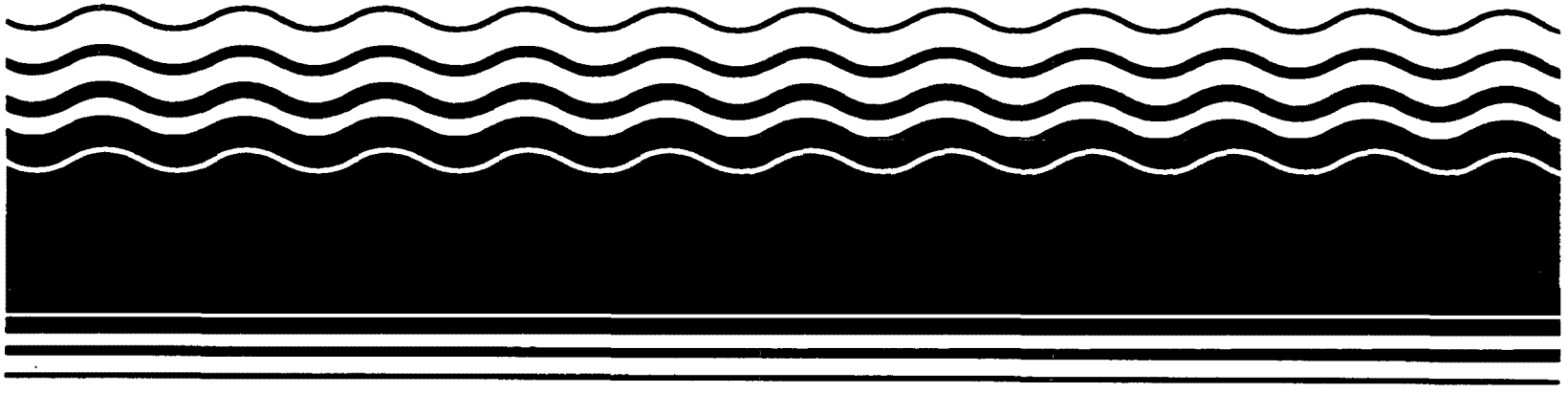
PB94-963721
EPA/ROD/R01-93/095
December 1994

EPA Superfund Record of Decision:

Brunswick Naval Air Station
Sites 5 and 6, Brunswick, ME
8/31/1993



RECORD OF DECISION
FOR A REMEDIAL ACTION
AT SITES 5 AND 6
NAVAL AIR STATION BRUNSWICK
BRUNSWICK, MAINE

AUGUST 1993

NAVAL AIR STATION BRUNSWICK
RECORD OF DECISION

TABLE OF CONTENTS

TABLE OF CONTENTS
continued

LIST OF FIGURES

NAVAL AIR STATION BRUNSWICK
RECORD OF DECISION

LIST OF TABLES

DECLARATION

SITE NAME AND LOCATION

Naval Air Station (NAS) Brunswick
Orion Street Asbestos Disposal Site: Site 5; and
Sandy Road Rubble and Asbestos Disposal Site: Site 6
Brunswick, Maine

STATEMENT OF BASIS AND PURPOSE

This decisi document presents a selected remedial action that will remove asbestos-covered pipes from Site 5, the Orion Street Asbestos Disposal Site, and remove construction rubble and asbestos-containing material from Site 6, the Sandy Road Rubble and Asbestos Disposal Site. This decision document was developed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 as amended by the Superfund Amendments and Reauthorization Act of 1986, and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan. Through this document, the Navy plans to remedy the threat to human health, welfare, or the environment posed by asbestos-containing material associated with Sites 5 and 6. This decision is based on information contained in the Administrative Record for the site. The Administrative Record for this site is located at the Public Works Office at NAS Brunswick and the Curtis Memorial Library, 23 Pleasant Street, Brunswick, Maine.

The State of Maine Department of Environmental Protection and the U.S. Environmental Protection Agency concur with the selected remedy.

ASSESSMENT OF THE SITE

Actual or threatened releases of hazardous substances from Sites 5 and 6, if not addressed by implementing the response action selected in this Record of Decision (ROD), may present an imminent and substantial endangerment to public health, welfare, or the environment.

DESCRIPTION OF THE SELECTED REMEDY

This action addresses the principal threat posed by Sites 5 and 6 by preventing endangerment of public health, welfare, or the environment by implementing this ROD. This ROD describes the removal of construction rubble and asbestos-

containing material and disposal of this material as necessary subgrade fill for the proposed cover system at the landfill at Sites 1 and 3.

The selected remedy includes the development of a health and safety plan to address the specific hazards associated with handling asbestos-containing material; site preparation; excavation of construction debris and asbestos-containing material; and containerization of the material and transport to the Sites 1 and 3 landfill for use as subgrade fill prior to the placement of a low-permeability cap. After excavating, soil samples will be collected and analyzed to confirm that waste removal is complete. The sampling results will be submitted to the regulatory agencies and the Technical Review Committee for review. Sites 5 and 6 will be graded to minimize erosion and seeded to reestablish vegetation. The landfill at Sites 1 and 3, where the material will be placed, is the subject of a separate ROD (NAVY, 1992a) and will be closed in accordance with all applicable federal and state requirements, and long-term monitoring will be implemented at these sites.

STATUTORY DETERMINATIONS

The selected remedy meets the mandates of CERCLA Section 121. It protects human health and the environment, complies with federal and state requirements that are legally applicable or relevant and appropriate to the remedial action, and is cost-effective. This remedy does not meet the statutory preference for treatment. Treatment of asbestos-containing material was not found to be practicable or proven. Because asbestos is a relatively insoluble material composed of minerals, many conventional treatment technologies ordinarily considered for contaminated soils are not applicable to asbestos waste. Vitrification, the only treatment demonstrated to destroy asbestos, was eliminated because no commercially operating vitrification plants currently exist for ex-situ vitrification and the presence of metallic objects buried at the site would not allow effective in-situ vitrification.

Because this remedy will remove contaminated soils and nonhazardous debris from the site, no long-term controls will be necessary and the five-year review will not apply.

The foregoing represents the selection of a remedial action by the Department of the Navy, and the U.S. Environmental Protection Agency, Region I, with concurrence of the Maine Department of Environmental Protection.

By: Richard H. Tobin Acting Date: 30 Aug 93
Robert L. Rachor, Jr.

Title: Captain, U.S. Navy
Commanding Officer
Naval Air Station
Brunswick, Maine

The foregoing represents the selection of a remedial action by the Department of the Navy, and the U.S. Environmental Protection Agency, Region I, with concurrence of the Maine Department of Environmental Protection.

By: Paul Keough
Paul G. Keough

Date: Aug 31, 1993

Title: Acting Regional Administrator, USEPA

DECISION SUMMARY

I. SITE NAME, LOCATION, AND DESCRIPTION

The U.S. Naval Air Station (NAS) Brunswick is located in Brunswick, Maine. In 1987, NAS Brunswick was placed on the National Priorities List (NPL). There are currently 13 areas (Sites) within NAS Brunswick under investigation. This Record of Decision (ROD) relates to the contamination at Sites 5 and 6.

NAS Brunswick is located south of the Androscoggin River between Brunswick and Bath, Maine, south of Route 1 and between Routes 24 and 123 (Figure 1). Undisturbed topography at NAS Brunswick is characterized by low, undulating hills with deeply incised brooks; ground surface elevations range from mean sea level (MSL) in lowland drainage areas and the Harpswell Cove estuary, to over 110 feet MSL west and southeast of the southern end of the runways. Topography in the developed areas of the base has been modified by construction, with ground surface elevations generally ranging from 50 to 75 feet above MSL.

NAS Brunswick is located on 3,094 acres. The operations area (138 acres) lies east of the two parallel runways and consists of numerous office buildings, a steam plant, fuel farm, barracks, recreational facilities, base housing, hangars, repair shops, and other facilities to support NAS Brunswick aircraft. Forested areas (approximately 48 percent), grasslands (approximately 28 percent), and paved areas (approximately 12 percent) comprise most of the base property. Paved areas are mostly flight ramps and runways. The remaining 12 percent of the base includes the operations area (approximately 5 percent) and miscellaneous shrubland, marsh, and open water. The southern edge of the base borders the estuary of Harpswell Cove.

Property uses surrounding NAS Brunswick are primarily suburban and rural residential, with some commercial and light industrial uses along Routes 1, 24, and 123. An elementary school, a college, and a hospital are located within 1 mile of the western base boundary.

Sites 5 and 6 are being considered together based on their shared geologic and hydrogeologic conditions and historical use as disposal sites for asbestos.

Site 5, located off Merriconeag Road south of the main runway, apparently was used briefly in 1979 to dispose of asbestos-covered pipe from a building being demolished on base (Figure 2). The site was inspected in 1980 by a facility engineer who described the site as consisting of two trenches. One of the trenches (measuring 3

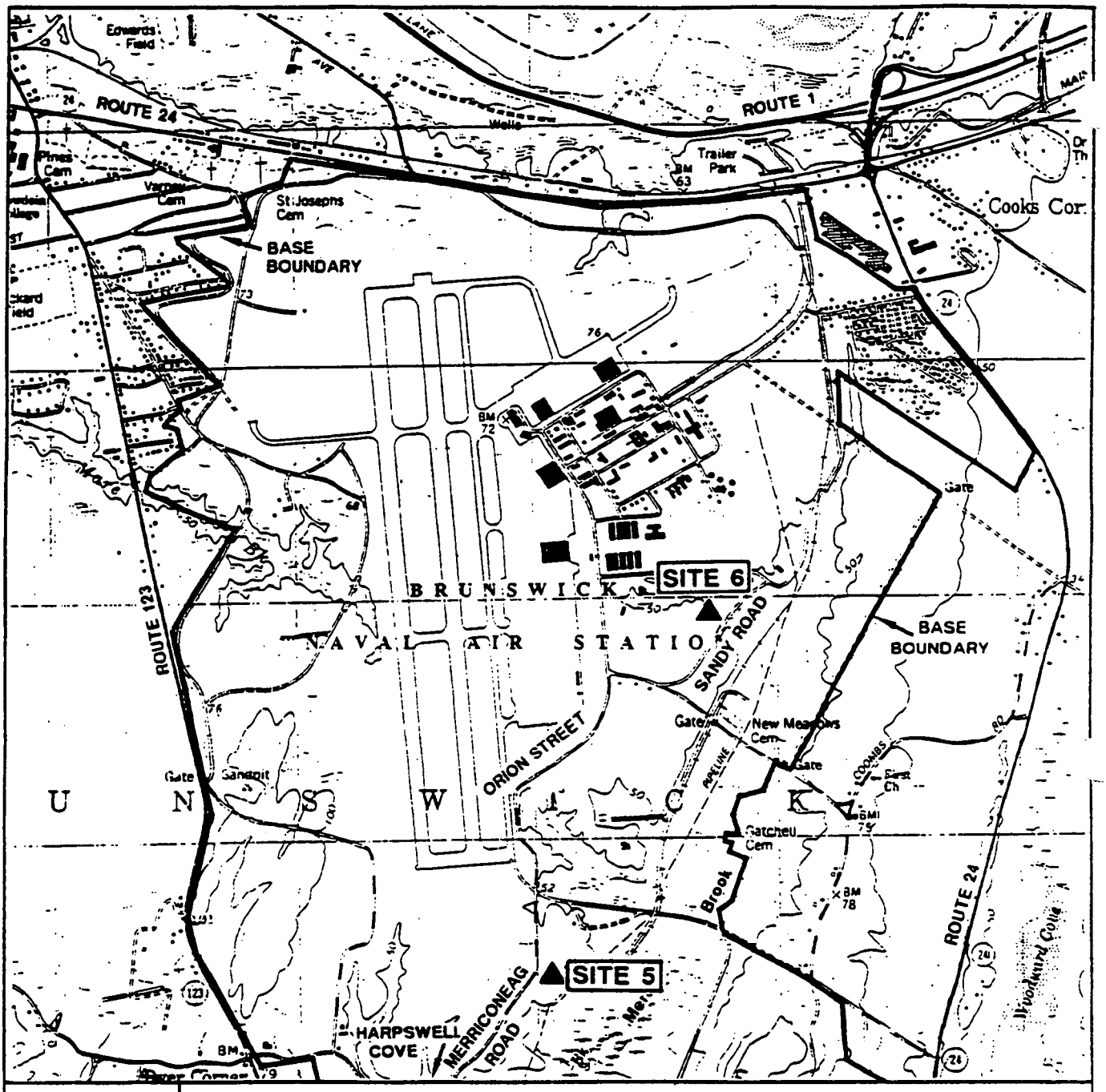


FIGURE 1
NAS BRUNSWICK
SITES 5 AND 6 LOCATION

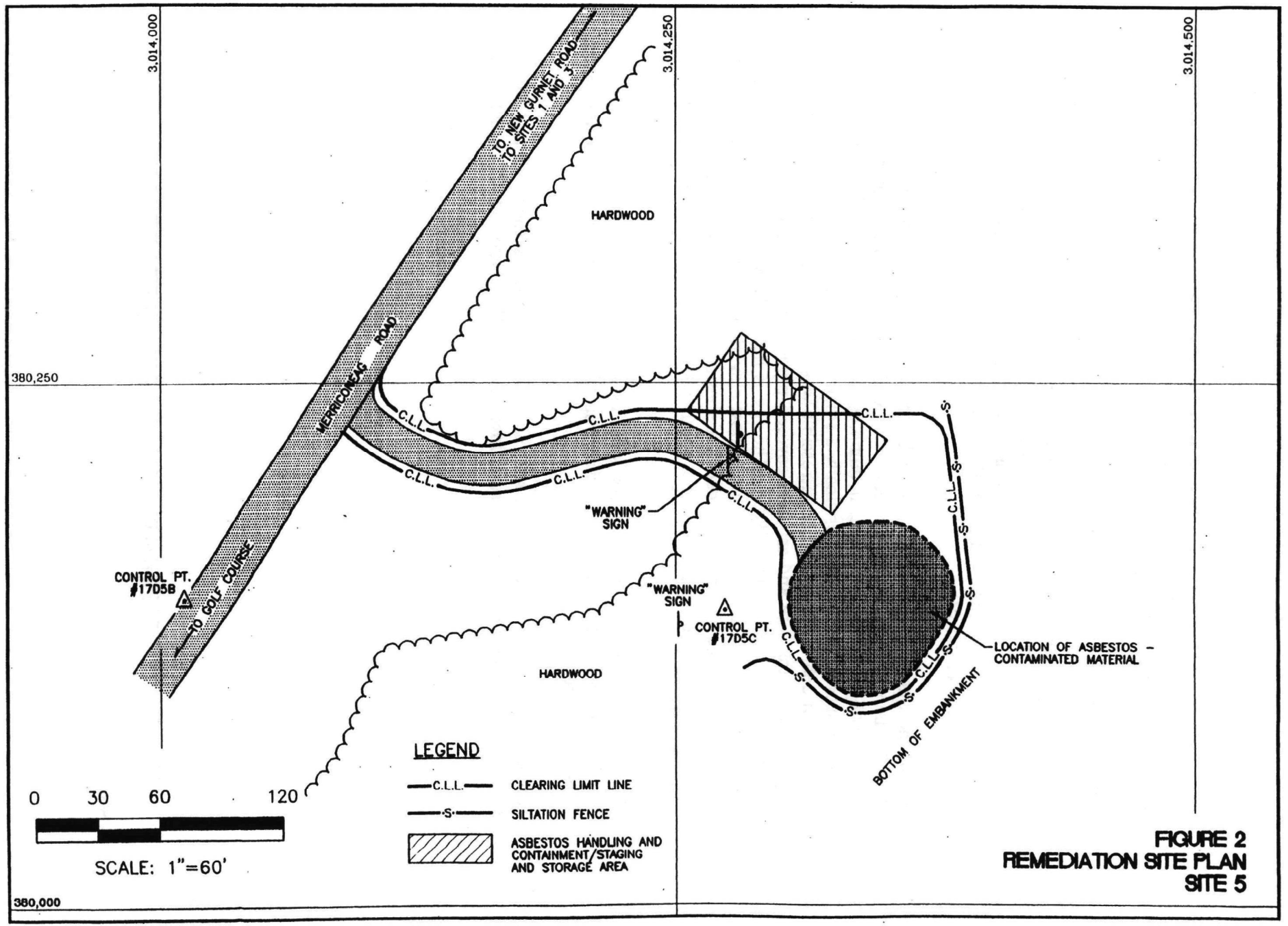


FIGURE 2
REMEDIATION SITE PLAN
SITE 5

J:\7124-01\C41B

by 20 by 7 feet deep) contained six 1-inch diameter asbestos pipes ranging in length from 4 to 12 feet. A second parallel trench measuring 15 by 30 by 10 feet deep was found to contain up to eight pieces of corrugated pipe of varying lengths that had smaller asbestos pipe inside. The asbestos material was left in the trenches and covered with soil (Roy F. Weston, Inc., 1983).

The site is currently covered with soil, seeded, and marked with signs as an asbestos disposal area. The soil and signs are believed to have been added in 1980. Site 5 is approximately one-quarter acre and is covered mostly with grass. The surrounding area is tree-covered. The site is level except for a bank that drops off several feet just southeast of the site.

Site 6, the Sandy Road Rubble and Asbestos Disposal Site, is bordered by Sandy Road to the southeast and by a stream behind Building 516 to the north (Figure 3). It reportedly was used for general dumping of construction debris until the late 1970s. It appears the site was originally a small depression that was later filled with construction debris and other nonputrescible wastes. Aircraft parts reportedly were disposed of at this site and asbestos-covered pipes were seen protruding from the surface (Roy F. Weston, Inc., 1983). The site is nearly level except for a large soil stockpile approximately 15 feet at its highest elevation on the eastern side. Empty pipes, concrete, asphalt, and other debris are visible at the site surface. In addition, steel dumpsters are stored on the southwest corner of the site. Site 6 is approximately 1 acre.

Groundwater associated with the sites is not used for potable or any other purposes. The base is connected to a public water supply administered by the Brunswick-Topsham Water District.

A more complete description of the sites can be found in the Sections 4.0 and 5.0 of the Draft Final Supplemental Remedial Investigation (RI) Report (E.C. Jordan Co., 1991a).

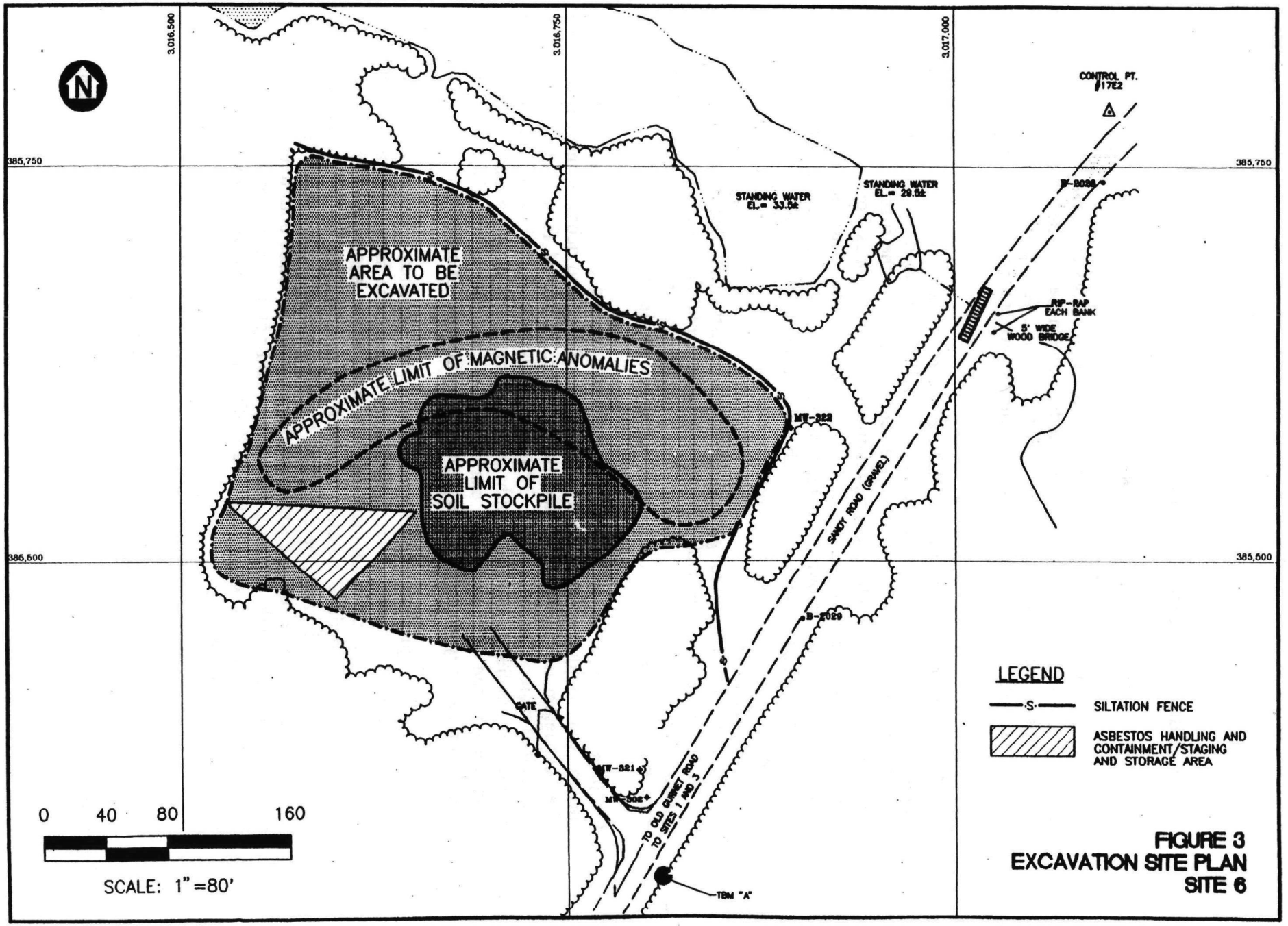


FIGURE 3
EXCAVATION SITE PLAN
SITE 6

J: /7124-01/C43B

II. SITE HISTORY AND ENFORCEMENT ACTIVITIES

A. LAND USE AND RESPONSE HISTORY

NAS Brunswick is an active facility supporting the U.S. Navy's antisubmarine warfare operations in the Atlantic Ocean and Mediterranean Sea. The base's primary mission is to operate and maintain P-3 Orion aircraft. NAS Brunswick first became active in the 1940s during World War II, and underwent major expansion in the 1950s.

Site 5 was apparently used once, in 1979, as a disposal area for asbestos-covered pipes. A fa[illegible]y engineer inspecting the site in 1980 described two trenches, one measuring 3 by 20 by 7 feet deep and the second, alongside the first, measuring 15 by 30 by 10 feet deep. One trench contained six asbestos pipes from 4 to 12 feet long and the second contained six to eight corrugated pipes with smaller asbestos pipe inside. Nothing is known about the manner or care with which these pipes were disposed. The trenches were covered with soil. There is no evidence or record that this site was used for disposal of any other material.

Site 6 was reportedly used for general dumping of construction debris until the late 1970s. A site inspection in 1980 reported asbestos-covered pipes protruding from the surface. Aircraft parts were also reportedly disposed of at Site 6. At the current time, pipes, concrete, asphalt and other debris are visible at the soil surface.

Geophysical surveys, including magnetometer and ground-penetrating radar (GPR) surveys, were conducted to confirm the presence of reported debris at these sites. The magnetometer survey identified the presence of buried ferrous (i.e., iron-containing) material at both sites. GPR profiling was conducted in the vicinity of magnetic anomalies to correlate with and supplement the magnetic data. While magnetometry and GPR techniques can indicate the presence of material below the ground surface, they do not provide positive identification of asbestos.

The GPR and magnetometer surveys at Site 5 were conducted to locate the two trenches where the asbestos-covered pipes were buried. The magnetometer located a single primary magnetic anomaly and a second minor anomaly. The primary anomaly indicates a definite presence of subsurface metallic materials, but the second minor anomaly is believed to be caused by the presence of surface debris (e.g., old tin cans). It is possible that the single primary anomaly indicates both trenches and, because they are directly adjacent, the survey could not distinguish between them. The GPR survey did not reveal additional findings but did support the results of the magnetometer survey.

GPR and magnetometer surveys were used to assess the areal extent of Site 6. Unlike Site 5, no single primary magnetic anomaly was found. However, readings forming a semicircular shape were found across the site. This suggests that the semicircular region is probably where asbestos and rubble were disposed of at Site 6. The GPR survey supported these findings. Another anomaly detected at Site 6 was attributed to dumpsters stored along the southwest edge of the site and is not considered part of the disposal site.

No asbestos was detected in surface soil samples collected from Sites 5 and 6. Groundwater at Site 6 was monitored to determine if the site was contributing to organic contamination detected in groundwater along the eastern boundary of NASB Brunswick (i.e., the Eastern Plume). No volatile organic or semivolatile organic compounds (VOCs or SVOCs) were detected in groundwater samples collected from Site 6. Inorganic analytes detected in the groundwater samples were reported at concentrations consistent with background concentrations. Groundwater contamination resulting from asbestos (the contaminant of concern at Sites 5 and 6) was not of concern, because asbestos fibers are very stable in the subsurface environment and are not likely to migrate (Gilbert, et al., 1981). Therefore, groundwater at Sites 5 and 6 was not monitored for asbestos.

B. Enforcement History

The enforcement history at NAS Brunswick, including Sites 5 and 6, is summarized as follows:

- In 1983, an Initial Assessment Study (IAS) was completed detailing historical hazardous material usage and waste disposal practices at NAS Brunswick. Ten sites were identified and ranked according to potential hazard.
- In 1984, a Pollution Abatement Confirmation Study was conducted. This study recommended further investigation of seven of the 10 hazardous waste sites originally identified (i.e., Sites 1 through 4 and 7 through 9).
- In 1987, NAS Brunswick was placed on the U.S. Environmental Protection Agency's (USEPA's) NPL.
- The Remedial Investigation/Feasibility Study (RI/FS) process was initiated in 1987 for the seven sites.

- In February 1988, the first Technical Review Committee (TRC) meeting was held. TRC meetings have been held quarterly since that initial meeting.

- Four sites were added to the RI/FS program in 1989 (i.e., Sites 11, 12, 13, and 14), as well as the two additional sites originally identified in the IAS (i.e., Sites 5 and 6). Site 10, originally identified in the IAS, was no longer under the jurisdiction of NAS Brunswick and is not included in the Installation Restoration Program (IRP).

- In 1990, the Navy entered into a Federal Facility Agreement (FFA) with the USEPA and the Maine Department of Environmental Protection (MEDEP) regarding the cleanup of environmental contamination at NAS Brunswick. The FFA sets forth the roles and responsibilities of each agency, contains deadlines for the investigation and cleanup of hazardous waste sites, and establishes a mechanism to resolve disputes among the agencies.

- In August 1990, the Navy completed Draft Final RI and Phase I FS reports (E.C. Jordan Co., 1990a and 1990b). The Draft Final RI Report described field sampling investigations, geology, and hydrogeology, and presented contamination and risk assessments. The Draft Final Phase I FS identified remedial action objectives, and developed and screened remedial alternatives for the nine original sites studied in the Draft Final RI. The Navy prepared Focused Feasibility Study (FFS) Reports for Sites 1 and 3 and Site 8 in 1991 and 1992, respectively (E.C. Jordan Co., 1991c and 1992b). The Navy submitted a Draft Final Supplemental RI Report for the Eastern Plume and Sites 5, 6, 8, 12, and 14, an FFS Report for Sites 5, 6, and 12, and an FS for Sites 2, 4, 7, 9, 11, and 13 in August and July of 1991, and March 1992, respectively (E.C. Jordan Co., 1991a, 1991b, and 1992a).

- Currently, the Navy is studying 13 sites under the IRP.

Because the Navy is committed to providing a timely response to environmental contamination at NAS Brunswick, a strategy was developed to expedite the RI/FS process. This strategy involves identifying the sites for which enough information exists to proceed to the ROD and design phases of the remediation process. Separate timetables have been established for completing the Final FS reports and RODs for these sites. The Navy has identified Sites 5 and 6 as a distinct area of contamination and believes the remedial process can be initiated. FFSs for Sites 1 and 3, Sites 5 and 6, and Site 8 and an FS for nine other sites (Sites 2, 4, 5, 6, 7, 9,

11, 12, and 13) have been submitted to the regulatory agencies for review (E.C. Jordan Co., 1991c, 1991b, 1992a and 1992b). Final RODs for Sites 1 and 3, and Site 8 have been signed (NAVY, 1992a and 1993c). In addition, an Interim ROD for the Eastern Plume has also been signed (NAVY, 1992b).

III. COMMUNITY PARTICIPATION

Throughout the sites' investigative and remediation history, the community has been active and involved in the IRP at NAS Brunswick. Community members and other interested parties have been informed of site activities through informational meetings, fact sheets, press releases, public meetings, and TRC meetings.

In August 1987, the Navy established an information repository for public review of site-related documents at the Curtis Memorial Library in Brunswick. On March 22, 1993, the Navy placed the Proposed Plan and Technical Memorandum detailing the Preferred Alternative for Sites 5 and 6 in the information repository at the Curtis Memorial Library (ABB-ES, 1993b and 1993a). The Administrative Record for Sites 5 and 6 is available for public review at NAS Brunswick in the Public Works office and at the Curtis Memorial Library. A notice and brief analysis of the Proposed Plan was published in the local newspaper, *The Times Record*, on March 18, 1993.

On April 8, 1993, the Navy held an informational meeting and public hearing to discuss the Proposed Plan for Sites 5 and 6. During this meeting, the Navy, its consultants, and regulatory representatives answered questions from the public and accepted formal comments. During a public comment period from March 29 to April 27, 1993, the Navy accepted comments on the alternatives presented in the Proposed Plan for Sites 5 and 6. The corresponding responses to comments are included in Appendix A, Responsiveness Summary, of this ROD.

The TRC has been an important vehicle for community participation. The TRC was established in early 1988 and comprises the Navy, USEPA, MEDEP, and various community representatives. The community members of the TRC include representatives from Brunswick, Harpswell, and Topsham as well as the Brunswick Area Citizens for a Safe Environment, who became active participants subsequent to 1988. The TRC also has representatives from the Brunswick-Topsham Water District. The TRC meets quarterly, reviews the technical aspects of the program, and provides community input to the program.

In September 1988, the Navy released a Community Relations Plan outlining a program to address public concerns and keep citizens informed about and involved in remedial activities. On August 16, 1990, the Navy held an informational meeting at the Jordan Acres School in Brunswick to discuss the results of the RI.

IV. SCOPE AND ROLE OF RESPONSE ACTION

The selected remedy for Sites 5 and 6 was developed in response to citizen concerns that all debris and asbestos-containing material be removed from the site so that no restrictions would be placed on future site use. The proposed alternative will be the final action for Sites 5 and 6. This remedy involves excavating nonhazardous construction rubble and debris from Site 6, excavating and containerizing asbestos-contaminated material from Sites 5 and 6, and placing this material as subgrade fill beneath the approved landfill cap at Sites 1 and 3. Fill material is needed to meet regulatory design criteria for cover system slopes and promote positive drainage away from the cap at Sites 1 and 3. The landfill cap exceeds MEDEP regulations for closure of asbestos waste disposal sites and RCRA Subtitle D requirements for closure of solid waste landfills, and is an approved modification to MEDEP regulations for the closure of solid waste disposal sites. Although human health risks are not a concern under current land use, this alternative prevents future potential exposure to asbestos. In addition, because no waste or debris would remain at either site, there would be no need for land-use restrictions, institutional controls, or five-year site reviews.

V. SUMMARY OF SITE CHARACTERISTICS

The nature and extent of contamination at Sites 5 and 6 are summarized by medium in the following paragraphs. A complete discussion of the site characteristics can be found in Sections 4.0 and 5.0 of the Draft Final Supplemental RI (E.C. Jordan Co., 1991a). Additional fieldwork was conducted at Site 6 during the spring of 1993 to support design activities. The results of this field effort are also summarized below.

RI field activities included a geophysical survey consisting of GPR profiling and a magnetometer survey, sampling of surface soils, and a detailed surface inspection at both sites; as well as monitoring well installations, groundwater sampling and analysis, and aquifer permeability testing at Site 6.

SOIL/WASTE AREA

The magnetometer survey identified the presence of buried ferrous material at both sites. GPR profiling was conducted in the vicinity of magnetic anomalies to correlate with and supplement the magnetic data. The GPR and magnetometer surveys at Site 5 were conducted to locate the two trenches where the asbestos-covered pipes were buried. The magnetometer located a single primary magnetic anomaly and a second minor anomaly. The primary anomaly indicates a definite presence of subsurface metallic materials, but the second minor anomaly is believed to be caused by the presence of surface debris (e.g., old tin cans). It is possible that the single primary anomaly indicates both trenches and, because they are directly adjacent, the survey could not distinguish between them. The GPR survey did not reveal additional findings but did support the results of the magnetometer survey.

GPR and magnetometer surveys were used to assess the areal extent of fill at Site 6. Unlike Site 5, no single primary magnetic anomaly was found. However, readings forming a semicircular shape were found across the site. This suggests the semicircular region is probably where asbestos and rubble were disposed of at Site 6. The GPR survey supported these findings.

A detailed visual surface inspection was made to identify any exposed asbestos materials. Although asbestos-covered pipe was seen protruding from the surface at Site 6 in the past (Roy F. Weston, Inc., 1983), no evidence of exposed asbestos materials currently exists at either Site 5 or 6. Site 5 is marked as an asbestos disposal site with two warning signs; surface debris (e.g., metal buckets, tin cans, and bottles) is scattered about the site. Four surface soil samples were collected from Site 5 and analyzed for asbestos. The locations of the surface soil samples were based on the geophysical survey and surface inspection. Asbestos was not detected in any samples.

Six surface soil samples were collected at Site 6. The sampling locations were established within the semicircular region identified by the magnetometer survey. One of the six samples, collected just south of the magnetic anomaly, was of material resembling pipe covering. The samples were analyzed for the presence of asbestos material; asbestos was not detected in any of the samples.

Seven test pits/trenches were excavated in the Site 6 area in March 1993 to better delineate the area of rubble and debris disposal. Fill material was encountered beyond the semicircular magnetic anomaly at depths ranging from 2 to 16 feet below ground surface (bgs). Soil samples were collected from these test pits and analyzed for asbestos, Target Compound List (TCL), VOCs, SVOCs, Target Analyte List (TAL) inorganics, and subjected to the Toxicity Characteristic Leachate Procedure (TCLP). No asbestos was detected in any samples. No unanticipated contamination was detected in the soil samples collected from the test pits. Low levels of pesticides (e.g., less than 150 micrograms per kilogram [μg/kg]) and VOCs (e.g., less than 30 μg/kg) were detected in these soil samples, and SVOCs were detected in soils at concentrations ranging from below detection limits to 19 milligrams per kilogram. No samples failed the TCLP.

Asbestos is a common rock-forming mineral of the amphibole mineral group. Asbestos minerals have very low to negligible water solubility, and therefore are very stable in the near-surface environment (Gilbert et al, 1981). Because of the low water solubility of asbestos, the only significant migration pathways are as solid asbestos particles in air and surface water. Because the asbestos is currently underground and above the water table, these two means of transport are unavailable to asbestos at Sites 5 and 6.

GROUNDWATER

An interpretation of groundwater flow at Site 5 is based on the observed regional hydrogeologic conditions in this portion of the base. Specifically, groundwater information generated for Sites 1 and 3 and the southern portions of the Eastern Plume area provide hydrogeologic data that should be generally consistent within the Site 5 area. Groundwater at this site is expected to flow within the stratified sand/silty sand/clay soils that overlie the Presumpscot clay unit throughout the base. Groundwater at this site is expected to flow southeast and ultimately discharge to Mere Brook. Mere Brook is located approximately 1,000 feet southeast of Site 5. Estimates of the depth to groundwater based on regional hydrogeology suggest that groundwater is approximately 25 to 30 feet below ground surface (bgs). Based on the 1980 inspection report, this would indicate that asbestos-containing materials are buried above the groundwater table at Site 5. Since asbestos fibers do not migrate

in the subsurface environment (Gilbert et al., 1981), groundwater at Site 5 was not monitored.

Shallow groundwater generally flows southeast and is located approximately 15 to 20 feet bgs at Site 6. Asbestos at Site 6 is also above the groundwater table, and therefore the groundwater was not monitored for asbestos. However, four monitoring wells were installed at Site 6 as part of the screening program conducted to establish the sources and extent of contamination for the Eastern Plume. Samples were analyzed for TCL organics and TAL inorganic compounds. The only SVOC detected, bis(2-ethylhexyl)phthalate, was determined to be related to laboratory contamination, not site contamination. No VOCs, pesticides, or polychlorinated biphenyls were detected. Inorganic compounds were detected at concentrations consistent with background values.

Groundwater at Site 6 was found to contain calcium, sodium, manganese, bicarbonate, chloride, and sulfate, which are inorganics normally found in groundwater. These inorganics were detected at concentrations consistent with background concentrations for NAS Brunswick and are not considered to pose a health hazard (E.C. Jordan Co., 1991a). Background samples were collected from uncontaminated wells upgradient of several sites at NAS Brunswick (E.C. Jordan Co., 1990a).

VI. SUMMARY OF SITE RISKS

A baseline risk assessment was performed to estimate the potential risks to human health and the environment from exposure to contaminants associated with Sites 5 and 6 (E.C. Jordan Co., 1991a). The human health risk assessment followed a four-step process: (1) contaminant identification, which identified those hazardous substances that, given the specifics of the site, were of significant concern; (2) exposure assessment, which identified actual or potential exposure pathways, characterized the potentially exposed populations, and estimated the extent of possible exposure; (3) toxicity assessment, which considered the types and magnitude of adverse health effects associated with exposure to hazardous substances; and (4) risk characterization, which integrated the three earlier steps to summarize the potential and actual risks posed by hazardous substances at the site, including carcinogenic and noncarcinogenic risks. The results of the baseline risk assessment are summarized in the following paragraphs.

The contaminant of concern identified for the Sites 5 and 6 human health risk assessment is asbestos, which is a carcinogen by the inhalation route of exposure. Asbestos was not detected in any soil samples collected at Site 5 or Site 6. It is known that asbestos pipe is buried at Site 5 and presumed to be buried at Site 6. However, no data exist to quantify potential exposure to this material and subsequent risk.

Site 5 is not located near any recreational areas and is remote from base housing. Site 6 is more centrally located. Neither site is fenced, although Site 5 is posted with signs as an asbestos disposal area. Potential current use of the sites is by older children trespassing on site to play. Any asbestos present at depth is considered to be stable and not likely to migrate. While there is a human health risk associated with future potential exposure to asbestos during construction or excavation-related activities, quantitative risks cannot be estimated because no subsurface samples were collected. The potential for increased future risks remains if any asbestos is uncovered by activities at either site.

The potential for harmful impacts associated with exposure to site-related contamination by environmental receptors was evaluated in the Ecological Risk Assessment (E.C. Jordan Co., 1990). The various types of ecological habitats at NAS Brunswick and the environmental receptors associated with these habitats are described in detail in the Ecological Risk Assessment. Additional data gathered during the October 1990 and March 1993 sampling rounds are consistent with the conclusions of this assessment. The concentration of contaminants in surface soils at Sites 5 and 6 were within background concentrations (E.C. Jordan Co., 1990) and are not expected to adversely affect environmental receptors.

VII. DEVELOPMENT AND SCREENING OF ALTERNATIVES

A. STATUTORY REQUIREMENTS/RESPONSE OBJECTIVES

Under its legal authorities, the lead agency's (i.e., Navy's) primary responsibility at NPL and similar sites is to undertake remedial actions that are protective of human health and the environment. In addition, Section 121 of CERCLA establishes several other statutory requirements and preferences, including a requirement that the Navy's remedial action, when complete, must comply with all federal and more stringent state environmental standards, requirements, criteria or limitations, unless a waiver is invoked; a requirement that the Navy select a remedial action that is cost-effective and that uses permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable; and a preference for remedies in which treatment that permanently and significantly reduces the toxicity, mobility, or volume of the hazardous substances is a principal element over remedies not involving such treatment. Remedial alternatives were developed to be consistent with these congressional mandates.

Based on preliminary information relating to the types of contaminants, environmental media of concern, and potential exposure pathways, remedial action objectives were established to aid in the development and screening of alternatives. The remedial action objectives for Sites 5 and 6 were established to mitigate existing and future potential threats to public health and the environment, comply with state requirements, and address community concerns, and include:

- preventing future potential risks from exposure to airborne asbestos;
- complying with Maine solid waste landfill closure requirements; and
- complying with the community's desire for less restrictive land use on base property.

B. TECHNOLOGY AND ALTERNATIVE DEVELOPMENT AND SCREENING

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Contingency Plan (NCP) set forth the process by which remedial actions are evaluated and selected. In accordance with these requirements, a range of alternatives was developed for the site.

Remedial action alternatives for NAS Brunswick were developed to meet the following requirements: (1) the alternative adequately protects public health and the environment; (2) the alternative can attain chemical-specific Applicable or Relevant

and Appropriate Requirements (ARARs) and can be implemented in a manner consistent with location- and action-specific ARARs; (3) the alternative uses permanent treatment technologies to the maximum extent practicable; (4) the alternatives developed are capable of achieving a remedy in a cost-effective manner, considering short- and long-term costs; and (5) alternatives that permanently and significantly reduce the toxicity, mobility, or volume of hazardous substances will be selected, to the maximum extent practicable.

The Supplemental FS for Sites 5, 6, and 12 screened technologies based on site- and waste-limiting characteristics (E.C. Jordan Co., 1991b). Of 16 technologies screened, 10 were retained and combined into remedial action alternatives. Section 5.0 of the Supplemental FS presented the remedial alternatives developed by combining the technologies identified in the screening process in the categories denoted in Section 300.430(e)(3) of the NCP. The purpose of the initial screening was to narrow the number of potential remedial actions for further detailed analysis while preserving a range of options. Each alternative was then evaluated and screened according to its implementability, effectiveness, and cost.

Of the six remedial action alternatives screened in the Supplemental FS, the following three alternatives were retained for the detailed evaluation in the FS:

- Minimal Action
- Low-permeability Cover
- Excavation/Off-Site Disposal

A No Action Alternative was added and is used as the baseline alternative. In addition, two alternatives were evaluated after completion of the FS. A Consolidation/Low-permeability Cover System Alternative and an Excavation/Use of Subgrade Fill at Sites 1 and 3 Alternative are presented in the Draft Final Proposed Plan for Sites 5 and 6 (ABB-ES, 1993b). The Excavation/Use as Subgrade Material at Sites 1 and 3 is also discussed in a Technical Memorandum (ABB-ES, 1993a). The six alternatives evaluated are listed in Table 1 and discussed in the following section.

TABLE 1
SUMMARY OF REMEDIAL ALTERNATIVES

ROD: SITES 5 AND 6
NAS BRUNSWICK

ALTERNATIVE	COMPONENTS
5,6-A: No Action	No remedial action
5,6-B: Minimal Action	Fencing and sign posting Land-use restrictions Annual inspections/maintenance Five-year reviews
5,6-C: Low-permeability Cover	Site preparations Low-permeability cover system Fencing and sign posting Land-use restrictions Annual inspections/maintenance Five-year reviews
5,6-D: Excavation/Off-Site Disposal	Site preparations Excavation/containerization/transport Confirmation sampling Backfill/grade/seed
5,6-E: Consolidation/Low-permeability Cover	Site preparation Excavation/containerization/transportation of Site 5 materials to Site 6 Low-permeability cover system Site 6 Backfill/grade/seed Land-use restrictions Annual inspections/maintenance Five-year reviews
5,6-F: Excavation/Use as Subgrade Material at Sites 1 and 3	Site preparation Excavation Containerization Transportation Confirmatory sampling Backfill/grade/seed

VIII. DESCRIPTION OF ALTERNATIVES

This section summarizes each of the remedial alternatives developed and evaluated in the FS (E.C. Jordan Co., 1992a). Because the alternatives evaluated for Sites 5 and 6 were the same, the descriptions are combined herein. Each alternative is briefly described below and discussed in more detail in Sections 5.0 and 6.0 of the FS Report (E.C. Jordan Co., 1992a). The Excavation/Off-site Disposal Alternative for Site 6 is slightly different from the alternative presented in the FS, because it considers complete removal of all debris and asbestos-containing material rather than excavating only asbestos-containing material. Two other alternatives that were not evaluated in the FS, Consolidation/Low-permeability Cover System, and Excavation/ Use as Subgrade Material at Sites 1 and 3 are presented here as Alternative 5,6-E and 5,6-F, respectively. A Technical Memorandum for Sites 5 and 6 was prepared which presented a detailed evaluation of the Alternative 5,6-F (but was incorrectly referenced as 5,6-E). This evaluation describes the Excavation and Use as Subgrade Material at Sites 1 and 3 Alternative and presents the detailed evaluation of this alternative against the nine evaluation criteria specified in the National Oil and Hazardous Substances Pollution Contingency Plan. It is similar in content and format to the detailed evaluation of the other alternatives developed for these sites and presented in the FS. These alternatives are described in the Proposed Plan for Sites 5 and 6 (ABB-ES, 1993b).

ALTERNATIVE 5,6-A: NO ACTION

The No Action Alternative does not include any remedial actions and provides a baseline for comparing alternatives. Under the No Action Alternative, the sites would remain undisturbed. Because no remedial actions would be implemented, no costs would be incurred and long-term human health risks for the site would essentially be the same as those identified in the baseline risk assessment. No current risks are present at either site because asbestos materials are covered with soil. Site 5 is currently marked by warning signs.

ALTERNATIVE 5,6-B: MINIMAL ACTION

This alternative would consist of the following components:

- land-use restrictions
- fencing/sign posting
- environmental monitoring
- five-year reviews

The Minimal Action Alternative for both Site 5 and Site 6 would use institutional controls to limit future activity at the sites. Annual inspections and five-year site reviews would be conducted.

Land-use restrictions would be used to restrict future site use, thereby limiting the potential for human exposure to asbestos. The legal implications of instituting land-use restrictions would be coordinated with appropriate Navy officials and state and local governments. If NAS Brunswick closes, land-use restrictions would be completed in accordance with requirements stated in National Emissions Standards for Hazardous Air Pollutants (NESHAPS) (40 CFR 61.151[e]). Fencing and warning signs would be placed around each site to reduce public access and potential exposure to soil contaminants. The fence was assumed to be a 6-foot-high chain-link fence for cost-estimating purposes. Warning signs would be posted along the fence at 50-foot intervals and there would be one access gate at each site. For cost-estimating purposes, it was assumed that environmental monitoring would be conducted annually for 30 years.

Site 5:

Estimated Time for Design and Construction: 2 months
Estimated Time of Operation: 30 years
Estimated Capital Cost: $14,000
Estimated Operations and Maintenance Costs (net present worth at a 10% discount rate): $55,000
Estimated Total Cost (net present worth at a 10% discount rate): $83,000

Site 6:

Estimated Time for Design and Construction: 2 months
Estimated Time of Operation: 30 years
Estimated Capital Cost: $28,000
Estimated Operations and Maintenance Costs (net present worth at a 10% discount rate): $84,000

Estimated Total Cost (net present worth at a 10% discount rate): $134,000

ALTERNATIVE 5,6-C: LOW-PERMEABILITY COVER

This alternative would consist of the following components:

- site preparation
- cover construction
- fencing/sign posting
- institutional controls
- site inspections and maintenance
- environmental monitoring
- five-year reviews
- land-use restrictions

The Low-permeability Cover Alternative was evaluated separately for each site. The cover system would be designed to meet current Maine regulations for closure of asbestos waste disposal sites because these requirements are more stringent than the cover system requirements outlined in NESHAPS. The cover system would contain asbestos, eliminate the possibility of future contact and inhalation, and prevent generation of asbestos dust. Closure of the sites would also require land-use restrictions, fencing, and warning signs as described for the Minimal Action Alternative. Annual inspections would occur and repairs would be conducted as appropriate to confirm the integrity of the fence and cover system. Five-year reviews would be required under CERCLA. For cost-estimating purposes, it was assumed that environmental monitoring and five-year reviews would be conducted for 30 years.

Site 5:

Estimated Time for Design and Construction: 6 months
Estimated Time of Operation: 30 years
Estimated Capital Cost: $58,000
Estimated Operations and Maintenance Costs (net present worth at a 10% discount rate): $84,000
Estimated Total Cost (net present worth at a 10% discount rate): $170,000

Site 6:

Estimated Time for Design and Construction: 7 months
Estimated Time of Operation: 30 years
Estimated Capital Cost: $133,000

Estimated Operations and Maintenance Costs (net present worth at a 10% discount rate): $84,000
Estimated Total Cost (net present worth at a 10% discount rate): $260,000

ALTERNATIVE 5,6-D: EXCAVATION/OFF-SITE DISPOSAL

This alternative would consist of the following components:

- site preparation
- excavation and transport of material
- containerization of asbestos material
- confirmation sampling
- grading and seeding of excavated area

The Excavation/Off-site Disposal Alternative for Site 5 involves removing all materials containing asbestos from the site, approximately 12 cubic yards, and disposing of them in an off-base landfill permitted to receive asbestos wastes. The Excavation/Off-site Disposal Alternative for Site 6 involves excavating all debris from Site 6 and disposing of it in a proper off-site facility. Initial estimates assumed approximately 8,800 cy of material which included approximately 250 cy of asbestos-containing material and approximately 8,550 cy of construction debris and rubble would be excavated at this site. Additional field investigations determined a larger areal extent of material; the debris at Site 6 consists of approximately 18,700 cy which includes approximately 250 cy of asbestos-containing material and approximately 18,450 cubic yards of construction rubble and debris. However, the cost for this alternative is based upon 8,800 cy of material. Proper health and safety procedures would be followed during the removal and transportation of asbestos-containing material. The sites would not need to be closed as asbestos disposal sites, as the Low-permeability Cover Alternative would require. Remedial activities after excavation at Sites 5 and 6 under this alternative would require filling of the excavations, and restoring the sites to a natural condition.

A confirmation sampling program would be developed and submitted for regulatory review. The sampling plan would identify the sampling frequency for collecting soil samples from the side walls and bottom of the excavation at both Sites 5 and 6. Soil samples would be analyzed for asbestos at Site 5, and TCL and TAL constituents and asbestos at Site 6. All analytical results would be available for regulatory and TRC review. Because asbestos material would be removed from the sites, no long-term monitoring or five-year reviews would be required. In addition, no land-use restrictions would be applied to these sites.

Site 5:

Estimated Time for Design and Construction: 6 months
Estimated Time of Operation: not applicable
Estimated Capital Cost: $90,000
Estimated Operations and Maintenance Costs (net present worth at a 10% discount rate): not applicable
Estimated Total Cost (net present worth at a 10% discount rate): $108,000

Site 6:

Estimated Time for Design and Construction: 9 months
Estimated Time of Operation: not applicable
Estimated Capital Cost: $3,065,000
Estimated Operations and Maintenance Costs (net present worth at a 10% discount rate): not applicable
Estimated Total Cost (net present worth at a 10% discount rate): $3,678,000

Costs for confirmatory sampling during excavation are not included.

ALTERNATIVE 5,6-E: CONSOLIDATION/LOW-PERMEABILITY COVER

This alternative would consist of the following components:

- site preparation
- excavation and transport of material from Site 5
- containerization of asbestos material at Site 5
- placement of excavated material at Site 6
- cover construction at Site 6
- grading and seeding
- institutional controls
- site inspections and maintenance
- environmental monitoring
- five-year reviews
- land-use restrictions

This alternative includes excavating asbestos-covered pipes from Site 5, transporting them to Site 6, and constructing a low-permeability soil cover that would be designed and constructed to meet the performance requirements of the MEDEP regulations for the closure of construction debris landfills. The state requirements are more stringent than those requirements outlined in NESHAPS. Proper health and safety

procedures would be followed during the removal of asbestos at Site 5 and transport to Site 6.

The cost estimate assumes the use of 18 inches of clay and 6 inches of vegetative cover to comply with the Maine Solid Waste Management Regulations for the closure of construction debris landfills. The Solid Waste Management Regulations are applicable for this alternative because the site would still contain solid waste. These solid waste requirements are more stringent than the state or federal requirements for asbestos disposal sites as well as the federal solid waste requirements. Annual inspections, five-year reviews, and land-use restrictions at Site 6 would be required as part of this alternative.

Sites 5 and 6:

Estimated Time for Design and Construction: 7 months
Estimated Time of Operation: Minimum of 30 years of cover maintenance
Estimated Capital Cost: $249,000
Estimated Operations and Maintenance Costs (net present worth at a 10% discount rate): $84,000
Estimated Total Cost (net present worth at a 10% discount rate): $400,000

ALTERNATIVE 5,6-F: EXCAVATION/USE AS SUBGRADE MATERIAL AT SITES 1 AND 3

This alternative would consist of the following components:

- site preparation
- excavation and transport of material
- containerization of asbestos material
- grading and seeding of excavated areas

This alternative involves excavating nonhazardous construction rubble and debris from Site 6, excavating and containerizing asbestos-containing material from Sites 5 and 6, and transporting these materials, as well as the stockpiled soil at Site 6, for use as subgrade fill beneath the landfill cap to be constructed at Sites 1 and 3. It has been estimated that approximately 12 cy and 250 cy of asbestos-containing material will be excavated from Sites 5 and 6, respectively. The Sites 1 and 3 landfill cap, which was selected as the remedy in a ROD (NAVY, 1992a) for these sites, exceeds MEDEP regulations for the closure of asbestos waste disposal sites and RCRA Subtitle D requirements for closure of solid waste landfills, and is an approved modification to MEDEP regulations for the closure of solid waste disposal sites.

Although human health risks are not a current concern, this alternative would prevent future contact with asbestos.

A confirmation sampling program would be developed and submitted for regulatory review. The sampling plan would identify the sampling frequency for collecting soil samples from the side walls and bottom of the excavation at both Sites 5 and 6. Soil samples would be analyzed for asbestos at Site 5, for TCL and TAL constituents and asbestos at Site 6. All analytical results would be available for regulatory and TRC review.

As stated, initial estimates assumed approximately 8,800 cy of material to be excavated at Site 6. Additional field investigations determined a larger areal extent of material and larger volume of material to be excavated (approximately 18,700 cy). However, the cost for this alternative is based upon excavation of 8,800 cy of material to be excavated at Site 6. No long-term monitoring, five-year reviews, or land-use restrictions would apply at either Site 5 or 6. The cost and time estimates for this alternative are:

Estimated Time for Design and Construction: 4 months
Estimated Time of Operation: not applicable
Estimated Capital Cost: $568,000
Estimated Operations and Maintenance Costs (net present worth at a 10% discount rate): not applicable
Estimated Total Cost (net present worth at a 10% discount rate): $681,000

IX. SUMMARY OF THE COMPARATIVE ANALYSIS OF ALTERNATIVES

Section 121(b)(1) of CERCLA presents several factors that, at a minimum, the Navy is required to consider in its assessment of alternatives. Building upon these specific statutory mandates, the NCP lists nine evaluation criteria to be used in assessing the individual remedial alternatives.

A detailed analysis was performed on the alternatives using the nine evaluation criteria to select a site remedy. The following is a summary of the comparison of each alternative's strengths and weaknesses with respect to the nine evaluation criteria. These criteria and their definitions are as follows:

Threshold Criteria

The two threshold criteria described below must be met for the alternatives to be eligible for selection in accordance with the NCP.

1. **Overall protection of human health and the environment** addresses whether or not a remedy provides adequate protection and describes how risks posed by each pathway are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.

2. **Compliance with ARARs** describes how the alternative complies with chemical-, location-, and action-specific ARARs, or other criteria, advisories, and guidance.

Primary Balancing Criteria

The following five criteria are used to compare and evaluate the elements of one alternative to another that meet the threshold criteria.

3. **Long-term effectiveness and permanence** evaluates the effectiveness of alternatives in protecting human health and the environment after response objectives have been met; in terms of the magnitude of residual risk and the adequacy and reliability of controls.

4. **Reduction of toxicity, mobility, or volume through treatment** evaluates the treatment technologies by the degree of expected reduction in toxicity, mobility, or volume of hazardous material. This criterion also evaluates the irreversibility of the treatment

process and the type and quantity of residuals remaining after treatment.

5. **Short-term effectiveness** addresses the period needed to achieve protection and any adverse impacts on human health and the environment that may be posed during the construction and implementation period, until the remedial action objectives are achieved.

6. **Implementability** assesses the ability to construct and operate the technology; the reliability of the technology; the ease of undertaking additional remedial actions; and the ability to monitor the effectiveness of the remedy. Administrative feasibility is addressed in terms of the ability to obtain approvals from other agencies. This criterion also evaluates the availability of required resources, such as equipment, facilities, specialists, and capacity.

7. **Cost** evaluates the capital and operation and maintenance costs of each alternative, and provides an estimate of the total present worth cost of each alternative.

Modifying Criteria

The modifying criteria are used in the final evaluation of remedial alternatives generally after public comment on the RI/FS and Proposed Plan has been received.

8. **State acceptance** addresses whether, based on its review of the RI/FS and Proposed Plan, the state concurs with, opposes, or has no comment on the alternative the Navy proposes for the remedial action.

   The State of Maine has commented on the proposed plan and has documented its concurrence with the remedial action in the letter of concurrence presented in Appendix B of this ROD.

9. **Community acceptance** addresses whether the public concurs with the Navy's Proposed Plan. Community acceptance of the Proposed Plan was evaluated based on comments received at the public hearings and during the public comment period.

This is documented in the Responsiveness Summary presented in Appendix A of this ROD.

The state acceptance criterion has been addressed by incorporating comments received from the state on the Proposed Plan. The state is a party to the FFA and has had the opportunity to review and comment on all documents. Community acceptance criterion is addressed as part of the Responsiveness Summary in Appendix A of this ROD.

Following the detailed analysis of each individual alternative, a comparative analysis, focusing on the relative performance of each alternative against seven of the nine criteria, was conducted. The comparative analysis of four alternatives for Sites 5 and 6 can be found in Tables 5-4 and 6-4 of the FS, respectively (E.C. Jordan Co., 1992a). Two additional alternatives were presented in the Proposed Plan: Consolidation/Low-permeability Cover and Excavation and Use as Subgrade Material at Sites 1 and 3. The comparative analysis of all six alternatives can be found in Section 8 of the Proposed Plan (ABB-ES, 1993b).

The section below presents the nine criteria and a brief summary of each alternative and its strengths and weaknesses according to the detailed and comparative analyses.

Overall Protection of Human Health and the Environment

The Selected Alternative, Excavation and Use as Subgrade Material at Sites 1 and 3, would prevent future potential exposure to asbestos by removing these contaminants from Sites 5 and 6 and placing them in the Sites 1 and 3 landfill subgrade for the proposed cover system. The Excavation/Off-site Disposal and Consolidation/Low-permeability Cover alternatives for Sites 5 and 6 would also prevent future potential exposure to asbestos. Engineering controls would be required to minimize exposure to airborne asbestos during any excavation activities conducted as part of these alternatives.

The Minimal Action and Low-permeability Cover alternatives for both Sites 5 and 6 reduce potential risk through land-use restrictions. The No Action Alternative for Sites 5 and 6 does not include land-use restrictions and, therefore, would not be protective of human health if the sites were developed for residential use. Under current conditions, all of the alternatives provide adequate protection to human health and the environment, because there is no current exposure to asbestos at either Site 5 or 6.

Compliance with Applicable or Relevant and Appropriate Requirements

The cover system component of the Selected Alternative at Sites 1 and 3, which meets RCRA Subtitle C requirements, meets or exceeds the performance requirements of the Maine Landfill Disposal Regulations for the Management, Testing, and Disposal of Special Wastes (38 MRSA Section 1304, Chapter 405.4) governing disposal of asbestos, and is an approved modification to the most stringent ARAR, the State of Maine Solid Waste Management Regulations (Chapter 401.7) governing the closure of solid waste landfills. The State of Maine requirements pertaining to the storage, transport and disposal of asbestos wastes (MEDEP Regulations, Chapter 405.4) will also be met. It should be noted that although the cover system at Sites 1 and 3 meets or exceeds state and federal requirements for asbestos and construction debris, the landfill at Sites 1 and 3 is an unlicensed facility with regard to the asbestos disposal requirements of these regulations. However, the Maine Division of Solid Waste Facility Licensing has stated that a license is not required since disposal of the material at Sites 1 and 3 would be part of a remedial action at a CERCLA site (MEDEP, 1993). The Low-permeability Cover and the Consolidation/Low-permeability Cover alternatives for Sites 5 and 6 would also comply with these ARARs.

The Excavation/Off-site Disposal and Consolidation/Low-permeability Cover alternatives for Sites 5 and 6 and the Excavation and Use as Subgrade Material at Sites 1 and 3 (the Selected Alternative) would be conducted in accordance with NESHAPS and Occupational Safety and Health Administration (OSHA) requirements. Fugitive dusts from clearing, grading, and excavation activities would be controlled (e.g., by using water sprays) to meet the requirements of NESHAPS. Respiratory protection used during remedial activities would comply with OSHA (29 CFR 1926.58).

Location-specific ARARs require that erosion control measures such as revegetation and erosion control fencing be used during excavation and grading to prevent sediment transport off site. The No Action and Minimal Action alternatives for both Sites 5 and 6 would not meet the Maine requirements for closure of asbestos waste disposal sites (38 MRSA Section 1304, Chapter 405.4).

Refer to Appendix C-1 for additional information on ARARs.

Transport of material from Sites 5 and 6 to Sites 1 and 3 requires consideration of additional ARARs for Sites 1 and 3 than those specified in the ROD for Sites 1 and 3. These ARARs are summarized in Table C-4 in Appendix C of this ROD and will be discussed further in an Explanation of Significant Difference (ESD). The ESD

will be incorporated in the Administrative Record for Sites 1 and 3. The movement of material from Sites 5 and 6 will not occur until after the ESD is issued.

Long-term Effectiveness and Permanence

Excavation of asbestos-containing materials under the Selected Alternative, Excavation and Use as Subgrade Material at Sites 1 and 3 and the Consolidation/ Low-permeability Cover and Excavation/Off-site Disposal alternatives would be effective in eliminating long-term risks at Site 5 and would allow for unlimited use of the area following remedial action. The Excavation/Off-site Disposal Alternative and Excavation and Use as Subgrade Material at Sites 1 and 3 (the Selected Alternative) would also allow for unlimited use and eliminate potential risks at Site 6. The Low-permeability Cover Alternative for Sites 5 and 6 would effectively cover the sites and limit site access, but would require long-term inspection and maintenance. The Minimal Action Alternative for Sites 5 and 6 would limit access and future land use as long as the restrictions were enforced. No unacceptable risk currently exists at either site. However, there is a risk associated with uncontrolled exposure to asbestos in the future, so the No Action alternative for both Sites 5 and 6 might not protect human health over the long-term.

Reduction of Toxicity, Mobility, or Volume through Treatment

The selected remedy meets the mandates of CERCLA Section 121. It protects human health and the environment, complies with federal and state requirements that are legally applicable or relevant and appropriate to the remedial action, and is cost-effective. This remedy does not meet the statutory preference for treatment. Treatment of asbestos-containing material was not found to be practicable or proven. Because asbestos is a relatively insoluble material composed of minerals, many conventional treatment technologies ordinarily considered for contaminated soils are not applicable to asbestos waste. Vitrification, the only treatment demonstrated to destroy asbestos, was eliminated because no commercially operating vitrification plants currently exist for ex-situ vitrification and the presence of metallic objects buried at the site would not allow effective in-situ vitrification.

Because this remedy will remove contaminated soils and nonhazardous debris from the site, no long-term controls will be necessary and the five-year review will not apply.

Short-term Effectiveness

During excavation under the Selected Alternative, the Excavation/Off-site Disposal Alternative, or the Consolidation/Low-permeability Cover Alternative, engineering

controls and personal protective equipment would be employed to protect site workers. Soils would be kept damp, preventing the generation of dust that could contain asbestos. Workers would also wear protective clothing and respirators to prevent inhalation of asbestos and follow a site health and safety plan. The Consolidation/Low-permeability Cover Alternative, which includes consolidation of waste from Site 5 with Site 6, and Excavation and Use as Subgrade at Sites 1 and 3, the Selected Alternative, minimize potential hazards associated with transporting excavated asbestos materials over long hauling distances. There would be no adverse effects on the community during implementation of the No Action or Minimal Action alternatives for Sites 5 and 6.

Environmental impacts for the remedial alternatives are associated with removal of trees and brush and surface water runoff. The No Action and Minimal Action alternatives for Sites 5 and 6 would have no adverse effects, because they do not include invasive activities. All other alternatives that include a cover or an excavation component would require minor clearing of brush and some engineering controls to handle surface water runoff and erosion control.

Implementability

The Selected Alternative, Excavation and Use as Subgrade Material at Sites 1 and 3, and the Excavation/Off-site Disposal and Consolidation/Low-permeability Cover alternatives would be most difficult to implement because they require special asbestos-handling procedures for removal and transportation of the material. The Low-permeability Cover Alternatives for Sites 5 and 6 and the Consolidation/Low-permeability Cover Alternative for Site 6 would require identification of a suitable borrow source and land-use restrictions. Locating the asbestos-containing material at Site 6 may be difficult and require significant exploration. Alternatives for both Sites 5 and 6 would be easy to implement. The Minimal Action Alternative for both sites would require land-use restrictions.

Cost

The capital, operation and maintenance, and total cost for each alternative is provided in Section VII, Description of Alternatives. Over half the estimated cost of the Selected Alternative, Excavation and Use as Subgrade Material at Sites 1 and 3, is attributed to the excavation and backfilling cost at Site 6, which is based upon initial estimates of 8,800 cy of material to be excavated. Other benefits of this alternative are that with the material placed beneath the proposed cap at Sites 1 and 3, there would be no off-base hauling of material as there would be for the Excavation/Off-site Disposal Alternative and there would be no long-term

monitoring cost as there would be for the Consolidation/Low-permeability Cover Alternative.

The No Action Alternative for Sites 5 and 6 would cost nothing. The major cost component in the Minimal Action Alternative for Sites 5 and 6 is long-term site inspection and five-year review costs. The cost estimates assume that inspections and reviews would continue for 30 years. The Low-permeability Cover Alternative for Sites 5 and 6 is more expensive, because in addition to site inspections, five-year reviews, and institutional controls, the cost estimates include material and construction costs for the cover systems, engineering design costs, and long-term maintenance costs.

The Site 5 Excavation/Off-site Disposal Alternative cost was of the same order of magnitude as the Low-permeability Cover Alternative for Site 5 because of high excavation costs; however, the Excavation/Off-site Disposal Alternative for Site 5 does not include long-term maintenance and five-year review costs. The Excavation/Off-site Disposal Alternative for Site 6 assumed that all material disposed of at Site 6 would be excavated and transported to an off-base landfill for final disposal. More than half the total cost of this alternative is estimated to be for transporting and disposing of the soil and debris, making this alternative prohibitively expensive. The cost of the Consolidation/Low-permeability Cover Alternative was estimated by combining the Excavation/Off-Site Disposal Alternative costs for Site 5 and the Low-permeability Cover Alternative costs for Site 6. Transportation and disposal costs for Site 5 were eliminated, but construction costs for Site 6 were increased to account for the burial of Site 5 pipes using soil from the Site 6 soil pile.

State Acceptance

As party to the FFA, the State of Maine has commented on the RI, FS, Technical Memorandum, and Proposed Plan. The state has documented its concurrence with the remedial action as stated in Section XIII of this ROD. A copy of the state's letter of concurrence is presented in Appendix B of this ROD.

Community Acceptance

The Excavation and Use as Subgrade Material at Sites 1 and 3 Alternative was developed as a direct result of public comments received on the Site 8 Proposed Plan. Public comments specifically requested the evaluation of alternatives that do not result in land-use restrictions. The Navy's Selected Alternative for Sites 5 and 6 was developed to meet this objective.

Community acceptance of the Proposed Plan was evaluated based on comments received at the public meetings and during the public comment period. This is documented in the Responsiveness Summary presented in Appendix A of this ROD.

X. THE SELECTED REMEDY

The selected remedial alternative chosen for Sites 5 and 6 (i.e., Alternative 5,6-F) is a comprehensive remedy that includes excavation of asbestos-containing material and construction debris. It is designed to remove the buried waste and place it beneath a permanent, low-permeability cap at Sites 1 and 3.

A. CLEANUP LEVELS

Based on data presented in the RI and results of the baseline risk assessment, there is no current risk to human health from exposure to asbestos. Therefore, target clean-up levels for asbestos were not calculated. However, the remedial action objectives include the removal of asbestos-containing material from Sites 5 and 6 to eliminate the potential future risks associated with exposure to subsurface asbestos material.

B. DESCRIPTION OF REMEDIAL COMPONENTS

The Navy's Selected Alternative involves excavating nonhazardous construction rubble and debris from Site 6, excavating and containerizing asbestos-containing material from Sites 5 and 6, and transporting these materials, as well as the stockpiled soil at Site 6, for use as subgrade fill beneath the landfill cap at Sites 1 and 3. This material will provide necessary subgrade fill to meet the design criteria for the Sites 1 and 3 landfill cap. This cap exceeds MEDEP regulations for the closure of asbestos waste disposal sites. Although human health risks are not a current concern, this alternative would prevent future contact with asbestos.

This alternative includes the following components:

- development of a health and safety plan
- site preparation
- excavation and confirmation sampling
- containerization of the asbestos-containing material
- transportation of materials
- disposal
- site restoration

Components of this remedial alternative are described in the following paragraphs.

Development of a Health and Safety Plan

Because of potential health hazards associated with asbestos exposure, a detailed health and safety plan would be developed prior to any remedial actions at Sites 5 and 6. This plan would comply with OSHA and other state and federal regulations, as appropriate.

The Safety, Health, and Emergency Response Plan (SHERP) will address the handling of contaminated soils, groundwater, asbestos-containing material, and construction debris that are encountered during excavation, removal, and disposal activities and will describe some of the resultant procedures and equipment required to protect workers and the general public from hazards associated with contaminated materials. Should any unforeseen or site-specific safety factors, health hazards, or conditions become evident during the performance of work at this site, the Contracting Officer shall be notified verbally and in writing as soon as possible for resolution. At a minimum, all workers would be required to wear protective clothing and respirators to prevent exposure to and inhalation of asbestos.

During all invasive activities, a radiological survey will be conducted to identify the potential for radiological hazards. Soil surfaces will be scanned periodically with a NA (T1) scintillator (5x5 cm detector size) and pancake Geiger Mueller detector. The former instrument is very sensitive to gamma radiation and the latter measures alpha, beta, and gamma radiation. The instruments will be used for qualitative measurements only. If radiation is detected at levels greater than twice the background level, work will stop and the Contracting Officer and the Site Safety and Health Officer will be notified to evaluate the situation.

Site Preparation

Site preparation involves all the activities associated with the alternative that must be conducted before the actual site remediation can begin. Important components include clearing and grubbing of vegetation, constructing an access road, mobilization of equipment, and erosion control at each site.

Site preparation at Sites 5 and 6 would include clearing trees, brush, and other vegetation from the sites and nearby work areas. The sites are relatively flat and free of heavy vegetation, but some of the surrounding area contains small trees and brush that would require clearing to provide site access.

An access road and small staging area would be constructed at Sites 5 and 6 outside the limits of waste for storage of equipment during excavation, decontamination areas, and access for trucks to remove soil and debris. Possible staging areas for Sites 5 and 6 are shown on Figures 2 and 3, respectively. These areas would be used to store excavation equipment, supplies for containerizing asbestos-containing materials, equipment to break up construction rubble (Site 6), and any temporary facilities. Because the sites are small and only a relatively short time would be required to implement the alternative, only minimal improvements would be made to prepare the access roads and staging areas. The existing access road at Site 6 would be improved to support heavy equipment. Equipment would then be mobilized to the sites.

To minimize erosion and sedimentation to downgradient areas during the excavations, erosion controls (e.g., a silt fence or hay bales) would be placed around the perimeter of the work area along the downgradient edges. Site 6 is adjacent to an unnamed tributary. The Maine Natural Resources Protection Act provides that removal of soils or other activities conducted adjacent to streams must not cause unreasonable soil erosion, cause unreasonable harm to significant wildlife habitats, unreasonably interfere with natural water flow, lower water quality, or unreasonably cause or increase flooding. Chapter 305 of the MEDEP regulations provides further standards for erosion control and soil excavation. Portions of the work at Site 6 are

located within 100 feet of the tributary; therefore, all Standards of Permit By Rule, Section 2, Disturbance of Soil Adjacent to a Wetland or Water, must be met. Implementation of the selected remedy would not impact the drainage or natural flow of this tributary. Erosion control measures will be employed during construction to minimize soil/sediment from entering the surface water.

Excavation and Confirmation Sampling

Site 5 would be excavated to remove all materials containing asbestos. The overburden soils in the area of the primary anomaly from the magnetometer survey would be excavated and stockpiled for use as backfill, and the asbestos-covered pipes removed. The pipes are estimated to be between 7 and 10 feet deep. For cost-estimating purposes, it was assumed that a 1-foot-thick circumference of soil surrounding the pipes would be handled as asbestos waste. The soil surrounding the pipes would be cleared using a vacuum device that contains soils automatically, and then the pipes would be removed from the trench. The total quantity of asbestos-containing soil and pipes at Site 5 was estimated to be 12 cy. Volume calculations are presented in the FS. The actual volume to be excavated would be established in the field by experienced asbestos abatement professionals and analytical sampling.

Site 6 would be excavated to remove all construction rubble and debris, including an assumed volume of 250 cy of asbestos-containing materials. For cost-estimating purposes, it was assumed that an area of 18,700 square feet would be excavated to a depth of 10 feet, plus the 1,900-cy on-site soil pile for a total of 8,800 cy of material (see Figure 3). Volume calculations are presented in the FS. The amount of material to be excavated was estimated from historical information, geophysical surveys, soil sampling, and monitoring well installation logs presented in the Draft Final Supplemental RI Report. Subsequent field investigations determined that there was a larger areal extent of material and the revised volume of material to be excavated is approximately 18,700 cy consisting of 250 cy of asbestos and 18,450 cy of construction rubble and debris. However, the cost estimate is based upon the initial quantity estimate.

During excavation at Sites 5 and 6, engineering controls and personal protective equipment would be employed to protect worker safety. Soils would be kept damp, preventing the generation of dust that could contain asbestos at Site 6. As stated, a detailed health and safety plan would be developed and followed during all remedial actions. After excavation is completed, soil samples would be collected at Sites 5 and 6 to confirm that no site-related contaminants are left in place. The presence of debris or rubble at Site 6 would be evaluated visually. The sampling and analysis plan would be developed by the remedial construction contractor before work begins and submitted for regulatory review and comment. At a minimum, three

soil samples would be collected and analyzed for asbestos at Site 5 and analyzed for TCL and TAL constituents and asbestos at Site 6. The sample locations would be selected by a Navy representative from areas where staining is apparent (if any). Excavation would proceed if these contaminants are detected above background concentrations. If contamination is detected, and cannot be physically removed by excavation, long-term monitoring of groundwater may be implemented to evaluate the impacts on groundwater downgradient of the site. Long-term monitoring is not a component of the remedial action because contamination is not expected, based on results of the RI and pre-design field programs. However, if necessary, Sites 5 and 6 could be included in the long-term monitoring program to be developed for NAS Brunswick.

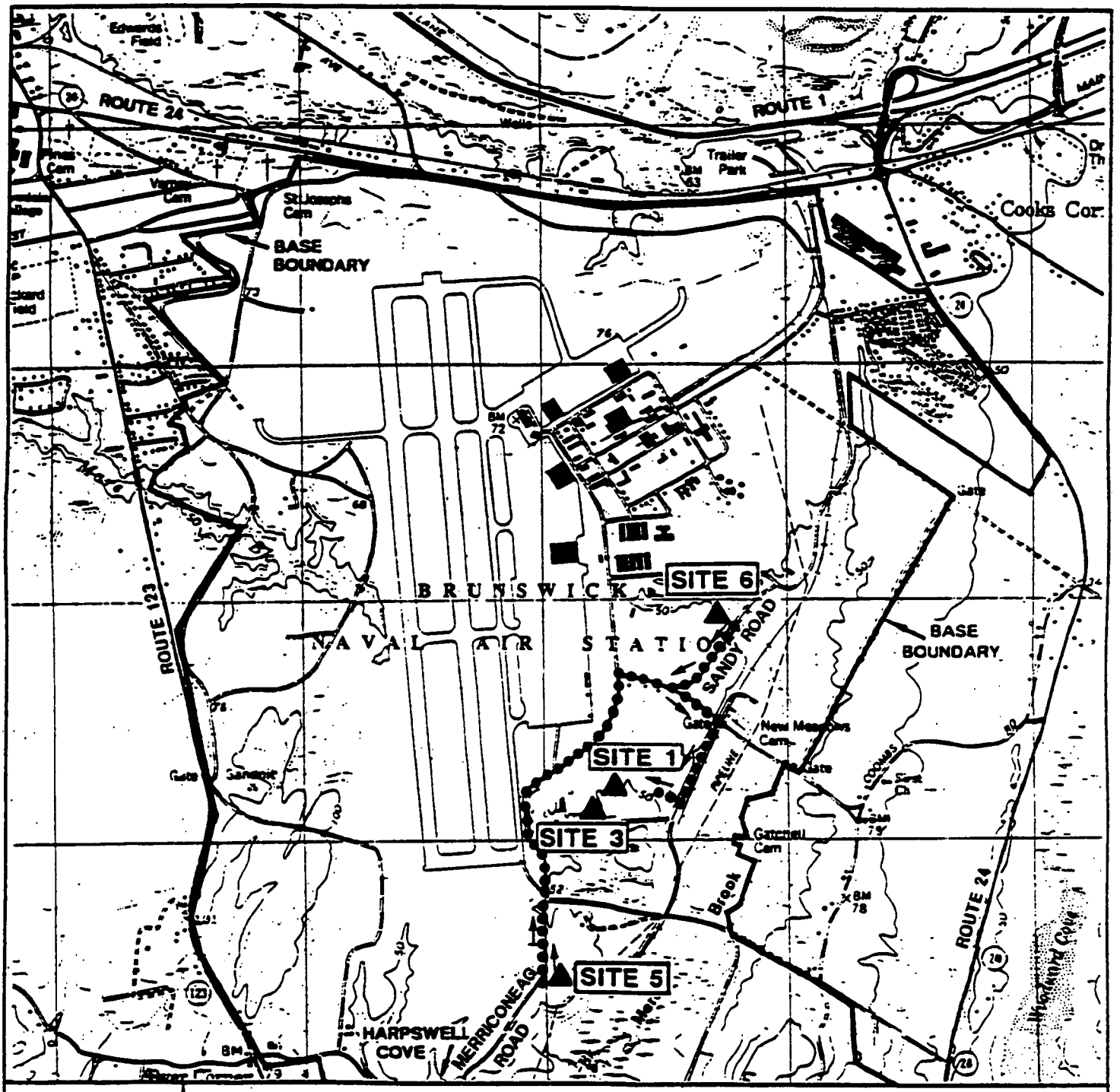
Containeri...on of Asbestos-containing Material

The asbestos-containing material excavated from Sites 5 and 6 would be containerized in two layers of polyethylene, each with a minimum thickness of 6 mils in accordance with the Maine Landfill Disposal Regulations for the Management, Testing, and Disposal of Special Wastes (38 MRSA Section 1304, Chapter 405.4), and labeled in accordance with OSHA regulations (29 CFR 1910.1001 or 1926.58).

Transportation of Materials

Transportation of the material from Sites 5 and 6 to Sites 1 and 3 would be accomplished using 12-cy dump trucks. The material would be placed at Sites 1 and 3 for use as subgrade fill beneath the landfill cap in accordance with Maine Solid Waste Management Regulations (Chapters 401.7 and 405.4). Chapter 401.7 covers closure of solid waste landfills and 405.4 regulates disposal of asbestos. The transport distance from Site 5 to Sites 1 and 3 is approximately 1.3 miles and from Site 6 to Sites 1 and 3 is approximately 0.65 mile. For cost-estimating purposes, the round-trip transport distance from these sites to Sites 1 and 3 is assumed to be 2 miles. The transportation route would not pass through residential or developed areas of the base. Figure 4 depicts the proposed transportation routes.

At Site 5, it is anticipated that excavation, containerization, and transport activities would take two to three days, and that one dump truck would be required for one day only. At Site 6, it is estimated that approximately 250 cy of material would be excavated and loaded for transport each day, and that three to four trucks would be required to keep pace with the rates of excavation, containerization, and breaking of construction debris. Site 6 activities are estimated to last a total of eight weeks (for excavation of 8,800 cy), including site preparation and restoration.



SOURCE: USGS QUADRANGLE, BRUNSWICK, AND ORRS ISLAND, ME, DATED 1960, 1978. 7.5 MINUTE SERIES.

FIGURE 4
PROPOSED TRUCK ROUTE
SITES 5 AND 6

Disposal

Sites 1 and 3 at NAS Brunswick are existing hazardous waste disposal sites that have been inactive since the 1970s. A ROD for these sites has been signed. The cap for these sites has been designed as an approved modification to the Maine Solid Waste Management Regulations, and in accordance with RCRA Subtitle C guidelines for closure of hazardous waste landfills, which are more stringent than NESHAPS or the Maine regulations for closure of asbestos disposal sites. Using the material from Sites 5 and 6 as subgrade fill at Sites 1 and 3 will help provide the proposed cap with the requisite slopes to promote long-term positive drainage of stormwater off the cap.

Site Restoration

After excavation is completed at Sites 5 and 6, the areas would be backfilled as necessary with clean soil and regraded to promote positive drainage, and all denuded areas would then be seeded and mulched to reestablish vegetation. The sites will be inspected on a regular basis during the turf establishment period to ensure promotion of growth until a stand of turf is established; the turf establishment period will be in effect until the turf has been mowed three times. The areas will be mowed, weeded, watered, fertilized and overseeded as necessary to promote turf growth. There would be no need for warning signs, institutional controls, or five-year site reviews because no waste would remain at either site.

Table 2 presents the estimated cost of this alternative. This estimate assumes a project duration of one week at Site 5 and eight weeks at Site 6, based on the assumed volumes of material of 8,800 cy at Site 6 and 12 cy at Site 5. The total cost of this alternative is $681,000.

TABLE 2
ALTERNATIVE 5,6-F:
EXCAVATE AND USE AS SUBGRADE MATERIAL AT SITES 1 AND 3

ROD: SITES 5 AND 6
NAS BRUNSWICK

EXCAVATE 12 cy AT SITE 5 AND EXCAVATE 8,800 cy AT SITE 6	COST	PRESENT WORTH
Capital Costs		
Site Preparation	20,500	
Temp. Road, Decon Pad	12,300	
Mobilization	1,600	
Survey		
Excavation/Backfilling		
Equipment and Labor	214,400	
Fill Material - Place and Compact	91,200	
Protective Clothing	7,800	
Packaging/Transport		
Containerize Asbestos	3,100	
Transport to Landfill	27,100	
Place and Compact at Landfill	44,100	
Site Restoration		
Remove Temporary Pavement	5,900	
Dispose of Temporary Pavement and Road Base	5,500	
Grade	700	
Seed, Fertilize and Mulch	2,200	
Subtotal	436,400	
Contingency (@ 20%)	87,300	
Total Capital Costs:	$523,700	$523,700

continued

TABLE 2
ALTERNATIVE 5,6-F:
EXCAVATE AND USE AS SUBGRADE MATERIAL AT SITES 1 AND 3

ROD: SITES 5 AND 6
NAS BRUNSWICK

EXCAVATE 12 cy AT SITE 5 AND EXCAVATE 8,800 cy AT SITE 6	COST	PRESENT WORTH
Indirect Costs		
Health and Safety (@ 5% of Capital Cost)	26,200	
Legal, Administrative, and Permitting (@ 5% of Capital Cost)	26,200	
Engineering (@ 10% of Capital Cost)	52,300	
Services During Construction (@ 10% of Capital Cost)	52,300	
Total Indirect Costs:	$157,000	$157,000
Annual Operating Costs	N/A	N/A
Total Capital Costs:	N/A	N/A
Five-Year Review	N/A	N/A
SUBTOTAL:	N/A	N/A
Total Cost:		$680,700

Notes:

cy = cubic yards

W002937ST.080/3

XI. STATUTORY DETERMINATIONS

The remedial action selected for implementation at NAS Brunswick Sites 5 and 6 is consistent with CERCLA and, to the extent practicable, the NCP. The selected remedy is protective of human health and the environment, attains ARARs, and is cost-effective.

A. THE SELECTED REMEDY IS PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT

The remedy at Sites 5 and 6 will permanently reduce the risks posed to human health and the environment by eliminating, reducing, or controlling exposures to asbestos by human and environmental receptors through engineering controls.

Human health risks from exposure to asbestos are currently not a concern at Sites 5 and 6; however, this alternative would prevent any future contact with asbestos if these sites are developed in the future. Asbestos minerals are very stable in the subsurface environment and are unlikely to migrate. Groundwater is considered an unlikely transport mechanism; the depth to groundwater at Site 5 is 25 to 30 feet and at Site 6 is 15 to 20 feet, minimizing the possibility of asbestos migrating through groundwater flow.

During removal of the asbestos-containing materials at Sites 5 and 6, exposure to airborne asbestos could occur. This exposure would be reduced by wetting the material prior to excavation to minimize any airborne migration of asbestos and thereby minimizing any risk to human health and the environment. In addition, the asbestos-containing material would be containerized to reduce the risk of any further exposure.

Removal of the rubble and debris from Site 6 would eliminate the physical hazards (i.e., chance of injury) associated with exposed reinforced concrete, pipes, and other debris at the site. Placement of this material at Sites 1 and 3 for use as subgrade fill beneath the proposed landfill cap would reduce accessibility to the debris during construction and eliminate the physical hazards associated with the material once cap construction is complete.

Removal of the material from Sites 5 and 6 would be beneficial to environmental receptors because once the material is removed, the sites would be regraded and revegetated to restore the natural physical condition of each site. This site restoration may potentially provide a more suitable environment for establishment of the natural ecosystem at Sites 5 and 6. Removal of waste from these sites would allow for unrestricted development of these sites in the future.

Placement of the material at Sites 1 and 3 could increase risks to environmental receptors at the landfills; however, these risks will be minimized by the remedial design at Sites 1 and 3.

B. THE SELECTED REMEDY ATTAINS ARARS

This remedy will attain all applicable or relevant and appropriate federal and state requirements that apply to Sites 5 and 6. ARARs for Sites 5 and 6 were identified during both the RI and FS. Section 2.0 of the RI and Section 3.0 of the FS reports present tabular summaries of all ARARs identified, including the regulatory citation and a brief summary of the regulatory requirement and its consideration in the remedial process. The ARARs are also included as Appendix C to this ROD. The following narrative summarizes key ARARs and their applicability to the selected remedy.

The selected remedy would meet the following federal and state ARARs:

Chemical-specific ARARs

- Clean Air Act - National Ambient Air Quality Standards
- Maine Ambient Air Quality Standards
- OSHA - Construction Standards
- Clean Air Act - National Emission Standards for Hazardous Pollutants
- Maine Landfill Disposal Regulations

Location-specific ARARs

- Maine Natural Resources Protection Act
- Maine Standards for Classification of Minor Drainages
- Maine Site Location Development Law and Regulations
- Maine Solid Waste Management Rules: Land Disposal Facilities
- Natural Resources Protection Act, Permit by Rule Standards

Action-specific ARARs

- RCRA - Subtitle D Landfill Regulations
- Occupational Safety and Health Administration (OSHA) - General Industry Standards
- OSHA - Safety and Health Regulations
- Asbestos Hazardous Emergency Response Act
- National Emission Standards for Hazardous Air Pollutants - Asbestos
- OSHA - Recordkeeping, Reporting, and Related Regulations
- Maine Asbestos Abatement Regulations
- Maine Landfill Disposal Regulations

Federal and State Air Quality Regulations. The excavation of soil, asbestos contaminated material and construction debris and rubble proposed in the selected remedy will not create any new sources of air emissions. Therefore, many federal and state regulations governing air quality do not apply to the selected remedy. The applicable air quality standards are particulate standards promulgated under the Clean Air Act and Maine Ambient Air Quality Standards and the asbestos standards promulgated under NESHAPS (40 CFR, Part 61, Subpart M), OSHA (29 CFR Part 1926), and the Maine Landfill Disposal Regulations (Chapter 405.4). The particulate standard would apply to remedial construction activities associated with excavation. These standards would be attained through monitoring and, if necessary, use of dust suppression techniques or engineering controls.

The asbestos standards would apply to any action causing asbestos fibers to be emitted to the air. The state standard is the most stringent, at 0.1 fibers per cubic centimeter in air, which is half of the OSHA permissible exposure limit. NESHAPS require that there be no visible emissions or that emission controls be used.

State Location-specific Regulations. All of the location-specific ARARs that apply to the selected remedy are based on the close proximity of Site 6 to the unnamed tributary. The Maine Natural Resources Protection Act provides that removal of soils or other activities conducted adjacent to streams must not cause unreasonable soil erosion, cause unreasonable harm to significant wildlife habitats, unreasonably interfere with natural water flow, lower water quality, or unreasonably cause or

increase flooding. Chapter 305 of the MEDEP regulations provides further standards for erosion control and soil excavation. Portions of the work at Site 6 are located within 100 feet of the tributary; therefore, all Standards of Permit By Rule, Section 2, Disturbance of Soil Adjacent to a Wetland or Water, must be met. Implementation of the selected remedy would not impact the drainage or natural flow of this tributary. Erosion control measures will be employed during construction to minimize soil/sediment from entering the surface water.

Federal and State Hazardous Waste Regulations. The applicability of RCRA and Maine Hazardous Waste Regulations depends on whether the wastes are RCRA-hazardous wastes as defined under these regulations. Asbestos is not a hazardous waste regulated under RCRA. To date, there is no information available (i.e., manifests) to indicate that RCRA-regulated materials were disposed of at Sites 5 or 6. Two samples from Site 6 analyzed in March 1993 by TCLP passed (did not leach hazardous constituents in toxic quantities); therefore, the soil is not a characteristic waste. However, because no RCRA-regulated materials were documented at Sites 5 and 6, Land Disposal Restrictions were not established to be an ARAR for the sites or final remedy.

OSHA regulations protecting worker health and safety at hazardous waste sites pertain to the implementation and long-term operation of the selected remedy. Site workers will have completed training requirements and will have appropriate health and safety equipment on site. Contractors and subcontractors working on site will follow health and safety procedures.

Federal and State Solid Waste Regulations

The cover system component of the Selected Alternative at Sites 1 and 3, which meets RCRA Subtitle C requirements, meets or exceeds the performance requirements of the Maine Landfill Disposal Regulations for the Management, Testing, and Disposal of Special Wastes (38 MRSA Section 1304, Chapter 405.4) governing disposal of asbestos, and is an approved modification to the most stringent ARAR, the State of Maine Solid Waste Management Regulations (Chapter 401.7) governing the closure of solid waste landfills. The State of Maine requirements pertaining to the storage, transport and disposal of asbestos wastes (MEDEP Regulations, Chapter 405.4) will also be met. It should be noted that although the cover system at Sites 1 and 3 meets or exceeds state and federal requirements for asbestos and construction debris, the landfill at Sites 1 and 3 is an unlicensed facility with regard to the asbestos disposal requirements of these regulations. However, the Maine Division of Solid Waste Facility Licensing has stated that a license is not required since disposal of the material at Sites 1 and 3 would be part of a remedial action at a CERCLA site (MEDEP, 1993).

Transport of material from Sites 5 and 6 to Sites 1 and 3 requires consideration of additional ARARs for Sites 1 and 3 than those specified in the ROD for Sites 1 and 3. These ARARs are summarized in Table C-4 in Appendix C of this ROD and will be discussed further in an Explanation of Significant Difference (ESD). The ESD will be incorporated in the Administrative Record for Sites 1 and 3. The movement of material from Sites 5 and 6 will not occur until after the ESD is issued.

C. THE SELECTED REMEDIAL ACTION IS COST-EFFECTIVE

The selected remedy is cost-effective; that is, the remedy affords overall effectiveness proportional to its costs. In selecting this remedy, the Navy identified alternatives that were protective of human health and the environment and that attained ARARs, and then evaluated the overall effectiveness of each alternative by assessing the relevant three criteria: (1) long-term effectiveness and permanence; (2) reduction in toxicity, mobility, and volume through treatment; and (3) short-term effectiveness, in combination. The relationship of the overall effectiveness of the selected remedial alternative was determined to be proportional to its costs. The costs of this remedial alternative are:

Estimated Capital Cost: $568,000
Estimated Operation and Maintenance Cost (net present worth at a 10% discount rate): not applicable
Estimated Total Cost (net present worth at a 10% discount rate): $681,000

The least expensive alternative is clearly the No Action Alternative with no cost. The Minimal Action Alternative is expected to cost approximately $217,000 for both sites. The Low-permeability Cover Alternative cost combined for the two sites is $430,000. Excavation and Off-site Disposal for the two sites would total $3,786,000. The Consolidation/Low-permeability Cover Alternative would cost $400,000.

While the selected remedy does not have the lowest estimated capital cost of the six treatment alternatives, over half the cost is directly related to excavation and backfill. If the actual volume excavated is less than the estimate, the cost of this remediation would be significantly reduced and be comparable to the other alternatives considered. The Navy also believes that the benefit in providing the opportunity for future development of Sites 5 and 6 offsets the increased costs.

D. THE SELECTED REMEDY UTILIZES PERMANENT SOLUTIONS AND ALTERNATIVE TREATMENT OR RESOURCE RECOVERY TECHNOLOGIES TO THE MAXIMUM EXTENT PRACTICABLE

The Navy identified those alternatives that attain ARARs and that are protective of human health and the environment. The Navy also identified which alternative uses permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. This determination was made by deciding which one of the identified alternatives provides the best balance of factors among alternatives in terms of: (1) long-term effectiveness and permanence, (2) reduction of toxicity, mobility, or volume through treatment, (3) short-term effectiveness, (4) implementability, and (5) cost. The balancing test emphasized long-term effectiveness and permanence and the reduction of toxicity, mobility, and volume through treatment; and considered the preference for treatment as a principal element, the bias against off-site land disposal of untreated waste, and community and state acceptance. The selected remedy provides the best balance of trade-offs among the alternatives.

The Navy's Selected Alternative for cleanup at Sites 5 and 6 involves excavating, transporting, and placing asbestos-containing material and construction rubble and debris as subgrade fill beneath the proposed landfill cap at Sites 1 and 3. This is a new alternative that was developed during the remedial design phase of Sites 1 and 3, when it was determined that fill requirements for subgrade material beneath the cap could incorporate the material from Sites 5 and 6. In addition, this alternative addresses the concerns raised during the public hearing for Site 8 (October 15, 1992). Excavating material from Sites 5 and 6 will eliminate the need for long-term land-use restrictions at these sites. Hauling material to Sites 1 and 3 will also minimize the hazards associated with transporting asbestos over long distances (e.g., to an off-base location) and eliminate the need for a low-permeability cap at Site 6 and the resultant long-term monitoring and land-use restrictions. Completely removing waste from Sites 5 and 6 allows these areas to be developed for future use and eliminates the need for long-term management.

E. THE SELECTED REMEDY DOES NOT SATISFY THE PREFERENCE FOR TREATMENT WHICH PERMANENTLY AND SIGNIFICANTLY REDUCES THE TOXICITY, MOBILITY, OR VOLUME OF THE HAZARDOUS SUBSTANCES AS A PRINCIPAL ELEMENT

This remedy does not meet the statutory preference for treatment. Treatment of asbestos-containing material was not found to be practicable or proven. Because asbestos is a relatively insoluble material composed of minerals, many conventional treatment technologies ordinarily considered for contaminated soils are not

applicable to asbestos waste. Vitrification, the only treatment demonstrated to destroy asbestos, was eliminated because no commercially operating vitrification plants currently exist for ex-situ vitrification and the presence of metallic objects buried at the site would not allow effective in-situ vitrification.

Because this remedy will remove contaminated soils and nonhazardous debris from the site, no long-term controls will be necessary and the five-year review will not apply. Physical hazards associated with the disturbed material would be eliminated once the cap is constructed at Sites 1 and 3.

XII. DOCUMENTATION OF NO SIGNIFICANT CHANGES

The Navy presented a Proposed Plan (Preferred Alternative) for remediation of Sites 5 and 6 in March 1993. The Preferred Alternative included excavating asbestos-containing material from Sites 5 and 6 as well as non-hazardous construction rubble from Site 6, and using this material as subgrade fill beneath the proposed Sites 1 and 3 landfill cap. No significant changes have been made to the alternative described in the Proposed Plan and presented to the public.

XIII. STATE ROLE

As a party to the FFA, MEDEP has reviewed the various alternatives and has indicated its support for the selected remedy. MEDEP concurs with the selected remedy for NAS Brunswick Sites 5 and 6. A copy of the letter of concurrence is presented in Appendix B of this ROD.

ABB Environmental Services, Inc. (ABB-ES) 1993a. "Draft Final Technical Memorandum: Detailed Evaluation of Alternative 5,6-E: Excavation and Use as Subgrade Material at Sites 1 and 3"; Portland, Maine; March.

ABB Environmental Services, Inc. (ABB-ES) 1993b. "Proposed Plan Sites 5 and 6"; Portland, Maine; March.

E.C. Jordan Co., 1990a. "Draft Final Remedial Investigation Report NAS Brunswick"; Portland, Maine; August.

E.C. Jordan Co., 1990b. "Draft Final Phase I Feasibility Study Development and Screening of Alternatives NAS Brunswick"; Portland, Maine; August.

E.C. Jordan Co., 1991a. "Draft Final Supplemental Remedial Investigation Report NAS Brunswick"; Portland, Maine; August.

E.C. Jordan Co., 1991b. "Draft Final Supplemental Feasibility Study Sites 5, 6, and 12 NAS Brunswick"; Portland, Maine.

E.C. Jordan Co., 1991c. "Focused Feasibility Study Sites 1 and 3 NAS Brunswick"; Portland, Maine; October.

E.C. Jordan Co., 1992a. "Feasibility Study NAS Brunswick"; Portland, Maine; March.

E.C. Jordan Co., 1992b. "Focused Feasibility Study Site 8 NAS Brunswick"; Portland, Maine; April.

Gilbert, et al., 1981. *Experimental Studies of Amphibole Stability*; Reviews in Mineralogy - Amphiboles and Other Hydrous Pyriboles; Vol. 9B, pp. 229-267.

Maine Department of Environmental Protection (MEDEP), 1993. Letter from Mark R. Hyland, Director, Federal Facilities Remediation to James Shafer, Project Manager, Department of the Navy, Northern Division; January 25.

Northern Division, Naval Facilities Engineering Command (NAVY), 1992a. "Record of Decision for a Remedial Action at Sites 1 and 3 Naval Air Station Brunswick, Maine"; Portland, Maine; June.

Northern Division, Naval Facilities Engineering Command (NAVY), 1992b. "Record of Decision for an Interim Remedial Action at the Eastern Plume Operable Unit Naval Air Station Brunswick, Maine"; Portland, Maine; June.

Northern Division, Naval Facilities Engineering Command (NAVY), 1993. "Record of Decision for a Remedial Action at Site 8 Naval Air Station Brunswick, Brunswick, Maine"; Portland, Maine; August.

Roy F. Weston, Inc., 1983. "Initial Assessment Study of Naval Air Station, Brunswick, Maine"; West Chester, Pennsylvania; June.

ARAR	Applicable or Relevant and Appropriate Requirement
BACSE	Brunswick Area Citizens for a Safe Environment
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (the Superfund statute)
cy	cubic yards
FFA	Federal Facility Agreement
FFS	Focused Feasibility Study
FS	Feasibility Study
GPR	Ground-penetrating radar
IAS	Initial Assessment Study
IRP	Installation Restoration Program
MEDEP	Maine Department of Environmental Protection
MSL	mean sea level
NAS	Naval Air Station
NCP	National Contingency Plan
NPL	National Priorities List
NESHAPS	National Emissions Standards for Hazardous Air Pollutants
OSHA	Occupational Safety and Health Administration
PCB	polychlorinated biphenyl
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
ROD	Record of Decision
SARA	Superfund Amendments and Reauthorization Act of 1986
SHERP	Safety, Health, and Emergency Response Plan
SVOC	semivolatile organic compound

TAL	Target Analyte List
TRC	Technical Review Committee
TCL	Target Compound List
TCLP	Toxicity Characteristic Leachate Procedure
µg/kg	micrograms per kilogram
USEPA	U.S. Environmental Protection Agency
VOC	volatile organic compound

APPENDIX B

MEDEP LETTER OF CONCURRENCE

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

JOHN R. McKERNAN, JR.
GOVERNOR

DEAN C. MARRIOTT
COMMISSIONER

DEBRAH RICHARD
DEPUTY COMMISSIONER

August 30, 1993

W.A. Waters
Captain, CEC, U.S. Navy
Commanding Officer
Department of the Navy, Northern Division
Naval Facilities Engineering Command
Building 77-L
Philadelphia Naval Shipyard
Philadelphia, PA 10112-5094

RE: Naval Air Station Brunswick Superfund Site, Brunswick, Maine

Dear Captain Waters:

The Maine Department of Environmental Protection (MEDEP) has reviewed the August 1993 Record of Decision (ROD) for a remedial action at Sites 5 and 6 for the Naval Air Station Brunswick Superfund Site located in Brunswick, Maine.

On the basis of this ROD the MEDEP concurs with the selected remedial action. This action includes excavating nonhazardous construction rubble and debris from Site 6, excavating and containerizing asbestos-containing material from Sites 5 and 6, and transporting these materials, as well as the stockpiled soil at Site 6, for use as subgrade fill beneath the landfill cap at Sites 1 and 3. This material will provide some of the necessary subgrade fill to meet the design criteria for the Sites 1 and 3 landfill cap. This alternative includes the following components:

I. Development of a Health and Safety Plan

A. A detailed Health and Safety Plan will be developed prior to any remedial actions at Sites 5 and 6. This plan will comply with OSHA and other state and federal regulations, as appropriate.

B. During all invasive activities, a radiological survey will be conducted to identify the potential for radiological hazards.

AUGUSTA
STATE HOUSE STATION 17
AUGUSTA, MAINE 04333-0017
(207) 287-7688 FAX: (207) 287-7826
OFFICE LOCATED AT: RAY BUILDING, HOSPITAL STREET

PORTLAND
312 CANCO ROAD
PORTLAND, ME 04103
(207) 879-6300 FAX: (207) 879-6303

BANGOR
106 HOGAN ROAD
BANGOR, ME 04401
(207) 941-4570 FAX: (207) 941-4584

PRESQUE ISLE
1235 CENTRAL DRIVE, SKYWAY PARK
PRESQUE ISLE, ME 04769
(207) 764-0477 FAX: (207) 764-1507

II. Site Preparation

A. An access road and small staging area will be constructed at Sites 5 and 6 outside the limits of the waste for storage of equipment during excavation, decontamination areas, and access for trucks to remove soil and debris.

B. Erosion control measures will be employed during construction to minimize soil/sediment from entering the tributary adjacent to Site 6, in accordance with the Natural Resources Protection Act, Permit By Rule Standards, Chapter 305.

III. Excavation and Confirmation Sampling

A. Site 5 will be excavated to remove all materials containing asbestos. The asbestos-covered pipes and a 1-foot-thick circumference of soil surrounding the pipes will be handled as asbestos waste.

B. The soil surrounding the pipes will either be cleared using a vacuum device that contains soils automatically or will be adequately wetted, then the pipes will be removed from the trench.

C. Site 6 will be excavated to remove all construction rubble and debris, including an assumed volume of 250 cy of asbestos-containing material.

D. Soils at Site 6 will be kept damp, preventing the generation of dust that could contain asbestos.

E. After excavation is completed, soil samples will be collected at Sites 5 and 6 to confirm that no site-related contaminants are left in place.

F. The sampling and analysis plan will be developed by the remedial construction contractor before work begins and submitted for regulatory review and comment.

G. At a minimum, three soil samples will be collected and analyzed for TCL and TAL constituents and asbestos at Site 6.

H. If contamination is detected, and cannot be physically removed by excavation, long term monitoring of groundwater may be implemented to evaluate the impacts on groundwater downgradient of the site.

IV. Containerization of Asbestos-Containing Material

A. The asbestos-containing material excavated from Sites 5 and 6 will be containerized in two layers of polyethylene, each with a minimum thickness of 6 mils.

V. Transportation of Materials

A. Transportation of the material from Sites 5 and 6 to Sites 1 and 3 will be accomplished using 12-cy dump trucks and will not pass through residential or developed areas of the base.

B. Erosion control measures will be employed during construction to minimize soil/sediment from entering the surface water in accordance with the Natural Resources Protection Act Permit By Rule Standards, Chapter 305.

C. The material will be placed at Sites 1 and 3 for use as subgrade fill beneath the landfill cap in accordance with Maine Solid Waste Management Regulations (Chapter 401.7 and 405.4).

D. Material from Sites 5 and 6 that is placed at Sites 1 and 3 will be covered daily with at least six inches of compacted non-asbestos cover for the duration of the disposal period.

E. Final cover procedures will be followed according to Maine Solid Waste Regulations Chapter 405.4 (B)(5)(o) if the cap for Sites 1 and 3 is not substantially under construction within 30 days of the last placement of asbestos waste materials.

This concurrence is based upon the State's understanding that:

A. The MEDEP will continue to participate in the Federal Facilities Agreement dated October 19, 1990 and in the review and approval of operational designs and monitoring plans.

The MEDEP looks forward to working with the Department of the Navy and the USEPA to resolve the environmental problems posed by this site. If you need any additional information, do not hesitate to contact me or members of my staff.

Sincerely,

Dean C. Marriott
Commissioner

pc: Captain Robert Rachor, BNAS
Robert McGirr, ABB-ES
Meghan Cassidy, USEPA
Mark Hyland, MEDEP

APPENDIX C

APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

TABLE C-1
CHEMICAL-SPECIFIC ARARS, CRITERIA, ADVISORIES, AND GUIDANCE FOR SITES 5 AND 6

ROD: SITES 5 AND 6
NAS BRUNSWICK

MEDIA	REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS	ACTION TO BE TAKEN TO ATTAIN ARARS
AIR				
State	Maine Ambient Air Quality Standards (38 MRSA, Section 584; MEDEP Regulations, Chapter 110)	Applicable	This Chapter establishes ambient air quality standards that are maximum levels of a particular pollutant permitted in the ambient air.	The standard for particulate matter is 150 $\mu g/m^3$, 24-hour average concentration, which applies to excavation activities.

Notes:

ARAR = Applicable or Relevant and Appropriate Requirement
CAA = Clean Air Act
CFR = Code of Federal Regulations
CMR = Code of Maine Rules
CSF = Cancer Slope Factor
MCL = Maximum Contaminant Level
MCLG = Maximum Contaminant Level Goal
MEDEP = Maine Department of Environmental Protection
MRSA = Maine Revised Statues Annotated
RfD = reference dose
SDWA = Safe Drinking Water Act
USEPA = U.S. Environmental Protection Agency
$\mu g/m^3$ = micrograms per cubic meter

TABLE C-2
LOCATION-SPECIFIC ARARS, CRITERIA, ADVISORIES, AND GUIDANCE FOR SITES 5 AND 6

ROD: SITES 5 AND 6
NAS BRUNSWICK

MEDIA	REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS	ACTION TO BE TAKEN TO ATTAIN ARARS
SURFACE WATER				
Federal	Section 404(b)(1) Guidelines for Specifications of Disposal Sites for Dredged or Fill Material (40 CFR Part 230)	Relevant and Appropriate	No discharge of dredged or fill material is permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem so long as the alternative does not have other significant adverse environmental consequences.	The remedial action does not involve a discharge of material to water or wetlands, and construction activities will be designed to ensure that there will be no adverse impacts to aquatic ecosystems.
WETLANDS/FLOODPLAINS				
State	Maine Natural Resources Protection Act (38 MRSA, Section 480-A through S)	Applicable	This act outlines requirements for certain activities adjacent to any freshwater wetland greater than 10 acres or with an associated stream, brook, or pond adjacent to a coastal wetland. The activities must not unreasonably interfere with certain natural features, such as natural flow or quality of any waters, nor harm significant aquatic habitat, freshwater fisheries, or other aquatic life.	Remedial activities regulated under this act will meet activity standards. Substantive requirements of these regulations must be met by any action taken within 100 feet of a wetland or stream.
	Natural Resources Protection Act, Permit by Rule Standards (Maine Department of Environmental Protection [MEDEP] Regulations, Chapter 305)	Applicable	This rule prescribes standards for specific activities that may take place in or adjacent to wetlands and water bodies. The standards are designed to ensure that the disturbed soil material is stabilized to prevent erosion and siltation of the water.	Proposed activities involving disturbance of soil material within 100 feet of the normal high water line will be designed to incorporate all applicable standards.

continued

TABLE C-2
LOCATION-SPECIFIC ARARS, CRITERIA, ADVISORIES, AND GUIDANCE FOR SITES 5 AND 6

ROD: SITES 5 AND 6
NAS BRUNSWICK

MEDIA	REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS	ACTION TO BE TAKEN TO ATTAIN ARARS
OTHER NATURAL RESOURCES				
State	Maine Site Location Development Law and Regulations (38 MRSA Sections 481-490; MEDEP Regulations, Chapter 375)	Relevant and Appropriate	This act and regulations govern development and include hazardous activities that consume, generate, or handle hazardous wastes and oil. Activities cannot adversely affect existing uses, scenic character, or natural resources in the municipality or neighboring municipality. The regulations provide that there be no unreasonable adverse effects on specified items (including air quality, runoff/infiltration relationships, surface water quality), no unreasonable alteration of climate or natural drainage ways, and provisions for erosion and sedimentation control and noise control.	Remedial alternatives will be developed considering these regulations. A permit is not required for on-site activity.

Notes:

ARAR = Applicable or Relevant and Appropriate Requirements
CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act
CFR = Code of Federal Regulations
CWA = Clean Water Act
EO = Executive Order
MRSA = Maine Revised Statutes Annotated
MEDEP = Maine Department of Environmental Protection

TABLE C-3
ACTION-SPECIFIC ARARs, CRITERIA, AND GUIDANCE FOR SITES 5 AND 6

ROD: SITES 5 AND 6
NAS BRUNSWICK

REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS	ACTION TO BE TAKEN TO ATTAIN ARARs
Federal			
Occupational Safety and Health Act (OSHA) - General Industry Standards (29 CFR Part 1910)	Applicable	These regulations specify the 8-hour time-weighted average concentration for various organic compounds. Training requirements for workers at hazardous wastes, including asbestos, operations are specified in 29 CFR Part 1910.120.	Proper respiratory equipment will be worn if it is impossible to maintain the work atmosphere below the concentration. Workers performing activities would be required to have completed specific training requirements.
OSHA - Safety and Health Standards (29 CFR Part 1926)	Applicable	This regulation specifies the type of safety equipment and procedures for handling asbestos.	All appropriate safety equipment will be on site. In addition, safety procedures will be followed during on-site activities.
CAA - National Emission Standards for Hazardous Pollutants (NESHAPs) (40 CFR Part 61)	Relevant and Appropriate	NESHAPs are promulgated for emissions of particular air pollutants, including asbestos. Emissions of asbestos fibers are regulated under Subpart M of 40 CFR Part 61. This regulation includes requirements for inactive waste disposal sites for asbestos mills and manufacturing and fabricating operations, for active waste disposal sites, and for waste disposal for demolition and renovation operations. It does not include requirements for inactive waste disposal sites like Sites 5 and 6 which were for demolition and renovation operations. Therefore, the NESHAP will not be "applicable" to cleanup of Sites 5 and 6. However, the regulation is "relevant and appropriate" to the control of asbestos fiber emissions at an inactive waste disposal site for demolition and renovation operations because the situation is sufficiently similar.	The NESHAP requirements for emission limits, and personnel training for the handling and disposal of asbestos (Subpart M) are relevant and appropriate to activities conducted at Sites 5 and 6. The actions taken under the remedial action will meet these requirements.

continued

TABLE C-3
ACTION-SPECIFIC ARARs, CRITERIA, AND GUIDANCE FOR SITES 5 AND 6

ROD: SITES 5 AND 6
NAS BRUNSWICK

REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS	ACTION TO BE TAKEN TO ATTAIN ARARs
State			
Maine Solid Waste Management Rules Including Regulations for Construction/Demolition Debris, Inert Fill, Land Clearing Debris, and Woodwaste (MEDEP Regulations, Chapters 400-404)	Applicable	These regulations outline requirements for closure of landfills to be used for the disposal of construction/demolition debris.	Sites 5 and 6 can be classified as a construction/ demolition debris landfill; therefore, the closure of the waste disposal area must meet the minimum specifications outlined in Chapter 404.
Maine Solid Waste Management Rules: Management, Testing, and Disposal of Special Wastes (MEDEP Regulations, Chapter 405)	Applicable	Section 405.4 sets forth requirements that apply to the storage, transport and disposal of asbestos wastes.	These requirements will pertain to activities conducted at Sites 5 and 6.
Maine Asbestos Abatement Regulations (MEDEP Regulations, Chapter 136)	Applicable	These regulations specify the minimum work practice requirements for asbestos abatement contractors.	These requirements will apply to remedial activities at Sites 5 and 6.

Notes:

CFR = Code of Federal Regulations
CMR = Code of Maine Regulations
CWA = Clean Water Act
DOT = Department of Transportation (U.S.)
FIFRA = Federal Insecticide, Fungicide, and Rodenticide Act
MEDEP = Maine Department of Environmental Protection
MRSA = Maine Revised Statutes Annotated
NAS = Naval Air Station
NPDES = National Pollutant Discharge Elimination System
OSHA = Occupational Safety and Health Administration
POTW = publicly owned treatment works
RCRA = Resource Conservation and Recovery Act
$\mu g/m^3$ = micrograms per cubic meter

TABLE C-4
ADDITIONAL ACTION-SPECIFIC ARARS, CRITERIA, AND GUIDANCE FOR SITES 1 AND 3
NECESSARY DUE TO ADDITION OF MATERIAL FROM SITES 5 AND 6

ROD: SITES 5 AND 6
NAS BRUNSWICK

REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS	ACTION TO BE TAKEN TO ATTAIN ARARS
Federal			
CAA - National Emission Standards for Hazardous Pollutants (NESHAPs) (40 CFR Part 61)	Relevant and Appropriate	NESHAPs are promulgated for emissions of particular air pollutants, including asbestos.	The NESHAP requirements for emission limits, and personnel training for the handling and disposal of asbestos (Subpart M) are relevant and appropriate to activities regarding the movement of asbestos material to Sites 1 and 3. Actions taken at Sites 1 and 3 will meet these requirements.
Occupational Safety and Health Act (OSHA) - General Industry Standards (29 CFR Part 1910)	Applicable	These regulations specify the 8-hour time-weighted average concentration for various organic compounds. Training requirements for workers at hazardous waste, including asbestos, operations are specified in 29 CFR Part 1910.120.	Proper respiratory equipment will be worn if it is impossible to maintain the work atmosphere below the concentration. Workers performing activities will be required to have completed specific training requirements.
OSHA - Safety and Health Standards (29 CFR Part 1926)	Applicable	This regulation specifies the type of safety equipment and procedures for handling asbestos.	All appropriate safety equipment will be on site. In addition, safety procedures will be followed during on-site activities.
State			
Maine Solid Waste Management, Testing, and Disposal of Special Wastes (MEDEP Regulations, Chapter 405)	Applicable	Section 405.4 sets forth requirements that apply to the storage, transport and disposal of asbestos wastes.	These requirements will pertain to activities involving disposal of asbestos materials at Sites 1 and 3.

continued

TABLE C-4
ADDITIONAL ACTION-SPECIFIC ARARs, CRITERIA, AND GUIDANCE FOR SITES 1 AND 3 NECESSARY DUE TO ADDITION OF MATERIAL FROM SITES 5 AND 6

ROD: SITES 5 AND 6
NAS BRUNSWICK

REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS	ACTION TO BE TAKEN TO ATTAIN ARARs
Maine Asbestos Abatement Regulations (MEDEP Regulations, Chapter 136)	Applicable	These regulations specify the minimum work practice requirements for asbestos abatement contractors.	These requirements will apply to remedial activities at Sites 1 and 3.

Notes:

CFR = Code of Federal Regulations
CMR = Code of Maine Regulations
CWA = Clean Water Act
DOT = Department of Transportation (U.S.)
FIFRA = Federal Insecticide, Fungicide, and Rodenticide Act
MEDEP = Maine Department of Environmental Protection
MRSA = Maine Revised Statutes Annotated
NAS = Naval Air Station
NPDES = National Pollutant Discharge Elimination System
OSHA = Occupational Safety and Health Administration
POTW = publicly owned treatment works
RCRA = Resource Conservation and Recovery Act
$\mu g/m^3$ = micrograms per cubic meter