

PROPOSED PLAN

Site 01 - McAllister Point Landfill

August 1993

U.S. Department of the Navy
Installation Restoration Program

Naval Education and Training Center
Newport, Rhode Island

1369

TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
1.0 U.S. Navy Proposes Remedial Plan for Site 01 - McAllister Point Landfill, NETC, Newport	1
2.0 The Public's Role in Evaluating Remedial Alternatives	3
2.1 Public Informational Meeting and Formal Public Hearing	3
2.2 Public Comment Period	5
2.3 Written Comments	5
2.4 The Navy's Review of Public Comment	5
2.5 Additional Public Information	5
3.0 Site History	6
3.1 General NETC Facility Description and History	6
3.2 Site Identification	7
3.3 McAllister Point Landfill Site Description	7
3.4 McAllister Point Landfill Site History and Disposal Areas	8
3.5 Initial Site Investigations (Confirmation Study)	8
3.6 Phase I Remedial Investigation (RI)	9
3.6.1 Nature and Extent of Contamination	9
3.6.2 Ground Water Flow and Subsurface Geology	10
3.7 Phase II Remedial Investigations	11
4.0 Summary of Site Risks	11
5.0 Proposed Cleanup Objectives	12
6.0 The Navy's Preferred Alternative	13
7.0 Other Alternatives Evaluated in the Focused Feasibility Study	14
8.0 Summary of the Comparative Analysis of the Alternatives	18
8.1 Overall Protection of Human Health and the Environment	18
8.2 Compliance with Applicable or Relevant and Appropriate Requirements (ARARS)	19
8.3 Long-Term Effectiveness and Permanence	19
8.4 Reduction of Toxicity, Mobility or Volume through Treatment	20
8.5 Short-Term Effectiveness	20
8.6 Implementability	21
8.7 Cost	21
8.8 State Acceptance	21
8.9 Community Acceptance	21
8.10 Application of the Criteria	22
9.0 The Navy's Rationale for Proposing the Preferred Alternative	22
Glossary	24

LIST OF FIGURES

<u>Figure</u>		<u>Page No.</u>
1	NETC Site Location Map	30
2	McAllister Point Landfill Site Location Map	31
3	Site Plan	32
4	Proposed Landfill Cap Area	33
5	Conceptual Cap Section	34
6	Conceptual Slope Section with Seaward Erosion Protection	35

Northern Division
Naval Facilities Engineering Command
Department of the Navy
Naval Education and Training Center
Newport, Rhode Island

Proposed Plan

July 1993

1.0 U.S. Navy Proposes Remedial Plan for Site 01 - McAllister Point Landfill, NETC, Newport

The U.S. Navy (Navy) is responsible for addressing environmental contamination at the Naval Education and Training Center (NETC), located in Newport, Rhode Island, pursuant to Section 120 of the **Comprehensive Environmental Response Compensation, and Liability Act (CERCLA)**¹ and a Federal Facilities Agreement (FFA) entered into by the U.S. Navy, the U.S. Environmental Protection Agency (U.S. EPA) and the Rhode Island Department of Environmental Management (RIDEM). NETC Newport was placed on the U.S. EPA's **National Priorities List (NPL)** on November 21, 1989. In March 1992, the Navy entered into an FFA with the U.S. EPA and RIDEM which sets forth the roles and responsibilities of each agency, contains deadlines for investigation and cleanup of the hazardous waste sites at NETC, and establishes a mechanism to resolve disputes between the agencies. Investigation and cleanup of Department of Defense (DOD) sites, such as NETC Newport, are funded through the **Defense Environmental Restoration Account (DERA)**.

The Navy is currently investigating four sites at NETC Newport: McAllister Point Landfill, Old Fire Fighting Training Area, Tank Farm Four and Tank Farm Five. As described in this Proposed Plan, the Navy is proposing a remedial plan to provide **source control** of existing soil/waste contamination at the McAllister Point Landfill. The proposed remedial action, also referred to as the preferred alternative, is designed to stabilize site conditions, thereby controlling exposures to or migration of contaminated soils from the surface of the landfill and to minimize the **infiltration** of precipitation and subsequent production of **leachate** within the landfill area.

The proposed remedial action is one of the **remedial alternatives** that have been evaluated during the **Remedial Investigation (RI)** and **Focused Feasibility Study (FFS)** for this **operable unit**. The proposed remedial action was identified as the preferred alternative based on the identification and evaluation of source control alternatives during the FFS process.

Management of contaminant migration at the McAllister Point Landfill site will be addressed within a second operable unit as necessary. **Management of migration**

¹Note: Technical terms that appear in bold print in this document are defined in the glossary located at the end of this Proposed Plan.

remedial actions will be developed and evaluated following the completion of additional field investigations at the McAllister Point Landfill site.

In accordance with Section 117(a) of CERCLA, the Navy is publishing this Proposed Plan to give the public an opportunity to review and comment on the preferred and other source control remedial alternatives under consideration for the site. The Navy will consider public comments as part of the final decision-making process for selecting the cleanup remedy for the site.

The preferred alternative to address the contamination at McAllister Point Landfill consists of securing and isolating the landfill contents utilizing a RCRA Subtitle C multi-layer cap in combination with fencing, surface controls, and deed restrictions. The cap will protect against erosion and will control the generation of landfill leachate by limiting infiltration through waste materials in the **unsaturated zone** (i.e., wastes disposed of above the **water table**). It will not address the **leaching** of contaminants from wastes which are present below the water table. Surface controls (for example, slope protection, regrading and revegetation) will be utilized to minimize erosion and manage runoff from the landfill surface and to ensure the integrity of the cap along the shoreline. Gas venting controls will be utilized to manage landfill gases generated beneath the cap. Fencing around the perimeter of the landfill and deed restrictions will be implemented to limit future site access and development. Contaminated near-shore sediments may also be consolidated within the proposed cap area prior to initiation of cap construction activities. The preferred alternative is described in greater detail in Section 6 of this document.

As part of the preferred alternative, additional environmental studies will be conducted at the McAllister Point Landfill site. These additional studies will be designed to determine the following:

- if additional measures, beyond capping the landfill, must be taken to reduce the amount of ground water in contact with the contaminated materials of the landfill;
- if the vented landfill gases require treatment to protect human health and/or the environment;
- whether "**hot spots**" within the landfill materials, if present, will be addressed by a separate remedial action or by the landfill cap; and
- the nature, extent and location of any near-shore sediments which may have been affected by site-related contamination, and whether they require a separate remedial action or excavation and consolidation under the landfill cap.

As determined to be necessary based upon the results of these studies, the management of migration operable unit, which will be the second operable unit for the McAllister Point Landfill site, will be developed prior to initiating construction of the landfill cap. The management of migration operable unit will include the following, as necessary:

- the treatment standards and remedial alternative(s) for vented landfill gases;

- the cleanup standards and remedial alternative(s) for "hot spots" within the landfill materials, if present;
- the cleanup standards and remedial alternatives(s) for contaminated ground water;
and
- the cleanup standards and remedial alternative(s) for contaminated sediments.

This Proposed Plan:

1. explains the opportunities for the public to comment on the preferred and other source control remedial alternatives;
2. includes a brief history of the site and the principal findings of the site investigations;
3. provides a brief description of the preferred alternative and other alternatives evaluated in the FFS;
4. outlines the criteria used by the Navy to propose a remedial alternative for use at the site, and briefly analyzes whether the alternatives meet each criterion;
and
5. presents the Navy's rationale for its preliminary selection of the preferred alternative.

To help the public participate in reviewing the cleanup options for the site, this Proposed Plan also includes information about where interested citizens can find more detailed descriptions of the remedy selection process and the alternatives under consideration for the McAllister Point Landfill site.

2.0 The Public's Role in Evaluating Remedial Alternatives

2.1 Public Informational Meeting and Formal Public Hearing

The Navy will hold a public informational meeting on Wednesday, August 25, 1993 at 7:00 p.m. at the John F. Kennedy School Cafeteria located at 740 West Main Road in Middletown, Rhode Island, to describe the proposed remedial action and other alternatives evaluated in the FS. The public is encouraged to attend the meeting to hear the presentations and to ask questions. The Navy will also hold a formal public hearing immediately following the informational meeting to accept verbal comments on the proposed remedial action under consideration for the site. This hearing will provide the opportunity for people to formally comment on the remedial plan after they have heard the presentations made at the informational meeting. Comments made at the hearing will be transcribed, and a copy of the transcript will be added to the site **Administrative Record** which is available at the following location:

Naval Education and Training Center
 Newport, Rhode Island 02841-5000
 Contact Person: David Sanders
 (401) 841-3735
 Hours: 7:00 a.m. - 4:30 p.m.

A copy of the transcript will also be added to the **Information Repositories**, which are maintained at:

Newport Public Library
 300 Spring Street
 Aquidneck Park
 Newport, Rhode Island 02840
 (401) 847-8720

Regular Hours:	Monday	12:30 p.m. - 9:00 p.m.
	Tuesday-Thursday	9:30 a.m. - 9:00 p.m.
	Friday-Saturday	9:30 a.m. - 6:00 p.m.
Summer Hours: (June 14 through Labor Day)	Monday	11:00 p.m. - 8:00 p.m.
	Tuesday-Thursday	9:00 a.m. - 8:00 p.m.
	Friday-Saturday	9:00 a.m. - 6:00 p.m.

Middletown Free Library
 700 West Main Road
 Middletown, Rhode Island 02842
 (401) 846-1573

Hours:	Monday-Thursday	10:00 a.m. - 8:00 p.m.
	Friday-Saturday	10:00 a.m. - 5:00 p.m.

Portsmouth Free Public Library Association
 2658 East Main Road
 Portsmouth, Rhode Island 02871
 (401) 683-9457

Regular Hours:	Monday-Thursday	9:30 a.m. - 8:00 p.m.
	Friday-Saturday	9:30 a.m. - 5:00 p.m.
Summer Hours: (July 1 through Labor Day)	Monday & Wednesday	9:30 a.m. - 8:00 p.m.
	Tuesday & Thursday	9:30 a.m. - 5:00 p.m.
	Friday	9:30 a.m. - 5:00 p.m.
	Saturday	9:30 a.m. - 1:00 p.m.

2.2 *Public Comment Period*

The Navy is conducting a 30-day public comment period from August 4, 1993 to September 3, 1993, to provide an opportunity for public involvement in the final decision on a remedial action. During the comment period, the public is invited to review this Proposed Plan, the Remedial Investigation (RI) Technical Report, and the FFS Report, and is encouraged to offer written comments to the Navy.

2.3 *Written Comments*

If, after reviewing the information on the McAllister Point Landfill site, you would like to comment in writing on the Navy's preferred alternative, any of the other remedial alternatives under consideration, or other issues relevant to the site remediation, please deliver your comments to the Navy at the public hearing or mail your written comments (postmarked no later than September 3, 1993) to:

U.S. Department of the Navy
Naval Facilities Engineering Command
Northern Division
10 Industrial Highway, Mail Stop #82
Lester, PA 19113-2090
Attn: Mr. Francisco La Greca, Code 1823
Remedial Project Manager

2.4 *The Navy's Review of Public Comment*

The Navy will review comments received from the public as part of the process of reaching a final decision on the most appropriate source control remedial alternative, or combinations of alternatives, for remediation of the McAllister Point Landfill site. The Navy's final choice of a remedy will be issued in a **Record of Decision (ROD)** for this operable unit. Public comment is an important part of the ROD process and will be considered in selecting the remedial action. A document called a **Responsiveness Summary** that summarizes the Navy's responses to comments received during the public comment period will be issued with the ROD. Once the ROD is signed by the Navy and the U.S. EPA Regional Administrator, it will become part of the Administrative Record, which contains documents used by the Navy to choose a remedy for the site.

2.5 *Additional Public Information*

Because this Proposed Plan provides only a summary description of the field investigations and the remedial alternatives considered for source control at the McAllister Point Landfill site, the public is encouraged to consult the Administrative Record, which contains the RI Technical Report, the FFS, and other site documents, for a more detailed explanation of the site and all of the remedial alternatives under consideration. The Administrative Record is available for review at the address listed in Section 2.1. Additional information is also available at the Information Repositories, as listed in Section 2.1.

If you have any questions about the site or would like more information, you may call or write to:

David Sanders, Public Affairs Officer
 Naval Education and Training Center
 Newport, Rhode Island 02841-5000
 (401) 841-3735

or

Andrew Miniuks, Remedial Project Manager
 U.S. Environmental Protection Agency
 Waste Management Division - Mail Code HAN-CAN1
 Federal Facilities Superfund Section
 JFK Federal Building
 Boston, Massachusetts 02203-2211
 (617) 573-9614

or

Paul Kulpa, Project Manager
 State of Rhode Island Department of Environmental Management
 Division of Air and Hazardous Materials
 291 Promenade Street
 Providence, Rhode Island 02908
 (401) 277-2797

3.0 Site History

3.1 *General NETC Facility Description and History*

NETC Newport is located on the western shore of Aquidneck Island facing the east passage of Narragansett Bay, with portions of the facility located in Newport, Middletown, and Portsmouth, Rhode Island (see Figure 1). The facility is approximately 1,400 acres in size, and is approximately 25 miles southeast of Providence. The facility layout is long and narrow, following the shoreline of Aquidneck Island for nearly six miles. As mentioned previously, the Navy is currently investigating four sites at NETC Newport: McAllister Point Landfill, Old Fire Fighting Training Area, Tank Farm Four and Tank Farm Five (see Figure 2).

The Navy's first permanent activity at NETC Newport was in 1869 when the experimental Torpedo Station at Goat Island was established. In 1881, Coasters Harbor Island was acquired by the Navy and used for training purposes. Military activities at the base significantly increased during times of war. During World Wars I and II, service men were housed on the base. In subsequent peacetime years, on-site facilities were slowly disassembled, until the headquarters of the Commander Cruiser-Destroyer Force Atlantic was located there in 1962. In April 1973, the Shore Establishment Realignment Program (SER) reorganized Naval forces in the Newport area under the Naval Officer Training Center (NOTC). In April 1974, NOTC was changed to the Naval Education Training Center (NETC) Newport.

3.2 *Site Identification*

In response to environmental contamination which has occurred as a result of the use, handling, storage, or disposal of hazardous materials at many military installations across the U.S., the Department of Defense (DOD) has initiated investigation and cleanup activities under the Installation Restoration (IR) Program.

The IR Program parallels the Superfund program and is conducted in several stages, including:

1. identification of potential hazardous waste sites;
2. confirmation of the presence of hazardous materials at the site;
3. determination of the type and extent of contamination;
4. evaluation of alternatives for remediation of the site;
5. proposal of a remedial remedy;
6. selection of a remedy;
7. implementation of the remedy for cleanup of the site; and
8. long-term monitoring, where appropriate, to assure protection of health and the environment.

In March 1983, an **Initial Assessment Study (IAS)** was completed detailing possible historical hazardous material usage and waste disposal practices and identifying areas of suspected contamination at NETC Newport. Site 01 - McAllister Point Landfill was identified in this study as a potentially contaminated area which may pose a threat to human health and the environment.

On November 21, 1989, NETC Newport was placed on the U.S. EPA's NPL. Private sector NPL sites are eligible for funding from the national environmental trust fund called Superfund. Investigation and cleanup of DOD sites, such as the NETC Newport facility, are funded through the Defense Environmental Restoration Account (DERA).

3.3 *McAllister Point Landfill Site Description*

McAllister Point Landfill is located in the central portion of the Naval Education and Training Center (see Figure 2). The site covers approximately 11.5 acres and is situated between Defense Highway and Narragansett Bay. Penn Central Railroad tracks run in a north-south direction along the eastern side of the site, parallel to Defense Highway. Access to the site is from Defense Highway in the south-central portion of the site. The layout of the site is depicted in Figure 3.

Grass, weeds, and small trees cover most of the site. A small, lightly wooded area is present in the north-central portion of the site. A more mature wooded area is located near the northeastern edge of the site between the railroad tracks and Defense Highway. Several depressions are present in the central portion of the site where standing water collects during heavy precipitation events. A wetlands evaluation summary for the site is available in the Administrative Record. Along the western edge of the site, the grade drops off quickly to the shoreline, changing by as much as 20 feet. Metal debris and concrete rubble are present

along the shoreline of the landfill and appear to act as **riprap**, decreasing the potential for erosion of the shoreline landfill slopes. The shoreline of the site is located in an area of 100-year coastal flood with velocity (wave action).

3.4 McAllister Point Landfill Site History and Disposal Areas

McAllister Point Landfill was the site of a sanitary landfill which operated over a 20-year period. From 1955 until the mid-1970's, the site accepted all wastes generated at the Naval complex. The landfill received waste from all operational areas (machine shops, ship repair, etc.), Navy housing areas (domestic refuse), and from the 55 ships homeported at Newport prior to 1973 (approximately fourteen 40-cubic yard containers each day). The materials disposed of at the site reportedly included spent acids, paints, solvents, waste oils (diesel, lube, and fuel), and **polychlorinated biphenyl (PCB)**-contaminated transformer oil.

During the period 1955 through 1964, wastes were trucked to the site, spread out with a bulldozer, and covered. In 1965, an incinerator was built at the landfill. From 1965 through 1970 to 1971, approximately 98 percent of all the wastes were burned before being disposed of in the landfill. The incinerator was closed around 1970 due to the resultant air emissions. During the remaining years that the site was operational, all wastes were again disposed of directly into the landfill. Based on a review of aerial photographs of the site covering the period from 1965 through 1975, a change in the shape of the shoreline in the central portion of the site is evident, indicating filling of Narragansett Bay in this area.

Following the closure of the landfill at McAllister Point, a three-foot thick covering of clay/silt was reportedly placed over the site. Current observations confirm the presence of a clay/silt material over portions of the landfill, although it is not continuous over the whole landfill area. Since the closure of the landfill, the site has remained inactive.

3.5 Initial Site Investigations (Confirmation Study)

As a result of the IAS for the NETC facility, a **Confirmation Study (CS)** including environmental sampling and analysis was conducted to verify the presence of contamination at the McAllister Point Landfill site. The CS, which was conducted from 1984 to 1985, included the collection of soil, leachate and **ground water** samples from the site as well as sediment and mussel samples from Narragansett Bay. The analysis of a composite **surface soil** sample collected from the landfill cover material indicated that low levels of contamination (inorganics and phenols) may be associated with the existing landfill cap. Samples of leachate seeping from the western edge of the landfill exhibited metals, cyanide, phenol, and some other organic constituents. Sediment and blue mussel samples were collected along the landfill shore and at two background locations several miles north and south of the site, respectively. The presence of inorganic contaminants was detected in sediment samples collected adjacent to the site, especially near the southern end of the landfill, with levels decreasing with distance from the site. Inorganics were also present in mussel samples. PCBs were detected in mussel samples but appeared to be attributable to bay-wide contamination, on the basis of similar levels detected in the background mussel samples. Site ground water samples exhibited elevated levels of metals. While the CS

results indicated that the presence of the landfill had resulted in apparent impacts to ground water and sediment quality, the study did not define whether the landfill was continuing to contribute contaminants into Narragansett Bay and, if it was, the potential contaminant migration pathways by which the contamination was reaching the bay.

Additional sediment and mussel sampling was conducted by the U.S. Army Corps of Engineers in the portion of Narragansett Bay adjacent to McAllister Point Landfill in January 1988, with one sample location sited approximately 300 feet north of the site as a control sample. Mussel and sediment samples were collected and analyzed for metals. The sediment samples were also analyzed for PCBs and **total petroleum hydrocarbons (TPH)**. All three chemical types were detected in the sediment samples, with concentrations in sediment samples collected adjacent to the landfill consistently at least one order of magnitude greater than those detected in the control sample. Copper, chromium, zinc and PCBs were detected in some of the mussel samples at concentrations greater than were detected in the control sample.

3.6 Phase I Remedial Investigation (RI)

A Phase I RI was conducted at McAllister Point Landfill from 1989 to 1990. The general purposes of the overall investigation were to:

- determine the presence, nature and extent of contamination resulting from historic site activities, including on-site and off-site impacts to soils, ground water, surface water, sediment and biota;
- identify potential contaminant migration routes;
- identify potential receptors of site contaminants; and
- characterize related environmental impacts and potential human health risks.

For a detailed assessment of the Phase I RI investigation refer to the Final RI Technical Report, which is included in the Administrative Record and Information Repositories, available at the locations listed in Section 2.1. A Phase II RI is planned to further investigate the site, as described in Section 3.7.

3.6.1 Nature and Extent of Contamination

The Navy implemented a field sampling program to evaluate the site which included site **geophysical surveys**, and the collection and chemical analysis of surface soil, **subsurface soil**, leachate, and ground water samples.

Volatile organic compounds (VOCs), base neutral/acid extractable organic compounds (BNAs) (including polynuclear aromatic hydrocarbons (PAHs)), pesticides, PCBs, and inorganics were all detected in on-site soils. The major areas of the site where contaminants were detected in the soil at elevated levels include the following:

- Northern area - **Carcinogenic PAHs**;
- North-central area - **BNAs, carcinogenic PAHs, and inorganics**;

- Central landfill area - VOCs, BNAs, PCBs and inorganics;
- South of access road - BNAs, carcinogenic PAHs, and inorganics; and
- Shoreline - BNAs, carcinogenic PAHs, and inorganics.

Under the ground water investigation, samples were collected from eight new monitoring wells and three existing monitoring wells. Two of the new wells were screened in **bedrock** while the remaining wells were screened within the **overburden**. VOCs, BNAs, PCBs and inorganics were all detected in ground water samples collected from the overburden wells. A thin oil layer was observed floating on the ground water surface in one monitoring well located in the southern portion of the site. The major areas of the site where contaminants were detected at levels exceeding drinking water standards include the following:

- Northern area - inorganics;
- North-central area - inorganics;
- Central landfill area - VOCs, and inorganics; and
- South of access road - VOCs, PCBs, and inorganics.

The presence of VOCs in ground water samples and soil samples collected at the depth of the water table over the north-central to southern portions of the site indicates the potential for ground water contamination throughout this area. The ground water samples collected from the deep bedrock wells generally indicated that deep ground water quality has not been impacted, with the exception of the detection of benzene at a low concentration (1 **part per billion**) in one deep well. The potential presence of **non-aqueous phase liquids** (DNAPLs and LNAPLs) will be further investigated during the Phase II RI.

3.6.2 Ground Water Flow and Subsurface Geology

The overburden deposits on this site consist of **fill** and **glacial till** deposits. The thickness of the fill material ranges from 3 feet at the periphery of the site to 38 feet at the western edge of the central portion of the landfill. The fill material consists of a wide variety of municipal and industrial/construction wastes (e.g., plastic, wood, paper, garbage, construction debris, paints), as well as what appears to be ash from the incinerator which reportedly operated on the site. The fill material appears to have been deposited directly upon the bedrock surface across a majority of the site.

Overlying the fill material at several locations across the landfill is a clay-silt layer, presumably the cover placed on the landfill after its closure, ranging in thickness from 0 to 4 feet. This layer is discontinuous across the site, and is found primarily in the central portion of the landfill. A clay-silt layer was also encountered overlying the fill material at the southern end of the landfill and in the northern portion of the landfill; however, this material did not appear to be the same cover material encountered in the central landfill area.

Glacial till deposits were observed directly beneath the fill and overlying the bedrock at the periphery of the site as well as at one location in the central landfill area, and one location in the southern portion of the site. The till encountered consisted primarily of fine to coarse sand and silt, with some weathered **shale** fragments.

The bedrock encountered at the McAllister Point Landfill site consists of a highly weathered to competent, **carboniferous shale**. The depth to bedrock at the site varied from 4 feet to 24 feet. The bedrock surface exhibits a uniform, westward slope towards Narragansett Bay.

The depth to ground water varies across the site from 20 feet near the Penn Central Railroad tracks on the east side of the site to 4 feet below grade along the southwestern shoreline. Ground water is flowing from east to west, towards Narragansett Bay. Based on an analysis of ground water level measurements collected from two pairs of shallow and deep monitoring wells, ground water above the bedrock surface (in the fill or overburden) may flow downward into the bedrock. A tidal influence on the ground water was observed and appeared to increase with proximity to Narragansett Bay. The current State of Rhode Island ground water classification for the site is **GA-NA**.

3.7 Phase II Remedial Investigations

Additional environmental investigations are planned at the McAllister Point Landfill site to fully characterize the site and to achieve the following objectives:

- Resolve outstanding issues regarding background soil and ground water quality;
- Further define the nature and extent of ground water contamination and the location of potential "hot spot" sources of ground water contamination;
- Determine the nature and extent of sediment and biota contamination in the adjacent bay.

The investigations will include the performance of geophysical surveys to further define the extent of the landfill area and to characterize bedrock topography beneath the site, a **soil gas survey** to further investigate subsurface areas of elevated VOC contamination in the central and southern portions of the site, and surface and subsurface soil, ground water and leachate sampling. An off-shore investigation involving the sampling of sediments and, if present, clams and mussels, and an ecological survey of marine **fauna** within the bay will also be conducted. Potential "hot spot" sources of ground water contamination which will be further investigated during the Phase II RI include the monitoring well location where a thin layer of oil was detected on the ground water surface, areas of ash disposal and shoreline areas where sediments have exhibited elevated levels of inorganics.

4.0 Summary of Site Risks

A **Human Health Risk Assessment (HHRA)** was prepared in 1991 as part of the RI Technical Report. The primary objectives of the HHRA included the following:

- examine exposure pathways and contaminant concentrations in environmental media at the site;
- estimate the potential for adverse effects associated with the contaminants of concern at the site under current and future land use conditions;

- provide a risk management framework upon which decisions can be made regarding, what, if anything, should be done at the site;
- identify site or land use conditions that present unacceptable risks; and
- provide a basis from which recommendations for future activities at the site can be made which are protective of human health.

The HHRA estimates the present and future potential risks to human health posed by exposure to contaminated soil and ground water, based on existing conditions as determined by the Phase I RI. The HHRA showed that the highest risk to human health would result from ingestion of contaminated ground water. However, this is not a current risk since ground water is not currently used as a water supply on-base and the plume has not been found to affect off-base private drinking water wells. There are also no existing homes which could be impacted by ground water contaminants emanating from the site. If future residents were to use the ground water from the shallow aquifer beneath the site as a drinking water supply, such use could pose unacceptable long-term risks to human health.

Migration of contaminated ground water to Narragansett Bay could potentially result in ecological risks. As previously described in Section 3.7, additional studies will be conducted during the Phase II RI to further characterize the nature and extent of contamination in Narragansett Bay, the potential impacts on mussels and clams, if present, and potential impacts to other bottom aquatic life which may be present in the bay.

Adverse human health effects associated with the incidental ingestion of contaminated soils are also a potential risk associated with the site. Existing soil contamination may also pose a potential risk to the environment, due to the potential for contaminant migration via erosion and the continued generation of leachate as a result of the infiltration of precipitation.

Actual or threatened releases of hazardous substances from the site, if not addressed by the preferred alternative or one of the other active measures considered, may present a current or potential threat to public health, welfare, or the environment.

For a complete explanation of the HHRA conducted on the basis of Phase I RI results at the McAllister Point Landfill site, please refer to Section 2.0 of Volume II of the Final RI Technical Report. This document is part of the Administrative Record and is included in the Information Repositories, available at the locations listed in Section 2.1. A complete ecological and human health risk assessment will be conducted as part of the Phase II RI.

5.0 Proposed Cleanup Objectives

Based on the potential risks to human health and the environment posed by existing site conditions at McAllister Point Landfill, as well as the location of the site adjacent to Narragansett Bay and the potential environmental risks associated with the presence of soil contamination, leachate seeps and ground water contamination, stabilization of site conditions at McAllister Point Landfill was determined to be a high priority in addressing potential risks to human health and the environment at NETC Newport. Considering the site is a landfill for which many remedial alternatives are impracticable due to implementability or cost, the

implementation of a remedial action to stabilize existing conditions and provide source control was determined to be appropriate. This approach is supported by the expectations of the Superfund program, as listed in the **National Oil and Hazardous Substances Contingency Plan** [NCP, 40 CFR 300.430(a)(1)]. The NCP indicates that the principal threats posed by a site should be treated wherever practicable (such as in the case of remediation of a hot spot) and that engineering controls, such as containment, are appropriate for waste that poses a relatively low long-term threat or where treatment is impracticable. The Phase II Remedial Investigation will further study potential hot spot areas, including sediment quality in the adjacent portion of Narragansett Bay. In order to implement a source control remedial action consistent with the Superfund expectations, a limited number of remedial alternatives that are focused to achieving containment of the landfill area were developed. A source control action will be consistent with the implementation of a management of migration remedy for the site. The management of contaminant migration (i.e., migration of contaminated ground water and leachate) as well as any hot spot areas or sediment requiring treatment to address principal threats (should any be identified as a result of Phase II Remedial Investigations) will be addressed within a separate operable unit, as necessary, and will be part of the final remedy for the site. The potential need for landfill gas treatment will also be addressed within the management migration operable unit.

Using the information gathered during the RI and FFS, the Navy identified the following remedial response objectives for the source control remedial action at the McAllister Point Landfill site:

Minimize potential environmental impacts by minimizing off-site migration of potentially contaminated surface soils, and by limiting the infiltration of precipitation to the underlying waste within the landfill area, thereby minimizing leachate generation; and

Minimize potential risk to human health associated with exposure to the landfill area.

To meet these objectives, the Navy proposes to conduct an action that is intended to provide source control and stabilize existing site conditions, and which will eventually become part of the overall remediation strategy for McAllister Point Landfill and NETC Newport as a whole. This source control remedial action is consistent with the Navy's long-term cleanup goals for reducing contamination at the site.

6.0 The Navy's Preferred Alternative

The Navy's selection of the preferred remedial alternative for the McAllister Point Landfill, as described in this Proposed Plan, is the result of a comprehensive evaluation and screening process. A FFS was conducted for the landfill site to identify and analyze alternatives for addressing source control at the site. The FFS describes the source control remedial alternatives which were considered, as well as the process and criteria the Navy used to develop and evaluate the remedial alternatives.

It should be noted that the alternatives developed during the screening and selection process are intended as source control remedial measures to limit exposure to the landfill soils/wastes and the generation of leachate. Measures to control or contain existing ground water contamination, sediment contamination or "hot spot" areas will be considered and reviewed, as appropriate, in a future FFS to be conducted following completion of the Phase II RI, as required.

The preferred alternative (Alternative 4 as presented in the FS) is summarized below. It involves isolating the landfill area to minimize direct exposure to landfill materials and surficial contaminants; to control erosion of soils and landfill materials; and to minimize infiltration of precipitation, thereby limiting the production of leachate and the resultant impacts to ground water quality and impacts on Narragansett Bay. The preferred alternative includes additional site studies which may result in the implementation of additional remedial actions prior to cap construction, as needed.

PREFERRED ALTERNATIVE SUMMARY

- RCRA Subtitle C Multi-layer Cap
- Landfill Gas Management System
- Surface Controls to Manage Drainage and Protect Shoreline Areas
- Institutional Controls to Limit Future Site Use and Access
- Long-term Maintenance, Including Ground Water and Storm Water Discharge Monitoring
- Additional Studies
 - To determine if additional measures beyond capping must be taken to reduce the amount of ground water in contact with the contaminated materials of the landfill
 - To determine if landfill gas requires treatment
 - To determine if "hot spots" within the landfill materials, if present, will be addressed by a separate remedial action or by the landfill cap
 - To determine the nature, extent and location of any near-shore sediments, which may have been affected by site-related contamination and whether they would be addressed by a separate remedial action or excavated and consolidated under the landfill cap

Estimated Cost to Implement:

Estimated Capital Cost:	\$4,300,000
Estimated Operations and Maintenance Costs (present worth):	\$2,300,000
Estimated Total Cost (including contingency):	\$8,000,000

Exposures to the landfill materials would be minimized by isolating the waste materials with a RCRA Subtitle C multi-layer cap and by utilizing institutional controls

to limit future site use and to restrict site access. The cap would also direct precipitation run-off away from the landfill materials and provide a barrier to infiltration.

Prior to construction of the cap, the site would be regraded to eliminate depressions and steep sidewalls to the extent practicable so that precipitation will run off instead of ponding on the surface or infiltrating into the landfill. The regraded surface will also enhance the placement of the cap materials over the landfill area, especially along the steep sidewall areas adjacent to Narragansett Bay. The proposed areal extent of the cap is indicated in Figure 4. Contaminated near-shore sediments or "hot spot" materials may also be consolidated within the proposed cap area prior to initiation of cap construction activities.

The cap would be designed to meet the requirements applicable to closure of a hazardous waste landfill (RCRA Subtitle C). The cap proposed for the McAllister Point Landfill was developed according to RCRA requirements and, as shown in Figure 5, consists of multiple layers, each with a specific purpose. The proposed cap design is consistent with state-of-the-art requirements for hazardous waste landfill caps, providing a high degree of isolation and control. It consists of the following layers (described from top of waste to top of finished cap):

- Gas vent layer over existing waste, if necessary based on site-specific conditions, to vent and/or control landfill gases which may be generated in the landfill;
- Lower **impermeable barrier**, consisting of approximately 24 inches of compacted low permeability soil (clay, for example);
- Upper impermeable barrier, consisting of a **synthetic membrane** to stop the infiltration of percolating water;

Drainage layer, consisting of approximately 12 inches of sand, to divert precipitation that infiltrates through the surficial vegetative and protective layer off of and away from the impermeable barrier layers; and

- Vegetative and protective layer, approximately 24 inches thick and including six inches of topsoil, to protect underlying cap components and to control erosion by providing a suitable medium for surficial vegetation.

Landfill gas controls, such as landfill gas vents or extraction wells, will be utilized as necessary to manage landfill gases generated beneath the cap, thereby preventing the accumulation of gas beneath the cap and potential subsequent disruption of the integrity of the cap.

The cap and drainage system would be connected to a system of drainage swales around the landfill to control run-on and run-off. Along the west side of the landfill, bordering Narragansett Bay, additional engineering controls would be utilized to protect the landfill materials and the landfill cap from potential damage due to wave erosion, storm surges, etc. Placement of a **revetment** along the shoreline slope would provide protection against the potential migration of debris and waste materials into Narragansett Bay as a result

of wave action. Access to the site would be further restricted by a fence along the perimeter of the site.

The engineering controls would be augmented by deed restrictions to limit future use of the site and site development. Such controls would prohibit future residential use of the site.

Following the completion of the cap and surface drainage system, the cap and associated systems will be inspected periodically and maintained to assure integrity and proper operation. Long-term operations and maintenance will include maintenance of the cap, site fencing, drainage and landfill gas control systems. Ground water and storm water discharge monitoring programs will also be implemented.

Also incorporated into the preferred alternative are additional studies to address contaminated ground water and sediment. These additional studies will be designed to determine the following:

- If additional measures, beyond capping the landfill, must be taken to reduce the amount of ground water in contact with the contaminated materials of the landfill;
- If the vented landfill gases require treatment to protect human health and/or the environment;
- Whether "hot spots" within the landfill materials, if present, will be addressed by a separate remedial action or by the landfill cap; and
- The nature, extent and location of near-shore sediments which may have been affected by site-related contamination and whether they will be addressed by a separate remedial action or excavated and consolidated under the landfill cap.

Such studies are currently included in Phase II Remedial Investigation activities or will be included in landfill cap design studies. As appropriate, remedial measures determined to be necessary on the basis of these investigations will be implemented prior to the construction of the landfill cap.

Estimated Time for Design and Construction: 2 years

Estimated Time of Operation: 30 years

Estimated Capital Cost: \$4,300,000

Estimated Operations and Maintenance Costs (net present worth): \$2,300,000

Estimated Total Cost Including 20% Contingency (net present worth): \$8,000,000

7.0 Other Alternatives Evaluated in the Focused Feasibility Study

The Navy considered three other remedial alternatives to address the McAllister Point Landfill. Each of these three alternatives is described briefly below. A detailed presentation and analysis of the alternatives can be found in the FFS.

Alternative 1 - No Action - This alternative was evaluated in the FFS to serve as a baseline for comparison to other alternatives under consideration. Under this alternative no containment or engineering controls or land use restrictions would be utilized.

Alternative 2 - Fencing, Surface Controls and Deed Restrictions Alternative 2 was developed as a limited action option which provides no active source control but limits potential risks to human health and the environment through access restrictions and surface controls in limited areas of the site. Alternative 2 would include regrading and filling of limited areas of the site to divert run-off and to prevent ponding and infiltration. Sparsely vegetated or sparsely covered areas would be covered and revegetated. A chain-link fence with warning signs would be placed around the perimeter of the site to limit site access and, if possible, would be extended into the water along the northern and southern boundaries of the site to limit access to shoreline areas. Deed restrictions would restrict future use and development of the site, thereby further limiting potential exposures to on-site contamination. Long-term monitoring of storm water discharge would be conducted in accordance with federal and state regulations.

Estimated Time for Design and Construction: 3 months

Estimated Time of Operation: 30 years

Estimated Capital Cost: \$190,000

Estimated Operations and Maintenance Costs (net present worth): \$290,000

Estimated Total Cost Including 20% Contingency (net present worth): \$580,000

Alternative 3 - RCRA Subtitle D Soil Cap with Surface and Institutional Controls

This alternative involves the capping of the McAllister Point Landfill site with a soil cap to minimize direct exposures to surficial contaminants, provide some restriction of the infiltration of precipitation into underlying waste materials and minimize potential erosion of surficial contaminants. The cap design would meet the landfill closure requirements established under RCRA municipal solid waste (**RCRA Subtitle D**) regulations. The site would be regraded to divert runoff and to allow for the placement of the low permeability soil cap material. The cap material would be graded to divert and control run-off and run-on, and would be covered with topsoil and seeded to prevent erosion. The shoreline along Narragansett Bay would be protected with riprap to prevent wave or storm damage. Deed restrictions would be placed on the site to limit future use and development, and a fence would be installed around the perimeter of the site to limit access. The deed restrictions would aid in the long-term protection of human health by minimizing potential disruption of the cap and by regulating future use of the site and, therefore, potential future exposure pathways. Ground water and storm water discharge monitoring programs would be implemented, along with a long-term cap maintenance program.

Estimated Time for Design and Construction: 1 to 2 years
Estimated Time of Operation: 30 years
Estimated Capital Cost: \$2,500,000
Estimated Operations and Maintenance Costs (net present worth): \$2,300,000
Estimated Total Cost Including 20% Contingency (net present worth): \$5,800,000

8.0 Summary of the Comparative Analysis of the Alternatives

In the detailed analysis of alternatives for remediating hazardous waste sites under CERCLA, the U.S. EPA requires that remedial alternatives be evaluated using nine criteria. The nine criteria are used to select a remedy that meets the national Superfund program goals of protecting human health and the environment, maintaining protection over time and minimizing untreated waste. Definitions of the nine criteria and a summary of the Navy's evaluation of the remedial alternatives with regard to the nine criteria are provided below.

8.1 Overall Protection of Human Health and the Environment

The criterion of overall protection of human health and the environment addresses how an alternative as a whole will protect human health and the environment. This includes an assessment of how public health and environmental risks are properly eliminated, reduced or controlled through treatment, engineering controls or institutional controls.

The preferred alternative (Alternative 4) and Alternative 3 are the most protective of human health and the environment, both providing protection against exposures to or erosion of surficial contaminants through the placement of a physical barrier over the site. The preferred alternative, which utilizes a RCRA Subtitle C multi-layer cap, provides an advantage over Alternative 3 in terms of protecting the environment by more stringently controlling the infiltration of precipitation and subsequent leachate generation as well as controlling potential surficial leachate seeps and by complying with regulatory requirements (see Section 8.2). The preferred alternative could also be expected to be more reliable over the long-term. Both alternatives are effective in the short-term.

Alternative 2 provides a degree of protection of human health and the environment by utilizing institutional controls to provide barriers to site access and future site use, as well as minor surface control actions to minimize the erosion of surficial contaminants and infiltration of precipitation in areas of the site where run-off tends to collect. However, it would not be as effective in the long-term as the capping alternatives and does not comply with landfill closure requirements.

Alternative 1, the no-action alternative, is not considered to be protective since it provides no reduction in potential risks or control of exposure pathways. It would not be effective in the long- or short-term.

8.2 *Compliance with Applicable or Relevant and Appropriate Requirements (ARARS)*

A selected remedial alternative must also comply with all state and federal environmental and public health laws and requirements that apply or are relevant and appropriate to the conditions and remedial options at the site. If an **Applicable or Relevant and Appropriate Requirement (ARAR)** cannot be met, the analysis of the alternative must provide the grounds for invoking a waiver.

Compliance with state and federal ARARs pertaining to hazardous waste and municipal solid waste landfill closure would be achieved under the preferred alternative only. Alternative 3 would not comply with state solid waste landfill closure requirements or state or federal hazardous waste landfill closure requirements.

Based on McAllister Point Landfill's shoreline location, the slope protection developed under the preferred alternative and Alternative 3 would be designed to meet the ARARs associated with floodplain, wetland, and coastal zone areas. Alternatives 1 and 2 would not meet these ARARs, because they permit continued erosion of contaminants into coastal areas. In accordance with the Clean Water Act Section 404, the slope protection features along Narragansett Bay could not extend beyond the toeprint of the existing landfill. If during the design process it is determined that the cap cannot be constructed in accordance with these requirements, mitigation of the impacted wetland areas will be required. If mitigation is required, a mitigation plan will be developed and distributed for public comment prior to implementation. The preferred alternative would also comply with the substantive requirements of the Coastal Resources Management Program. The preferred alternative and Alternatives 2 and 3 would meet **National Pollutant Discharge Elimination System (NPDES)** and **Rhode Island Pollutant Discharge Elimination System (RIPDES)** storm water discharge substantive requirements.

8.3 *Long-Term Effectiveness and Permanence*

Long-term effectiveness and permanence refers to the ability of an alternative to maintain reliable protection of human health and the environment over time once the cleanup goals have been met. If a remedial action results in hazardous substances, pollutants or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the action shall be reviewed no less often than every five years after initiation of the action.

The preferred alternative and Alternative 3 involve the placement of a cap over the landfill area and associated long-term monitoring and maintenance as well as institutional controls. Each of these alternatives would be similar in terms of the residual landfilled wastes remaining on-site and long-term maintenance and monitoring requirements. The preferred alternative would be more effective in the long-term in preventing infiltration of precipitation through underlying waste materials than Alternative 3. Both alternatives would require a five-year review.

Alternative 2 would require long-term maintenance of site improvements and site access restrictions to maintain its effectiveness. Due to its limited scope, it would not

provide the same degree of long-term effectiveness, permanence or reliability as the preferred alternative or Alternative 3. Alternative 1 would not be effective in the long-term in addressing potential site-related risks. Both Alternatives 1 and 2 would require five-year reviews.

None of the source control alternatives evaluated are expected to result in the restoration of ground water quality to a GA classification, in accordance with the site's current GA-NA ground water classification. However, the preferred alternative would provide the greatest protection against continued leaching of contamination into the ground water of the alternatives evaluated, followed by Alternatives 3, 2 and 1 in order of decreasing effectiveness. The potential for achieving the goal of ground water quality restoration at the site in accordance with a GA classification will be further evaluated within the management of migration operable unit.

8.4 *Reduction of Toxicity, Mobility or Volume through Treatment*

Reduction of toxicity, mobility, or volume of contaminants is a principal measure of the overall performance of an alternative. The 1986 amendments to the Superfund statute emphasize that, whenever possible, a remedy should be selected that uses a treatment process to permanently reduce the level of toxicity of contaminants at the site, the spread of contaminants away from the source of contamination, and the volume or amount of contamination at the site.

No treatment or destruction of contaminants is provided by any of the alternatives undergoing consideration. The preferred alternative provides the greatest reduction in the potential mobility of site-related contamination through a multi-layer cap, which minimizes infiltration and subsequent leaching of contaminants from wastes in the unsaturated zone to the ground water, as well as erosion of surficial contamination and the potential formation of leachate seeps through the side slope of the cap. Alternative 3 is less effective than the preferred alternative in minimizing infiltration and the potential for leachate seeps but does limit the erosion of surficial contamination. Alternative 2 provides a minimal reduction in contaminant mobility through the limited improvement of existing site conditions. Alternative 1 provides no reduction in contaminant mobility, toxicity or volume except through natural degradation and attenuation.

8.5 *Short-Term Effectiveness*

Short-term effectiveness refers to the likelihood of adverse impacts on human health or the environment that may be posed during the construction and implementation of an alternative until cleanup goals are achieved through final remedy selection.

Alternative 3 and the preferred alternative would be comparable in terms of short-term effectiveness, with similar potential short-term risks and environmental impacts associated with the construction of the landfill caps. Alternative 2 would result in fewer potential short-term human health or environmental risks during the implementation period but would not provide the same degree of protection upon completion. Alternative 1 requires

no implementation and therefore results in no increase in short-term risks. However, it does not achieve remedial response objectives.

8.6 *Implementability*

Implementability refers to the technical and administrative feasibility of an alternative, including the availability of materials and services needed to implement the alternative.

Alternatives 2, 3, and the preferred alternative have no significant barriers to implementation, although the implementation considerations become more complex with the increasing complexity of the remedial action. Alternative 2 is most easily implemented from a technical standpoint, involving implementation of only minor surface controls and institutional controls. Both Alternative 3 and the preferred alternative require removal of existing vegetation, site regrading, and slope protection along the western side of the site. The soil cap of Alternative 3 would be more easily constructed than the multi-layer cap of the preferred alternative, which requires specialized construction methods and handling for the installation of the synthetic geomembrane.

8.7 *Cost*

The costs of an alternative include the capital (up-front) cost of implementing the alternative and the costs associated with operating and maintaining the alternative over a 30-year period. The total cost of an action is expressed as the net present worth of the capital, operation, and maintenance costs combined.

The estimated costs of the alternatives increase incrementally with the increasing sophistication of the remedial action from the no action alternative to the preferred alternative (Alternative 4). The capital, operation and maintenance, and total cost for each alternative is provided as part of the site description in the preceding sections on "The Navy's Preferred Alternative" and "Other Alternatives Evaluated in the Feasibility Study".

8.8 *State Acceptance*

State acceptance addresses whether, based on its review of the RI Technical Report, FFS, and the Proposed Plan, the State concurs with, opposes, or has no comment on the preferred alternative the Navy is proposing for the site. The State has reviewed and commented on the Proposed Plan and the Navy has taken the State's comments into account.

8.9 *Community Acceptance*

Community acceptance addresses whether the public concurs with the Navy's Proposed Plan. Community acceptance of this Proposed Plan will be evaluated based on comments received at the upcoming public meeting and during the public comment period.

8.10 Application of the Criteria

Of the nine criteria, protection of public health and compliance with ARARs are considered threshold requirements that must be met by the final remedy for the site. In selecting a source control remedy, the Navy considers long-term effectiveness and permanence, reductions in toxicity, mobility, or volume through treatment, short-term effectiveness, implementability, and cost as balancing criteria. State and community concerns will be considered as modifying criteria in the selection of a remedy. U.S. EPA, State, and community comments may prompt the Navy to modify aspects of the remedial action or decide that another alternative is preferred.

9.0 The Navy's Rationale for Proposing the Preferred Alternative

Based on current information and analysis of the RI and FS reports, the Navy believes that the preferred alternative for Site 01 - McAllister Point Landfill, a RCRA Subtitle C multi-layer cap with surface and institutional controls, and recommended additional studies, is consistent with the requirements of the Superfund law and its amendments, specifically Section 121 of CERCLA, and to the extent practicable, the National Oil and Hazardous Substances Contingency Plan (NCP). Implementation of the preferred alternative addressing source control will provide a response to potential risks while additional site investigations are on-going. Potential risks posed by ground water contamination, leachate, "hot spots", or contaminated sediment will be addressed in a separate operable unit for the site.

The preferred alternative will provide the greatest overall protection of human health and the environment of the remedial alternatives evaluated. It will eliminate exposures of human and environmental receptors to the landfill area through engineering and institutional controls. It will also comply with relevant and appropriate hazardous and municipal waste landfill closure requirements as well as location-specific requirements, including requirements of the Coastal Resources Management Program. Potential risks associated with exposures to contaminated surface soil and materials will be addressed through the control of potential exposure pathways (through the placement of an impermeable barrier over the landfill area and fencing around the site) and through the control of future site usage (through deed restrictions). Implementation of the remedy is not expected to pose unacceptable short-term risks. The remedy meets U.S. EPA expectations regarding Superfund remedial actions, including the use of engineering controls such as containment for waste that poses a relatively low long-term threat or where treatment is impracticable.

This alternative can be fairly easily modified to incorporate other remedial actions, as necessary. If, on the basis of Phase II RI results, removal and/or treatment of hot spot areas or consolidation of contaminated sediment beneath the proposed cap area is required, these actions could be incorporated into the cap design activities and conducted prior to the construction of the cap. Similarly, leachate and landfill gas generation can be further evaluated during the landfill cap design with removal and/or treatment systems incorporated as necessary prior to the final design of the cap. A multi-layer cap could also complement a future ground water/leachate remediation action by removing infiltration as a source of leachate generation and, thereby, reducing the volume of leachate and contaminated ground

water requiring treatment over time. This flexibility allows remedial decision and conceptual design activities to move forward for contaminated soil/waste at the site, while other areas or media of the site requiring additional investigation are further evaluated during Phase II remedial investigations.

Glossary

Administrative Record: A file which is maintained and contains all information considered and relied upon by the Navy to make its decision on the selection of a response action under CERCLA. The file is available for public review.

Applicable or Relevant and Appropriate Requirements (ARARs): ARARs include any State or Federal statute or regulation that pertains to protection of public health and the environment in addressing certain site conditions or using a particular remedial technology at a Superfund site. A State law to preserve wetland areas is an example of an ARAR. The Navy must consider whether a remedial alternative meets ARARs as part of the process for selecting a remedial alternative for a Superfund site.

Baseline: With respect to the alternatives evaluated, a statement of existing conditions and their relative consequences should no further action be taken.

Bedrock: The solid rock that underlies all the soil, sand, clay, gravel, and loose material on the earth's surface. Bedrock can be either solid (competent) or fractured (cracked or weathered). Fractured bedrock which can support a supply of ground water is referred to as a bedrock aquifer.

Biota: Biological entities such as plants and animals.

Base Neutral/Acid Extractable Compounds (BNAs): A class of compounds which may be present at sites containing petroleum products. As a group, BNAs are less volatile, and have a greater tendency to persist in the environment than VOCs. Examples of BNAs include polynuclear aromatic hydrocarbons (PAHs), phenols, and phthalates. Similar to VOCs, the toxicity of BNAs is variable with some BNAs classified as carcinogenic. BNAs are also commonly referred to as semi-volatile organics.

Carboniferous: Producing, containing, or pertaining to carbon or coal.

Carcinogenic: Relating to a chemical's potential to cause or promote cancer in people and/or experimental animals. The U.S. EPA classifies chemicals with regard to their carcinogenic potential and publishes cancer toxicity values for use in estimating human health risks at Superfund sites. These toxicity values are published in the U.S. EPA's Integrated Risk Information System data base and in the Health Effects Assessment Summary Tables.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA): A Federal law passed in 1980 and modified in 1986 by the Superfund Amendments and Reauthorization Act (SARA). The act created a special tax that goes into a Trust Fund, commonly known as Superfund, to investigate and clean up abandoned or uncontrolled hazardous waste sites. Under the program, the U.S. EPA can either: 1) pay for site cleanup when parties responsible for the contamination cannot be located or are unwilling or unable to perform the work or 2) take legal action to force parties responsible for site contamination to clean up the site or pay back the Federal government for the cost of the cleanup.

Confirmation Study (CS): An integral step of the Navy's Assessment and Control of Installation Pollutants (NACIP) Program. It consists of an on-site investigation which includes physical and analytical monitoring to confirm or deny the existence of contamination. Areas requiring a Confirmation Study are identified as part of the **Initial Assessment Study (IAS)** at a site.

Defense Environmental Restoration Account (DERA): An account containing funds appropriated by Congress to be used to fund the investigation and cleanup of past hazardous chemical releases at Department of Defense (DOD) sites.

DNAPLs: Dense, non-aqueous phase liquids. DNAPLs tend to sink and collect as a separate layer at the bottom of a saturated geologic unit.

Fauna: The animals and animal life of a specific area.

Feasibility Study (FS): Process that develops remedial response objectives and identifies and evaluates remedial alternatives which achieve remedial response objectives at a site.

Fill: Soil, gravel, or other materials placed in an opening in the ground. "Clean" fill is typically used to replace contaminated soil which has been excavated or to serve as a cap over soil/waste that is kept in place. Waste (e.g., household garbage) placed into a landfill may also be referred to as fill.

GA-NA: Ground water classified as GA includes those ground water resources which have been designated to be suitable for public drinking water use without treatment. Non-attainment (NA) indicates an area is known or presumed to be out of compliance with the standards of the assigned classification. The goal for non-attainment areas is restoration to a quality consistent with the assigned classification.

Geophysical Surveys: Practical applications of non-destructive geophysical methods such as electromagnetics and magnetometry to identify anomalous areas which may be representative of buried drums or contaminated ground water plumes or to identify depth to bedrock.

Glacial Till: Non-sorted, non-stratified sediment and materials originally carried or deposited by a glacier.

Ground Water: Water beneath the land surface contained in the inter-connected pores in the saturated zone; includes water which enters wells and issues from springs.

Hot Spot: Area of contamination which differs from the surrounding area by posing a greater level of contamination and/or a significantly increased level of risk to human health and the environment.

Human Health Risk Assessment (HHRA): Evaluation conducted as part of the RI/FS process which includes a baseline risk assessment, refinement of preliminary remediation goals, and risk evaluation of remedial alternatives. In conducting a baseline risk assessment,

exposure estimates based on site data are combined with information on chemical toxicity to characterize potential site-related risks.

Impermeable Barrier: A component of a RCRA Subtitle C cap intended to act as a barrier in preventing the infiltration of water into underlying waste materials. Impermeable barriers typically consist of a low hydraulic conductivity, compacted soil layer or a synthetic membrane.

Infiltration: The flow of water downward from the land surface into and through the pores in soil, rock or other subsurface materials.

Information Repository: A file, available for public review at a public building convenient to local residents, containing current information on technical reports, and reference documents regarding the site.

Initial Assessment Study (IAS): Report that identifies areas of suspected contamination and which may pose a threat to human health or the environment.

Institutional Controls: Legal restrictions established to prevent specified activities from occurring in a designated area. Examples include deed restrictions and easement zoning.

Leachate: A product of natural biodegradation, infiltration, and ground water migrating through an area of waste materials.

Leaching: The act of washing or draining by percolation. As precipitation infiltrates waste materials, contaminants can be washed or "leached" from the waste.

LNAPLs: Light, non-aqueous phase liquids. LNAPLs (e.g., petroleum products) tend to float on the ground water surface as a separate layer.

Management of Migration: Action taken to limit or manage the migration of contamination away from source areas.

National Oil and Hazardous Substances Contingency Plan (NCP): The federal regulation that guides determination of the sites to be corrected under the Superfund program and the program to prevent or control spills into surface waters or other portions of the environment.

National Pollutant Discharge Elimination System (NPDES): Federal regulations which set standards and conditions for discharges to surface water, including storm water discharges from land disposal facilities which have received industrial waste from industrial facilities.

National Priorities List (NPL): U.S. EPA's list of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term remedial action under Superfund.

Navy Installation (IR) Restoration Program: An environmental investigation and cleanup program developed by the Navy in 1987, following the passage of the Superfund

Amendments and Reauthorization Act (SARA), which parallels the requirements of CERCLA. The IR program resulted from the restructuring of the Navy's previous environmental investigation and cleanup program which was instituted prior to CERCLA.

Net Present Worth: The amount of money necessary to secure the promise of future payment, or series of payments, at an assumed interest rate.

Non-Aqueous Phase Liquids: Free-phase organic liquids such as oil, fuel or solvents, which depending on their chemical characteristics, are classified as either DNAPLs or LNAPLs.

Operable Unit: A specific environmental medium, area of a site or type of contamination, the remediation of which may be addressed separately as part of the overall remediation of a site.

Overburden: Material (e.g., soil, fill) overlying the bedrock.

Part Per Billion: Unit of measurement used to describe a level of contamination. For example, one gallon of solvent in one billion gallons of water would be equivalent to one part per billion.

Polychlorinated Biphenyls (PCBs): Organic compounds in which two or more chlorine atoms have been substituted for hydrogen atoms on a biphenyl molecule. PCBs are very stable (and, therefore persistent) and are characterized by a low vapor pressure, low flammability, high heat capacity and low electrical conductivity. PCBs were used in hydraulic, lubricating, and heat transfer liquids. The U.S. EPA classifies PCBs as Group B2 - probable human carcinogens.

Polynuclear Aromatic Hydrocarbons (PAHs): PAHs are one group of BNA (or semi-volatile) compounds. PAHs are characterized as having two or more aromatic rings and are found naturally in heavy petroleum residues, such as tar. Examples of PAHs include naphthalene which is classified as non-carcinogen and benzo(a)pyrene which is considered a probable human carcinogen.

RCRA Subtitle C: Portion of the Resource Conservation and Recovery Act (RCRA) which addresses hazardous waste management; provides the basis for the regulation of hazardous waste land disposal facilities.

RCRA Subtitle D: Portion of the Resource Conservation and Recovery Act (RCRA) which addresses state or regional solid waste plans; provides the basis for the regulation of municipal solid waste landfill facilities.

Record of Decision (ROD): A public document which presents the selected remedial alternative to be used at a National Priorities List (NPL) site. The Decision Summary portion of the ROD provides an overview of the information and technical analysis generated during the site investigation and remedial analysis process. It identifies the selected remedy and explains how the remedy fulfills statutory requirements. The Responsiveness Summary

portion of the ROD addresses public comments and community concerns received during the public comment period.

Remedial Alternative: Option evaluated by the Navy to address the source and/or migration of contaminants at a Superfund site to meet health-based cleanup levels.

Remediation: The act or process of remedying a problem such as the cleanup or containment of contamination at a Superfund site.

Remedial Investigation (RI): The RI determines the nature, extent, and composition of contamination at a hazardous waste site, and directs the types of cleanup options that are developed in the **Feasibility Study**.

Responsiveness Summary: A report that will summarize the Navy's responses to comments received during the upcoming public informational meeting and public comment period. Public comments are taken into account in the final selection of a remedial action for a site.

Revetment: A facing of material such as stone or concrete to sustain an embankment.

Rhode Island Pollutant Discharge Elimination System (RIPDES): State regulations which set standards and conditions for discharges to surface water including storm water discharges from land disposal facilities.

Riprap: A loose assemblage of broken stones erected in water or on soft ground as a foundation or an embankment slope used to prevent erosion.

Shale: A fine-grained sedimentary rock formed by consolidation of clay, silt, or mud.

Soil Gas Survey: Means of surveying the nature and extent of subsurface soil and/or ground water volatile organic contamination through the sampling and analysis of vapors within the pore spaces of unsaturated subsurface soils.

Source Control: Action taken to control the source(s) of contamination at a site.

Surface Soil: Soils located at the surface down to a specified depth (typically 1 or 2 feet). These soils are likely subject to erosion as a result of wind and surface water run-off. Animals and people may be readily exposed to these soils (e.g., by walking on the soil surface).

Subsurface Soil: Soils located at depths greater than 1 or 2 feet below the soil surface. These soils are less likely to be subject to wind and water transport than surface soil unless exposed through excavation. Animals and people are also less likely to contact these soils unless by burrowing (animals) or by activities such as gardening, landscaping, or constructing buildings with foundations.

Synthetic Membrane: Thin sheet of synthetic material, such as polyethylene or polyvinyl chloride, which is used as a manmade barrier to reduce surface infiltration, prevent direct contact, limit gas emissions and/or control erosion.

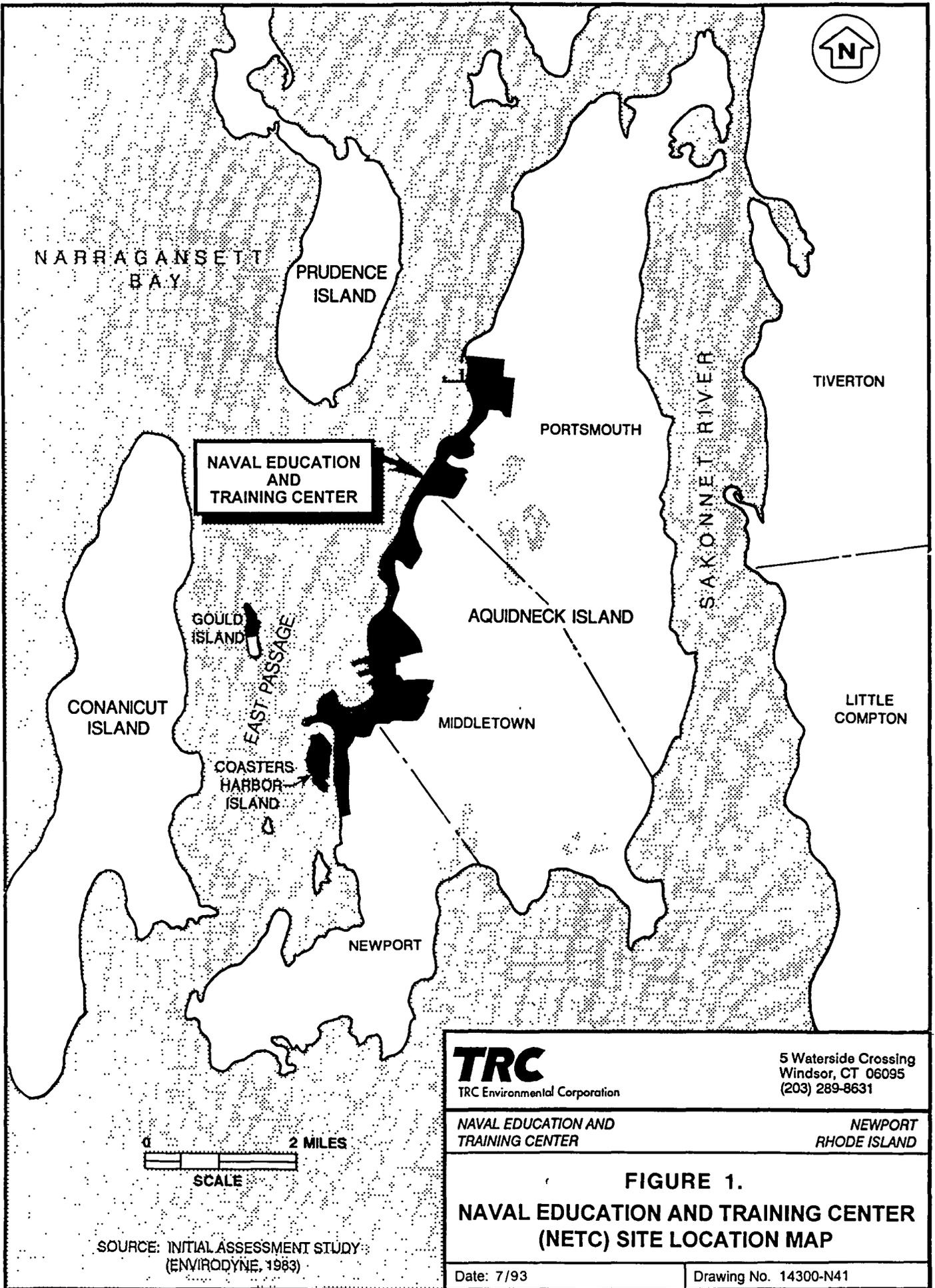
To-Be-Considered (TBC) Criteria: Non-promulgated advisories or guidance issued by federal or state government that are not legally binding and do not have the status of potential ARARs. However, TBCs may prove useful if no ARAR addresses a particular situation or if existing ARARs do not provide sufficient protection. Therefore, in many circumstances, TBCs may be considered along with ARARs in determining the level of cleanup necessary at a site.

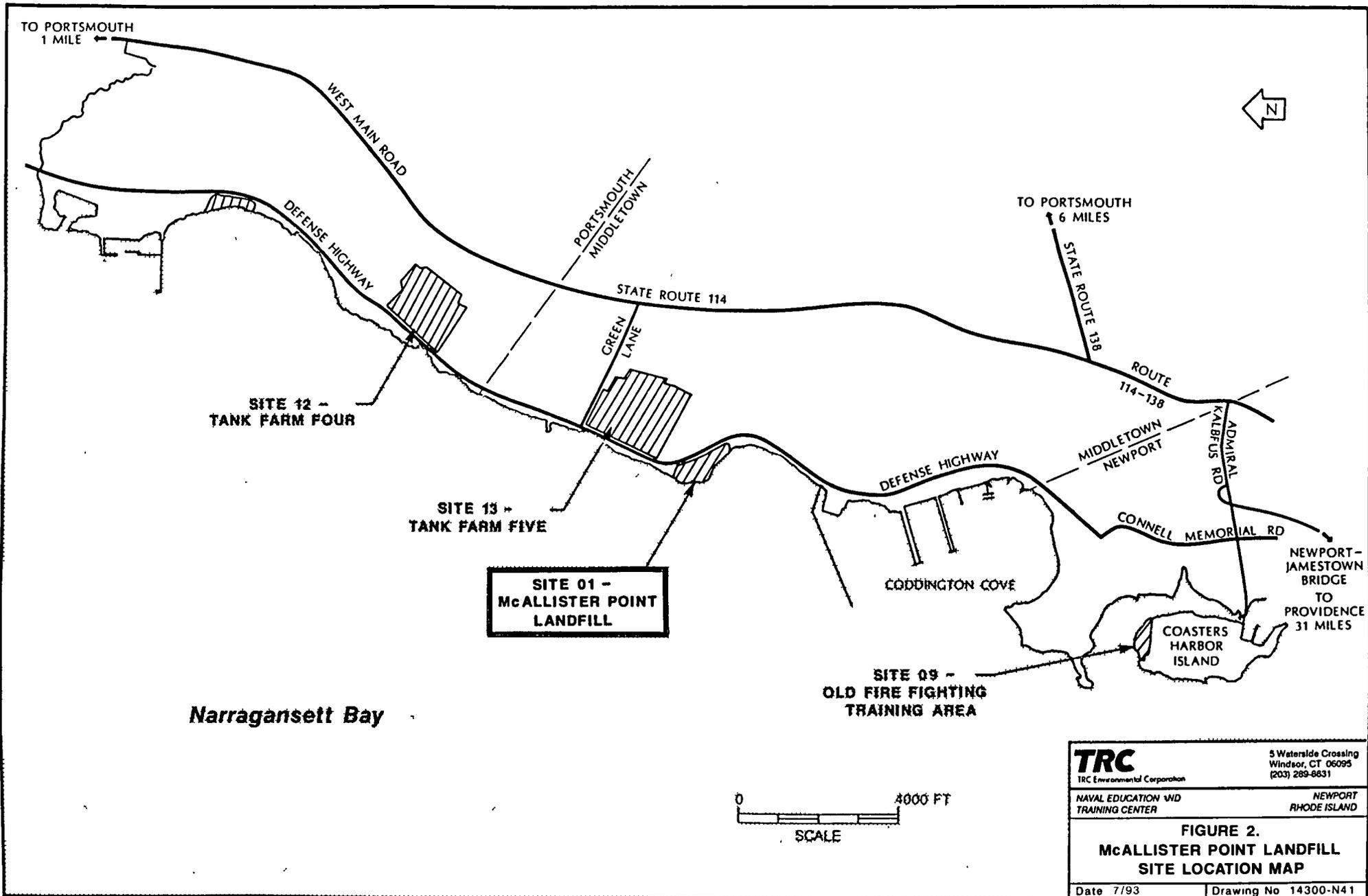
Total Petroleum Hydrocarbons (TPH): Generally refers to an analytical method used to determine the total concentration of aromatic and aliphatic compounds in a sample. The analytical procedure does not identify individual chemicals in the sample, and is generally used only as a screening tool to identify areas of high organic contamination.

Unsaturated Zone: The zone between the land surface and the water table. The pore spaces contain water at less than atmospheric pressure, as well as air and other gases.

Volatile Organic Chemicals (VOCs): A large group of chemical compounds composed primarily of carbon and hydrogen that are characterized by their high volatility (i.e., their tendency to move into the air from soil or water). VOCs are commonly contained in petroleum products, solvents and cleaning fluids. VOCs vary widely in regard to their potential effects on human health.

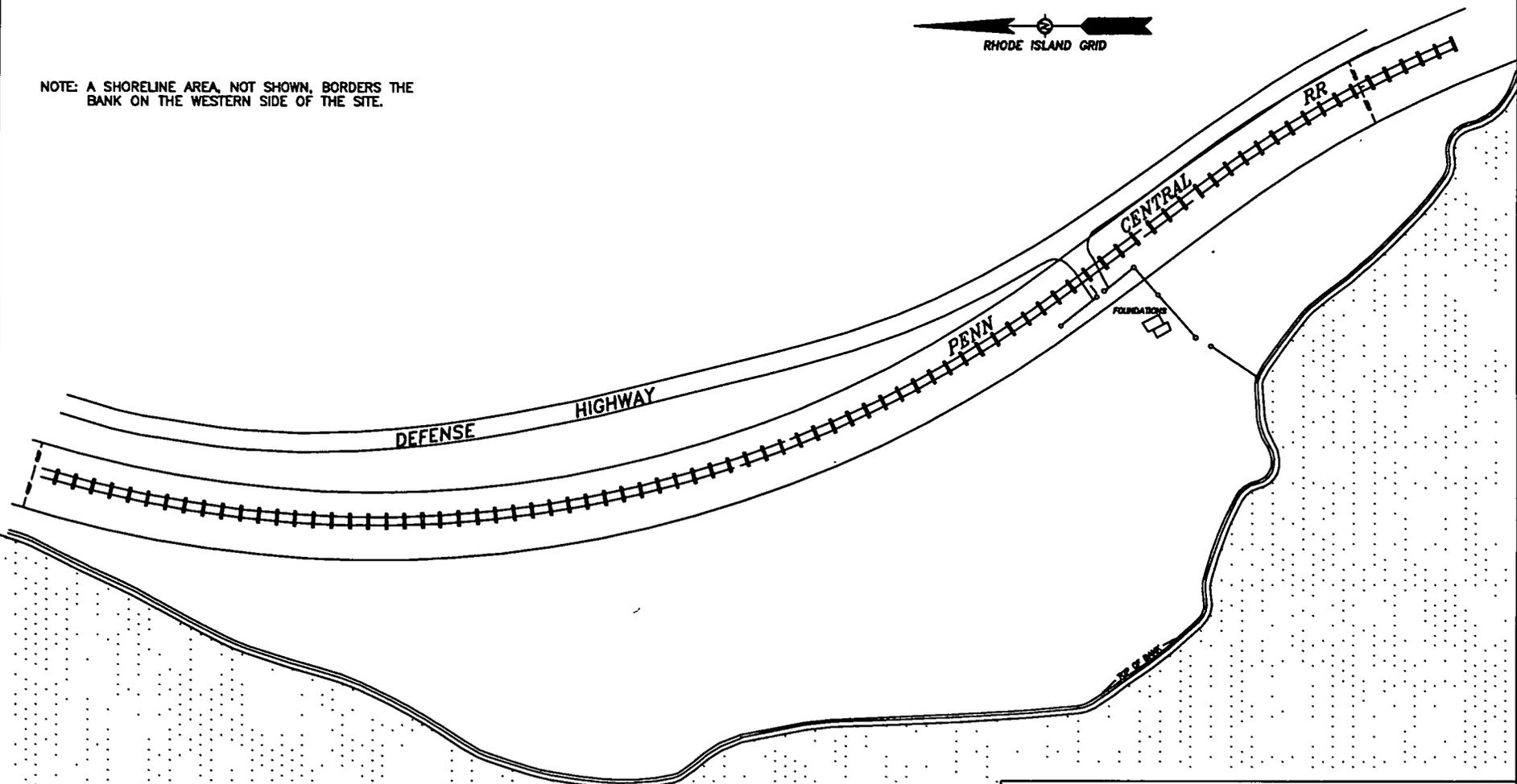
Water Table: The surface in a ground water body at which the pore pressure is atmospheric. The zone above the water table is unsaturated while the zone below is saturated.





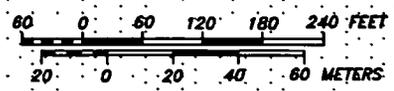


NOTE: A SHORELINE AREA, NOT SHOWN, BORDERS THE BANK ON THE WESTERN SIDE OF THE SITE.



32

NARRAGANSETT BAY



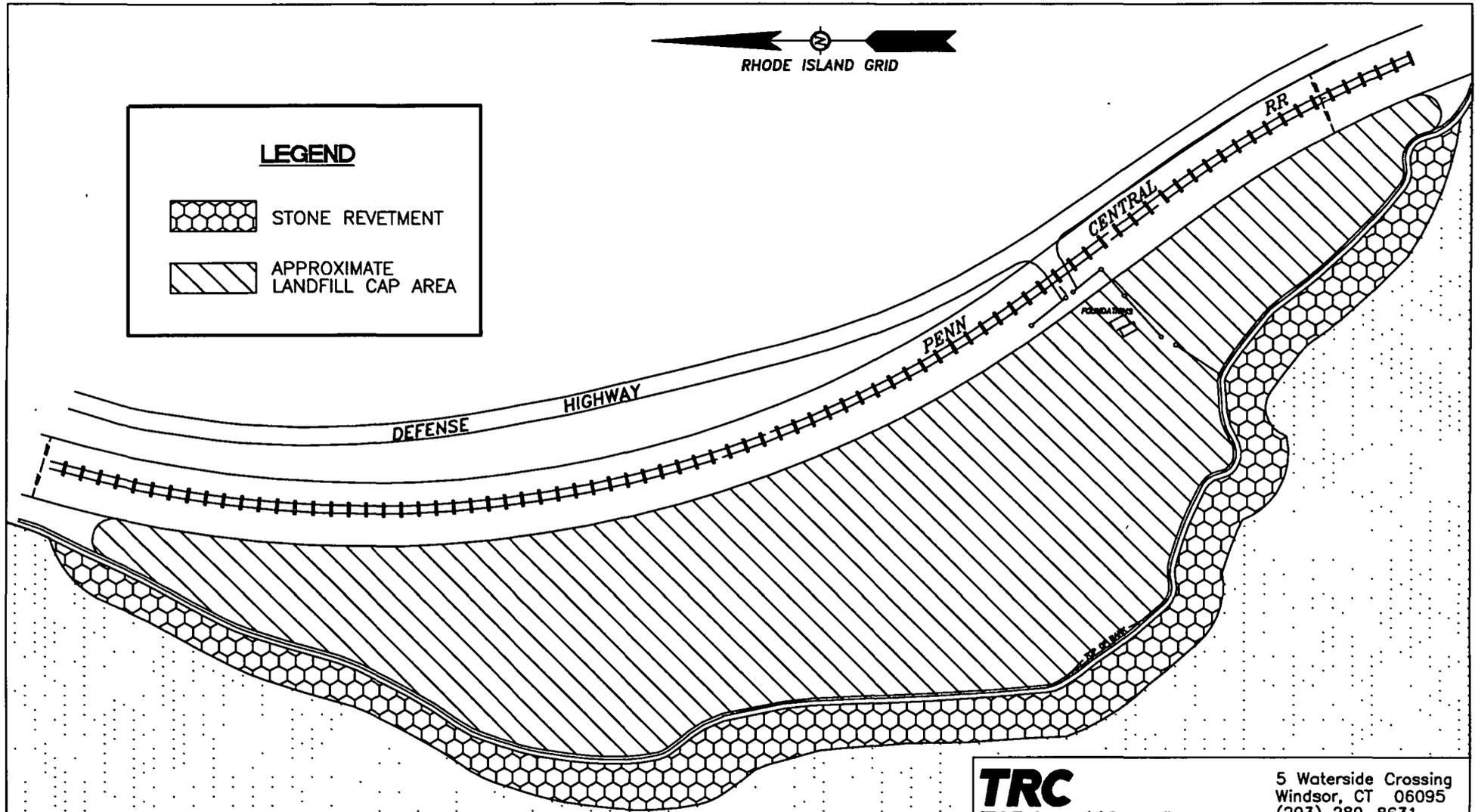
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NEWPORT RHODE ISLAND	
McALLISTER POINT LANDFILL	
FIGURE 3. SITE PLAN	
Date: 7/93	Drawing No. 14300-N41



LEGEND

 STONE REVETMENT

 APPROXIMATE LANDFILL CAP AREA

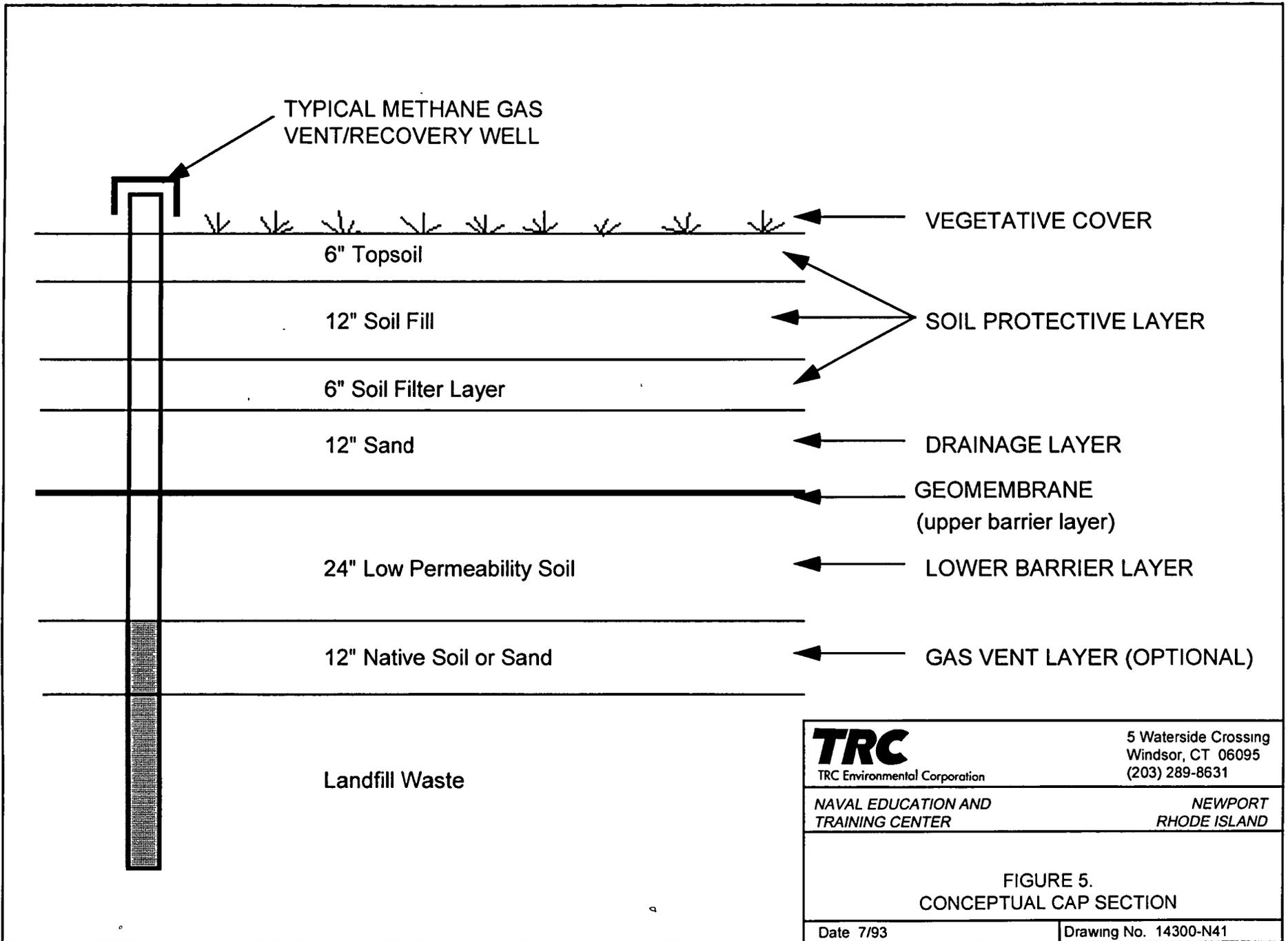


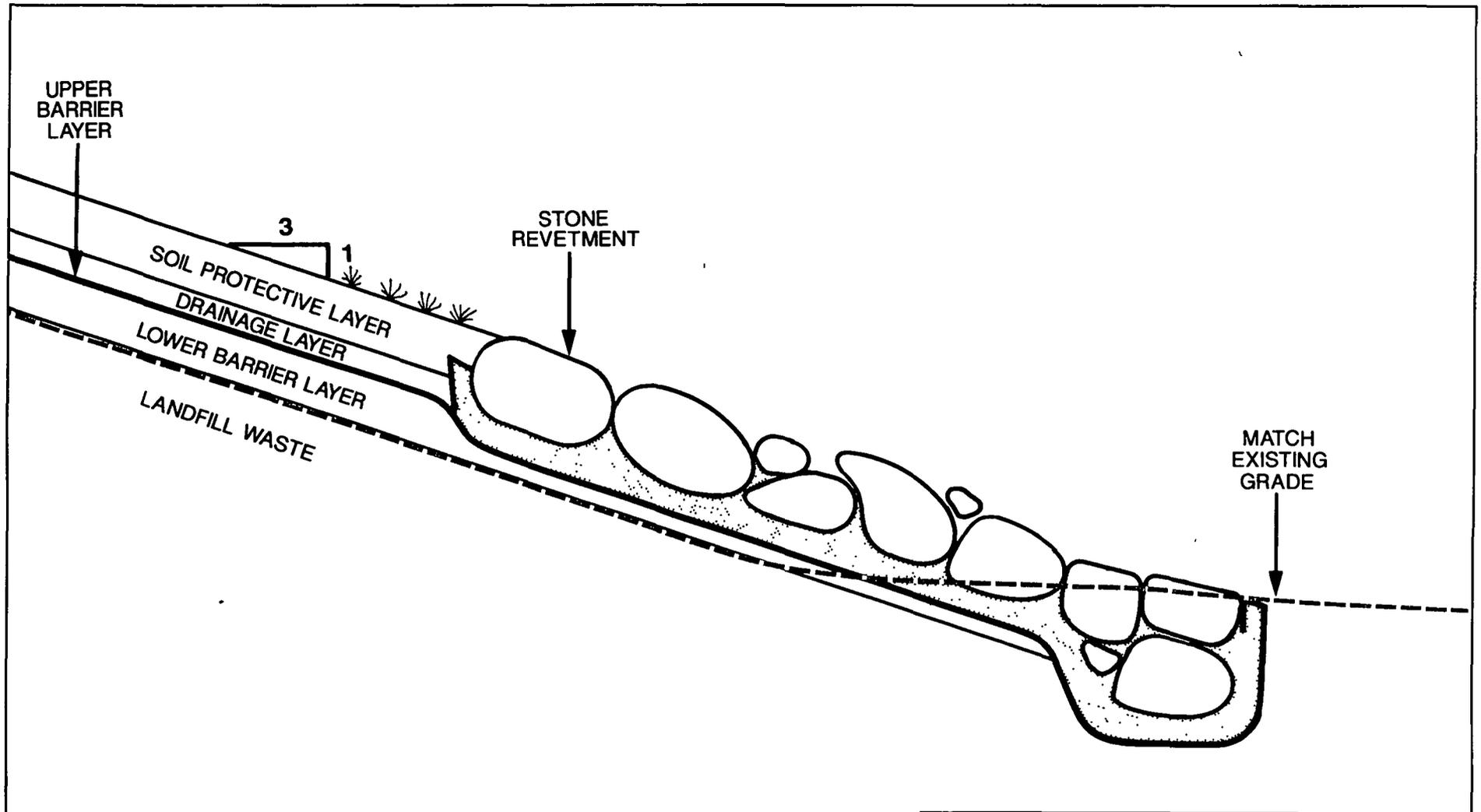
NARRAGANSETT BAY



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FIGURE 4. PROPOSED LANDFILL CAP AREA	
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33





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FIGURE 6 CONCEPTUAL SLOPE SECTION WITH SEAWARD EROSION PROTECTION	
Date 7/93	Drawing No. 14300-N41

Mailing List Additions

If you or someone you know would like to be placed on the NETC Newport mailing list, please fill out and mail this form to:

Mr. Francisco La Greca, P.E., Code 1823
Remedial Project Manager
Department of the Navy
Naval Facilities Engineering Command
Northern Division
10 Industrial Highway, Mail Stop #82
Lester, PA 19113-2090

Name: _____

Address: _____

Affiliation (if any): _____ Phone: _____