a route of exposure, and [5] a receptor population.

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

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

The potential exposure pathways identified for this site are incidental ingestion of contaminated soil, inhalation of contaminated dust by people who enter the site, and dermal contact with contaminated surface soil. On-site utility and construction workers could likewise be exposed to contaminated soil and dust at the site during any construction activities.

Currently no one is using the on-site groundwater, however, if a well were installed on-site users could be exposed to contaminants present in the groundwater through ingestion, inhalation, and direct contact. It is also possible that the volatile contamination present in the groundwater could volatilize and contaminate indoor air in any future structures that may be built on the site.

5.4: Summary of Environmental Impacts

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

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

- Sediments of Glen Cove Creek may become affected by surface water run-off containing levels of metals and PAHs that may affect survival of benthic organisms and may bioaccumulate in fish.

SECTION 6: SUMMARY OF THE REMEDIATION GOALS AND THE PROPOSED USE OF THE SITE

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

The proposed future use for the Gladsky site is recreational in the form of an esplanade and inter-tidal wetland.

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

- potential exposures of persons at the site to SVOCs and metals in soil;
- the release of contaminants from soil into groundwater that may create exceedances of groundwater quality standards; and
- the release of contaminants from surface soil, into Glen Cove Creek through storm water erosion and wind borne dust.
- mitigate any future exposures from soil vapor intrusion, if present.

SECTION 7: SUMMARY OF THE EVALUATION OF ALTERNATIVES

The selected remedy must be protective of human health and the environment, be cost-effective, comply with other statutory requirements.

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

7.1: Description of Remedial Alternatives

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

Alternative 1: No Action

Present Worth: *$0*
Capital Cost: *$0*

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

additional protection to human health or the environment.

Alternative 2: Excavation of Contaminated Soil

Present Worth: *$388,000*
Capital Cost: *$378,000*
O&M Cost: *$10,000*

This alternative would include the removal of contaminated soil above the NYSDEC TAGM 4046, with a minimum of 2 feet of soil across the site removed. Confirmation sampling will be required to determine the final depth of excavation. Excavation will be limited to above the groundwater interface. If backfill is needed to achieve proper post-excavation grading, the backfill will constitute soil with no analytes in exceedance of NYSDEC TAGM 4046 soil cleanup objectives or local site background. Excavated soil would be appropriately disposed at an off-site facility. Approximately 3,100 cubic yards of material would be excavated and disposed.

A site management plan would be developed to: i) address residual contaminated soils that may be excavated from the site during future redevelopment. The plan would require soil characterization and, where applicable, disposal/reuse in accordance with NYSDEC regulations; (ii) evaluate the potential for vapor intrusion for any buildings developed on the site, including provision for mitigation of any impacts identified; and (iii) identify any use restrictions.

An environmental easement would be placed on the site requiring compliance with site management plan.

7.2 Evaluation of Remedial Alternatives

The criteria to which potential remedial alternatives are compared are defined in 6 NYCRR Part 375, which governs the remediation of environmental restoration projects in New York State.

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

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

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

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

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

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

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

6. Implementability. The technical and administrative feasibility of implementing each alternative are evaluated. Technical feasibility includes the difficulties associated with the

construction of the remedy and the ability to monitor its effectiveness. For administrative feasibility, the availability of the necessary personnel and materials is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, institutional controls, and so forth.

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

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

8. Community Acceptance - Concerns of the community regarding the ESA reports and the PRAP are evaluated. A responsiveness summary will be prepared that describes public comments received and the manner in which the NYSDEC will address the concerns raised. If the selected remedy differs significantly from the proposed remedy, notices to the public will be issued describing the differences and reasons for the changes.

SECTION 8: SUMMARY OF THE PROPOSED REMEDY

The NYSDEC is proposing Alternative 2 - Excavation of Contaminated Soil, as the remedy for this site. The elements of this remedy are described at the end of this section.

The proposed remedy is based on the results of the ESA and an evaluation of alternatives.

Alternative 2 is proposed, because, as described below, it satisfies the threshold criteria and provides the best balance of the remaining criteria described in Section 7.2. Alternative 2 would achieve the remedial goals (as described in Section 6) by eliminating the most significant source of contamination in the soil.

Alternative 2 will have minimal short-term impacts during excavation, including storm water run-off and fugitive dust. These impacts are easily managed through engineering controls, a community air monitoring plan, and a storm water management plan.

Achieving long-term effectiveness is best accomplished by excavation and removal of the contaminated soil above the NYSDEC TAGM 4046, with a minimum of 2 feet of soil across the site removed. Excavation will be limited to above the groundwater interface.

Alternative 2 is favorable in that it is readily implementable, as excavation and removal are a common construction practice.

Alternative 2 would reduce the volume of waste on-site by excavation and removal. Approximately 3,100 cubic yards of material would by removed by this alternative.

Alternative 2 would greatly reduce the mobility of contaminants by removing the contamination from the site and preventing run-off or fugitive dust emissions.

The estimated present worth cost to implement the remedy is $388,000.

The elements of the proposed remedy are as follows:

1. Excavation of contaminated soil above the NYSDEC TAGM 4046, with a minimum of 2 feet of soil across the site removed. Confirmation sampling will be required to determine the final depth of excavation.

Excavtion will be limited to above the groundwater interface. If backfill is needed to achieve proper post-excavation grading, the backfill will constitute soil with no analytes in exceedance of NYSDEC TAGM 4046 soil cleanup objectives or local site background. Excavated soil would be appropriately disposed at an off-site facility. Approximately 3,100 cubic yards of material would be excavated and disposed.

2. Development of a site management plan to: (i) address residual contaminated soils that may be excavated from the site during future redevelopment. The plan would require soil characterization and, where applicable, disposal/reuse in accordance with NYSDEC regulations; (ii) evaluate the potential for vapor intrusion for any buildings developed on the site, including provision for mitigation of any impacts identified; and (iii) identify any use restrictions.

3. Imposition of an institutional control in the form of an environmental easement that would: (i) require compliance with the approved site management plan; (ii) restrict the use of groundwater as a source of potable water, without necessary water quality treatment as determined by NYSDOH; and (iii) require the property owner to complete and submit to the NYSDEC a periodic certification.

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

TABLE 1
Nature and Extent of Contamination
April 2000 - March 2002

SURFACE SOIL	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]	Frequency of Exceeding SCG
Semivolatile Organic Compounds (SVOCs)	Benzo(a)anthracene	ND - 12.0	0.224	4 of 9
	Chrysene	ND - 11.0	0.4	3 of 9
	Benzo(b)fluoranthene	ND - 18.0	1.1	2 of 9
	Benzo(k)fluoranthene	ND - 4.3	1.1	1 of 9
	Benzo(a)pyrene	ND - 8.2	0.061	6 of 9
	Indeno(1,2,3-cd)pyrene	ND - 3.4	3.2	1 fo 9
	Dibenzo(a,h)anthracene	ND - 1.9	0.014	3 of 9
Inorganic Compounds	Arsenic	14.4 - 3,380	7.5	9 of 9
	Cadmium	1.4 - 17.1	10	2 of 9
	Chromium	16.6 - 674	50	4 of 9
	Copper	95.2 - 10,000	25	9 of 9
	Lead	132 - 7,590	400	4 of 9
	Nickel	12 - 107	13	7 of 9
	Zinc	121 -3,250	20	9 of 9
PCBs	Aroclor-1254	ND - 1.1	1.0	1 of 4

SUBSURFACE SOIL	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]	Frequency of Exceeding SCG
Semivolatile Organic Compounds (SVOCs)	Benzo(a)anthracene	ND - 15.0	0.224	6 of 19
	Chrysene	ND - 14.0	0.4	4 of 19
	Benzo(b)fluoranthene	ND - 25.0	1.1	3 of 19
	Benzo(k)fluoranthene	ND - 8.7	1.1	3 of 19
	Benzo(a)pyrene	ND - 14.0	0.061	13 of 19
	Indeno(1,2,3-cd)pyrene	ND - 5.0	3.2	1 of 19
	Dibenzo(a,h)anthracene	ND - 1.5	0.014	4 of 19

TABLE 1
Nature and Extent of Contamination (Continued)

SUBSURFACE SOIL	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]	Frequency of Exceeding SCG
Inorganic Compounds	Arsenic	6.8 - 44.4	7.5	13 of 19
	Cadmium	0.43 - 12.8	10	1 of 19
	Chromium	11.1 - 53	50	1 of 19
	Copper	22.2 - 338	25	15 of 19
	Lead	35.3 - 739	400	1 of 19
	Nickel	7.6 - 20.7	13	3 of 19
	Zinc	31.7 - 355	20	18 of 19

GROUNDWATER	Contaminants of Concern	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)[a]	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)	Vinyl Chloride	ND - 10	2	1 of 5
	1,1-Dichloroethene	ND - 7	5	1 of 5
	1,2-Dichloroethene	ND - 51	5	1 of 5
	Trichloroethene	ND - 36	5	1 of 5
Inorganic Compounds	Antimony (Total)	ND - 28.1	3	1 of 5
	Antimony (Dissolved)	ND - 5	3	3 of 5
	Arsenic (Total)	ND - 40.5	25	1 of 5
	Arsenic (Dissolved)	ND - 5	25	0 of 5
	Barium (Total)	42.5 - 2,720	1,000	1 of 5
	Barium (Dissolved)	ND - 62.5	1,000	0 of 5
	Beryllium (Total)	ND - 29.3	3	2 of 5
	Beryllium (Dissolved)	ND	3	0of 5
	Cadmium (Total)	ND - 27.2	5	2 of 5
	Cadmium (Dissolved)	ND - 6.9	5	0 of 5
	Chromium (Total)	24.4 - 731	50	3 of 5
	Chromium (Dissolved)	ND - 12.3	50	0 of 5

TABLE 1
Nature and Extent of Contamination (Continued)

GROUNDWATER	Contaminants of Concern	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)[a]	Frequency of Exceeding SCG
Inorganic Compounds	Copper (Total)	6.4 - 495	200	2 of 5
	Copper (Dissolved)	ND - 4.7	200	0 of 5
	Iron (Total)	5,250 - 1,230,000	300	5 of 5
	Iron (Dissolved)	325 - 5380	300	5 of 5
	Lead (Total)	5.1 - 391	25	4 of 5
	Lead (Dissolved)	ND - 4.1	25	0 of 5
	Magnesium (Total)	28,400 - 99,700	35000	4 of 5
	Magnesium (Dissolved)	16,600 - 47,500	35000	2 of 5
	Manganese (Total)	461 - 41,700	300	5 of 5
	Manganese (Dissolved)	348 - 16,500	300	5 of 5
	Mercury (Total)	ND - 0.91	0.7	1 of 5
	Mercury (Dissolved)	ND	0.7	0 of 5
	Nickel (Total)	12.7 - 649	100	2 of 5
	Nickel (Dissolved)	ND - 34.1	100	0 of 5
	Selenium (Total)	ND - 27.1	10	2 of 5
	Selenium (Dissolved)	ND - 6.6	10	0 of 5
	Sodium (Total)	43,500 - 405,000	20000	5 of 5
	Sodium (Dissolved)	25,500 - 417,000	20000	5 of 5
	Thallium (Total)	ND - 35.8	0.5	1 of 5
	Thallium (Dissolved)	ND - 16.2	0.5	1 of 5

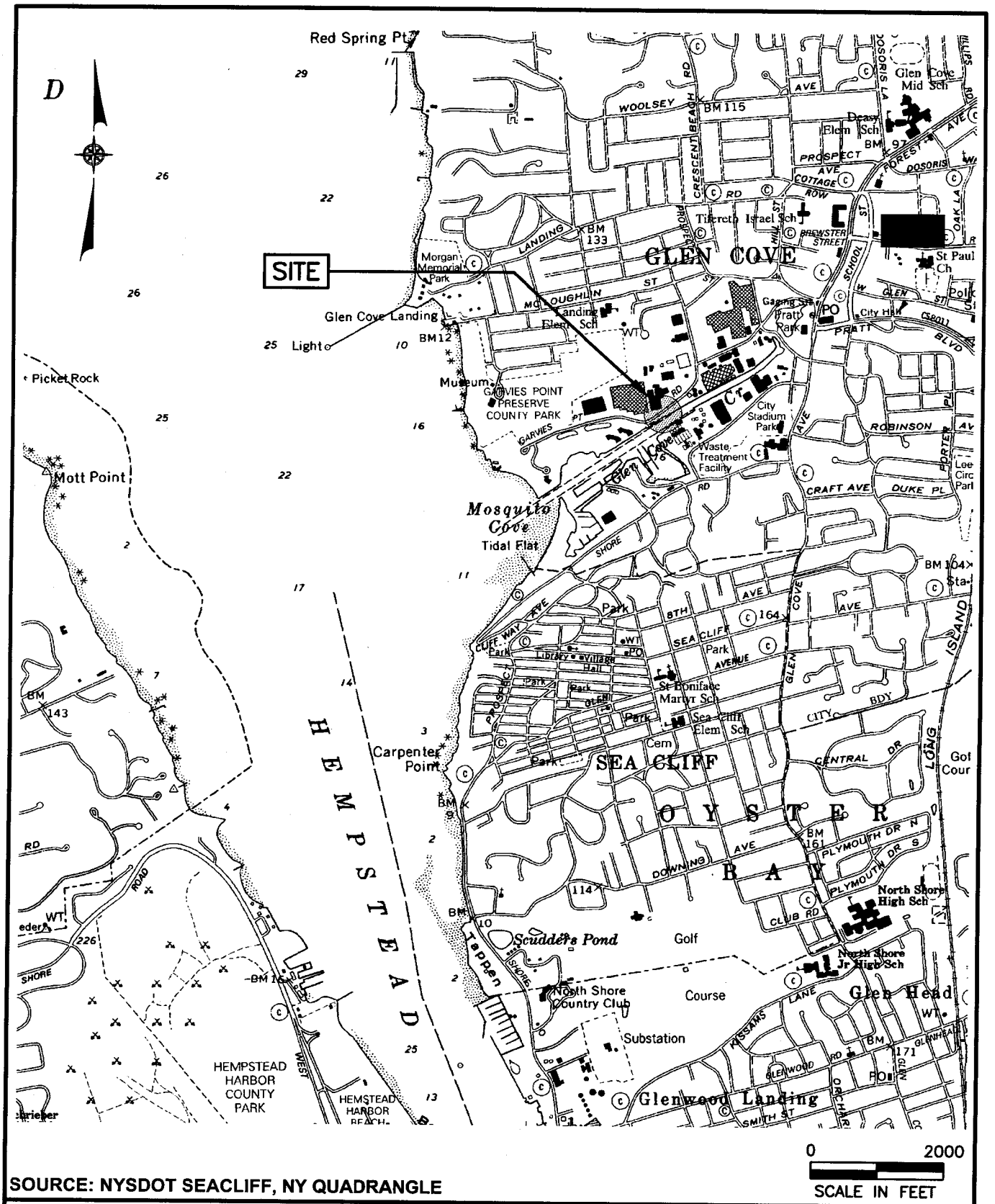
[a] ppb = parts per billion, which is equivalent to micrograms per liter, ug/L, in water;
ppm = parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;

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

ND - Not Detected

Table 2
Remedial Alternative Costs

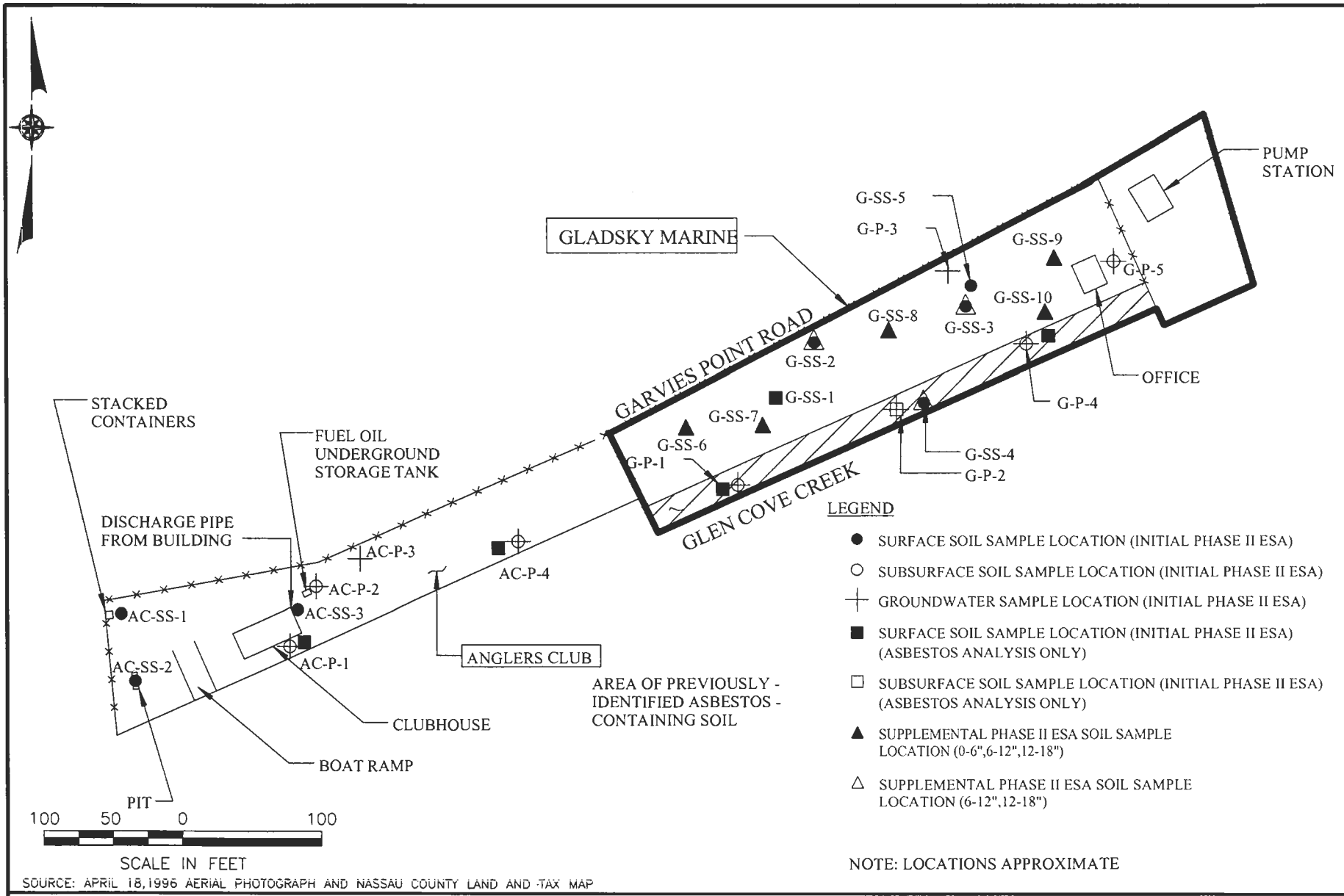
Remedial Alternative	Capital Cost	Annual OM&M	Total Present Worth
No Action	$0	$0	$0
Excavation of Contaminated Soil	$378,000	$10,000	$388,000



SOURCE: NYSDOT SEACLIFF, NY QUADRANGLE

Dvirka and Bartilucci
CONSULTING ENGINEERS
A DIVISION OF WILLIAM F. COSULICH ASSOCIATES, P.C.

FIGURE 1
SITE LOCATION



SOURCE: APRIL 18,1996 AERIAL PHOTOGRAPH AND NASSAU COUNTY LAND AND TAX MAP

FIGURE 2
SITE MAP

Dvirka and Bartilucci
Consulting Engineers
A Division of William F. Cosulich Associates, P.C.

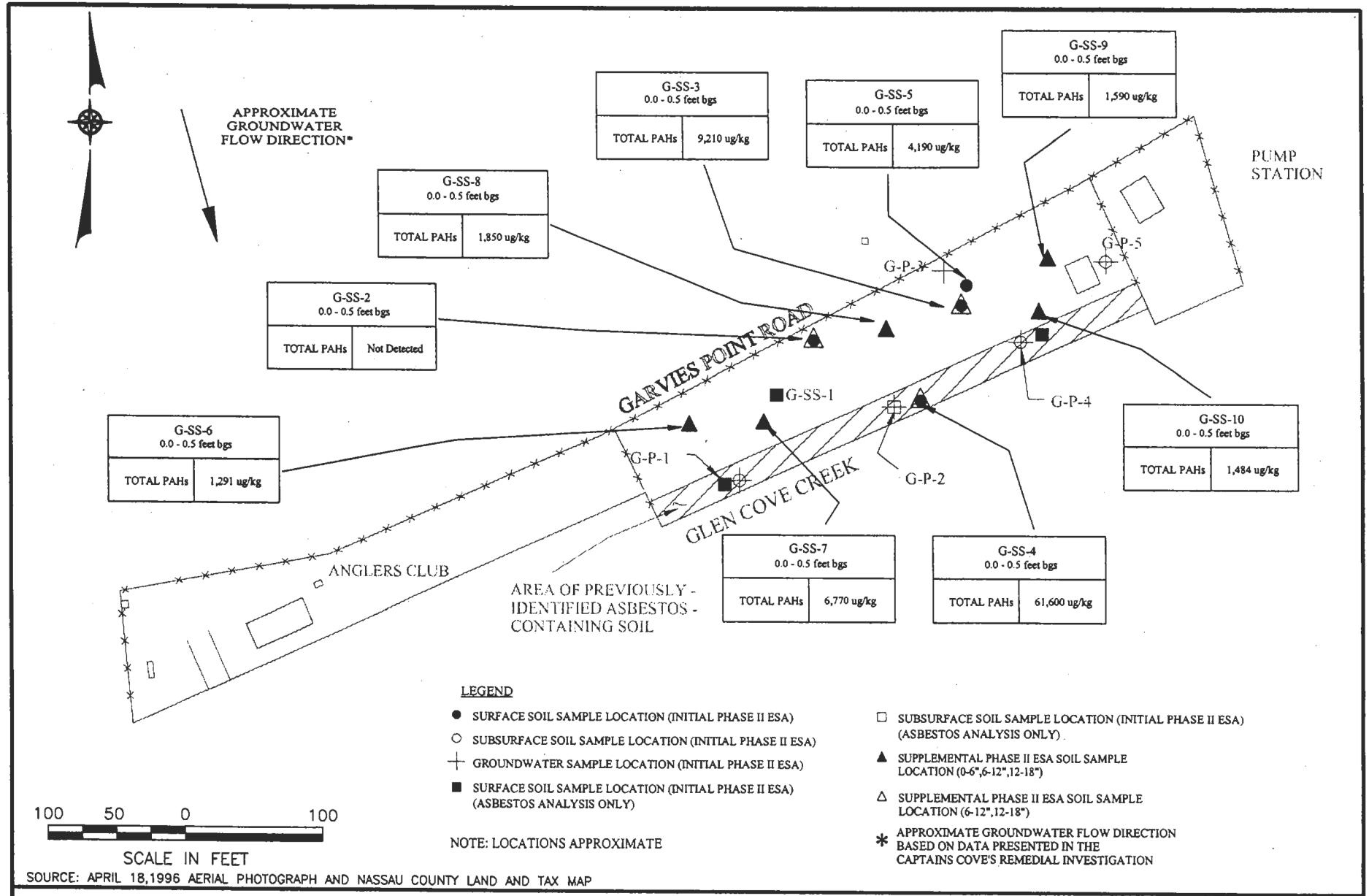


FIGURE 3
SURFACE SOIL PAH DISTRIBUTION

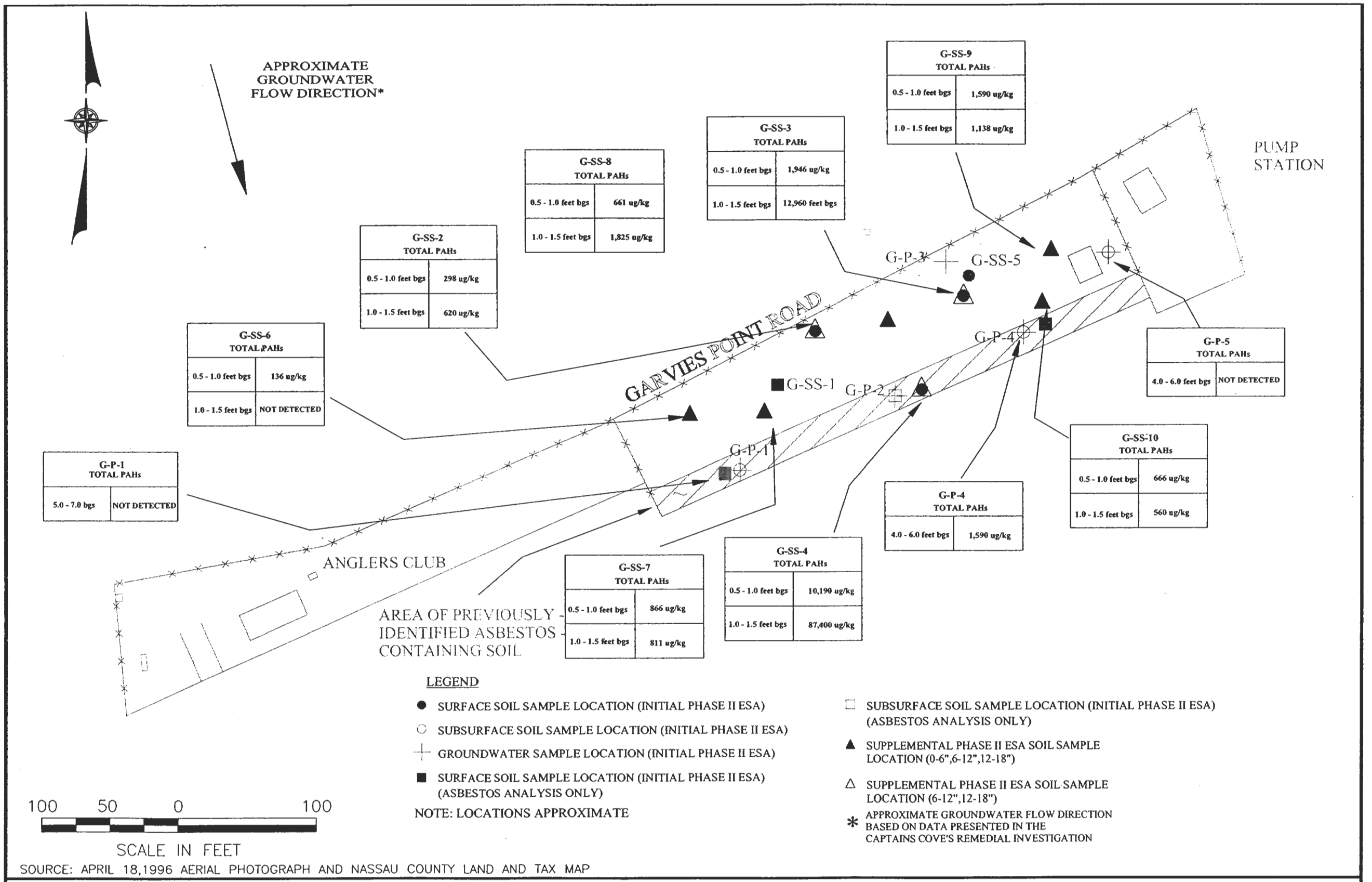


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FIGURE 4
SUBSURFACE SOIL PAH DISTRIBUTION