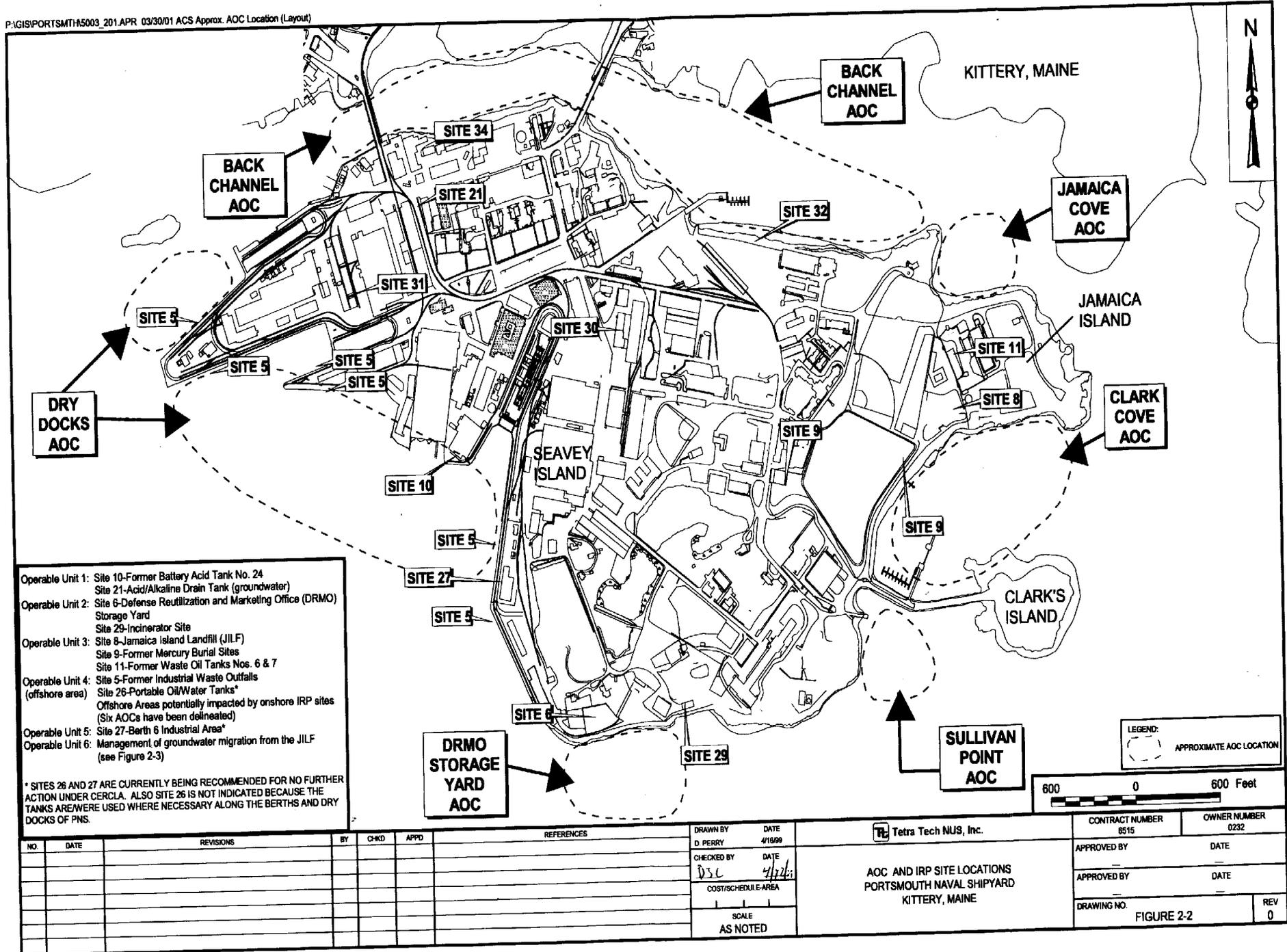


FIGURE 2-1

GREAT BAY ESTUARY AND PORTSMOUTH NAVAL SHIPYARD LOCATION
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE

This page intentionally left blank.

P:\GIS\PORTSMTH5003_201.APR_03/30/01 ACS Approx. AOC Location (Layout)



Operable Unit 1: Site 10-Former Battery Acid Tank No. 24
 Site 21-Acid/Alkaline Drain Tank (groundwater)

Operable Unit 2: Site 6-Defense Reutilization and Marketing Office (DRMO) Storage Yard
 Site 29-Incinerator Site

Operable Unit 3: Site 8-Jamaica Island Landfill (JILF)
 Site 9-Former Mercury Burial Sites
 Site 11-Former Waste Oil Tanks Nos. 6 & 7

Operable Unit 4: Site 5-Former Industrial Waste Outfalls (offshore area)
 Site 26-Portable Oil/Water Tanks*
 Offshore Areas potentially impacted by onshore IRP sites (Six AOCs have been delineated)

Operable Unit 5: Site 27-Berth 6 Industrial Area*

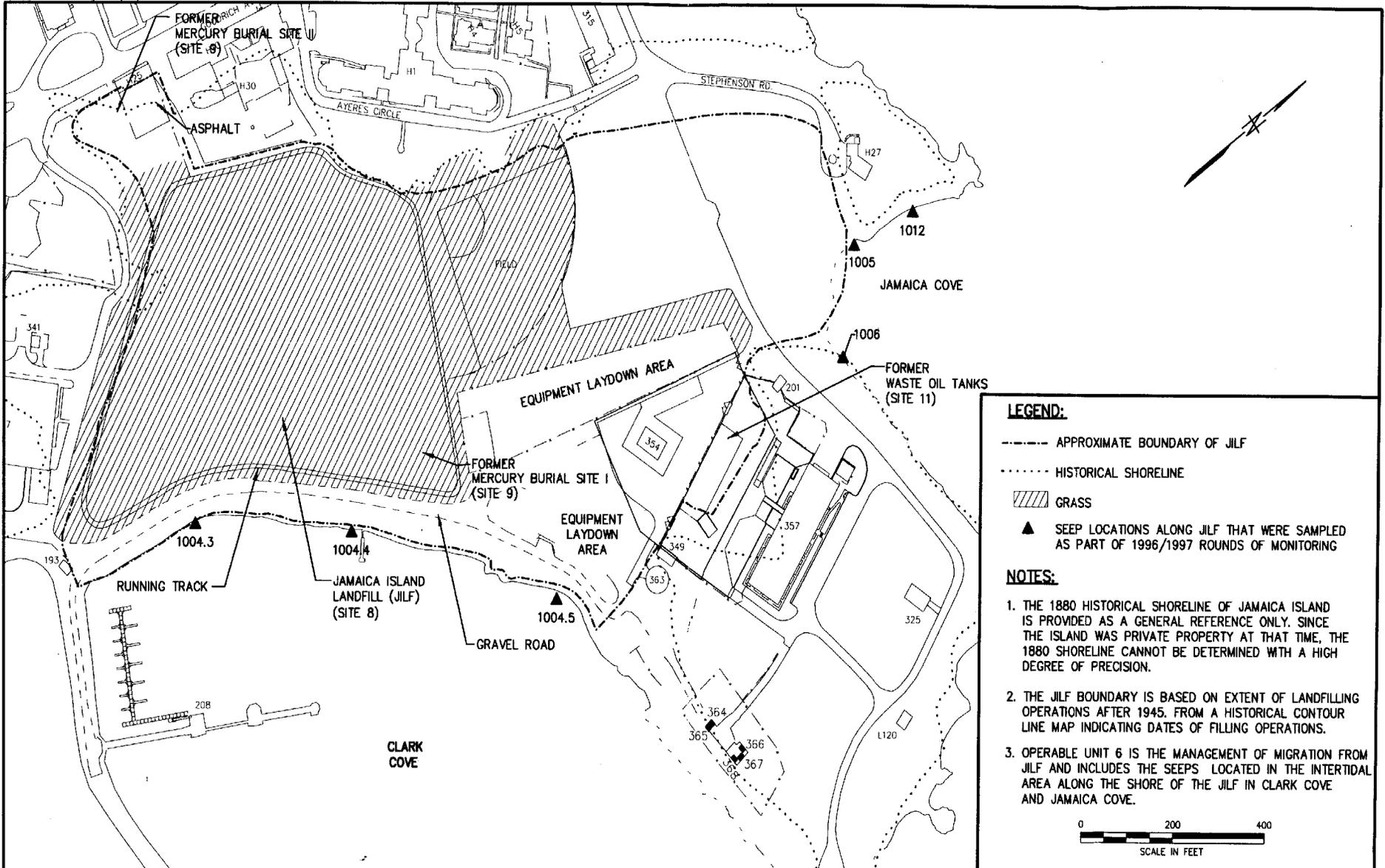
Operable Unit 6: Management of groundwater migration from the JILF (see Figures 2-3)

* SITES 26 AND 27 ARE CURRENTLY BEING RECOMMENDED FOR NO FURTHER ACTION UNDER CERCLA. ALSO SITE 26 IS NOT INDICATED BECAUSE THE TANKS ARE/WERE USED WHERE NECESSARY ALONG THE BERTHS AND DRY DOCKS OF PNS.

NO	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY D. PERRY	DATE 4/18/99	Tetra Tech NUS, Inc.	CONTRACT NUMBER 8515	OWNER NUMBER 0232
CHECKED BY DSC	DATE 4/27/01		APPROVED BY	DATE
COST/SCHEDULE-AREA		APPROVED BY		
SCALE AS NOTED		DATE		
AOC AND IRP SITE LOCATIONS PORTSMOUTH NAVAL SHIPYARD KITTERY, MAINE		DRAWING NO. FIGURE 2-2		REV 0

ACAD:6515GM22.dwg 06/27/01 DT



LEGEND:

- APPROXIMATE BOUNDARY OF JILF
- HISTORICAL SHORELINE
- /// GRASS
- ▲ SEEP LOCATIONS ALONG JILF THAT WERE SAMPLED AS PART OF 1996/1997 ROUNDS OF MONITORING

NOTES:

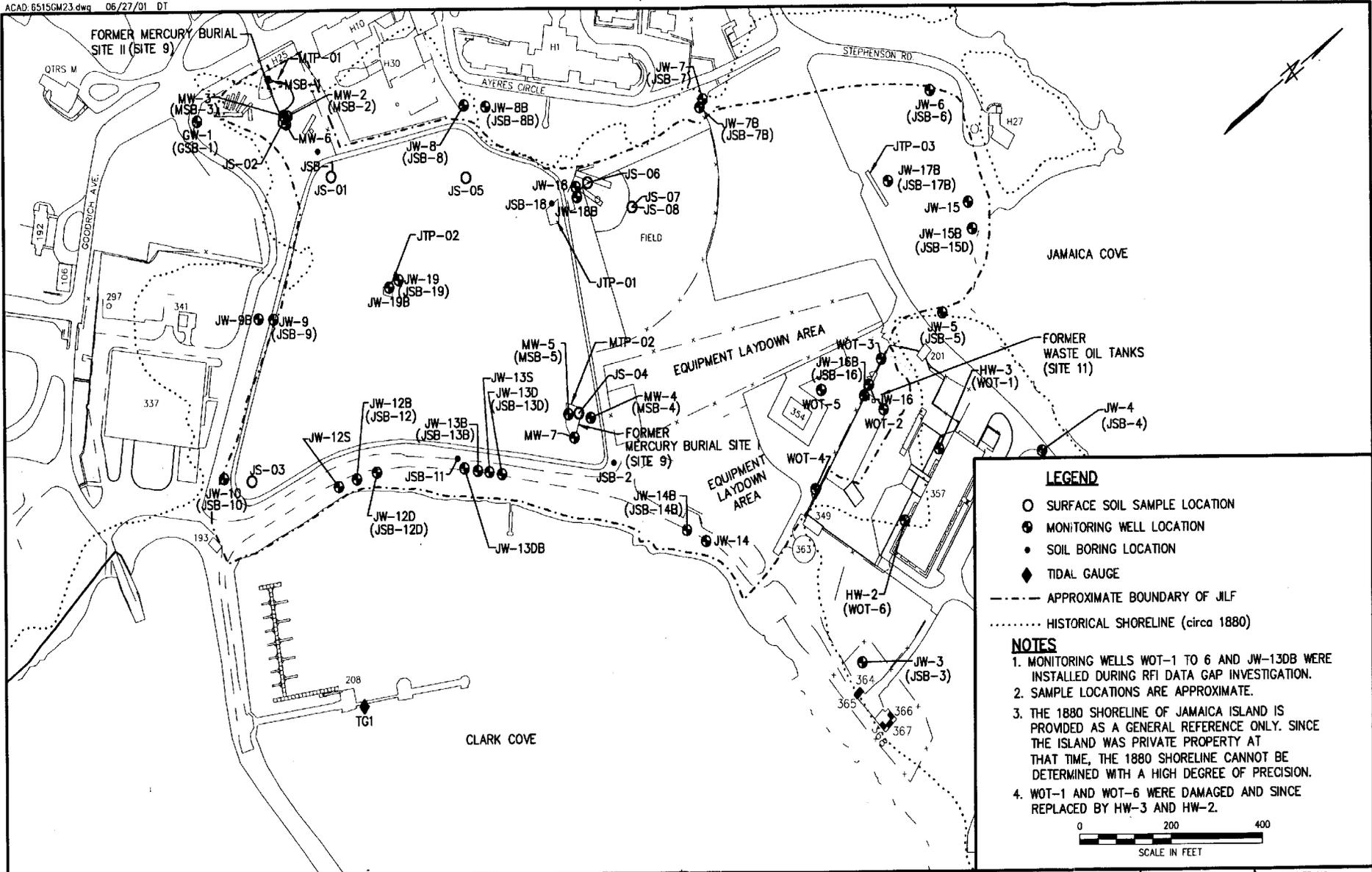
1. THE 1880 HISTORICAL SHORELINE OF JAMAICA ISLAND IS PROVIDED AS A GENERAL REFERENCE ONLY. SINCE THE ISLAND WAS PRIVATE PROPERTY AT THAT TIME, THE 1880 SHORELINE CANNOT BE DETERMINED WITH A HIGH DEGREE OF PRECISION.
2. THE JILF BOUNDARY IS BASED ON EXTENT OF LANDFILLING OPERATIONS AFTER 1945. FROM A HISTORICAL CONTOUR LINE MAP INDICATING DATES OF FILLING OPERATIONS.
3. OPERABLE UNIT 6 IS THE MANAGEMENT OF MIGRATION FROM JILF AND INCLUDES THE SEEPS LOCATED IN THE INTERTIDAL AREA ALONG THE SHORE OF THE JILF IN CLARK COVE AND JAMAICA COVE.



NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES	DRAWN BY	DATE	Tetra Tech NUS, Inc.		CONTRACT NO.	
							HJP	3/28/01	OPERABLE UNIT 3 LAYOUT MAP PORTSMOUTH NAVAL SHIPYARD KITTEKY, MAINE		6515	0232
							05C	7/1/01			APPROVED BY	DATE
											APPROVED BY	DATE
											DRAWING NO.	REV.
								SCALE AS NOTED			FIGURE 2-3	0

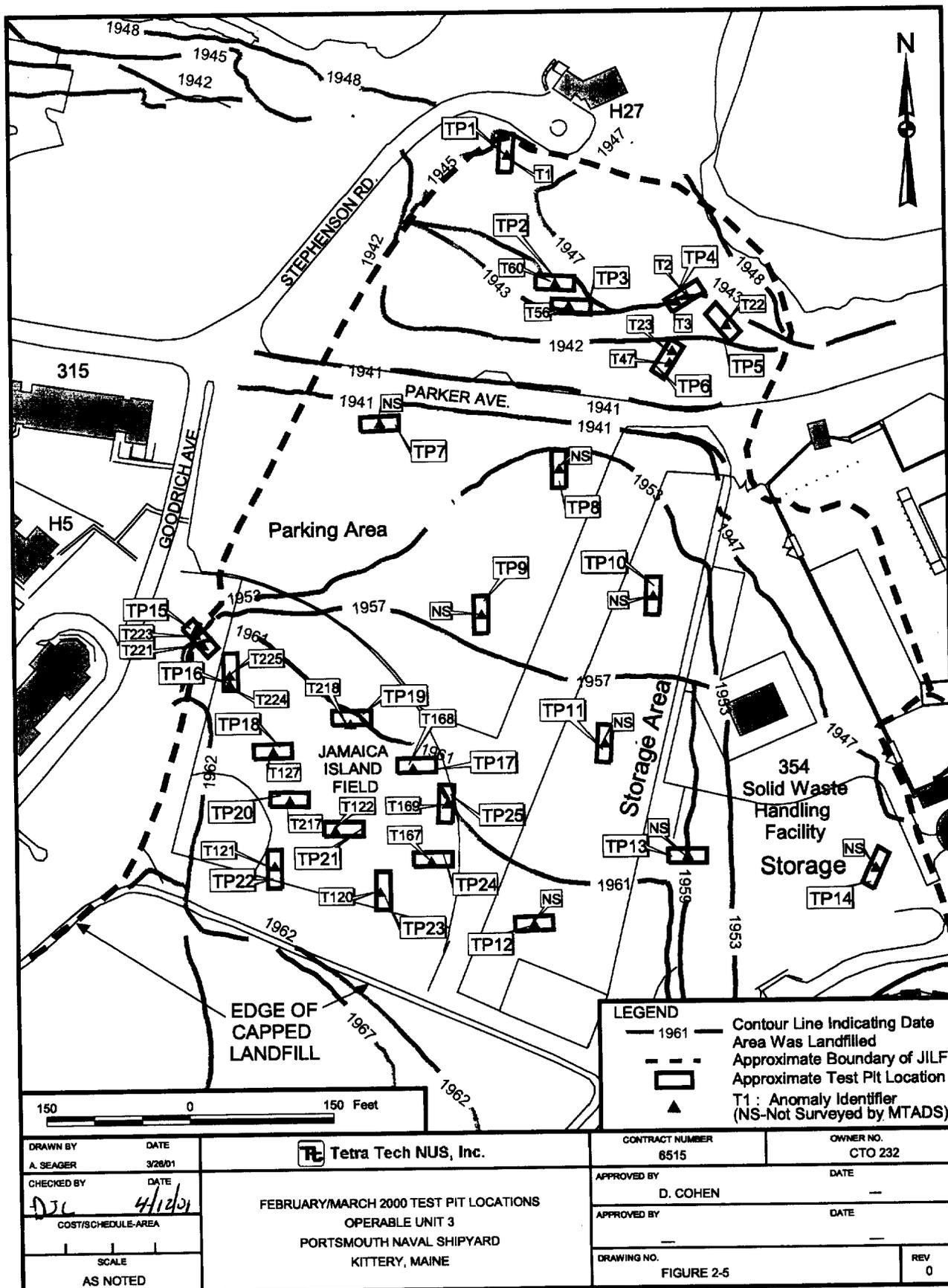
FORM CADD NO. T&NUS_BHDDN - REV 0 - 1/20/98

ACAD: 6515CM23.dwg 06/27/01 DT



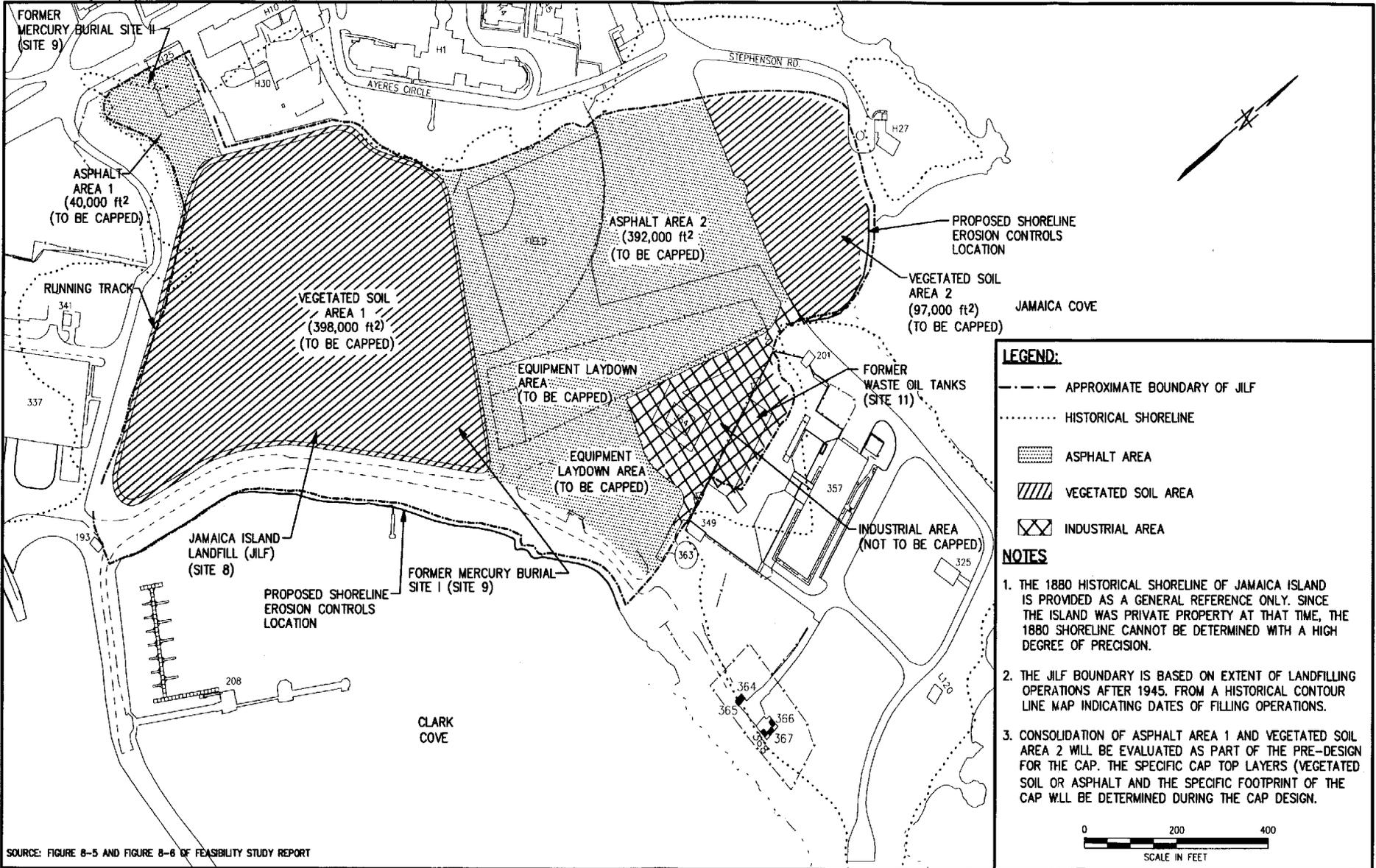
NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES	DRAWN BY	DATE	Tetra Tech NUS, Inc.	CONTRACT NO.	OWNER NO.
							HJP	3/28/01		6515	0232
							CHECKED BY	DATE	APPROVED BY	DATE	
								7/1/01			
							COST/SCHED-AREA		APPROVED BY	DATE	
							SCALE		DRAWING NO.	FIGURE 2-4	REV. 0
							AS NOTED				

FORM CADD NO. T1NUS_BH.DGN - REV 0 - 1/20/98



P:\GIS\PORTSMOUTH\TEST_PITS.APR 03/30/01 ACS TEST PIT LOCATIONS

ACAD: 8515GM24.dwg 06/27/01 DT

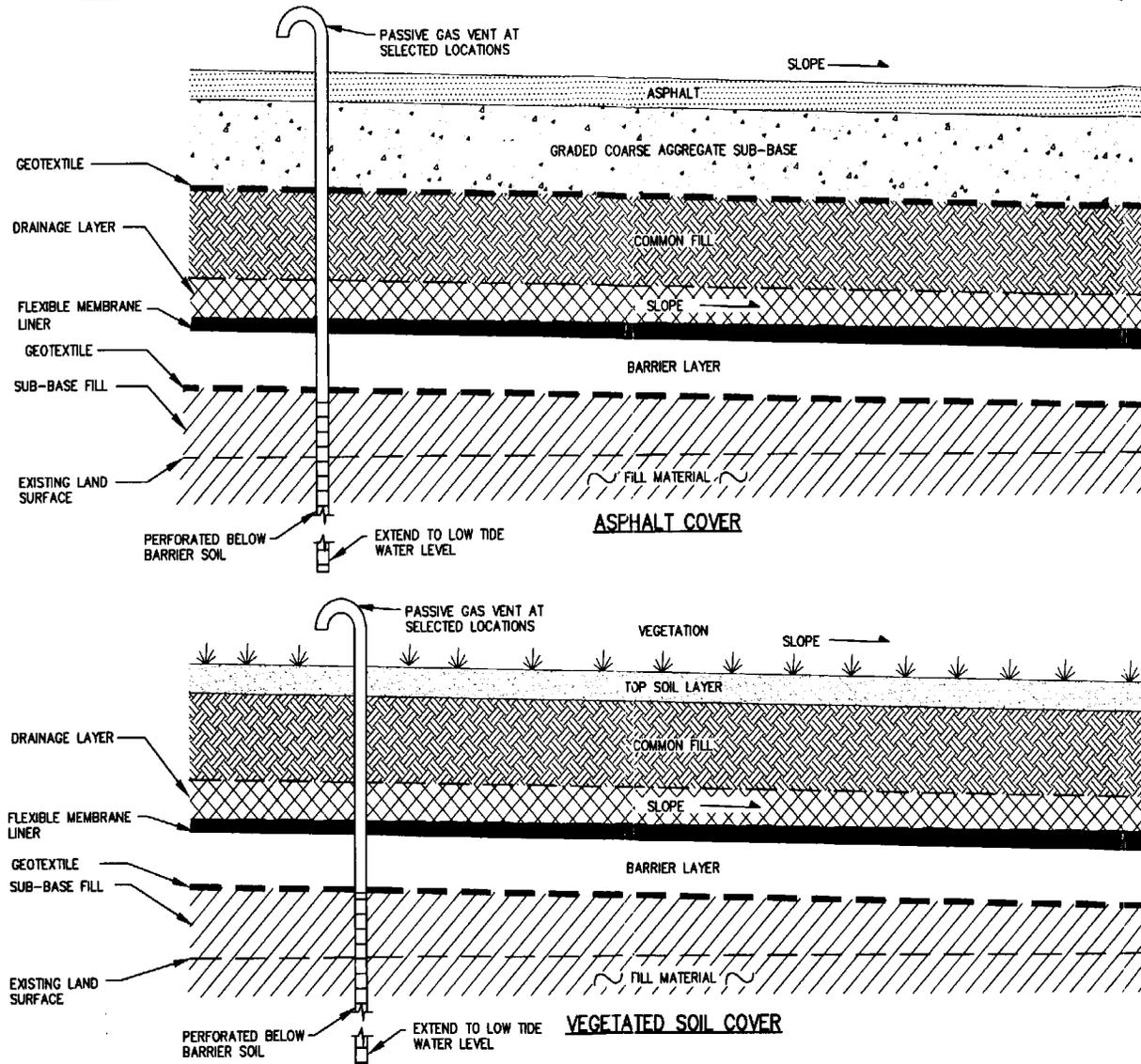


SOURCE: FIGURE 8-5 AND FIGURE 8-6 OF FEASIBILITY STUDY REPORT

NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES	DRAWN BY	DATE	Tetra Tech NUS, Inc. CONTRACT NO. 6515 OWNER NO. 0232 APPROVED BY _____ DATE _____ APPROVED BY _____ DATE _____ DRAWING NO. FIGURE 2-6 REV. 0
							HJP	3/23/01	
							Checked by	DATE	
							COST/SCHED-AREA		
							SCALE	AS NOTED	

FORM CADD NO. T&NUS_M4.DGN - REV 0 - 1/20/98

ACAD: 6515CD05.dwg 03/26/01 HJP



NOTE:
 COVER CROSS-SECTIONS ARE BASED UPON RCRA SUBTITLE C REQUIREMENTS, USING STATE OF MAINE SOLID WASTE MANAGEMENT RULES AS GUIDANCE. SPECIFIC CAP COMPONENTS WILL BE DETERMINED DURING THE CAP DESIGN.

SOURCE: CONCEPTUAL VERSION OF FIGURE B-7 OF THE FEASIBILITY STUDY REPORT

NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES	DRAWN BY HJP	DATE 3/23/01	Tetra Tech NUS, Inc. CONCEPTUAL CAP CROSS SECTIONS UNDER ALTERNATIVE 3 OPERABLE UNIT 3 PORTSMOUTH NAVAL SHIPYARD KITTERY, MAINE	CONTRACT NO. 6515	OWNER NO. 0232
							CHECKED BY DTC	DATE 4/12/01		APPROVED BY	DATE
							COST/SCHED-AREA			APPROVED BY	DATE
							SCALE NOT TO SCALE			DRAWING NO.	REV.
									FIGURE 2-7	0	

FORM CADD NO. T4MUS_BLDGN - REV 0 - 1/20/98

3.0 RESPONSIVENESS SUMMARY

The Responsiveness Summary is a concise and complete summary of significant comments received from the public and includes responses to these comments. The Responsiveness Summary summarizes information about the views of the public and regulatory agencies regarding both the remedial action decision and general concerns about the site. It also documents in the record how public comments were integrated into the decision-making process and provides answers to major comments.

This Responsiveness Summary for the comments received on the Proposed Remedial Action Plan (PRAP) for Operable Unit 3 (OU3) at Portsmouth Naval Shipyard (PNS), Kittery, Maine was prepared after the public comment period (which ended on March 1, 2001) in accordance with guidance in "Community Relations in Superfund: A Handbook" (OSWER Directive 9230.0-3B, January 1992) and consists of the following three sections: An overview, the background on community involvement with the site, and a summary of the comments received on the PRAP and the Navy's responses.

Overview

The PRAP for OU3 as presented to the public identified a hazardous waste landfill cover, institutional controls, erosion controls, and monitoring to address soil and groundwater within the boundary of Jamaica Island Landfill (JILF) at PNS in Kittery, Maine.

Comments were received from 30 community members, 2 organizations (Clean Water Action and Seacoast Anti-Pollution League), and the City of Portsmouth. The majority of comments indicated concerns with the separation of the source control (OU3) remedy from the management of migration (OU6) remedy and the need for a cut-off barrier in addition to the landfill cover to protect human health and the environment. In addition, four comments indicated a preference for complete removal of the landfill and one comment indicated a preference for no action (Alternative 1).

Background on Community Involvement

The Navy solicits community involvement in PNS's Installation Restoration Program (IRP) throughout the remedial investigation and remedial action process through presentations at PNS's Restoration Advisory Board (RAB) meetings, by responding to comments from RAB members on documents provided for review and comment, and formally as part of public comment periods for specific documents. The following provides a discussion of community involvement for the remedy for OU3 through the RAB and as part of the public comment period on the PRAP for OU3.

RAB Involvement

The RAB generally meets every two months and provides the forum for discussion and exchange of information between the Navy, regulatory agencies, and the community on environmental restoration activities. It provides an opportunity for individual community members to participate in the decision-making process by providing input to the decision makers for various IRP sites, including OU3. RAB meeting minutes are prepared for each RAB meeting and are distributed to the RAB members for review. RAB updates are prepared for each meeting and distributed to the PNS IRP mailing list. The RAB community members are also invited to participate in technical meetings that are held to resolve specific issues related to the IRP sites. Technical meeting minutes are prepared for each technical meeting and distributed to the RAB members. RAB meeting minutes, RAB updates, and technical meeting minutes are also included in the Information Repositories for PNS.

The draft Feasibility Study Report for Operable Unit 3 was presented at the November 18, 1999 RAB. The Feasibility Study (FS) identifies and summarizes the evaluation of the potential cleanup alternatives being considered for the JILF. At the request of the RAB, specific components of the alternatives evaluated were presented in more detail at subsequent RAB meetings. These included conceptual presentations of the capping component at the May 25, 2000 meeting and the wetlands component of shoreline erosion controls at the August 3, 2000 meeting. The Navy made other additional presentations to the RAB concerning specific aspects of the FS and the proposed remedy for the JILF. These included a presentation on alternative components to address migration of groundwater (monitoring and/or containment systems) at the September 21, 2000 RAB, a presentation of the draft PRAP for OU3 at the November 30, 2000 RAB meeting, and a presentation of the Navy's decision to separate "source control" from "management of migration" at the November 30, 2000 RAB meeting.

Three technical meetings were held related to the development of the FS for OU3. The first meeting was held on February 10, 2000 to discuss alternative landfill covers. The second meeting, held on April 4, 2000, was organized to discuss and determine action items to resolve follow-up comments on the draft FS for OU3. The third meeting held on September 13, 2000, focused on discussing seep issues associated with the JILF.

In addition to the information presented at the meetings, the RAB also received copies of the documents produced as part of the FS and proposed remedy for the JILF. These included the draft, draft final, and final OU3 FS documents (including the interim submittals and responses to comments on the FS); the draft, draft final, and final version of the OU3 PRAP; and the Navy's OU3 FS Clarification Memorandum (dated November 21, 2000), which discusses the Navy's decision to separate OU3 and OU6. Comments

from the RAB members on these documents have been addressed by the Navy and responses were distributed to the RAB.

Public Participation During Public Comment Period

The public comment period for the PRAP for OU3 was held from January 31, 2001 through March 1, 2001. An Informational Open House was held on February 1, 2001 at the Courtyard Marriott in Portsmouth, New Hampshire. The meeting was held to provide a forum for the Navy to respond to public questions and concerns about the proposed cleanup remedy. The Public Hearing was held on February 22, 2001 at the Courtyard Marriott in Portsmouth, New Hampshire, where the Navy accepted oral public comments. Written comments were accepted throughout the public comment period.

Summary of Comments Received During The Public Comment Period and Navy Responses

During the public comment period, verbal comments were received from 16 community members and 2 organizations (Clean Water Action and SAPL) and written comments were received from 14 community members and from the City of Portsmouth. Additional written comments were also received from Clean Water Action. The transcript from the February 22, 2001 public hearing and a copy of the written comments are provided in Appendix B. The public comments have been separated in to five categories; Comments on PRAP Alternatives; Comments on Separation of Operable Units and Monitoring of Seeps; Comments related to Human Health and Environmental Risk Concerns; Comments on the CERCLA Process; and Additional Comments. A summary of the comments with responses is provided below.

Comments on PRAP Alternatives

Comment 1: A cut-off barrier in addition to the cap (proposed in Alternative 3) is needed at this site to address tidal impacts to the sites, including impacts from migration of groundwater/seeps offshore, from sea level rise, and storm events.

Response: The Navy recognizes concerns have been expressed by members of the community related to the need for a cut-off barrier at the JILF. Based on available information, the Navy, USEPA, and MEDEP have determined that a cut-off barrier is not necessary at this time. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process is a risk-driven process. As part of this process, the Navy uses USEPA risk assessment methodology to identify potential risks to human health and the environment associated with a site and to calculate the risk ranges. If a site is found to pose an unacceptable risk to human health or the environment, then possible remedies to address these risks are identified and evaluated in an FS. Based on available information, the migration of groundwater offshore from the JILF does not represent a current or potential future risk that requires a

cut-off barrier. The tidal impacts to the landfill were considered as part of these evaluations. The studies included groundwater fate and transport modeling to evaluate the potential for chemicals in the soil and groundwater at OU3 to move in the environment. The modeling used a conservative approach to estimate the potential current and future impacts on the groundwater from chemicals in the soil. The modeling assumed the maximum soil concentrations detected in the landfill (regardless of whether or not it was in contact with groundwater) were the average concentrations throughout the landfill. The modeling also assumed that the source was constant over time (i.e., the source did not get any smaller) and the source was located one foot from the shoreline. So the modeling conducted should be a worst case estimate of current and future potential impacts to groundwater from tidal impacts to the landfill.

Review of available information on global warming and sea level rise show there is a wide range of opinions and conflicting information on the time frame and rate for sea level rise (some even predict a lowering of the sea level). Based on the USEPA's "The Probability of Sea Level Rise" (EPA 230-R-95-008), global warming is most likely to raise sea level 15 cm (approximately 6 inches) by the year 2050 (which is approximately 0.27 cm/year or 0.10 inches/year) and 34 cm (approximately 13 inches) by the year 2100 (which is approximately 0.32 cm/year or 0.12 inches/year). But they expect the rate will be less because of efforts to reduce pollutant emissions, and USEPA estimates these emission reduction efforts could cut the rate of sea level rise in half by the year 2025.

There are uncertainties related to global warming and associated sea level rise and increased storm events. Also, the various investigations conducted at the JILF indicate a low potential of hazardous wastes/materials at high concentrations or that are likely to move through the groundwater to adversely impact the offshore. Therefore, the Navy believes a cut-off barrier to address potential tidal impacts on the JILF is not justified at this time.

The Navy recognizes the public's concern regarding consideration of sea level rise/increased storm events in the remedy for the OU3. The Navy believes monitoring, routine inspections and maintenance (particularly of the cap and shoreline erosion controls), and 5-year reviews that will be conducted as part of the remedy for OU3 can address the public's concerns related to impact of sea level rise/storm events on the JILF. Based on these activities, the Navy will evaluate impacts to the effectiveness of the remedy (including from rising sea level and storm events) and conduct additional action as necessary to ensure the remedy remains protective of human health and the environment in the long-term. In addition, the Navy will conduct additional investigation related to potential impacts from migration of groundwater to the offshore as part of OU6. Additional information related to management of migration and OU6 are provided in the responses to Comments 13 and 15.

In terms of consideration of sea level rise and increase storm events expected as part of global warming in the design of the cap component of the OU3 remedy, based on the Navy's previous experience at other coastal landfills, the extent of synthetic materials in the vicinity of the shoreline have been governed by slope stability concerns using a 100-year flood elevation. Assuming a higher sea level elevation from global warming may result in greater slope stability concerns than with a 100-year flood elevation. Therefore, the Navy believes that accounting for sea level rise as part of the design of the cap, given the uncertainties related to the sea level rise, would impact the function and quality of the cap design. The Navy believes that the shoreline erosion controls that will be provided to protect the JILF shoreline from erosion should provide some protection from the impacts from increased number and severity of storms that are expected to come with the rise in sea level.

The Navy welcomes suggestions from the public on how their concerns could be addressed further as part of the remedial design for OU3 or other activities as part of the Navy's environmental restoration program at PNS. Please contact the PNS Public Affairs Office at 207-438-1140 for information on how to provide suggestions to the Navy.

Comment 2: The long-term monitoring program as part of the selected alternative should consider continuous monitoring and real time monitoring to identify whether there is any change in conditions at the site that may result in releases of hazardous materials from the site. Also, what contingency actions will be conducted based on the results of the monitoring?

Response: Monitoring is required whenever waste is left in place, and is included as a component of the remedy selected for the JILF. The specifics of the monitoring program, including what to sample, when and how often to take samples, what to test the samples for, how to evaluate the data, and what actions are required based on this evaluation, will be developed after the Record of Decision (ROD) for OU3 is signed. The Navy plans to use the USEPA's Data Quality Objective (DQO) process for the development of the monitoring program for OU3. DQO meetings will be held as technical meetings and the results of the meeting will be documented in the meeting minutes. The final output from the DQO process will be the monitoring plan for OU3 and draft, draft final, and final versions of the monitoring plan will be provided to the regulators and RAB for review and comment.

During development of the monitoring program, the Navy will identify the specific decision points that will be made based on evaluation of the data collected. The decision points will be identified as part of the monitoring program development. The decisions may require additional and/or more frequent monitoring or additional action, as necessary to provide for long-term effectiveness of the remedy. A formal contingency action or contingency plan (where the specific contingency action is identified at the current time) is not included in the remedy for OU3. This allows the additional action, if necessary, to be tailored

to the specific problem that needs to be addressed at such a time it is required. Typically, long-term monitoring programs identify decision points so that additional action is taken before there is an adverse impact to human health or the environment.

Comment 3: Why does Alternative 5 disqualify as a source control remedy, but Alternative 1 (no action), which is not a source control remedy, is included in the PRAP?

Response: As provided in the Summary of Remedial Alternatives in the PRAP, Alternative 1 (No Action) is presented as a baseline for comparison with other remedial action alternatives as required by regulation. Therefore, regardless of whether the No Action Alternative meets the remedial action objectives, it must be included in the FS and in the PRAP for comparison to existing conditions. With the exception of the No Action Alternative, only alternatives that meet the remedial action objectives are considered for selection for a remedial action. Five remedial action objectives were originally identified for the JILF; four relate to source control and the fifth relates to both source control and management of migration. When the JILF was separated into two operable units, OU3 (source control) and OU6 (management of migration), the fifth remedial action objective no longer applied to source control for OU3. Based on additional evaluation by the Navy after receiving comments on the draft PRAP, the cut-off barrier included in Alternative 5 was considered only to meet this fifth remedial action objective related to management of migration and was removed from the draft final PRAP for OU3.

Comment 4: Alternative 5, included in the draft PRAP, should not have been deleted from the final PRAP. Deleting important information at the 11th hour is not the way to gain public trust.

Response: In hindsight, the Navy recognizes the PRAP would have been easier to explain and understand if Alternative 5 had been removed from the draft PRAP before it was presented to the RAB. Navy personnel hoped that in their explanation of the separation of the Operable Units that the RAB, and subsequently the public, would understand that Alternative 5 (included in the FS for OU3), no longer applied to the OU3 remedy which addresses source control only. Based on later feedback from RAB members and other members of the community, the Navy did not do an adequate job of explaining this during the November 2000 RAB meeting. In the time between the RAB meeting and the public comment period on the PRAP, the Navy deleted Alternative 5 from the draft final PRAP in response to comments received from the USEPA. In response to the many comments on the PRAP and questions by RAB members, the Navy provided an additional presentation on the OU3 PRAP and the separation of the Operable Units during the March 15, 2001 RAB meeting in an effort to more clearly explain why Alternative 5 was removed from the PRAP. In addition, the Navy prepared a fact sheet to explain the current understanding of risks for OU3 and OU6 and the separation of operable units. This fact sheet was mailed to the people included on the PNS IRP mailing list. The Navy hopes that the additional

information helped address questions among RAB members and concerned members of the public and better explained the reasons for the separation of the Operable Units and the removal of Alternative 5 from the PRAP.

Comment 5: Complete excavation of the landfill with restoration to pristine conditions is necessary to protect human health and the environment.

Response: Complete excavation of the landfill was evaluated in the FS (Alternative G) during the screening of alternatives. This alternative was screened out in the FS because there were concerns with the effectiveness, implementability, and cost of the alternative. Specifically some of the concerns are that a large volume of material (approximately 700,000 cubic yards) would need to be excavated and transported off site for treatment and disposal. Assuming off site areas (off the Shipyard) were available for disposal of the excavated materials, the excavation was estimated to take approximately 16 years and costs estimated to be greater than a billion dollars. During excavation of materials, considerable planning and engineering controls would be required to ensure that the environment and worker health and safety would not be adversely impacted. The other alternatives developed could provide protection of human health and the environment and meet regulations for the site/activity with less concerns during construction and more cost-effectively, therefore, the alternative was considered one of the least feasible options and was eliminated from further consideration in the FS.

Comment 6: Alternative 1 is the best choice.

Response: Alternative 1 (No Action) would not meet the remedial action objectives (e.g., prevent human exposure to soil/waste materials or groundwater) and therefore does not provide adequate overall protection of human health and the environment. Therefore, the Navy is not selecting Alternative 1 for the JILF. Evaluation of a No Action alternative is required by regulation even when No Action will not meet the remedial action objectives.

Comment 7: There is no clear monitoring plan in any of the alternatives or cost estimates for the alternatives. Under Alternative 1 (no action), the Navy will still need to monitor; however there are no cost estimates for Alternative 1. Therefore, it is unlikely that the cost estimates for the alternatives presented in the PRAP are adequate.

Response: Alternative 1 (No Action) does not include monitoring or any other action (including institutional controls or five-year review); therefore there is not cost associated with this alternative. All other alternatives considered for the JILF include a monitoring component and therefore, the cost

estimates include costs for monitoring. The specifics of the monitoring plan will be determined using the DQO process after the ROD is signed.

Comment 8: The remedial alternatives evaluated by the Navy are incomplete and there are a lack of adequate options. Alternative 5 was removed from consideration and there is no consideration of complete or partial removal.

Response: As part of an FS, technologies to address site contaminants and conditions are identified and alternatives are developed to meet the remedial action objectives. The alternatives then may be screened to identify the most feasible alternatives for further evaluation. For a landfill such as the JILF, the most typical remedy (the presumptive remedy) is capping. However, during the identification and screening of alternatives, a range of alternatives were developed that could meet the remedial action objectives (RAOs). The more feasible alternatives were retained for further evaluation. Complete excavation and partial removal of the landfill alternatives were developed in the FS and then eliminated during the screening of alternative stage because it was considered one of the least feasible options for the JILF. A cap with a cut-off barrier (Alternative 5) was retained for further evaluation. During preparation of the FS, MEDEP raised some concerns related to the seeps that would require additional investigation to address and the agencies decided that "source control" and "management of migration" needed to be separated (see additional discussion under the Comments on Separation of Operable Units and Monitoring of Seeps). The cut-off barrier (included in Alternative 5) was considered only to address "management of migration" and was not related to the "source control" remedy. Therefore, for a "source control" remedy under OU3, a cut-off barrier (Alternative 5) was removed from consideration at this time. If at any time during the evaluation of the effectiveness of the remedy for OU3, the evaluation of the interim remedy for OU4, or during the evaluation of the additional information for OU6, it is determined that additional action is necessary to address migration of groundwater/seeps from the JILF to the offshore, then the Navy will take action, and a barrier would likely be one of several alternatives considered at that time.

The Navy has agreed to re-evaluate the feasibility of consolidating portions of the landfill (in the Jamaica Cove area and the vicinity of the former location of Mercury Burial Site II) into the existing landfill. The evaluation will be conducted as part of the pre-design investigation and cap design and addresses issues related to both OU3 and OU6.

Comment 9: Alternatives 1 and 2 are do nothing choices and the State of Maine would not agree to such choices so they do not represent genuine options. Alternatives 3 and 4 are merely variations on the same theme and those technical variations could have been left to the design phase.

Response: Alternative 1 (no action) must be evaluated in accordance with CERCLA regulations. Alternative 2 was evaluated as a limited action alternative and it meets the CERCLA requirements. Alternatives 3 and 4 are similar and are variations on cap components that would meet the same required regulations, but vary on how they consider State of Maine Solid Waste Regulations (which will be considered during the design where appropriate). The major difference between Alternatives 3 and 4 is the method in which the cover minimizes water (such as from rainfall or snow) from infiltrating and coming in contact with underlying landfill materials. Both alternatives include a drainage layer with an underlying barrier layer above the landfill materials to minimize the infiltration. The drainage layer in Alternative 3 would help the water drain faster away from landfill to minimize water coming in contact with barrier layer and underlying landfill materials. Specifically the cover in Alternative 3 features an "enhanced drainage layer with a high-flow capacity" that provides better drainage than a standard drainage layer (such as that included in Alternative 4). The barrier layer in Alternative 4 would be designed to be better at preventing water from going through the layer to the underlying landfill material than a standard barrier layer (such as included in Alternative 3). Evaluation of the ability of the two covers to minimize water from permeating through the cover to underlying landfill material indicates that the two are equally effective (both would prevent over 99 percent of rainfall/snow from going through the cover to the underlying landfill materials). However, availability of materials for the cover layers, the constructability, and costs are likely to be better for Alternative 3 than for Alternative 4 (particularly based on the ability to use on-site materials as part of the cover design for Alternative 3).

Comment 10: The USEPA has so far gone along with the Navy's proposals for the JILF. They now stand alone as the only signatory on this decision in a position to call for a real remedial action plan. There is still time for the USEPA to come forth to protect human health and the environment by demanding the Navy place a barrier as well as a cap at the JILF.

Response: One of the threshold criteria for selection of a remedy is protection of human health and the environment. This means that no remedy can be selected unless it meets this CERCLA criterion. EPA believes that the source control remedy outlined in the draft ROD is protective of human health and the environment. In addition, based on available information, the migration of groundwater offshore from the JILF does not represent a current or potential future risk that requires a cut-off barrier. This finding will be re-evaluated in relation to the OU6 studies and decision-making process.

Comment 11: Will the shoreline erosion controls (rip-rap and/or wetlands) be as effective as a barrier to stop any kind of leakage?

Response: The purpose of the shoreline erosion controls is to prevent the wearing away of soil/fill material along the shoreline from tidal action of the surface water. While the shoreline erosion controls

may reduce some of the tidal infiltration, it is not a barrier/containment system that will minimize groundwater from migrating offsite.

Comments on Separation of Operable Units and Monitoring of Seeps

Comment 12: Why was a last-minute decision made to separate OU3 and OU6?

Response: The separation was made so that the remedy for soil and groundwater within the boundary of the JILF would not be further delayed while addressing MEDEP's concerns related to the seeps. The Navy, USEPA, and MEDEP are all in agreement that a cap is needed to reduce human health risks from exposure to the site soils and groundwater. The three agencies decided that "source control" and "management of migration" needed to be separated because the seeps do not pose an immediate threat to human health and the environment, the agencies want to take action on installation of the cap as soon as possible, and separating OU3 and OU6 would provide the additional time needed to properly address concerns that MEDEP has about the seeps without delaying installation of the needed landfill cap. The following provides a discussion of the rationale and timeframe related to the separation:

During development of the OU3 Feasibility Study, the MEDEP identified a concern with the seeps found on the OU3 shoreline. MEDEP has determined additional information is required to determine whether the water coming from the seeps that could have chemical concentrations exceeding surface water quality criteria may adversely impact the organisms exposed directly to the seeps. In September 2000, a technical meeting was held to resolve the MEDEP's seep issues. Although the Navy and USEPA indicated that the concern could be addressed as part of a comprehensive remedy for OU3, the MEDEP indicated that more information is needed before they could identify a remedy for seeps/management of migration. To address the MEDEP's concern without further delay of a remedy for the soils and groundwater within the boundary of the landfill, the Navy split off seeps/management of migration from OU3 and created a new operable unit, OU6. The decision was made during the October 23, 2000 conference call that was held between the Navy, USEPA, and MEDEP. The USEPA issued a letter (dated October 24, 2000) documenting the outcome of the conference call, wherein all the parties agreed to pursue only a source control remedy for OU3 at this time. The Navy prepared a clarification memorandum (dated November 21, 2000) to accompany the OU3 FS that explains the separation of OU3 and OU6 and clarifies that the OU3 FS was finalized without addressing the separation of operable units. The Navy also discussed the separation of OU3 and OU6 at the November 30, 2000 RAB meeting.

Comment 13: The Navy should not separate "source control" from "management of migration" for the JILF when the impacts to the offshore and nearshore environment via seeps from the JILF are not clearly

understood. The remedies for OU3 and OU6 should occur concurrently and should include monitoring of seeps and thorough evaluation of containment methods to control groundwater migration from the JILF.

Response: Various investigations have been conducted related to the chemicals at the JILF and the potential for future impact on the offshore. The results of these investigations indicate that the JILF has a low potential to impact the offshore in the future. The Navy believes that the interim monitoring program that was developed to address the offshore and nearshore areas (OU4) that is currently being conducted will provide additional understanding to the current and potential future impacts. MEDEP agrees that they are ready to identify a remedy for source control, but they do not believe that they have enough information to identify an appropriate remedy for management of migration at this time. MEDEP raised a question during development of the OU3 FS about the impacts the seeps were having directly on the plant and animal life living in the seeps. Addressing MEDEP's concerns will take additional time that would delay the construction of the source control remedy, a landfill cap. All three agencies are in agreement that the cap is needed at this time to reduce human health risks from exposure to the site soils and groundwater, and that containment is not required based on the information currently available. The three agencies decided that "source control" and "management of migration" needed to be separated because the seeps do not pose an immediate threat to human health and the environment, the agencies want to take action on installation of the cap as soon as possible, and separating OU3 and OU6 would provide the additional time needed to properly address the MEDEP's concerns about seeps without delaying installation of the landfill cap.

The Navy's original timeline indicated they would begin investigation of the seeps under OU6 after construction of the landfill cap was complete and the soil and groundwater had sufficient time to settle. Based on comments received from the MEDEP on the schedule for OU6 and the concerns raised by the public during the comment period on the PRAP for OU3, the Navy, in consultation with the USEPA and MEDEP, has agreed to take action on OU6 sooner by incorporating the following activities related to OU6 into the ROD for OU3:

- Initiate development of a work plan for the additional investigation for OU6 by holding a DQO meeting within 60 days of signing of the ROD for OU3.
- Complete the work plan for the additional investigation for OU6 by the time the JILF cap construction is complete.
- Evaluate the possibility of wetlands construction specifically for water quality improvement to address groundwater migration from the JILF.

The Navy plans to use the USEPA's DQO process for the development of the work plan. The DQO process is a logical process that assists with identifying the objectives of the work, the necessary sampling and testing requirements, and the evaluation and decisions that will be made once the data are collected. Through the DQO process a sampling plan for OU6 will be developed that includes information on where to collect samples, how many samples to collect, how and when to collect them, and what they will be tested for. The DQO meetings are held as technical meetings and the results of the meeting will be documented in the meeting minutes. The first DQO meeting for OU6 will be held within 60 days of the signing of the ROD for OU3. The final output from the DQO process is the work plan. The draft, draft final, and final versions of the work plan for OU6 will be provided to the regulators and RAB for review and comment. The final work plan will be complete and ready to use when the JILF cap is complete. The work plan and meeting minutes will be included in the PNS Information Repositories, which are available to the public in the Kittery Town Hall and the Portsmouth Library.

In addition to the items specifically associated with OU6, the Navy has agreed to re-evaluate the feasibility of consolidating portions of the landfill (in the Jamaica Cove area and the vicinity of the former location of Mercury Burial Site II) into the existing landfill. The evaluation will be conducted as part of the pre-design investigation and cap design and addresses issues related to both OU3 and OU6.

Comment 14: What is the timeline for study and remediation of OU6 and what funding will be available to deal with OU6?

Response: The Navy has agreed to hold a DQO meeting for OU6 within 60 days of signature of the OU3 ROD and to finalize the work plan for the OU6 sampling by the time the cap construction at the JILF is complete. The work plan will include a schedule for the fieldwork, report and subsequent steps in the CERCLA process. A proposed schedule for the work plan for OU6 will be provided in the Amended Site Management Plan for Fiscal Year 2002 (the draft is scheduled to be submitted by June 15, 2001). Prioritization of studies for OU6, and other areas covered by PNS' IRP is performed in accordance with the Federal Facilities Agreement (FFA) for PNS, the Department of defense (DOD)'s Relative Risk Evaluation Framework, availability of funds, and input from the RAB members (USEPA, MEDEP, community members, and natural resource trustees).

Comment 15: How does the new OU6 relate to OU3 and OU4. How will the OU3 remedy currently proposed by the Navy affect OU6?

Response: OU3 addresses the source materials (soil, landfill debris, and groundwater) contained within the boundaries of the JILF. OU4 includes the offshore areas of PNS. OU6 has been identified to address migration of groundwater from OU3 to OU4 via the seeps in the intertidal area of the JILF shoreline.

Although OU4 includes the intertidal area of the JILF shoreline, OU4 focuses on the sediment in the offshore area (both intertidal and subtidal). The interim offshore monitoring program for OU4 can be used to determine the potential impact of the OU6 groundwater migration/seeps on the sediment (and biota). If a potential impact to the offshore is found that relates to OU6 groundwater migration/seeps, then action to stop/control the migration would be evaluated and conducted as necessary as part of OU6.

Because the remedy for OU3 includes shoreline erosion controls in the intertidal area, the seeps may no longer be present in the intertidal area after construction of the cap is complete. Therefore, the MEDEP's concern related to organisms exposed directly to the seeps may no longer be an issue. However, as discussed in the response to Comment 13, the Navy will prepare a work plan for investigation of OU6 (using the DQO process). The Navy will conduct the investigation in accordance with the work plan. Based on the information obtained during the investigation, risks related to groundwater migration will be calculated and a feasibility study will be conducted. If necessary, a remedy to address risks related to the seeps will be identified. The remedy could indicate that additional monitoring specifically for OU6 is needed, that OU3 and OU4 monitoring are sufficient for OU6, or that active measures for management of migration (e.g., barrier wall or groundwater collection) are necessary.

Comments Related to Human Health and Environmental Risk Concerns

Comment 16: Without containment at the JILF, daily tidal action and the current groundwater seepage will continue to flush contaminants from the JILF and introduce them into the intertidal nearshore and offshore environments. These represent continued risk to human health and the environment.

Response: When evaluating whether a site represents a health or environmental concern, the type of chemical and the chemical concentrations must be considered. The presence of a chemical at detectable levels does not necessarily indicate a health/environmental concern. Chemicals were detected in the seeps and sediments along the shore of the JILF at low concentrations in comparison to human health risk standards [the risks identified were within or below the CERCLA risk range (between 10^{-6} and 10^{-4}) and below the MEDEP risk guidelines (1×10^{-5})]. Risk evaluations indicated that there are no human health concerns for people (or children) who may play along the shoreline of the JILF because of chemicals in the seep or sediment (see the Feasibility Study Report for Operable Unit 3, TtNUS, May 2000a for more details). The chemical concentrations in the sediment and surface water in the vicinity of the Shipyard are also low in comparison to human health risk standards and there are no human health concerns because of chemicals in the sediment or surface water. Explaining the human health concerns related to seafood ingestion is a little more complicated. There are a variety of chemical and biological sources present in the lower Piscataqua River. There are shellfish closures or restrictions in the lower Piscataqua River currently imposed by the States of Maine and New Hampshire because of

biological contamination primarily from sewage treatment plants and from private septic systems in previous years. In addition, there are seafood consumption advisories in place by the States of Maine and New Hampshire. The risk evaluation for seafood consumption indicated that the concentrations of chemicals in the vicinity of Shipyard were similar to elsewhere in the lower Piscataqua River. However, as part of the interim offshore monitoring program development, the Navy is collecting sediment, mussel, and juvenile lobster data (see the Interim ROD for OU4, Navy 1999 and Interim Offshore Monitoring Plan for OU4, TtNUS, October 1999 for more details).

Comment 17: Will the delay for addressing management of migration (OU6) result in risks to human health and the environment? What are the risks to human health from the seeps?

Response: The Navy does not believe that the delay for OU6 will result in unacceptable risks to human health and the environment. The risk evaluation for the seeps indicate that there are no human health concerns for exposure to the seeps. The offshore ecological concerns are being addressed as part of OU4 and the interim remedy for OU4 is currently being implemented. The MEDEP's specific concern related to seeps involves a small portion of the intertidal area, namely the organisms that live in the seeps. These concerns are localized; however, the Navy believes that appropriate data are currently being collected as part of OU4 that will be able to identify potential risks to the environment from the seeps. The investigation for OU6 will provide the data/information necessary to address the concerns related to seep. The objectives of the investigation will be determined as part of the DQO development for OU6.

Comment 18: The Navy needs to implement a testing protocol for the seeps from the landfill as well as intertidal monitoring to insure that at a minimum the public can be notified if there is any danger of contamination through eating fish or shell fish from the waters around the JILF.

Response: The Maine and New Hampshire Departments of Health are responsible for informing the public of restrictions on eating fish or shell fish in the waters of the respective States. The States of Maine and New Hampshire have advisories for seafood and fish consumption because of contamination in the Piscataqua River from other sources. The State of Maine determined no additional advisories are required for any chemicals specifically associated with the JILF. The Navy is conducting interim monitoring, which includes monitoring in the intertidal area of the JILF, in accordance with the Interim Record of Decision for OU4 (Navy, May 1999) and the Interim Offshore Monitoring Plan for OU4 (TtNUS, October 1999). The monitoring includes collection and testing of sediment, mussel, and juvenile lobster. Three rounds of monitoring have been completed and the fourth round will begin in the beginning of May 2001. The data will be evaluated to determine whether the PNS onshore sites are potentially adversely impacting the offshore (currently or in the near future). In addition, the Navy has provided and

will continue to provide the appropriate agencies of the States of Maine and New Hampshire with data from the various offshore investigations, including the interim offshore monitoring, so that the States have the available data for the offshore of PNS.

Comment 19: What impact will dioxin concentrations detected in the soil at the JILF and in the sediment, mussel, and juvenile lobster near the JILF have on the results of the risk assessments? Dioxin testing of the seeps wasn't conducted; therefore, there is not sufficient information to determine whether dioxins are leaching out of the landfill. Finding dioxin in the seeps could alter the risk level of the site significantly. Also, evaluation of the available dioxin data may change the risk assessment conclusions significantly.

Response: In terms of risks related to soil and groundwater within the JILF boundary, dioxin concentrations detected in soil during the February/March 2000 test pitting does not impact the understanding or results of the risk evaluation. As part of the Revised OU3 Risk Assessment (TtNUS, May, 2000a), risks were identified within the CERCLA risk range (between 1×10^{-6} and 1×10^{-4}) and above MEDEP's risk guidelines (1×10^{-5}). Based on the risks identified, the Navy evaluated alternatives in feasibility study and proposed a landfill cap. Performing a new risk assessment, which includes dioxins, on the soil and groundwater within the JILF will not cause the Navy to select a different source control remedy because the remedy will address all chemicals detected within the landfill (including dioxin) by putting a physical barrier to prevent contact with soil and using institutional controls to restrict land use and use of fresh groundwater for drinking. The Navy will use the DQO process to determine components for the OU3 monitoring program including monitoring media (e.g., groundwater), analytes (e.g., inorganic and organic chemicals), and decisions (e.g., the need for additional action) (please see the response to Comment 2 for additional information regarding DQOs).

The Navy will also be developing a work plan to address MEDEP's concerns regarding the seeps using USEPA's DQO process (to be used for the development of the investigation program for OU6, management of migration from the JILF as discussed in the response to Comment 13). Following the seep investigation, the risks associated with the seeps will be evaluated and appropriate action to address the risks will be determined.

The Navy believes that risks to human health and the environment from chemicals present in OU3 and OU6 media (including dioxins), will be addressed as necessary by the remedy for OU3 (through covering of site material, institutional controls, and monitoring) and the investigation program for OU6 (through development and implementation of the investigation program) to ensure that human health and the environment are not adversely impacted from the JILF.

Comment 20: A strong potential exists for future releases from undiscovered steel drums in the JILF. Investigations to date were limited and did not prove that additional drums are not present elsewhere in the JILF.

Response: The JILF is a heterogeneous landfill, where a variety of materials were deposited between 1945 and 1978. Remedial investigations at the JILF, including the RFI, RFI Data Gap, Groundwater Monitoring, February/March 2000 test pitting, and test pitting related to the mercury burial sites were conducted to further identify the type, quantity, and location of wastes present in the JILF. As part of these investigations forty drums of non-hazardous materials were found (at one location) and removed from the landfill and one drum of non-hazardous material (resembling Portland cement) at another location was found and left in place. With exception of the mercury burial sites, no other drums of hazardous materials have been found during the various test pitting, soil sampling, or soil boring/monitoring well installation activities that have been conducted as part of the remedial investigations. In addition, the landfill has been characterized as containing a large quantity of low level wastes. This means that the USEPA, MEDEP, and the Navy all believe that the JILF does not contain hazardous wastes that are at high concentrations (i.e., hot spots) or that are likely to move in to the groundwater. The characterization of the landfill is based on the various investigations conducted at the JILF, including surveys, test pitting, soil sampling, and groundwater monitoring. The concrete vaults at the mercury burial sites, which encapsulated the mercury contaminated materials (liquids and solids) in drums, were excavated and disposed off site. The concrete vaults were intact and there was no indication of any leakage from the vaults. Therefore, the Navy believes that there is a low potential for the presence of drums of hazardous materials in the landfill and that any potential future releases can be appropriately addressed in a monitoring program as part of the remedy for OU3.

Comment 21: Most of the quantitative analysis to date has focused solely on the human health risk at the immediate landfill site. However, there has been little data generated related to the overall health of the ecosystem or whether it will ever be safe to fish and swim in the Piscataqua River.

Response: Evaluation of human health and ecological risks in the offshore area have been conducted. The risk assessments focus on the risks associated with PNS IRP sites. The Navy cannot use remedial funds to investigate the overall health of the Piscataqua River. Based on the risk assessments conducted by the Navy, the offshore area of PNS is considered safe for human exposure. However, the States of Maine and New Hampshire have issued seafood advisories in place because of contamination from all sources in the Piscataqua River estuary. Please also see the response to Comment 18 related to recent OU4 monitoring and provision of data to the States of Maine and New Hampshire.

Comment 22: The sediment in the offshore area of the Shipyard is heavily contaminated with lead and other toxins and there should be no additional contamination from the seeps added to what is already there.

Response: The ecological risk assessment for the offshore indicated low risks in the offshore areas in the vicinity of OU3 and OU3 seeps (i.e., Jamaica Cove and Clark Cove). The Navy is conducting interim offshore monitoring that included consideration of seep impacts to sediment. The data will be evaluated (in accordance with the interim offshore monitoring plan) to determine whether there is a potential impact to the sediment from the PNS onshore sites.

Comment 23: Contaminants present in Sullivan Point have been shown to pose a significantly higher risk to human health and safety and the Navy has not been able to rule out that some of the contamination may come from the landfill. There exists the possibility that fractures in bedrock allow the JILF groundwater to migrate in the direction of Sullivan Point.

Response: The offshore risk assessments, which included Sullivan Point, did not show unacceptable risks to human health at Sullivan Point. The concern that the JILF is currently impacting Sullivan Point was raised previously by the MEDEP and SAPL (on the draft version of the Seep/Sediment Summary Report, TtNUS, August, 2000). Investigations conducted in November 1995 and in August 1999 indicate that the groundwater from OU3 flows toward Clark Cove and not toward Sullivan Point.

Comments on the CERCLA Process

Comment 24: How will the public's concerns related to the remedy for OU3 be addressed under the CERCLA process?

Response: Many of the concerns related to human health and the environment associated with the seeps and offshore have been expressed previously by RAB members and discussed by the Navy at RAB meetings and through response to comments on the various documents related to the development of the PRAP. The Navy has been aware that several members of the RAB seemed to have a preference for a cut-off barrier or containment system to address groundwater migration. However, based on the information available at this time, the risks for the site do not support the need for containment of groundwater at this time. Because waste is left in place a long-term monitoring program is required to ensure that the selected remedy is effective in the future and to verify the remedy remains protective of human health and the environment. The concerns raised related to the separation of OU3 and OU6 and the timeframe for addressing OU6 are being addressed by incorporating several requirements into the ROD for OU3. In addition, the Navy already has a monitoring program in place that was designed to

determine whether there are potential continued adverse impacts to the offshore area, which includes the intertidal and subtidal areas. The presence of seeps in the intertidal area was considered during the program development. It was determined that monitoring of sediment in the vicinity of the seep was a better indicator of adverse impacts because contaminants tend to accumulate in the sediment. The program was developed through the DQO process and the USEPA, MEDEP, NOAA, US Fish and Wildlife, and SAPL's TAG consultant participated with the Navy in the development of the process. The Navy believes that the appropriate technical people from the various regulatory agencies and the Navy participated in the development of the monitoring program to ensure that a comprehensive monitoring program was developed for the offshore areas.

Comment 25: The cleanup process is too slow and needs to be accelerated. Why has it taken the Navy so long to come up with the solution for capping and how many more years will it take to determine a need for a barrier?

Response: The Navy began a feasibility study in 1995 that included the sites within OU3. At that time, data gaps were identified that required the Navy to conduct additional investigations before identifying a remedy for the sites within OU3. The Navy conducted four rounds of groundwater, seep, and sediment monitoring; and conducted onshore/offshore contaminant fate and transport modeling. In addition, the Navy updated the human health risk assessment for OU3. The results of the additional investigations support the Navy's evaluation that human health risks estimates are above acceptable levels for exposure to JILF soil and fresh groundwater. To address these risks the Navy is selecting a cap for the OU3. The investigations also support the Navy's conclusion that a barrier is not needed at this time. Because waste is left in place a long-term monitoring program is required to ensure that the selected remedy is effective in the future and to verify the remedy remains protective of human health and the environment. If site conditions change such that additional action is required to protect human health and the environment, the Navy will conduct the appropriate action.

Comment 26: The community's voice is not being adequately heard in the CERCLA process. Clear answers to questions were not provided at the Informational Open House on February 1, 2001. Also, the communication with the public should use less technical terms and provide less technical discussion so that the general public can understand.

Response: Through the RAB the Navy tries to obtain community input throughout the CERCLA process. The Navy solicits input from the RAB through RAB presentations, discussions at the RAB, and RAB minutes and updates. In addition, RAB members are provided with documents to review and they can provide comments to the Navy, USEPA, or MEDEP. RAB updates are mailed to the PNS IRP mailing list. However, to encourage the community to provide their concerns to the Navy at the earliest opportunity,

the Navy will attempt to provide fact sheets on a more regular basis. The fact sheets will provide in less technical terms information related to current activities or concerns for the CERCLA sites at PNS.

Comment 27: Concern that the representatives for the Navy, USEPA, and MEDEP at the public hearing are not the decision makers.

Response: The representatives of the Navy, USEPA, and MEDEP who attended the public hearing on February 22, 2001 are the personnel responsible for providing recommendations and updates to the people who will be signing the ROD, and are also the most knowledgeable in the day to day management of PNS's IRP sites.

Comment 28: Why was there no New Hampshire Environmental Protection representative involved in the remediation process when the Shipyard is so close to the boundary of New Hampshire and Maine and could impact New Hampshire waters?

Response: The Navy is strictly neutral in the current dispute between the States of New Hampshire and Maine concerning the physical location of the PNS. However, the Shipyard historically has been regarded by the State of Maine and the DOD and the Navy as being physically located within the boundaries of the State of Maine. Accordingly, the Shipyard is subject to regulation by the State of Maine and not by the State of New Hampshire. The issue of the Shipyard's location was recently before the United States Supreme Court and the Supreme Court ruled that the Shipyard is in the State of Maine. However, we wish to point out that the New Hampshire Fish and Game Department has a seat on the RAB as a Natural Resource trustee and receives all information related to the Shipyard's IRP clean up activities.

Comment 29: How do funding problems affect adequate implementation of additional remedial action based on the results of monitoring?

Response: At this time, funding has not been a factor affecting adequate implementation of remedial actions based on the results of monitoring. The goal of the monitoring plan is identify potential adverse impacts to human health and the environment to permit timely evaluation of additional remedial actions prior to implementation. However, should an immediate action be required, the Navy will work with USEPA and the states to prioritize work based on risk using the DOD's Relative Risk Evaluation Framework (DOD, Summer 1997) to address the high risk sites first.

Comment 30: Are funding and cost driving selection of remedy? How do budget cycles affect remedy selection?

Response: Remedy selection is based on CERCLA's nine criteria that are used to evaluate the alternatives and compare them to one another in the FS. The nine criteria fall into three groups: threshold criteria, primary balancing criteria, and modifying criteria. A description of the purposes of the three groups follows:

- Threshold criteria
 - The threshold criteria are (1) overall protection of human health and the environment, and (2) compliance with applicable or relevant and appropriate requirements (ARARS) (or justification of a waiver)
 - Threshold criteria are requirements that each alternative must meet to be eligible for selection.

- Primary balancing criteria
 - The primary balancing criteria are: (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 primary balancing criteria are used to weigh major trade-offs among alternatives.

- Modifying criteria
 - The modifying criteria are: (1) state acceptance, and (2) community acceptance;
 - The modifying criteria may be considered to the extent that information is available during the FS, but can be fully considered only after public comment is received on the Proposed Plan.

In the final balancing of trade-offs between alternatives upon which the final remedy selection is based, modifying criteria are of equal importance to the balancing criteria. Availability of funds is not one of CERCLA's nine criteria. Cost is one of the five primary balancing criteria that are considered of equal importance with the two modifying criteria after public comment period in selection of a remedy. Therefore budget funding and budget cycles are not considered during the remedy selection process.

Additional Comments

Comment 31: The RAB has not met since November 30, 2000, as a result a vital link in communications between the community and the shipyard was missing while some crucial decisions were being made about the JILF.

Response: The Navy discussed the RAB meeting schedule at the November 30, 2000 RAB and proposed to hold the next RAB meeting in March 2001 because of the number of meetings to be held related to the OU3 PRAP (the informational open house and public hearing), the Navy. No objections were received and the next RAB meeting was subsequently scheduled for March 2001. In addition, RAB members are encouraged to contact the Navy, USEPA, or MEDEP to indicate their concerns or concerns of the community at any time. The Navy recognizes that not all RAB members can attend the RAB meetings. At future RAB meetings and in the minutes or RAB updates from the meetings, the Navy will continue to encourage the RAB members to provide their input either through discussion at the RAB meeting or by calling or writing to the Navy, MEDEP, or USEPA; and by inviting RAB members to participate in technical meetings.

Comment 32: As part of the licensing process for a commercial hazardous waste storage facility at the Shipyard the Navy indicated that it had a schedule in place to clean up the superfund sites that currently exist. However, it appears that the Navy is now delaying cleanup for years and that no schedule is in place to determine when the clean up is going to be conducted. Therefore, the Navy should withdraw its application for a commercial hazardous waste storage facility license.

Response: Schedules from the February 2001 Amended Site Management Plan for clean up of the IRP sites at the Shipyard have been submitted as part of the license application for the commercial facility permit. The schedule for OU6 will be updated in Amended Site Management Plan for Fiscal Year 2002 (the draft is scheduled to be submitted by June 15, 2001) to reflect the schedule changes based on the addition of investigations for OU6, which will be incorporated in the ROD for OU3.

REFERENCES

W

REFERENCES

B&R Environmental, 1996. "Community Relation Plan," Portsmouth Naval Shipyard, Kittery, Maine, Brown & Root Environmental, a Division of Halliburton NUS Corporation, Wayne, PA, October.

FWENC, 1997. "Action Memorandum for Mercury Burial Site I at Portsmouth Naval Shipyard, Kittery, Maine," by Foster Wheeler Environmental Corporation, Longhorn, PA September 8.

FWENC, 2001. "Removal Action Report for Mercury Burial Vault Site II," Portsmouth Naval Shipyard, Kittery, Maine, Foster Wheeler Environmental Corporation, Langhorne, PA, June.

Halliburton NUS, 1995a. "RCRA Facility Investigation (RFI) Data Gap Report (Final)," Portsmouth Naval Shipyard, Kittery, Maine, Halliburton NUS Corporation, Wayne, PA, November.

LEA, 1986. "Final Confirmation Study Report on Hazardous Waste Sites" at Portsmouth Naval Shipyard, Kittery, Maine. Loureiro Engineering Associates, June.

McLaren/Hart, July 1992. "Draft RCRA Facility Investigation Report," Portsmouth Naval Shipyard, Kittery, Maine, McLaren/Hart Environmental Engineering Corporation, Albany, NY.

McLaren/Hart, August 1992. "On-shore Ecological Risk Assessment," Portsmouth Naval Shipyard, Kittery, Maine. McLaren/Hart Environmental Engineering Corporation, Albany, NY.

McLaren/Hart, 1993. "Addendum to RCRA Facility Investigation Report," Portsmouth Naval Shipyard, Kittery, Maine, McLaren/Hart Environmental Engineering Corporation, Albany, NY, June.

McLaren/Hart, March 1994. "Public Health and Environmental Risk Evaluation Part A: Human Health Risk Assessment," Portsmouth Naval Shipyard, Kittery, Maine, McLaren/Hart Environmental Engineering Corporation, Albany, NY.

McLaren/Hart, May 1994. "Final Human Health Risk Assessment Report for Offshore Media," Portsmouth Naval Shipyard, Kittery, Maine, McLaren/Hart Environmental Engineering Corporation, Albany, NY.

Navy (Department of Navy), 1999. Interim Record of Decision for Operable Unit 4, May.

Navy, November 2000. Operable Unit 3 (OU3) Feasibility Study (FS) Clarification Memorandum, Navy correspondence dated November 21, 2000 for Portsmouth Naval Shipyard, Kittery, Maine.

Navy, January 2001. "Proposed Remedial Action Plan for Operable Unit 3," Portsmouth Naval Shipyard, Kittery, Maine, Department of Navy.

Navy, February 2001. "Amended Site Management Plan for the Installation Restoration Program," Portsmouth Naval Shipyard, Kittery, Maine, Department of Navy.

NCCOSC, 2000. "Estuarine Ecological Risk Assessment" for Portsmouth Naval Shipyard, Kittery, Maine. Naval Command, Control, and Ocean Surveillance Center, Narragansett, RI, May.

TtNUS, August 1999. "Groundwater Monitoring Summary Report," Portsmouth Naval Shipyard, Kittery, Maine, Tetra Tech NUS, Inc., King of Prussia, PA.

TtNUS, October 1999. "Interim Offshore Monitoring Plan for OU4" for Portsmouth Naval Shipyard, Kittery, Maine. Tetra Tech NUS, Inc., King of Prussia, PA.

TtNUS, March 2000. "Field Investigation Report Site 10 (Building 238) and Site 29 (Teepee Incinerator)," for Portsmouth Naval Shipyard, Kittery, Maine, Tetra Tech NUS, Inc., King of Prussia, PA.

TtNUS, May 2000a. "Revised OU3 Risk Assessment" for Portsmouth Naval Shipyard, Kittery, Maine. Tetra Tech NUS, Inc., King of Prussia, PA.

TtNUS, May 2000b. "Field Investigation Report Site 30 (Building 184), Site 31 (West Timber Basin), and Site 32 (Topeka Pier)," Portsmouth Naval Shipyard, Kittery, Maine, Tetra Tech NUS, Inc., King of Prussia, PA.

TtNUS, May 2000c. "Facility Background Report," Portsmouth Naval Shipyard, Kittery, Maine. Tetra Tech NUS, Inc., King of Prussia, PA.

TtNUS, August 2000. "Seep/Sediment Summary Report" for Portsmouth Naval Shipyard, Kittery, Maine. Tetra Tech NUS, Inc., King of Prussia, PA.

TtNUS, October 2000. "Test Pitting Investigation Report for Jamaica Island Landfill – February/March 2000 Activity, Portsmouth Naval Shipyard, Kittery, Maine." Tetra Tech NUS, Inc., King of Prussia PA.

TtNUS, November 2000a. "Feasibility Study (FS) Report for Operable Unit 3, Portsmouth Naval Shipyard, Kittery, Maine." Tetra Tech NUS, Inc., King of Prussia, PA.

TtNUS, November 2000b. "Revised OU2 Risk Assessment" for Portsmouth Naval Shipyard, Kittery, Maine. Tetra Tech NUS, Inc., King of Prussia, PA.

USEPA, 1989. "HSWA Permit for Portsmouth Naval Shipyard," Permit under The Hazardous and Solid Waste Amendments of 1984, United States Environmental Protection Agency, March 10.

Weston, 1983. "Initial Assessment Study," Portsmouth Naval Shipyard, Kittery, Maine, Naval Energy and Environmental Support Activity, NEESA 13-032, Port Hueneme, CA, Roy F. Weston, June.

APPENDIX A

**MEDEP LETTER OF CONCURRENCE AND
ADMINISTRATIVE RECORD INDEX FOR OU3**

APPENDIX A.1

MEDEP LETTER OF CONCURRENCE



STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

ANGUS S. KING, JR.
GOVERNOR

MARTHA KIRKPATRICK
COMMISSIONER

July 26, 2001

V. T. Williams
Captain, USN
Commander,
Portsmouth Naval Shipyard
Kittery, Maine

Re: Letter of Concurrence, Record of Decision for Operable Unit 3, Portsmouth Naval Shipyard, Kittery, Maine

Dear Capt. Williams:

The Maine Department of Environmental Protection (MEDEP) has reviewed the Draft Final Record of Decision (ROD) for Operable Unit 3, dated July 2001. Operable Unit 3 consists of the Jamaica Island Landfill (Site 8), the Former Mercury Burial Sites (Site 9) and the Former Waste Oil Tanks Nos. 6 and 7.

Based on MEDEP's review the Maine Department of Environmental Protection concurs with the selected remedial action which consists of a hazardous waste landfill cover, institutional controls, erosion controls, and monitoring. The remedial action is outlined below:

- A multiple layer cover over the landfill surface that would prevent receptors on the surface from coming in contact with contaminated soil and/or waste and minimize infiltration of water through the cover to the landfill.
- Institutional controls to restrict land and fresh water groundwater uses with the JILF boundary to prevent unacceptable human exposure to site contaminants. Institutional controls will also be used to prevent unrestricted disturbance of the hazardous waste landfill cover, shoreline erosion controls, and building and structures within the boundary of the JILF.
- Shoreline erosion controls, including rip-rap and/or wetlands placed along the shoreline, to minimize the potential for washing away of soil and/or waste materials from the edge of the JILF.
- Monitoring of site media to assess the effectiveness of the remedy over the long term.

AUGUSTA
17 STATE HOUSE STATION
AUGUSTA, MAINE 04330-0017
(207) 287-7688
RAY BLDG., HOSPITAL ST.

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

PORTLAND
312 CANCO ROAD
PORTLAND, MAINE 04103
(207) 822-6300 FAX: (207) 822-6303

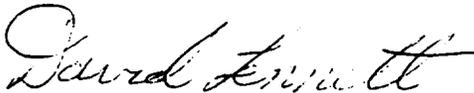
PRESQUE ISLE
1235 CENTRAL DRIVE, SKYWAY PARK
PRESQUE ISLE, MAINE 04769-2094
(207) 764-0477 FAX: (207) 764-1507

- Routine inspections and maintenance of the cover, shoreline erosion controls, and institutional controls to ensure that the cover, erosion controls, and site controls remain effective. An operation and maintenance plan will be developed.
- Five-year site reviews to confirm that remedial action objectives (RAOs) are being achieved and the remedy remains protective.

Please note that the State's concurrence with the remedial action is conditional on our acceptance of the landfill cover design. We anticipate that the Navy's landfill cover design will address all areas of the landfill including areas around buildings up to the footprints of the buildings.

The MEDEP looks forward to working with Navy and EPA to resolve the environmental problems posed by the Shipyard. If you need additional information do not hesitate to call me or members of my staff.

Sincerely,



David Lennett
Bureau Director
Bureau of Remediation and Waste Management
Maine Department of Environmental Protection

pc:

Denise Messier, MEDEP
Larry Dearborn, MEDEP
Katie Zeeman, MEDEP
Harrison Bispham, MEDEP
Meghan Cassidy, USEPA
Marty Raymond, PNS
Linda Klink, TtNUS
Debbie Cohen, TtNUS
Ken Finkelstein, NOAA
Ken Munney, USFWS
Jeff Clifford, RAB
Doug Bogen, RAB

Don Card, RAB
Michele Dionne, RAB
Mary Marshall, RAB
Phil McCarthy, RAB
Jack McKenna, RAB
Onil Roy, RAB
Roger Wells, RAB
Seacoast Anti-Pollution League, TAG Group
Carolyn Lepage, TAG Advisor
Claire McBane, NH F&W
File

APPENDIX A.2
ADMINISTRATIVE RECORD INDEX

**ADMINISTRATIVE RECORD INDEX FOR OU3
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE
PAGE 1 OF 2**

DATE	FILE SECTION	TYPE OF DOCUMENT	TITLE/SUBJECT	COMMENT
June-83	Report	Report	Initial Assessment Study (IAS) for Portsmouth Naval Shipyard, Kittery, Maine	Naval Energy and Environmental Support Activity (NEESA) 1: 032, Port Hueneme, CA, Roy F. Weston
June-86	Report	Report	Final Confirmation Study Report on Hazardous Waste Sites at Portsmouth Naval Shipyard, Kittery, Maine	Loureiro Engineering Associates (LEA)
March-89	Report	Report	HSWA Permit for Portsmouth Naval Shipyard	Permit under the Hazardous and Solid Waste Amendments of 1984, United States Environmental Protection Agency (USEPA)
July-92	Report	Report	Draft RCRA Facility Investigation (RFI) Report for Portsmouth Naval Shipyard, Kittery, Maine	McLaren/Hart Environmental Engineering Corporation, Albany, NY
August-92	Report	Report	On-shore Ecological Risk Assessment for Portsmouth Naval Shipyard, Kittery, Maine	McLaren/Hart Environmental Engineering Corporation, Albany, NY
June-93	Report	Report	Addendum to RCRA Facility Investigation Report for Portsmouth Naval Shipyard, Kittery, Maine	McLaren/Hart Environmental Engineering Corporation, Albany, NY
March-94	Report	Report	Public Health and Environmental Risk Evaluation Part A: Human Health Risk Assessment (PHERE)	McLaren/Hart Environmental Engineering Corporation, Albany, NY
March-94	Correspondence	Correspondence	Sampling Results at Site 22, Portsmouth Naval Shipyard, Kittery, Maine	Letter dated March 30, 1994 from N. Beardsley, MEDEP to Lt. Conroy, NFEC.
May-94	Report	Report	Final Human Health Risk Assessment Report for Offshore Media (HHRA)	McLaren/Hart Environmental Engineering Corporation, Albany, NY
March-95	Report	Report	On-shore Feasibility Study (FS) (Draft) for Portsmouth Naval Shipyard, Kittery, Maine	Halliburton NUS Corporation, Wayne, PA
November-95	Report	Report	RCRA Facility Investigation (RFI) Data Gap Report for Portsmouth Naval Shipyard, Kittery, Maine	Halliburton NUS Corporation, Wayne, PA
January-96	Correspondence	Letter Report	Alternative for Excavation of All Contaminated Material at the JILF and Consolidation above High Tide Level	Report dated January 16, 1996, prepared by United States Navy (Northern Division, Lester, PA).
March-96	Report	Response to Comments	Response to EPA and MEDEP Comments on the Draft On-Shore Feasibility Study Report	Brown & Root Environmental, a Division of Halliburton NUS Corporation, Wayne, PA
June-96	Report	Report	Phase II Ambient Air Quality and Meteorological Monitoring Report	Brown & Root Environmental, a Division of Halliburton NUS Corporation, Wayne, PA
October-96	Report	Report	Community Relation Plan for Portsmouth Naval Shipyard, Kittery, Maine	Brown & Root Environmental, a Division of Halliburton NUS Corporation, Wayne, PA
September-97	Report	Report	Action Memorandum for Mercury Burial Site 1 at Portsmouth Naval Shipyard, Kittery, Maine	Foster Wheeler Environmental Corporation (FWENC) Longhorn, PA
February-98	Correspondence	Correspondence	Evaluation of Heavy Metal Migration at Portsmouth Naval Shipyard with Geochemical Modeling	Letter dated February 18, 1998 from I. McLeod, MEDEP to F. Evans, Navy.
May-99	Report	Report	Interim Record of Decision of OUC	United States Navy (Northern Division, Lester, PA)

**ADMINISTRATIVE RECORD INDEX FOR OU3
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE
PAGE 1 OF 2**

DATE	FILE SECTION	TYPE OF DOCUMENT	TITLE/SUBJECT	COMMENT
June-83	Report	Report	Initial Assessment Study (IAS) for Portsmouth Naval Shipyard, Kittery, Maine	Naval Energy and Environmental Support Activity (NEESA) 1: 032, Port Hueneme, CA, Roy F. Weston
June-86	Report	Report	Final Confirmation Study Report on Hazardous Waste Sites at Portsmouth Naval Shipyard, Kittery, Maine	Loureiro Engineering Associates (LEA)
March-89	Report	Report	HSWA Permit for Portsmouth Naval Shipyard	Permit under the Hazardous and Solid Waste Amendments of 1984, United States Environmental Protection Agency (USEPA)
July-92	Report	Report	Draft RCRA Facility Investigation (RFI) Report for Portsmouth Naval Shipyard, Kittery, Maine	McLaren/Hart Environmental Engineering Corporation, Albany, NY
August-92	Report	Report	On-shore Ecological Risk Assessment for Portsmouth Naval Shipyard, Kittery, Maine	McLaren/Hart Environmental Engineering Corporation, Albany, NY
June-93	Report	Report	Addendum to RCRA Facility Investigation Report for Portsmouth Naval Shipyard, Kittery, Maine	McLaren/Hart Environmental Engineering Corporation, Albany, NY
March-94	Report	Report	Public Health and Environmental Risk Evaluation Part A: Human Health Risk Assessment (PHERE)	McLaren/Hart Environmental Engineering Corporation, Albany, NY
March-94	Correspondence	Correspondence	Sampling Results at Site 22, Portsmouth Naval Shipyard, Kittery, Maine	Letter dated March 30, 1994 from N. Beardsley, MEDEP to Lt. Conroy, NFEC.
May-94	Report	Report	Final Human Health Risk Assessment Report for Offshore Media (HHRA)	McLaren/Hart Environmental Engineering Corporation, Albany, NY
March-95	Report	Report	On-shore Feasibility Study (FS) (Draft) for Portsmouth Naval Shipyard, Kittery, Maine	Halliburton NUS Corporation, Wayne, PA
November-95	Report	Report	RCRA Facility Investigation (RFI) Data Gap Report for Portsmouth Naval Shipyard, Kittery, Maine	Halliburton NUS Corporation, Wayne, PA
January-96	Correspondence	Letter Report	Alternative for Excavation of All Contaminated Material at the JILF and Consolidation above High Tide Level	Report dated January 16, 1996, prepared by United States Navy (Northern Division, Lester, PA).
March-96	Report	Response to Comments	Response to EPA and MEDEP Comments on the Draft On-Shore Feasibility Study Report	Brown & Root Environmental, a Division of Halliburton NUS Corporation, Wayne, PA
June-96	Report	Report	Phase II Ambient Air Quality and Meteorological Monitoring Report	Brown & Root Environmental, a Division of Halliburton NUS Corporation, Wayne, PA
October-96	Report	Report	Community Relation Plan for Portsmouth Naval Shipyard, Kittery, Maine	Brown & Root Environmental, a Division of Halliburton NUS Corporation, Wayne, PA
September-97	Report	Report	Action Memorandum for Mercury Burial Site 1 at Portsmouth Naval Shipyard, Kittery, Maine	Foster Wheeler Environmental Corporation (FWENC) Longhorn, PA
February-98	Correspondence	Correspondence	Evaluation of Heavy Metal Migration at Portsmouth Naval Shipyard with Geochemical Modeling	Letter dated February 18, 1998 from I. McLeod, MEDEP to F. Evans, Navy.
May-99	Report	Report	Interim Record of Decision of OUC	United States Navy (Northern Division, Lester, PA)

APPENDIX C

OU3 ARARs AND COST ESTIMATE TABLES

APPENDIX C.1

ARARs

**ALTERNATIVE-SPECIFIC ARARS AND TBCS
 ALTERNATIVE 3 – COVER WITH COMPOSITE LINER AND ENHANCED DRAINAGE LAYER,
 INSTITUTIONAL CONTROLS, EROSION CONTROLS, AND MONITORING
 PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE
 PAGE 1 OF 11**

Medium/Activity	Requirement/ Citation	Status	Synopsis	Action To Be Taken
Federal Chemical-Specific:				
Groundwater	Health Advisories, EPA Office of Drinking Water	To Be Considered	These advisories establishes short- term, long-term, and lifetime exposure limits for children and adults.	These advisories were used to document contaminant exceedances in groundwater (as part of the OU3 risk assessment).
Risk Assessment	EPA Risk Reference Doses (RfDs)	To Be Considered	RfDs are the concentrations considered unlikely to cause significant adverse health effects associated with a threshold mechanism of action in human exposure over a lifetime.	RfDs were used to estimate noncarcinogenic risks as part of the OU3 risk assessment.
Risk Assessment	EPA Human Health Assessment Group Cancer Slope Factors (CSFs)	To Be Considered	CSFs present the most up-to-date information on cancer risk potency for known and suspected carcinogens.	CSFs were used to estimate carcinogenic risks as part of the OU3 risk assessment.
State of Maine Chemical-Specific:				
Soil/Ground-water	Guidance Manual for Human Health Risk Assessments at Hazardous Substance Sites, June 1994	To Be Considered	This guidance manual prepared by the MEDEP and the Maine Department of Human Resources provides acceptable carcinogenic and noncarcinogenic risk levels (1×10^{-5} and 1, respectively).	This guidance manual was considered in determining acceptable risk levels for RAOs related to the protection of human health.

**ALTERNATIVE-SPECIFIC ARARS AND TBCS
 ALTERNATIVE 3 – COVER WITH COMPOSITE LINER AND ENHANCED DRAINAGE LAYER,
 INSTITUTIONAL CONTROLS, EROSION CONTROLS, AND MONITORING
 PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE
 PAGE 2 OF 11**

Medium/Activity	Requirement/ Citation	Status	Synopsis	Action To Be Taken
Federal Location-Specific:				
Other Natural Resources	Fish and Wildlife Coordination Act (16 USC 661 et seq.; 33 CFR 320; 40 CFR 6.302)	Relevant and Appropriate	This act requires any federal agency proposing to modify a body of water to consult with the U.S. Fish and Wildlife Service or National Marine Fisheries Service and appropriate state agencies if alteration of a body of water, including discharges of pollutants into a wetland or construction in a wetland, will occur as a result of off-site remedial activities. Consultation is strongly recommended for on-site actions.	Precautions will be taken to minimize the potential effect on fish and wildlife during construction and maintenance of the shoreline erosion controls.
Floodplains	Floodplain Management, Executive Order 11988 (40 CFR 6, Appendix A)	Applicable	Appendix A includes the federal policy on floodplain management. Under this order, federal agencies are required to avoid long-term and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid support of floodplain development wherever there is a practicable alternative. If no practicable alternative exists to performing cleanup in a floodplain, potential harm must be mitigated and actions taken to preserve the beneficial value of the floodplain.	Implementation of this alternative will include construction in the floodplain. No practicable alternative to this construction exists. However, best management practices will be used during remedial activities to reduce any adverse impacts to the floodplain. The shoreline erosion controls will be constructed so that they do not adversely affect the floodplain and will ensure the bank is sufficiently stabilized to contain the waste materials.

**ALTERNATIVE-SPECIFIC ARARS AND TBCS
 ALTERNATIVE 3 – COVER WITH COMPOSITE LINER AND ENHANCED DRAINAGE LAYER,
 INSTITUTIONAL CONTROLS, EROSION CONTROLS, AND MONITORING
 PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE
 PAGE 3 OF 11**

Medium/Activity	Requirement/ Citation	Status	Synopsis	Action To Be Taken
Floodplains	RCRA Floodplain Restrictions for Hazardous Waste Facilities (40 CFR 264.18(b))	Relevant and Appropriate	A hazardous waste facility located in a 100-year floodplain must be designed, constructed, operated, and maintained to prevent washout of any hazardous waste by a 100-year flood or result in no adverse effects on human health and the environment if washout were to occur.	The landfill cap will be designed, constructed, operated, and maintained to prevent washout of any hazardous waste by a 100-year flood and to result in no adverse effects on human health or the environment if washout were to occur.
Wetlands	Federal Protection of Wetlands, Executive Order 11990 (40 CFR 6, Appendix A)	Applicable	Appendix A includes the federal policy on wetlands protection. Under this order, federal agencies are required to minimize the destruction, loss, or degradation of wetlands and preserve and enhance natural and beneficial values of wetlands. If no practicable alternative exists to remedial activity that may adversely affect a wetland, impacts from implementing the chosen alternative must be mitigated.	Implementation of this alternative will include construction in tidal wetlands. No practicable alternative to this construction exists. However, best management practices will be used during remedial activities to reduce any adverse impacts to wetlands. The shoreline erosion controls will be constructed so that they do not adversely affect wetlands and will ensure the bank is sufficiently stabilized to contain the waste materials.
Wetlands	CWA Section 404(b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material (40 CFR 230; 33 CFR 320-330)	Applicable	Section 404 of the CWA regulates the discharge of dredged or fill material into U.S. waters, including wetlands. The purpose of Section 404 is to ensure that proposed discharges are evaluated with respect to impacts on the aquatic ecosystem. No activity that adversely effects a wetland is permitted if a practicable alternative that has less effect is available. If there is no practicable alternative, impacts must be mitigated.	Remedial activities will involve dredged or fill material discharge to a tidal wetland. There is no practicable alternative to such discharge. However, the construction will be conducted to comply with these requirements.

**ALTERNATIVE-SPECIFIC ARARS AND TBCS
 ALTERNATIVE 3 – COVER WITH COMPOSITE LINER AND ENHANCED DRAINAGE LAYER,
 INSTITUTIONAL CONTROLS, EROSION CONTROLS, AND MONITORING
 PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE
 PAGE 4 OF 11**

Medium/Activity	Requirement/ Citation	Status	Synopsis	Action To Be Taken
Wetlands	Coastal Zone Management Act (16 USC 1451 et seq.)	Applicable	This act provides for the preservation and protection of coastal zone areas. Federal activities that are in or directly affecting the coastal zone must be consistent to the maximum extent practicable with a federally approved state management program.	Implementation of this alternative will include construction in the coastal zone. However, best management practices will be used during remedial activities to reduce any adverse impacts to the coastal zone. The remedial action will be consistent with Maine Coastal Management Policies. The shoreline erosion controls will ensure the bank is sufficiently stabilized to contain the waste material.
Navigable Waters	River and Harbors Act (33 USC 403; 33 CFR 320-323)	Applicable	Section 10 of the River and Harbors Act prohibits unauthorized obstruction or alteration of navigable waters. Activities involving excavation or deposition of materials in navigable waters or affecting such waters must serve the public interest, and benefits must outweigh adverse impacts on natural resources, aesthetics, and navigation.	The shoreline erosion control work in the Piscataqua River (at OU3) will meet the substantive requirements of Section 10 of the Act to prevent obstruction or alteration of navigable waters.

**ALTERNATIVE-SPECIFIC ARARS AND TBCS
 ALTERNATIVE 3 – COVER WITH COMPOSITE LINER AND ENHANCED DRAINAGE LAYER,
 INSTITUTIONAL CONTROLS, EROSION CONTROLS, AND MONITORING
 PORTSMOUTH NAVAL SHIPYARD, KITTEERY, MAINE
 PAGE 5 OF 11**

Medium/Activity	Requirement/ Citation	Status	Synopsis	Action To Be Taken
State of Maine Location-Specific:				
Wetlands	Maine Site Location of Development Law (38 MRSA 481 et seq.; 06-096 CMR 371-377)	Applicable	This statute and the related regulations prohibit any development from adversely affecting existing uses, scenic character or existing natural resources in or near a community. Remediation activities must not have adverse effect on the natural environment, historic sites, unusual natural areas, and wildlife and fisheries. Also, this act requires that activities shall not interfere with existing uses of the site.	Because the landfill cover will be more than 3 acres, this alternative will need to meet the substantive requirements of the statute and regulations. However, no adverse effects on the existing uses, scenic character, or existing natural resources will occur due to the construction of the cover.
Wetlands	Maine Natural Resources Protection Act (NRPA) Permit by Rule Standards (38 MRSA 480 et seq.; 06-096 CMR 305)	Relevant and Appropriate	This act requires a permit for any activity conducted in, on, or over any protected natural resource or any activity conducted on land adjacent to and operates in such a way that material or soil may be washed into any freshwater or coastal wetland, great pond, river, stream or brook.	Implementation of this alternative will include construction in tidal wetlands or the offshore. Remedial activities (grading/capping) will be performed in compliance with substantive requirements. Erosion and sediment controls will be included during implementation of the alternative. There will be little to no net loss of naturally vegetated areas after implementation of this alternative.
Wetlands	Maine Wetland Protection Rules (06-096 CMR 310)	Applicable	Standards are provided for wetlands protection. Activities that have an unreasonable impact on the wetlands are prohibited.	Implementation of this alternative will include construction in wetlands. However, the shoreline erosion controls will not adversely affect wetlands and will ensure the banks are sufficiently stabilized to contain the waste materials.

**ALTERNATIVE-SPECIFIC ARARS AND TBCS
 ALTERNATIVE 3 – COVER WITH COMPOSITE LINER AND ENHANCED DRAINAGE LAYER,
 INSTITUTIONAL CONTROLS, EROSION CONTROLS, AND MONITORING
 PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE
 PAGE 6 OF 11**

Medium/Activity	Requirement/ Citation	Status	Synopsis	Action To Be Taken
Coastal Zone	Maine Coastal Management Policies (38 MSRA 1801 et seq.)	Applicable	These policies provide for the regulation, conservation, beneficial use, and management of coastal resources.	The remedial action will be consistent with these policies. The shoreline reconstruction will ensure the bank is sufficiently stabilized to contain the waste materials.
Other Natural Resources	Maine Endangered Species Act (12 MRSA 7751 et seq.)	To Be Considered	The state of Maine has authority to research, list, and protect any species deemed endangered or threatened. The Maine Department of Inland Fisheries and Wildlife determines appropriate use(s) of various habitats on a case-by-case basis. The Maine lists may differ from the federal lists of endangered species.	No known endangered or threatened species or critical habitats are present at OU3. However, to prevent flushing of birds from their nests on Clark's Island, guidance from the Maine Department of Inland Fisheries and Wildlife to refrain from remedial activities from April 1 to August 15 within 0.25 miles of a nesting habitat will be considered.
Other Natural Resources	Maine Significant Wildlife Habitat Rules (06-096 CMR 335)	To Be Considered	These rules outline requirements associated with a NRPA permit for an activity impacting significant wildlife habitat, including certain seabird nesting islands.	No known endangered or threatened species or critical habitats are present at OU3. However, to prevent flushing of birds from their nests at Clark's Island, guidance from the Maine Department of Inland Fisheries and Wildlife to refrain from remedial activities from April 1 to August 15 within 0.25 miles of a nesting habitat will be considered.
Federal Action-Specific:				
Hazardous Waste	RCRA Subtitle C Standards for Owners and Operators of TSD Facilities (40 CFR 264)	Relevant and Appropriate	These regulations outline specifications and standards for design, operation, closure, and monitoring of performance for hazardous waste storage, treatment, and disposal facilities.	These regulations are relevant and appropriate, not applicable, because disposal of wastes at this site ceased prior to the promulgation of RCRA in 1980. However, substantive requirements will be met and adhered to on site.

ALTERNATIVE-SPECIFIC ARARS AND TBCS
ALTERNATIVE 3 – COVER WITH COMPOSITE LINER AND ENHANCED DRAINAGE LAYER,
INSTITUTIONAL CONTROLS, EROSION CONTROLS, AND MONITORING
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE
PAGE 7 OF 11

Medium/Activity	Requirement/ Citation	Status	Synopsis	Action To Be Taken
Hazardous Waste	RCRA Subtitle C, Subpart F – Releases from Solid Waste Management Units (40 CFR 264.90-264.101)	Relevant and Appropriate	These regulations detail groundwater monitoring requirements for hazardous waste facilities. These regulations outline general groundwater monitoring standards, as well as standards for detection monitoring, compliance monitoring, and corrective action monitoring.	These regulations are relevant and appropriate, not applicable, because disposal activities at this site ceased prior to the promulgation of RCRA in 1980. However, the alternative will meet the substantive requirements of these regulations.
Hazardous Waste	RCRA Subtitle C, Subpart G – Closure and Post-Closure (40 CFR 264.110-264.120)	Relevant and Appropriate	These regulations detail general requirements for closure and post-closure of hazardous waste facilities, including installation of a groundwater monitoring program.	These regulations are relevant and appropriate, not applicable, because disposal activities at this site ceased prior to the promulgation of RCRA in 1980. However, design, monitoring, maintenance, and post-closure care will meet the substantive requirements of these regulations.
Hazardous Waste	RCRA Subtitle C, Subpart N – Landfills (40 CFR 264.310)	Relevant and Appropriate	This regulation contains closure and post-closure requirements for Subtitle C landfills.	This regulation is relevant and appropriate, not applicable, because disposal of wastes at this site ceased prior to the promulgation of RCRA in 1980. However, this alternative will meet the substantive requirements of this regulation with regard to cap design, monitoring, maintenance, and post-closure care.
Capping	Alternative Cap Design Guidance Proposed for Unlined, Hazardous Waste Landfills in the EPA Region I (memo dated 9/30/97)	To Be Considered	Guidance for design of a cover or cap for unlined, hazardous waste landfills in EPA Region I.	This guidance will be followed for design of the cap.

**ALTERNATIVE-SPECIFIC ARARS AND TBCS
 ALTERNATIVE 3 – COVER WITH COMPOSITE LINER AND ENHANCED DRAINAGE LAYER,
 INSTITUTIONAL CONTROLS, EROSION CONTROLS, AND MONITORING
 PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE
 PAGE 8 OF 11**

Medium/Activity	Requirement/ Citation	Status	Synopsis	Action To Be Taken
Capping	Amendment to Recommended Long Term Hydraulic Performance Criteria of the Geocomposite Drainage Layer in Landfill Cap Applications (memo dated 3/23/99)	To Be Considered	Guidance for testing long-term performance characteristics of a geocomposite drainage layer.	This guidance will be followed for design of the cap.
Groundwater	Safe Drinking Water Act (SDWA), Maximum Contaminant Levels (MCLs) (40 CFR 141.11-141.16 and 141.60-141.65)	Relevant and Appropriate	MCLs have been promulgated for many common organic and inorganic contaminants. These levels regulate the concentration of contaminants in public drinking water supplies, but may also be considered relevant and appropriate for groundwater aquifers used for drinking water.	MCLs were used to document contaminant exceedances in groundwater (as part of the OU3 risk assessment). Until contaminant concentrations in the groundwater are below MCLs, a restriction on the use of groundwater within the OU3 compliance boundary will be established and maintained, and an appropriate monitoring program will be conducted.
Groundwater	SDWA Maximum Contaminant Level Goals (MCLGs) (40 CFR 141.50-141.51)	Relevant and Appropriate	MCLGs have been promulgated for many common organic and inorganic contaminants. These concentrations indicate the level of contaminants in drinking water at which no known or anticipated adverse effect on the health effect of a person would occur, allowing for an adequate margin of safety. MCLGs are non-enforceable public health goals.	Where MCLs have not been established, non-zero MCLGs were used to document contaminant exceedances in groundwater (as part of the OU3 risk assessment). Until contaminant concentrations in the groundwater are below non-zero MCLGs, a restriction on the use of groundwater within the OU3 compliance boundary will be established and maintained, and an appropriate monitoring program will be conducted.

**ALTERNATIVE-SPECIFIC ARARS AND TBCS
 ALTERNATIVE 3 – COVER WITH COMPOSITE LINER AND ENHANCED DRAINAGE LAYER,
 INSTITUTIONAL CONTROLS, EROSION CONTROLS, AND MONITORING
 PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE
 PAGE 9 OF 11**

Medium/Activity	Requirement/ Citation	Status	Synopsis	Action To Be Taken
Emissions	Air/Superfund National Technical Guidance (EPA/450/1-89/001 through 004)	To Be Considered	This guidance describes methodologies for predicting risks due to air release at a Superfund site.	Releases to air will be minimized by fugitive dust controls. Emissions of hazardous air pollutants are not anticipated.
State of Maine Action-Specific:				
Hazardous Waste	Maine Hazardous Waste Management Rules (06-096 CMR 800-802, 850, 851, 853-857)	Relevant and Appropriate	These regulations provide standards for the generation, transportation, treatment, storage, and disposal of hazardous waste. They set forth the state definition and criteria for establishing whether waste materials are hazardous and subject to associated hazardous regulations. They also provide standards for the location of facilities in a floodplain or within 300 feet of the floodplain and detail groundwater monitoring requirements for hazardous waste facilities. The regulations outline general groundwater monitoring standards, as well as standards for detection monitoring, compliance monitoring, and corrective action monitoring.	State requirements more stringent than federal requirements take precedence. At the completion of the remedial action, these remedial standards will be met under this alternative.
Emissions	Maine Air Pollution Control Law – Classification of Air Quality Control Regions (38 MSRA 583; 06-096 CMR 114)	Relevant and Appropriate	Air quality regions and classification of each region and ambient air quality and emission standards are established.	Emissions of criteria pollutants will be minimized by fugitive dust control during excavation, grading, and capping activities. Emissions of hazardous air pollutants are not anticipated during implementation of this alternative.

ALTERNATIVE-SPECIFIC ARARS AND TBCS
ALTERNATIVE 3 – COVER WITH COMPOSITE LINER AND ENHANCED DRAINAGE LAYER,
INSTITUTIONAL CONTROLS, EROSION CONTROLS, AND MONITORING
PORTSMOUTH NAVAL SHIPYARD, KITTERY, MAINE
PAGE 10 OF 11

Medium/Activity	Requirement/ Citation	Status	Synopsis	Action To Be Taken
Emissions	Maine Ambient Air Quality Standards (38 MSRA 584; 06-096 CMR 110)	Relevant and Appropriate	Ambient air quality standards are established for particulate matter, sulfur dioxide, carbon monoxide, ozone, hydrocarbon, nitrogen dioxide, lead, and total chromium. Ambient increments that define the maximum ambient increase of a particular pollutant, which can be permitted for a given area, are defined.	Emissions of criteria air pollutants will be minimized by fugitive dust control during excavation, grading, and capping activities
Emissions	Maine Air Pollution Control Laws – Maine Emission License Regulations (38 MSRA 585 and 590; 06-096 CMR 115)	Relevant and Appropriate	Requires new sources of air emissions to demonstrate that its emissions do not violate ambient air quality standards. New sources must meet preconstruction monitoring and post-construction monitoring requirements.	Emissions of criteria air pollutants will be minimized by fugitive dust control during excavation, grading, and capping activities.
Groundwater	Maine Department of Human Services Rules Relating to Testing of Private Water Systems for Potentially Hazardous Contaminants (10-144E CMR 233, Appendix C)	Relevant and Appropriate	Maximum Exposure Guidelines (MEGs) are contained in Appendix C to these rules. MEGs include health advisories, which are maximum allowable concentrations of contaminants in drinking water.	Until contaminant concentrations in the groundwater are below MEGs, a restriction on the use of groundwater within the OU3 compliance boundary will be established and maintained, and an appropriate monitoring program will be conducted.

ALTERNATIVE-SPECIFIC ARARS AND TBCS
ALTERNATIVE 3 – COVER WITH COMPOSITE LINER AND ENHANCED DRAINAGE LAYER,
INSTITUTIONAL CONTROLS, EROSION CONTROLS, AND MONITORING
PORTSMOUTH NAVAL SHIPYARD, KITTEERY, MAINE
PAGE 11 OF 11

Medium/Activity	Requirement/ Citation	Status	Synopsis	Action To Be Taken
Groundwater	Maine Hazardous Waste Rules Relating to Performance Standards for Establishing, Constructing, Altering, and Operating Certain Types of Hazardous Waste Units (06-096 CMR 854)	Relevant and Appropriate	This requirements outlines the State of Maine's rules relating to establishing, constructing, altering, and operating certain types of hazardous waste units.	Until contaminant concentrations in the groundwater are below MEGs, a restriction on the use of groundwater within the OU3 compliance boundary will be established and maintained, and an appropriate monitoring program will be conducted.
Groundwater	Maine Department of Human Services Rules Relating to Drinking Water (10-144E CMR 231-233)	Relevant and Appropriate	Maine's primary drinking water standards are similar to federal MCLs as drinking water standards under the Maine Safe Drinking Water Rules. When state standards are more stringent than federal standards, and have been legally and constantly applied, the state levels shall be used.	Until contaminant concentrations in the groundwater are below Maine MCLs, a restriction on the use of groundwater within the OU3 compliance boundary will be established and maintained, and an appropriate monitoring program will be conducted.
Erosion	Erosion and Sedimentation Control (38 MRSA 420-C) and Stormwater Management (38 MSRA 420-D; 06-096 CMR 500 and 502)	Applicable	Erosion control measures must be in place before activities, such as filling, displacing, or exposing soil or other earthen materials occur. Prior MEDEP approval is required if the disturbed area is in the direct watershed of a water body most at risk.	Appropriate controls will be implemented to address erosion, sedimentation, and storm water and applicable plans will be coordinated with the MEDEP before implementation.
Waste	Maine Solid Waste Management Regulations (06-096 CMR 400-411)	To be Considered	Provides standards for generation, transportation, treatment, storage, and disposal of solid and special wastes. Also provides closure and post-closure maintenance standards.	Not applicable for a facility established before 1973. Capping performance standards are TBC for the conceptual cover design. The specific design standards are not appropriate for a landfill that has been closed since 1978.

APPENDIX C.2
COST ESTIMATES

PORTSMOUTH NAVAL SHIPYARD
 Kittery, Maine
 JILF - OU3 FS

Alternative #3 - Cover with Composite Liner and Enhanced Drainage Layer, Institutional Controls, Erosion Controls, and Monitoring

BY: TJR / NJB

Date: 10-14-99 / 5-25-00

CHECKED BY: RMC / JLM

Date: 6-7-00 / 5-25-00

Item	Quantity	Unit	Subcontract	Unit Cost			Extended Cost				Subtotal	Comments
				Material	Labor	Equipment	Subcontract	Material	Labor	Equipment		
1 PROJECT DOCUMENTS & PRE-DESIGN												
1.1 Prepare Documents & Plan including Permits	370	hr			\$40.00		\$0	\$0	\$14,800	\$0	\$14,800	
1.2 Property Use Restrictions	100	hr			\$40.00		\$0	\$0	\$4,000	\$0	\$4,000	
1.3 Pre-Design Geotechnical Investigation	1	ls	\$40,000.00				\$40,000	\$0	\$0	\$0	\$40,000	
2 MOBILIZATION/DEMobilIZATION												
2.1 Office Trailer(2)	24	mo	\$195.00				\$4,680	\$0	\$0	\$0	\$4,680	
2.2 Storage Trailer	12	mo	\$85.00				\$1,020	\$0	\$0	\$0	\$1,020	
2.3 Construction Survey	1	ls	\$1,500.00				\$1,500	\$0	\$0	\$0	\$1,500	
2.4 Equipment Mobilization/Demobilization	1	ls			\$321.50	\$1,661.00	\$0	\$0	\$322	\$1,661	\$1,983	8 pieces of equipment
2.5 Site Utilities	12	mo	\$1,000.00				\$12,000	\$0	\$0	\$0	\$12,000	
3 DECONTAMINATION												
3.1 Decontamination Trailer	5	mo	\$2,200.00				\$11,000	\$0	\$0	\$0	\$11,000	
3.2 Temporary Decon Pad	1	ls		\$500.00	\$450.00	\$155.00	\$0	\$500	\$450	\$155	\$1,105	
3.3 Decon Water	5000	gal		\$0.20			\$0	\$1,000	\$0	\$0	\$1,000	
3.4 Decon Water Storage Tank, 6,000 gallon	5	mo	\$577.50				\$2,888	\$0	\$0	\$0	\$2,888	
3.5 Clean Water Storage Tank, 4,000 gallon	5	mo	\$472.50				\$2,363	\$0	\$0	\$0	\$2,363	
3.6 PPE (8 p * 5 days * 22 Weeks)	880	day		\$30.00			\$0	\$26,400	\$0	\$0	\$26,400	
3.7 Disposal of Decon Waste (liquid & solid)	5	mo	\$4,500.00				\$22,500	\$0	\$0	\$0	\$22,500	
4 MONITORING WELLS												
4.1 Monitoring Well Installation	90	lf	\$35.00				\$3,150	\$0	\$0	\$0	\$3,150	
4.2 Monitoring Well Surface Casing & Lock	4	ea	\$550.00				\$2,200	\$0	\$0	\$0	\$2,200	
4.3 Monitoring Well Development	16	hr	\$35.00				\$560	\$0	\$0	\$0	\$560	4 wells at 4 hours each
4.4 Collect/Containerize IDW and Soil	4	ea	\$50.00				\$200	\$0	\$0	\$0	\$200	
4.5 Transport/Dispose IDW and Soil Off Site	4	drums	\$150.00				\$600	\$0	\$0	\$0	\$600	
5 SHORELINE PROTECTION/JAMAICA COVE												
5.1 Purchase Clean Sand	7,955	cy		\$5.05	\$0.38	\$0.76	\$0	\$40,173	\$3,023	\$6,046	\$49,241	
5.2 Haul Sand in 20 cy Trucks, 10 mile R/T	7,955	cy			\$1.61	\$5.10	\$0	\$0	\$12,808	\$40,571	\$53,378	
5.3 Place Sand	7,955	cy			\$0.93	\$2.52	\$0	\$0	\$7,398	\$20,047	\$27,445	3x labor and equipment
5.4 Purchase Topsoil, 6 in layer from EI 107 to EI 96	900	cy		\$14.15	\$0.35	\$0.76	\$0	\$12,735	\$315	\$684	\$13,734	
5.5 Haul Topsoil in 20 cy Trucks, 10 mile R/T	900	cy			\$1.61	\$5.10	\$0	\$0	\$1,449	\$4,590	\$6,039	
5.6 Place Topsoil	900	cy			\$1.86	\$5.04	\$0	\$0	\$1,674	\$4,536	\$6,210	6x labor and equipment
5.7 Coir/Jute Mesh (double layer) EI 100 to EI 96	25,700	sy		\$0.72	\$1.68	\$0.56	\$0	\$18,504	\$43,176	\$14,392	\$76,072	8x labor and equipment
5.8 Geotextile, Heavy Duty Woven below EI 96	23,100	sy		\$1.55	\$1.40	\$0.30	\$0	\$35,805	\$32,340	\$6,930	\$75,075	10x labor and equipment
5.9 Marsh Grasses on 2' centers	15,300	ea		\$1.50	\$2.00	\$0.00	\$0	\$22,950	\$30,600	\$0	\$53,550	
5.10 Shrubs on 8' centers	330	ea		\$15.00	\$10.00	\$0.00	\$0	\$4,950	\$3,300	\$0	\$8,250	
6 SHORELINE PROTECTION/NORTH CLARK COVE												
6.1 Riprap for Breakwater, Placed Off-Shore	3,500	cy		\$17.75	\$20.70	\$25.20	\$0	\$62,125	\$72,450	\$88,200	\$222,775	3x labor and equipment
6.2 Purchase Filter Layer Aggregate	2,500	cy		\$37.50	\$1.08	\$2.18	\$0	\$93,750	\$2,700	\$5,450	\$101,900	
6.3 Haul Aggregate in 20 cy Trucks, 10 mile R/T	2,500	cy			\$1.61	\$5.10	\$0	\$0	\$4,025	\$12,750	\$16,775	
6.4 Place Aggregate	2,500	cy			\$0.93	\$2.52	\$0	\$0	\$2,325	\$6,300	\$8,625	3x labor and equipment
6.5 Purchase Clean Sand	3,500	cy		\$5.05	\$0.38	\$0.76	\$0	\$17,675	\$1,330	\$2,660	\$21,665	
6.6 Haul Sand in 20 cy Trucks, 10 mile R/T	3,500	cy			\$1.61	\$5.10	\$0	\$0	\$5,635	\$17,850	\$23,485	
6.7 Place Sand	3,500	cy			\$0.93	\$2.52	\$0	\$0	\$3,255	\$8,820	\$12,075	3x labor and equipment
6.8 Purchase Topsoil, 6 in layer from EI 107 to EI 96	470	cy		\$14.15	\$0.35	\$0.76	\$0	\$6,651	\$165	\$357	\$7,172	
6.9 Haul Topsoil in 20 cy Trucks, 10 mile R/T	470	cy			\$1.61	\$5.10	\$0	\$0	\$757	\$2,397	\$3,154	
6.10 Place Topsoil	470	cy			\$1.86	\$5.04	\$0	\$0	\$874	\$2,369	\$3,243	6x labor and equipment
6.11 Coir/Jute Mesh (double layer) EI 100 to EI 96	12,400	sy		\$0.72	\$1.68	\$0.56	\$0	\$8,928	\$20,832	\$6,944	\$36,704	8x labor and equipment
6.12 Marsh Grasses on 2' centers	8,000	ea		\$1.50	\$2.00	\$0.00	\$0	\$12,000	\$16,000	\$0	\$28,000	
6.13 Shrubs on 8' centers	120	ea		\$15.00	\$10.00	\$0.00	\$0	\$1,800	\$1,200	\$0	\$3,000	
7 SHORELINE PROTECTION/SOUTH CLARK COVE												
7.1 Riprap, machine placed along shore	5,250	cy		\$17.75	\$6.90	\$8.40	\$0	\$93,188	\$36,225	\$44,100	\$173,513	3' thick
8 REGRADE EXISTING SOIL TO 3% SLOPE												
8.1 Grade Existing Surface (level C)	27,000	cy			\$2.27	\$6.03	\$0	\$0	\$61,290	\$162,810	\$224,100	
8.2 Compact Existing Fill, 12" lifts w/ 4 passes (level C)	27,000	cy			\$0.22	\$0.28	\$0	\$0	\$5,940	\$7,560	\$13,500	
8.3 Stockpile Barrier soil	34,400	cy										
8.4 Dispose of Excess Grading Soil, T & D	4,200	cy	\$150.00				\$630,000	\$0	\$0	\$0	\$630,000	
9 SOIL CAP WITH COMPOSITE LINER AND ENHANCED DRAINAGE LAYER												
9.1 Geotextile, 8 oz. nonwoven	55,000	sy		\$0.62	\$0.35	\$0.03	\$0	\$34,100	\$19,250	\$1,650	\$55,000	
9.2 Place/Spread Barrier Soil (Level C)	18,400	cy			\$0.31	\$0.84	\$0	\$0	\$5,704	\$15,456	\$21,160	
9.3 Compact Barrier Soil, 12" lifts w/ 4 passes (level C)	18,400	cy			\$0.12	\$0.21	\$0	\$0	\$2,208	\$3,864	\$6,072	
9.4 VFPE Liner, 60 mil	496,600	sf	\$0.62				\$307,892	\$0	\$0	\$0	\$307,892	call to GSE, 4/5/00
balsamoportsmouth\alt 3 cost final\capcost												7/20/00, 10 25 AM

PORTSMOUTH NAVAL SHIPYARD

**Kittery, Maine
JILF - 0U3 FS**

Alternative #3 - Cover with Composite Liner and Enhanced Drainage Layer, Institutional Controls, Erosion Controls, and Monitoring

BY: TJR / NJB

Date: 10-14-99 / 5-25-00

CHECKED BY: RMC / JLM

Date: 6-7-00 / 5-25-00

Item	Quantity	Unit	Subcontract	Unit Cost			Subcontract	Extended Cost			Subtotal	Comments
				Material	Labor	Equipment		Material	Labor	Equipment		
9.5 Triplanar drainage net w/ both sides of fabric	496,600	sf	\$0.63				\$312,858	\$0	\$0	\$0	\$312,858	call to GSE, 4/5/00
9.6 Purchase Fill to Grade to 2%	13,400	cy		\$5.05	\$0.38	\$0.76	\$0	\$67,670	\$5,092	\$10,184	\$82,946	
9.7 Haul Fill in 20 cy Trucks, 10 mile R/T	13,400	cy			\$1.61	\$5.10	\$0	\$0	\$21,574	\$68,340	\$89,914	
9.8 Place/Spread Fill	13,400	cy			\$0.31	\$0.84	\$0	\$0	\$4,154	\$11,256	\$15,410	
9.9 Compact Fill, 12" lifts w/ 2 passes	13,400	cy			\$0.06	\$0.07	\$0	\$0	\$804	\$938	\$1,742	
9.10 Purchase Subbase Fill, 18" thick minimum	27,600	cy		\$5.05	\$0.38	\$0.76	\$0	\$139,380	\$10,488	\$20,976	\$170,844	
9.11 Haul Fill in 20 cy Trucks, 10 mile R/T	27,600	cy			\$1.61	\$5.10	\$0	\$0	\$44,436	\$140,760	\$185,196	
9.12 Place/Spread Fill	27,600	cy			\$0.31	\$0.84	\$0	\$0	\$8,556	\$23,184	\$31,740	
9.13 Compact Fill, 12" lifts w/ 2 passes	27,600	cy			\$0.06	\$0.07	\$0	\$0	\$1,656	\$1,932	\$3,588	
9.14 Purchase Topsoil, 6" thick	9,200	cy		\$14.15	\$0.35	\$0.76	\$0	\$130,180	\$3,220	\$6,992	\$140,392	
9.15 Haul Soil in 20 cy Trucks, 10 mile R/T	9,200	cy			\$1.61	\$5.10	\$0	\$0	\$14,812	\$46,920	\$61,732	
9.16 Place/Spread Topsoil	9,200	cy			\$0.31	\$0.84	\$0	\$0	\$2,852	\$7,728	\$10,580	
9.17 Revegetation	55,000	sy		\$0.30	\$1.09	\$0.22	\$0	\$16,500	\$59,950	\$12,100	\$88,550	
10 ASPHALT CAP WITH COMPOSITE LINER AND ENHANCED DRAINAGE LAYER												
10.1 Geotextile, 8 oz. nonwoven	48,000	sy		\$0.62	\$0.35	\$0.03	\$0	\$29,760	\$16,800	\$1,440	\$48,000	
10.2 Place/Spread Barrier Soil	16,000	cy			\$0.31	\$0.84	\$0	\$0	\$4,960	\$13,440	\$18,400	
10.3 Compact Barrier Soil, 12" lifts w/ 4 passes	16,000	cy			\$0.12	\$0.21	\$0	\$0	\$1,920	\$3,360	\$5,280	
10.4 VFPE Liner, 60 mil	431,000	sf	\$0.62				\$267,220	\$0	\$0	\$0	\$267,220	call to GSE, 4/5/00, \$ 62/sf
10.5 Triplanar drainage net w/ both sides of fabric	431,000	sf	\$0.63				\$271,530	\$0	\$0	\$0	\$271,530	call to GSE, 4/5/00, \$ 63/sf
10.6 Purchase Fill to Grade to 2%	12,800	cy		\$5.05	\$0.38	\$0.76	\$0	\$64,640	\$4,864	\$9,728	\$79,232	
10.7 Haul Fill in 20 cy Trucks, 10 mile R/T	12,800	cy			\$1.61	\$5.10	\$0	\$0	\$20,608	\$65,280	\$85,888	
10.8 Place/Spread Fill	12,800	cy			\$0.31	\$0.84	\$0	\$0	\$3,968	\$10,752	\$14,720	
10.9 Compact Fill, 12" lifts w/ 2 passes	12,800	cy			\$0.06	\$0.07	\$0	\$0	\$768	\$896	\$1,664	
10.10 Purchase Subbase Fill, 12" thick minimum	16,000	cy		\$5.05	\$0.38	\$0.76	\$0	\$80,800	\$6,080	\$12,160	\$99,040	
10.11 Haul Fill in 20 cy Trucks, 10 mile R/T	16,000	cy			\$1.61	\$5.10	\$0	\$0	\$25,760	\$81,600	\$107,360	
10.12 Place/Spread Fill	16,000	cy			\$0.31	\$0.84	\$0	\$0	\$4,960	\$13,440	\$18,400	
10.13 Compact Fill, 12" lifts w/ 2 passes	16,000	cy			\$0.06	\$0.07	\$0	\$0	\$960	\$1,120	\$2,080	
10.14 Geotextile, 8 oz. nonwoven	48,000	sy		\$0.62	\$0.35	\$0.03	\$0	\$29,760	\$16,800	\$1,440	\$48,000	
10.15 Gravel Subbase, 12" thick	48,000	sy		\$11.60	\$0.43	\$0.86	\$0	\$556,800	\$20,640	\$41,280	\$618,720	
10.16 Base Course, 1 1/2" thick	48,000	sy	\$2.91				\$139,680	\$0	\$0	\$0	\$139,680	
10.17 Wearing Course, 1 1/2" thick	48,000	sy	\$3.37				\$161,760	\$0	\$0	\$0	\$161,760	
11 GAS VENTS												
11.1 Gas Vent Installation WL (14 at 20' each)	280	lf	\$35.00				\$9,800	\$0	\$0	\$0	\$9,800	
11.2 Gas Vent Stick-up and Hood	14	ea	\$550.00				\$7,700	\$0	\$0	\$0	\$7,700	
11.3 Gas Vent Development	50	hr	\$35.00				\$1,750	\$0	\$0	\$0	\$1,750	
11.4 Collect/Containerize IDW and Soil	12	ea	\$50.00				\$600	\$0	\$0	\$0	\$600	
11.5 Transport/Dispose IDW and Soil Off Site	12	drums	\$150.00				\$1,800	\$0	\$0	\$0	\$1,800	
12 PERIMETER SECURITY/ACCESS ROAD												
12.1 Excavate/Haul Existing Road	2,630	cy			\$2.86	\$4.07	\$0	\$0	\$7,522	\$10,704	\$18,226	2 mile R/T
12.2 Backfill/Compact Material	2,630	cy			\$0.99	\$1.27	\$0	\$0	\$2,604	\$3,340	\$5,944	place on site
12.3 Gravel Subbase Course, 10" thick	1,370	sy		\$13.80	\$0.87	\$1.39	\$0	\$18,906	\$1,192	\$1,904	\$22,002	bank run gravel
12.4 Gravel Base Course, 6" thick	4,940	sy		\$5.80	\$0.30	\$0.60	\$0	\$28,652	\$1,482	\$2,964	\$33,098	1 1/2" crush stone
12.5 Asphalt Base Course, 1 1/2" thick	4,940	sy	\$2.91				\$14,375	\$0	\$0	\$0	\$14,375	
12.6 Asphalt Wearing Course, 1 1/2" thick	4,940	sy	\$3.37				\$16,648	\$0	\$0	\$0	\$16,648	
13 CONSTRUCTION OVERSIGHT												
13.1 Professional Oversight (6 p * 5 days * 52 weeks)	1,560	MD				\$320.00	\$0	\$0	\$499,200	\$0	\$499,200	\$20.00 per hr / 8 hrs per day
Subtotal Direct Costs less Subcontract								\$1,656,281	\$1,236,500	\$1,115,306	\$4,008,087	
Local Area Adjustments								92.0%	96.5%	96.5%		
								\$1,523,778	\$1,193,222	\$1,076,271	\$3,793,271	
Overhead on Labor Cost @ 30%									\$357,967		\$357,967	
G & A on Labor Cost @ 10%									\$119,322		\$119,322	
G & A on Material Cost @ 10%								\$152,378			\$152,378	
Total Direct Cost								\$1,676,156	\$1,670,511	\$1,076,271	\$4,422,938	
Indirects on Total Direct Labor Cost @ 50%									\$835,256		\$835,256	
Profit on Total Direct Cost @ 10%											\$442,294	
balsamo\portsmouth\alt 3 cost final\capcost												

PORTSMOUTH NAVAL SHIPYARD

Kittery, Maine

JILF - OUs FS

Alternative #3 - Cover with Composite Liner and Enhanced Drainage Layer, Institutional Controls, Erosion Controls, and Monitoring

BY: TJR / NJB

CHECKED BY: RMC / JLM

Date 10-14-99 / 5-25-00

Date 6-7-00 / 5-25-00

Item	Quantity	Unit	Subcontract	Unit Cost			Subcontract	Extended Cost			Subtotal	Comments
				Material	Labor	Equipment		Material	Labor	Equipment		
Subtotal											\$5,700,488	
Health & Safety Monitoring @ 1%			(Includes Subcontractor cost)								\$79,488	
Total Field Cost											\$5,779,975	
Subtotal Subcontractor Cost							\$2,248,273				\$2,248,273	
G & A on Subcontract Cost @ 10%							\$224,827				\$224,827	
Profit on Subcontractor Cost @ 5%											\$112,414	
Subcontractor Cost											\$2,585,514	
Contingency on Total Field and Subcontractor Costs @ 15%											\$1,254,823	
Engineering on Total Field Cost @ 10%											\$577,998	
TOTAL COST											\$10,198,310	

W

PORTSMOUTH NAVAL SHIPYARD

Kittery, Maine

JILF - OU3 FS

Alternative #3 - Cover with Composite Liner and Enhanced Drainage Layer, Institutional Controls, Erosion Controls, and Monitoring

Operation and Maintenance Costs

Item	Qty	Unit	Unit Cost	Subtotal Cost	Notes
1 Wetland Maintenance	1	ea	\$55,000.00	\$55,000	Inspect and replace 25% of plants (Year 1)
2 Soil Cap Maintenance	1	ea	\$2,800.00	\$2,800	(Years 1-30)
3 Asphalt Cap Maintenance	1	ea	\$5,000.00	\$5,000	Patch Pavement (Years 1-9, 11-19, 21-29)
4 Asphalt Cap Maintenance	1	ea	\$11,850.00	\$11,850	Repair Pavement Cracks (Years 5, 15, 25)
5 Asphalt Cap Maintenance	1	ea	\$45,120.00	\$45,120	Clean & Seal Pavement (Years 5, 15, 25)
6 Asphalt Cap Maintenance	1	ea	\$167,040.00	<u>\$167,040</u>	Repave Cap, 1 1/2" thick (Years 10, 20, 30)
Total Cost Year 1				\$62,800	
Total Cost Years 2-4, 6-9, etc.				\$7,800	
Total Cost Years 5, 15, 25				\$64,770	
Total Cost Years 10, 20, 30				\$169,840	

PORTSMOUTH NAVAL SHIPYARD

Kittery, Maine

JILF - OU3 FS

Alternative #3 - Cover with Composite Liner and Enhanced Drainage Layer, Institutional Controls, Erosion Controls, and Monitoring

Annual Sampling Cost

Item	Item Cost Annually ⁽²⁾	Item Cost Annually ⁽³⁾	Item Cost Every 5 years	Notes
Sampling ⁽¹⁾	\$7,725	\$5,725		Labor, Mobilization/Demobilization, Field Supplies
Groundwater Analysis	\$9,840	\$9,840		Analyze 16 samples for VOC, SVOC, & Metals. Analyze 8 samples for pesticides.
Surface water/Seep Analysis	\$14,000	\$14,000		Analyze 10 unfiltered + 10 filtered samples through 0.2 um filter for SVOCs, metals and pesticides/PCBs.
Sediment Analysis	\$42,300	\$42,300		Analyze 30 samples (15 per event twice a year) for metals, PAHs, pesticides, PCBs, and limited number of dioxins
Validation+Report	\$15,000	\$15,000		
Site Review			\$12,000	Review of documents, wetlands inspections, and data evaluation/recommendations
TOTALS	\$88,865	\$86,865	\$12,000	

67

(1) Sampling crew years 1-5 from out of town, years 6-30 local.

(2) Sampling would occur annually for the years 1 - 5.

(3) Sampling would occur annually for years 6 - 30.

PORTSMOUTH NAVAL SHIPYARD

Kittery, Maine

JILF - OU3 FS

Alternative #3 - Cover with Composite Liner and Enhanced Drainage Layer, Institutional Controls, Erosion Controls, and Monitoring

Present Worth Analysis

Year	Capital Cost	Operation & Maintenance Cost	Annual Cost	Total Year Cost	Annual Discount Rate at 7%	Present Worth
0	\$10,198,310			\$10,198,310	1.000	\$10,198,310
1		\$62,800	\$88,865	\$151,665	0.935	\$141,807
2		\$7,800	\$88,865	\$96,665	0.873	\$84,389
3		\$7,800	\$88,865	\$96,665	0.816	\$78,879
4		\$7,800	\$88,865	\$96,665	0.763	\$73,755
5		\$64,770	\$100,865	\$165,635	0.713	\$118,098
6		\$7,800	\$86,865	\$94,665	0.666	\$63,047
7		\$7,800	\$86,865	\$94,665	0.623	\$58,976
8		\$7,800	\$86,865	\$94,665	0.582	\$55,095
9		\$7,800	\$86,865	\$94,665	0.544	\$51,498
10		\$169,840	\$98,865	\$268,705	0.508	\$136,502
11		\$7,800	\$86,865	\$94,665	0.475	\$44,966
12		\$7,800	\$86,865	\$94,665	0.444	\$42,031
13		\$7,800	\$86,865	\$94,665	0.415	\$39,286
14		\$7,800	\$86,865	\$94,665	0.388	\$36,730
15		\$64,770	\$98,865	\$163,635	0.362	\$59,236
16		\$7,800	\$86,865	\$94,665	0.339	\$32,091
17		\$7,800	\$86,865	\$94,665	0.317	\$30,009
18		\$7,800	\$86,865	\$94,665	0.296	\$28,021
19		\$7,800	\$86,865	\$94,665	0.277	\$26,222
20		\$169,840	\$98,865	\$268,705	0.258	\$69,326
21		\$7,800	\$86,865	\$94,665	0.242	\$22,909
22		\$7,800	\$86,865	\$94,665	0.226	\$21,394
23		\$7,800	\$86,865	\$94,665	0.211	\$19,974
24		\$7,800	\$86,865	\$94,665	0.197	\$18,649
25		\$64,770	\$98,865	\$163,635	0.184	\$30,109
26		\$7,800	\$86,865	\$94,665	0.172	\$16,282
27		\$7,800	\$86,865	\$94,665	0.161	\$15,241
28		\$7,800	\$86,865	\$94,665	0.150	\$14,200
29		\$7,800	\$86,865	\$94,665	0.141	\$13,348
30		\$169,840	\$98,865	\$268,705	0.131	\$35,200

TOTAL PRESENT WORTH \$11,675,580