STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

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June 6, 2000

Mr. Fred Evans
Department of the Navy
Northern Division
Naval Facilities Engineering Command
10 Industrial Highway, Mailstop 82
Lester, PA 19113-2090

re: April 28, 2000 and May 5, 2000 Draft Interim Submittals for Feasibility Study Report for Operable Unit 3, Portsmouth Naval Shipyard, Kittery, ME

Dear Fred:

The Maine Department of Environmental Protection has reviewed the document referenced above. The Department's comments follow.

April 28, 2000 Submittal

Note: the following general comment also refers to the minutes from the February 10, 2000 Technical Meeting

I. General Comment on Landfill Cap Alternative Evaluations

1. Frost Protection

Frost protection of cap components has not been addressed. This is a major concern in the proposed asphalt area. Placing a liner under a paved area introduces greater potential for gravel subgrade frost heave and soft road surface during thawing. Freezing of the drainage layer could also result in soft road surface. If asphalt areas are to be considered then the design must show that the area can handle the loads and address the need for use restrictions during thawing conditions.

II. HELP Modeling

The HELP modeling appears to be properly done. The results illustrate an overall 8 order of magnitude leakage reduction from the worst case existing condition to the most impermeable alternative. This overall reduction steps down uniformly through the different alternatives.

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1. Overall Infiltration Rate

The Navy should include uncapped areas within JILF in the HELP modeling. The capping alternatives all include areas within the solid waste boundary that will not be capped. This includes roads, areas below the 100 year flood level, industrial area, etc. Parker Avenue is a specific concern, this road is not to be capped and could be a substantial source of infiltration. These areas should be clearly delineated on a site plan and an estimate of leachate producing infiltration expected from these areas should be provided. This estimate should be tabulated with the infiltration rates of the cap alternatives.

2. Geonet and Geomembrane Design

At some places in the submittals reviewed by the MEDEP it appears as if the Navy considers the HELP model a suitable design tool for specifying these items. HELP modeling is suitable for determining that these types of products can control infiltration adequately in a capping situation. However, detailed design specification of these items should be done based on other factors that the HELP model does not evaluate. Selection of these materials should not be done primarily by HELP modeling but should be done by material properties and design evaluation of expected in place conditions.

3. Lateral Drainage Layer

It appears the Navy has concluded that lateral soil drainage layers are much less efficient than geonet drainage layers. The Navy does not include any soil drainage alternatives in the next round of HELP modeling. The MEDEP supports the use of geonet as opposed to soil drainage.

4. Membrane Thickness

It appears that the Navy has concluded that 60 mil membrane is essentially equal to 40 mil membrane. They appear to be making a case that HELP modeling can be used to select membrane thickness. The Navy continues to compare different thickness membrane in the next round of HELP modeling. The MEDEP does not support the use of HELP modeling for determining the suitability of 60 mil vs. 40 mil membrane.

5. Surface and Drainage layer Slopes

The Navy modeling assumes a 2% slope in all cases with either a 2% or 5% drainage layer slope. MEDEP Chapter 854, Standards for Hazardous Waste Facilities, states "The final grade of the landfill surface must be between two and ten percent grade." This does not imply that a 2% slope is appropriate for all hazardous waste landfills. And while not directly applicable to the JILF, Maine Solid Waste Regulations require a post-settlement surface slope of a minimum of 5%. The MEDEP is especially concerned about the potential for settling at the JILF. While most hazardous waste landfills consist of

contaminated soil, the JILF is a combination of soil and debris, including wood and metal that can decay and cause settling. Therefore, a 2% slope – which may decrease due to settling – is not acceptable.

A further consideration is that the JILF was never constructed to meet current standards. It is built on a tidal wetland, it is unlined, it has no leachate collection, etc. (as was considered normal operating procedure during the years it was in operation). Even under the best circumstances, the MEDEP discourages hazardous waste landfills. The JILF is far from best-case conditions. Therefore it is necessary and appropriate to use a more conservative surface slope.

III. FS Appendix B - HELP Modeling - Tt-NUS 4/28/00 Interim Submittal

General Comment

1. The MEDEP has reviewed the input/output reports and summary documentation. To evaluate areas of concern the MEDEP performed its own modeling runs. In general the Navy modeling is reasonable and there are no significant errors in the modeling. The worst case alternative modeled achieves about a 4 order of magnitude reduction of infiltration below the existing condition.

Specific Comments

2. Installation Quality

The Navy has followed the MEDEP's 3/24/00 email (titled "HELP model inputs") recommendations except that they have not used the recommended "poor" contact, instead they have continued to use "good" contact. Also, the Navy has continued to use 5 holes instead of the recommended 10 holes. The MEDEP modeled similar conditions but with poor contact instead of good contact and has found that for the relatively very impermeable caps modeled that there is a 2 to 4 times greater leakage rate. Please use the "poor" contact as specified in our 3/24/00 email.

3. Slopes

See above comment regarding slopes.

IV. Revisions to Section 1.0

1. 1.4.3.1 Initial Assessment Study, p. 1-11

The text in this section describes design plans for the dike construction at the JILF and refers to a figure for as-built drawings. The MEDEP is primarily interested in the dike as-built and would prefer to see a discussion of the as-built construction in the text.

2. 1.4.3.26 MTADS Geophysical Mapping and Test Pitting Activities

"...test pitting at OU3 will be completed on the identified anomalies"

This should be changed to indicate that test pitting has been completed.

3. Additional Evaluation of JILF Impact Area, p. 1-27, last paragraph

In the first sentence of this paragraph change "regarded" to "regraded".

4. Section 1 Figures

The Navy's February 17, 2000 Responses to Comments on the Draft FS indicated that several minor changes would be made to figures in Section 1. These revised Figures were not included with this revision package. Please be sure that they are included with the Draft Final FS for OU3.

V. Section 5 COC Discussion

The MEDEP has not been able to conduct a thorough review of the Section 5 revisions. Therefore, please note that a lack of comments on details does not imply complete approval of the selections. A more thorough review of this section will be conducted following submittal of the Draft Final OU3 FS.

General Comment

1. Overall, the process used to identify the primary risk drivers appears to be generally satisfactory. However, facility background was used as one of the eliminating factors. Depending on the substance, this may or may not be acceptable. In addition, it is mentioned that only human health risk drivers were considered as potential COCs. This may be agreeable for the terrestrial component. However, the seeps transport site-related contaminants to the offshore OU (OU4), where ecological receptors are of concern. The selection of COCs for seeps should address both human health and ecological issues.

Specific Comments

2. The section following Section 5.3.2 Groundwater is a repeat of section 5.3.1. Does section 5 end after Section 5.3.2 or should there be more to Section 5?

3. 5.3.1 Soils

"For cancer risks, each exposure scenario with total Incremental Lifetime Cancer Risk (ILCR) greater than 1 x 10-4 and/or 1 x 10-5 the chemicals with individual ILCR greater than greater than 1 x 10-6 and representative concentrations greater than facility background were identified as COCs."

Please fix this sentence.

This same sentence also appears under Section 5.3.2, Groundwater.

VI. Section 6 Revisions and Appendix D Revisions

1. 6.1.1 Chemical-Specific ARARs and TBCs

Please explain why the discussions of the Clean Water Act and the Maine Surface Water Toxic Control Program were moved to Section 6.1.3 Action-Specific ARARs and TBCs.

In addition, the Maine Safe Drinking Water Act was replaced with three state chemical-specific ARARs relating to drinking water, as directed by the USEPA. These three ARARs should be discussed in the text of Section 6.

2. 6.1.2 Location-Specific ARARs and TBCs

Why were the discussions of the Federal Endangered Species Act and Maine Ambient Air Quality Standards removed from the document?

3. Maine Surface Water Toxic Control Program, p. 6-16

"These discharge requirements would be potentially applicable if remedial activities at OU3 include discharges to the Piscataqua River."

Please remove "potentially" from this sentence. The discharge requirements will be applicable (not potentially applicable) if remedial activities at OU3 include discharges to the Piscataqua River.

4. Maine Hazardous Waste Management Rules, p. 6-17

a) Add the following to the section describing Maine's Hazardous Waste Management Rules (06 096 CMR 850-857)

"The rules establish performance standards for hazardous waste landfills including migration of hazardous wastes, constituents or derivatives into ground and surface waters of the state."

b) "These performance standards would be potentially relevant and appropriate for covers proposed under the alternatives."

As the MEDEP stated in Comment 74 in our 12/30/99 comment letter,

"The closure requirements of Chapter 854 are relevant and appropriate requirements. Chapter 854 requires final cover; it is not optional."

Please revise the sentence by removing the word "potentially".

5. 6.2 Media of Concern, p. 6-19

a) "The brackish/saline groundwater at OU3 migrates offshore, with surface water the downgradient exposure point."

Please change this to, "...with tidal waters and sediments of the Piscataqua River Estuary."

b) "Because the groundwater migrating offsite mixes with surface water, AWQCs with consideration of mixing are the preliminary cleanup goals for brackish/saline groundwater and seeps."

Regarding mixing zones, note that 06-096 CMR Chapter 530.5 authorizes DEP to accept a mixing zone when making licensing decisions. 06-096 Chapter 854 establishes performance standards for hazardous waste landfills and states that "landfills are the least preferable method of hazardous waste handling". A mixing zone is not mentioned in these rules. DEP may consider a remedial decision for groundwater discharge to surface water from the shipyard that includes a mixing zone if the release to surface water has been fully characterized at the point of exposure and we believe the potential risks are acceptable. DEP has asked the Navy to conduct WET tests on seep water. The WET test is a common, generally accepted technique. It can be used to assess the combined impact of a number of contaminants and potential for harm to the marine environment at low tide. Based on the FS drafts and revisions to date, DEP is not able to make a remedial decision for the management of migration at this time. We disagree with the last statement in this paragraph.

c) "The seep data was compared to AWQCs with appropriate consideration of the dilution factors for Clark Cove and Jamaica Cove..."

As stated in our May 23 comments on the first interim submittal for the OU3 FS the MEDEP believes dilution factors for Clark Cove may be one-third that calculated by the Navy.

d) "...it is likely that the elevated pesticide concentrations at CC-1004.5 are associated with sediment particulates in the seep."

A comparison of pesticide concentrations at CC-1004.5 with parameters indicative of sediment particulates, e.g., Total Suspended Solids, Total Organic Carbon, Aluminum, Iron, etc., does not bear this out. The MEDEP performed some basic statistics using Microsoft Excel. Most significantly, over the four seep/sediment rounds DDT

concentrations in seep water had a negative correlation with Total Dissolved Solids and Total Suspended Solids. That is, overall, when the concentration of solids went up, the concentrations of DDT went down. The largest correlation coefficient (0.522) was seen with the ratio of unfiltered aluminum:filtered aluminum. See attached table.

e) "...surface water concentrations meet the AWQCs."

This statement is incorrect. Earlier in this paragraph the Navy stated, "...concentrations of DDD at one seep...exceeded the AWQC with application of the dilution factor." How does the Navy intend to reduce concentrations of DDD to come into compliance with AWQC? Also see comment 5b.

6. <u>6.3 Remedial Action Objectives</u>

a) p. 6-20: RAO 4 states, "Ensure that the migration of groundwater contaminants does not adversely impact the offshore environment."

06-096 Chapter 854 § 8H, Closure and Post Closure Requirements, states,

"...in the closure and post-closure plans, the owner or operator must address the following objectives and indicate how they will be achieved:

(1) Control of pollutant migration from the facility via ground water, surface water, and air..."

The wording of RAO4 is contradictory to this objective. RAO4 states, "Ensure that the migration of groundwater contaminants does adversely impact..." while the Rule states "Control of pollutant migration". Therefore, RAO4 as presently worded is not acceptable to the MEDEP.

Furthermore, this remedial action objective does not take into account the possibility that the migration of groundwater contaminants is currently adversely impacting the offshore environment. The MEDEP recognizes that sediment PRGs are in development. However, until PRGs are developed and approved neither the MEDEP, USEPA, or Navy knows if present concentrations of contaminants in the sediment are acceptable. Therefore it may be possible that the migration of groundwater is currently impacting the offshore environment, i.e. intertidal sediment and associated biota. The MEDEP notes that the Estuarine Ecological Risk Assessment examined subtidal, not intertidal communities. Until PRGs are developed we must rely on the only available screening values we have - the NOAA ERLs and ERMs - for decision making.

b) p. 6-21: "Risk estimates for the hypothetical future resident exceeded acceptable levels. However this scenario is unlikely...In addition, risks for future residents included risks for using OU3 groundwater for drinking water. This is also highly unlikely..."

The remedy must not rely on the probability of drinking groundwater or residential exposure. Enforceable institutional controls must be established which will provide notice for the future and restrict use. The proposed mechanisms for institutional controls must be described in detail in the FS and the life cycle costs estimated.

c) p. 6-21: "...the results from the contaminant fate and transport modeling...indicate that the potential for impact to the nearshore surface water and sediment are minimal assuming steady-state conditions..."

Please identify the Navy's threshold for minimal impact. Does this phrase mean a contaminant concentration below screening or cleanup criteria?

7. 6.3 Remedial Action Objectives, p. 6-21/22

"In addition, groundwater/seep management, which may be achieved through technologies considered to address the other RAOs, will be identified and evaluated where appropriate."

This sentence is vague. Please clarify its meaning.

8. 6.3 Remedial Action Objectives, p. 6-22

The MEDEP is troubled by RAO 5. In general, we discourage reuse of closed landfills by municipalities. We are aware of the Shipyard's space limitations and unique needs, but we are particularly concerned about paved parking areas on top of the cap for the following reasons:

- Our experience with the performance of landfills caps has demonstrated that evapotranspiration plays a significant role in cap performance.

- The minimal slope we require for the JILF is 5%. This slope may interfere with the performance and convenience of a parking lot.

- Frequent inspection and regular maintenance of the asphalt would be necessary to prevent damage to the cap. These activities must be funded for the indefinite future.

9. Table 6-4, State of Maine Location-Specific ARARs

06-096 CMR 530.5, Maine Surface Water Toxics Control should be added to this table

VII. Section 7 Revisions to Draft

1. 7.2.1.3 Capping, p. 7-5

"Reducing infiltration of precipitation would be secondary because conditions are assumed to be steady state."

This statement is contrary to MEDEP requirements that infiltration reduction is a primary objective. Please further explain or correct this statement.

2. 7.2.1.3 Implementability, p. 7-8

"If significant consolidation/settling can occur, then a 60 mil geomembrane would be preferred."

The MEDEP agrees that differential settlement might result in a need for the higher tensile strength provided by thicker membrane. However, 60 mil membrane is better suited in terms of constructibility and longevity and might also be required for these reasons. The MEDEP prefers a 60 mil membrane.

VIII. Section 8 Capping Description and ARARs Evaluation

1. Draft FS Section 8.2.2 Existing Infiltration Rate for No Action Alternative

Section 8.2.2 has not been revised however the original draft FS includes a 22 gpm estimated rate which converts to 4,235 cu. ft. per day or 1,500,000 cu. ft. per year. Technical meeting documents include a landfill cover simulation for "existing" vegetated cover which estimates 456,000 cu. ft. per year for about 1/2 the JILF area. For comparison to groundwater/tidal flux and for comparison to capping alternatives a better developed existing condition infiltration rate should be developed.

2. ARAR Compliance, Maine Hazardous Waste Management Rules, pp. 5 & 11

The text claims rule compliance. This is correct with respect to minimum technical standards. However the rules (854.5) are primarily environmental performance-based and in this respect it would be difficult to conclude compliance with prevention of adverse effects.

3. Maine Solid Waste Management Rules, pp. 5 & 11

a) The text on p. 5 claims compliance with non-secure landfill standards and the text on p. 11 claims compliance with secure landfill standards. The MEDEP requires compliance, at a minimum, with the most stringent cap standards which is the secure landfill standards. The Solid Waste Rules (401.5.B.1) also include performance

standards for hazard mitigation and portions of this rule may be relevant and appropriate for operation and maintenance of the closed landfill.

b) The alternative 3 cap does not meet the secure landfill standard because it only has 12" of barrier soil as opposed to the 24" required.

c) The alternative 3 and the alternative 4 cap do not meet the Solid Waste Rule minimum 5% slope standards.

d) See Comment VI. 8 regarding reuse.

4. Alternative 4, p. 6

"The conceptual design under this alternative allows flexibility in selecting slope, geomembrane thickness, and barrier characteristics during the final design, based on calculations that would demonstrate low liner leakage."

Allowing flexibility for design is appropriate, however the apparent reliance on the HELP model raises the following concerns:

a) Slope: HELP modeling is the best tool available for comparing alternatives but it should not be considered perfectly accurate. The MEDEP considers 5% slope a minimum requirement.

b) Geomembrane Thickness: This is not commonly selected based on HELP model calculations. Instead, thickness is commonly based on constructability and in-place performance based on material properties such as strength and elasticity. Resolving the issue of liner thickness during design would be acceptable provided it was not based on HELP modeling.

VI. Conceptual Design for Wetlands as Part of Erosion Controls for OU3

The conceptual design for wetlands did not indicate the presence of seeps containing contaminants. This is an important design consideration that should not have been omitted. The design should include a summary of contaminants present in the seeps and the range of concentrations seen.

Regardless of the above comment, based on consideration of the proposal and internal discussions, the MEDEP believes that there is no value to be added by constructing a salt marsh adjacent to the landfill as presently proposed and there are others ways to protect the shoreline of the landfill from coastal erosion which would have less of a negative impact on the tidal flats.

The MEDEP prefers to remove part of the landfill by pulling material away from the toe of the landfill and using that material to build up the slope for the landfill cover.

At a minimum, stabilizing the slopes adjacent to the tidal mudflats is required.

Please feel free to contact me at (207) 287-8010 if you have any questions.

Sincerely,

Iver McLeod
Project Manager
Bureau of Remediation and Waste Management

Attachment

pc:

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ATTACHMENT 1

Correlation coefficients (as calculated by MS Excel 97) for DDT in seep CC1004.5 vs parameters indicative of particulates in water samples

Round:	**7**	**8**	**9**	**10**	
DDT (ng/L)	17	36	4.1	81.9	**Correlation Coefficient (parameter vs. [DDT])**
Turbidity (mg/L)	55	0.1	8	11	-0.27792
TSS (mg/L)	23	54	130	28	-0.59536
TOC (mg/L)	8.1	3.6	3.8	6	0.125543
unf Al/f Al	5.25	6.92	33.82	47	0.521714
unf Fe/f Fe	5.56	18.48	11.89	5.55	-0.28209
TDS (mg/L)	6700	15000	30000	14000	-0.35999