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Project Number N7538

Ms. Kimberlee Keckler
U.S. Environmental Protection Agency
Federal Facilities Superfund Section
1 Congress Street, Suite 1100
Boston, Massachusetts 02114-2023

Reference: CLEAN Contract No. N62472-90-D-1298
Contract Task Order 0282

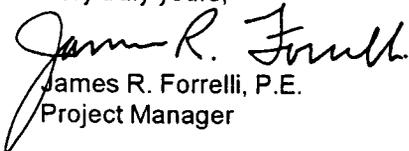
Subject: Response to EPA's Comments on the Draft Feasibility Study Report
Old Fire Fighting Training Area, Naval Station Newport, Newport, Rhode Island
Received in EPA letter to James Shafer of the U.S. Navy July 18, 2001

Dear Ms. Keckler:

The Navy has reviewed the comments provided by EPA on the Draft Feasibility Study Report for the Old Fire Fighting Training Area site. The responses to EPA's comments are provided in Attachment A (two copies). EPA's comments are presented verbatim in italic type followed by the Navy's response in standard type. Comments contained in the EPA's cover letter have been itemized and presented as general comments. The report is being revised to address the comments.

Please contact Jim Shafer of the Navy or me if you have any questions about this transmittal or would like to discuss this matter further.

Very truly yours,


James R. Forrelli, P.E.
Project Manager

JRF:rp

Enclosure

c: J. Shafer, NORTHDIV (w/enc. - 3)
M. Griffin, NAV STA Newport (w/enc. - 2)
P. Kuipa, RIDEM (w/enc. - 4)
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File N7538-8.0 (w/enc.)/File N7538-3.2 (w/o enc. - 2)

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ATTACHMENT A
Responses to Comments from the
U.S. Environmental Protection Agency
Old Fire Fighting Training Area Draft FS For
Soil and Marine Sediments (April 2001)
Comments dated June 18, 2001

General Comments

No **Comment/Response**

1. *Comment: The FS defines the terms shoreline sediment, near shore sediment, and offshore sediment on page 2-4. This terminology has not been consistently used in the FS, thereby causing some confusion. Please edit the FS so that consistent terminology is used throughout the FS to clarify the FS discussion regarding sediment activities.*

Response: A description of the terms noted above is provided in Appendix B. In the draft final report this description will be brought forward to Section 1 and Section 2, and clarified as appropriate for the discussions in those sections. The document will be checked for consistency in these definitions as revisions are completed.

2. *Comment: Managing the excavation of sediment in the wet will be impacted by sloughing and sediment movement (suspension and redeposition). The volume of sediment that will need to be excavated to achieve the remediation goals will exceed the contaminant-impacted volume because of the sediment movement. Sediment movement will also make it difficult to establish and confirm a clean excavation. Horizontal and vertical over-excavation will be required to attempt to achieve a clean excavation. The FS should discuss these uncertainties and present a conceptual plan for dealing with them.*

Response: Discussion of the uncertainties and a conceptual plan will be added to the text of the FS. The proposed sediment remedial area boundaries and excavation depth (2 feet) were selected to address some of this uncertainty.

3. *Comment: It is not clear from the description of the alternatives proposed whether the general plan is to over-excavate the contaminated sediment to try to avoid confirmation sampling before backfilling, or if confirmation sampling has been inadvertently omitted from the alternative descriptions. While it may be appropriate to postpone confirmation sampling for sediment until the excavations in the wet have been backfilled, it would not be appropriate to assume the excavations have been completely successful and dismiss confirmation sampling. Please add an appropriate discussion of confirmation sampling to the FS to clarify what will be done. A discussion of confirmation sampling should include an estimate of the number of samples required, the analyses to be performed, a schedule (which will be critical), and follow-up actions if unfavorable results are obtained. The cost calculations should be updated to include the confirmation sampling.*

Response: The text and cost estimates will be revised to include confirmation sampling.

4. *Comment: There are errors and inconsistencies in the cost estimates in Appendix D that should be corrected. A principal concern is the assumed duration of the construction activities for several of the soil and sediment alternatives. The construction durations used for the cost estimates are not consistent with the durations used in the FS text and in other tables summarizing the alternatives. Also, a bulking factor associated with excavation may have been used for sediment cost estimates but not for soil cost estimates. Some of the other inconsistencies are identified in the specific comments on the FS. Please review the cost estimates and correct them as appropriate.*

Response: The cost estimates and text will be revised to address these inconsistencies.

Response EPA Comments
OFFTA Draft FS

5. *Comment: A cost sensitivity analysis should be added to the FS to discuss the potential impacts of several uncertainties associated with the proposed alternatives. Some of these uncertainties include:*

- *the actual volume of contaminated sediment requiring remediation*
- *the amount of over excavation required to achieve remedial goals*
- *the capability of the bridge to the mainland to withstand the truck traffic loadings*
- *the ability to conduct all operations within the site boundaries*

Response: The Navy agrees that there is uncertainty as to the actual volume of sediment requiring remediation. The Navy plans to conduct additional sediment sampling and evaluation as part of the pre-design investigation. The Navy doesn't believe that the suggested sensitivity analyses would be beneficial at this point. The uncertainties listed will be better addressed and discussed in the text from a qualitative standpoint.

6. *Comment: It is not apparent that there is enough space at the site to implement some of the proposed alternatives. Additional conceptual design information should be provided regarding the space requirements for some of the construction activities, such as dewatering, screening, stockpiles, on-site treatment to name a few. The implementability discussion for the alternatives cannot be evaluated properly without this additional information. If space off site is required to implement any of the proposed alternatives, that needs to be discussed in the FS.*

Response: Additional information will be provided regarding the space at the site to implement the alternatives. It is not anticipated that space constraints will cause a problem with any of the alternatives.

7. *Comment: The time required to reach the remedial objectives for Soil Alternatives 2 and 3 and Sediment Alternatives 3 and 4 is not presented consistently throughout the FS. Various times are presented in the FS text, in the tables, and in the cost estimate calculations. The FS should be reviewed and the assumptions for the time to complete each alternative made consistent throughout the FS.*

Response The text, tables, and cost estimates will be revised to make the presentation of the time required to reach remedial objectives consistent. However, note that no information will be presented on the sequencing of the overall project regarding phasing of the alternatives for the two media; soil and sediment alternatives are independent of each other at this time.

8. *Comment: There are errors in the calculation of the ecological PRGs for acenaphthylene, benzo(a)anthracene, benzo(b,j,k)fluoranthene, indeno(1,2,3-cd)pyrene and benzo(g,h,i)perylene. The errors alter the selection of the limiting contaminants of concern. The ecological aquatic PRG values must be recalculated.*

Response: The calculations have been checked and the values are correct as presented. Details on these calculations are provided in the responses to specific comments that follow. If necessary, the project technical personnel are available for additional discussions regarding ecological PRG calculation.

9. *Comment: The FS inappropriately eliminates a containment alternative from detailed analysis. Moreover, the rationale used for dropping it from further consideration is inconsistent with that used in FSs for other sites on the base, most notably the McAllister Point Landfill. Limiting "access to the harbor" and "altering the bay/harbor bottom elevations and access to Coaster harbor" are neither mentioned in EPA guidance nor listed as NCP criteria for evaluation of alternatives and therefore do not constitute sufficient justification to drop these alternatives. Please rewrite the FS to include a containment alternative or better clarify the reasons for not doing so.*

**Response to EPA Comments
OFFTA Draft FS**

Response: The Navy will revise and expand the discussion for dropping containment from consideration to be consistent with EPA guidance and the FSs for other sites on the base. The Navy reviewed EPA and RIDEM comments on the McAllister Point Landfill FS in which the agencies provide several reasons why a containment alternative for sediments will not be an acceptable remedy. These include

“EPA is concerned that the permeable cap proposed in the FS will not contain the contaminants present in the sediments – and therefore will not protect human health and the environment. Additionally, since contaminants could conceivably wash out or migrate through the permeable cap proposed under alternative NS-3, this alternative may not meet certain location-specific ARARs.” (EPA March 19, 1998)

“EPA believes that Alternative NS-3 – the cap and associated habitat restoration – will result in significant intertidal habitat destruction. Since dredging is an alternative that appears to be less environmentally damaging, the NS-4 alternative should be selected.” (EPA March 19, 1998)

The revised text to eliminate the containment alternative for sediment will include language similar to that provided in these and other regulatory comments on the sediment capping alternative for the McAllister Point Landfill FS.

10. *Comment: EPA believes that it is not appropriate to eliminate groundwater from the remedial action alternatives. As demonstrated from previous OFFTA RIs, the contribution from groundwater to overall risk can be quite significant. Additionally, the groundwater to sediment pathway is not evaluated anywhere in the administrative record for the site. As recognized on page 1-7, “...groundwater flows from the site and any potential source areas toward Narragansett Bay...” As a result, the FS fails to adequately address the overall protectiveness of the remedies retained for detailed analysis. EPA recommends that alternatives incorporating institutional controls be developed to ensure that wells are not installed on the site for drinking water or sprinklers. A table that compares site groundwater data to MCLs and relevant State standards would be helpful. Additionally, the groundwater should be monitored to delineate the boundary of the contaminated groundwater plume and to ensure that it is not contaminating the sediments adjacent to the site.*

Response: Groundwater was not selected as a medium of concern based on the RI and is not addressed in the draft FS. This is consistent with the agreement made between the Navy and EPA regarding the groundwater (see the response to General Comment No. 11 for further discussion of this issue). The Navy does not agree that the previous OFFTA RI groundwater risk assessment accurately estimates the potential risks. The previous risk assessment is out of date and evaluates groundwater samples that may not be indicative of the actual groundwater conditions. In addition, groundwater at the site is not used and is classified as a GB aquifer and as such is not reasonably anticipated to be used. However, if the EPA insists that groundwater be evaluated in the FS for possible use restrictions, then the Navy proposes that the 1997 groundwater data be evaluated for potential risks. The 1997 data was acquired using low-flow pumps to prevent suspended solids from biasing the metals data. The Navy proposes updating the groundwater risks by preparing a streamlined risk evaluation using the 1997 data and evaluating the data under a standard residential exposure scenario. This would include tap water ingestion, dermal contact, and inhalation during showering pathways and estimate noncancer and cancer risks for a residential child and a residential adult. Tables would be prepared to document COPC selection, distributional analysis, exposure point concentrations, toxicity factors, and cancer and noncancer risks, along with a brief narrative discussing the risks and methodologies. The risk evaluation would be included as a part of the FS. The Navy proposes that a meeting be held to review the input parameters for each receptor and pathways of exposure before the risk evaluation is performed. If unacceptable risk is identified under the residential use scenario then the Navy will present the risks, a comparison to GB criteria and MCLs, and propose limited alternatives for groundwater. Considering the salinity of the groundwater, the classification of the groundwater, and the lack of projected future use, the limited alternatives that the Navy will

**Response to EPA Comments
OFFTA Draft FS**

evaluate will include the need to establish institutional controls and/or monitoring in conjunction with the soil remediation alternatives.

In addition the groundwater to sediment pathway will be evaluated.

11. *Comment: Regarding groundwater, EPA has not formally adopted the RI groundwater classification system. Therefore, although the State classifies the groundwater GB, the Navy still must address federal standards and more stringent state standards for monitoring and the establishment of boundaries for institutional controls (i.e., groundwater use prohibition/well restriction). This approach has been discussed with the Navy at NCBC to deal with the contaminated groundwater plume under "Study Area 01, Site 02, Site 03, Study Area 04." In that area the remedy discussed monitoring the plume as it moved under the site and into the Bay and restrictions on groundwater use/well installation. Even in an area where wells for drinking water are not likely there still is potential that well(s) could be installed for irrigation purposes.*

Response: The Navy proposes that the need for monitoring and establishment of boundaries for institutional controls (i.e., groundwater use prohibition/well restriction) be based on a groundwater risk evaluation. These measures, if necessary, could be incorporated into the soil remediation alternatives. (See response to General Comment No. 10.)

Please note that the Navy proposed to EPA and RIDEM that the aquifer would be evaluated against GB standards in a meeting held on October 5, 1999 and the EPA agreed. In Section 4.0 of the OFFTA revised Draft Final RI, submitted in October 2000, groundwater was compared to GB standards. Neither EPA nor RIDEM provided any comments on the revised Draft Final RI that took exception to the Navy's evaluation of the aquifer against GB Groundwater Objectives.

Regarding the approach for the contaminated groundwater plume at NCBC Study Area 01, Site 02, Site 03, Study Area 04, the Navy doesn't believe that this approach would apply to OFFTA. There the groundwater exceeds RIDEM GB Groundwater Objectives and the property is being transferred. These conditions do not exist at OFFTA.

12. *Comment: Please consider whether a different organization of the FS would be clearer. For example, the areas could be discussed as "onshore" and "offshore" rather than "soil" and "marine sediment." Groundwater risks could be discussed within an "Onshore" section (or within an entirely new chapter).*

Response: The FS will continue to be organized into the "soil" and "marine sediment" sections in order to focus on the media to be addressed. Also, the project is considered one site and not broken into onshore and offshore operable units. Groundwater will not be addressed in this FS.

13. *Comment: The FS erroneously states that site risks are acceptable. Although risk levels between 10-4 and 10-6 are generally considered acceptable, such risks are also actionable under federal law (40 C.F.R. §300.430(e)(2)). EPA policy states that a risk manager may also decide that a baseline risk level less than 10-4 is unacceptable and that remedial action is warranted (OSWER Directive 9355.0-30). Generally, when risk levels lie between 10-4 and 10-6, a risk management discussion is warranted in the administrative record. The FS should better clarify the justification for action at the site.*

Response: The Navy wants to be able to reuse the site for residential purposes. Therefore, for risk management purposes, the Navy wishes to remediate soil with risk greater than 10-4. Additional language about this risk management decision will be added to the text.

**Response to EPA Comments
OFFTA Draft FS**

14. *Comment: Use of the Final RI report (dated 2001) as reference: Although the RI has been cited many times, at the time of reviewing the FS report, EPA has not received the final RI report yet. It is therefore inappropriate to cite the final RI report as justification for some of the FS findings.*

Response: By the time the FS is finalized, the RI will have been finalized and submitted. Therefore, the citation was put in the draft FS. If there are changes to the RI before it is finalized, the FS text will be revised accordingly.

15. *Comment: Use of background concentrations for selecting chemicals of potential concern (COPCs): It is not EPA's policy to use background concentrations for selecting COPCs. According to Region I's Risk Update # 3 (August 1995), chemicals present below background concentrations may still contribute significantly to total site risk and therefore should be retained to conduct a complete characterization of site risks. Chemical concentrations should be compared to risk-based concentrations from Region IX table (preferable, according to Region I's Risk Update #5, September 1999) or Region III table (as it was done in the RI report). Those chemicals that have concentrations exceeding these risk-based values should be retained in the COPC list. EPA assumes that the final RI will explain that actual sites risks are higher because of the contribution to overall risk from background contaminants that were not quantified.*

Response: This comment appears to apply more to the selection of chemicals to be used in the Baseline Risk Assessment in the RI and not to the selection of COPCs and COCs for remediation. The only chemical for which the background concentration affects the COC list is arsenic, which is retained as a COC and requires action.

Response to EPA Comments
OFFTA Draft FS

Specific Comments

- | <u>No.</u> | <u>Page</u> | <u>Comment/Response</u> |
|------------|------------------|---|
| 1. | p. ES-1, ¶4 | <p><i>Comment: Please discuss the potential human health and ecological risk from groundwater. Previous groundwater risk assessments and a qualitative assessment of contaminants in groundwater as a source to other media should be addressed.</i></p> <p>Response: The results of the risk evaluation will be summarized in this section. The previous groundwater risk assessment is outdated and will be used as basis for remedial actions in this FS. A qualitative assessment of contaminants in groundwater as a source to other media will be discussed.</p> |
| 2. | p. ES-2, ¶2 | <p><i>Comment: Please discuss and quantify the area where groundwater is contaminated (i.e., above federal/state standards).</i></p> <p>Response: Groundwater contamination and the affected area will be summarized.</p> |
| 3. | p. ES-2, ¶23 | <p><i>Comment: In the section on "Feasibility Study Process," discuss groundwater issues, including PRGs and remedial alternatives.</i></p> <p>Response: Text will be added to summarize groundwater issues and remedial alternatives.</p> |
| 4. | p. ES-2 | <p><i>Comment: Add a Summary Section for groundwater alternatives.</i></p> <p>Response: Depending on the outcome of the groundwater risk evaluation the Navy anticipates that limited alternatives for groundwater (institutional controls and/or monitoring) would be evaluated in conjunction with the soil remediation alternatives.</p> |
| 5. | p. 1-1, §1.2, ¶1 | <p><i>Comment: Please include the town of Jamestown in the second sentence and ensure that the acreage estimate includes Gould Island.</i></p> <p>Response: The text will be checked and revised as appropriate.</p> |
| 6. | p. 1-10, §1.7 | <p><i>Comment: Please insert a more detailed discussion of groundwater contamination in this section.</i></p> <p>Response: Additional text from the findings in the RI will be added regarding groundwater contamination.</p> |
| 7. | p. 1-11, §1.7, 4 | <p><i>Comment: It is inappropriate to compare sediment concentrations with soil standards. Please compare the sediment concentrations with an appropriate sediment benchmark instead and modify the text accordingly.</i></p> <p>Response: Because there are no sediment benchmarks against which to compare, the shoreline sediment samples (which are directly accessible when walking on the shore) were compared with soil standards. The same text was included in the RI. However, text will be added to indicate that it is not directly appropriate to do so but provides a general comparison.</p> |

**Response to EPA Comments
OFFTA Draft FS**

8. p. 1-13, §1.9, 3 *Comment: Please identify that non-cancer risks exceed 1 for all scenarios (adult subsistence fisherman, child and adult recreational users) for lobster, clam and blue mussel consumption (Table 1-2). Specify the target organs and primary contributors to these risks.*

Response: The text will be revised as suggested.

9. p. 1-13, 5 *Comment: The organic form of arsenic in fish and shellfish tissue is arsenobetaine. Although there are some studies that show that arsenobetaine is the non-toxic form of arsenic primarily found in fish and shellfish tissue, EPA recommends retaining arsenic on the list of primary risk contributors for fish and shellfish. Unless additional site-specific data are provided to prove that arsenic in fish and shellfish at the site is mainly found in its non-toxic form, EPA recommends developing a risk-based PRG and cleanup goal for arsenic.*

Response: A human health risk-based PRG for ingestion of shellfish tissue was developed for arsenic and carried through the FS process. Ecological risk-based PRGs were not calculated for metals.

10. p. 1-13, §1.10 *Comment: Please include a qualitative discussion of onshore terrestrial ecological risks.*

Response: The text will be revised as suggested.

11. p. 2-5 *Comment: Revise the Section on Groundwater based on the comments in the cover letter (specifically MCLs should be used as action-specific standards for monitoring and establishing groundwater use/well restriction areas).*

Response: The Navy proposes that the need for monitoring and establishment of boundaries for institutional controls (i.e., groundwater use prohibition/well restriction) be based on a groundwater risk evaluation. These measures, if necessary, could be incorporated into the soil remediation alternatives. (See response to General Comment No. 10.)

12. pp. 2-6 to 2-7 *Comment: Please clarify what is meant by "...then making any adjustments for background concentrations...."*

Response: The word "adjustments" will be changed to "substitutions." The reason these substitutions are made is so the PRG will not be lower than background concentrations or quantitation limits. Also, certain ARARs take precedence over risk-based PRGs.

13. p. 2-7, ¶3 *Comment: The text incorrectly summarizes the Navy's policy regarding human health risk assessments. Figure 1 of the September 18, 2000 Navy Interim Final policy on the Use of Background Chemical Levels explicitly states "Compare Background Level to Benchmarks and Document Background Risks in the Baseline Risk Assessment Report" when site concentrations are below background. Change the first sentence to accurately reflect this policy.*

Response: The text of this paragraph is stating almost exactly the Navy policy item no. 2 as given on page 2 of the September 18, 2000 Navy Interim Final Policy on the Use of Background Chemical Levels. The quoted information is from a flowchart, which abbreviates the description of how background risks are handled. The following sentences will be added to this paragraph so as to include verbatim the Navy background policy. "In some cases, there may be risks associated with chemical levels below background levels. This risk is outside the scope of the Navy's Environmental Restoration Program but it

**Response to EPA Comments
OFFTA Draft FS**

should be communicated to our stakeholders. Elevated chemicals that were lower than background levels and screened out due to background considerations in the data evaluation step of the baseline risk assessment should be compared to the appropriate risk-based benchmark concentrations. The results should be documented in the Risk Characterization section of the baseline risk assessment report."

14. p. 2-9,
§2.2 2.2 *Comment: This section discusses the use of chemical-specific ARARs/TBCs for the development of PRGs for soils, but § 2.2.3.2 does not discuss the use of chemical-specific ARARs/TBCs for developing sediment PRGs (although they are cited in the ARARs Tables). Please clarify.*

Response: The ARARs/TBCs listed here only apply to soil. The methodology for sediment is different than soil. The text and tables for sediment will be revised for consistency.

15. p. 2-9,
§2 2.2.2, ¶15 *Comment: Please explain the basis for establishing a level of 1 mg/kg for PCBs for residential sites and the level of 400 mg/kg for lead for residential areas. According to EPA's Directive 9355.4-01, A Guide on Remedial Actions at Superfund Sites with PCB Contamination (August 1990), the level of 1 mg/kg PCBs for residential areas is recommended as the soil action level - analytical starting point to reflect a protective quantifiable concentration. The PRG for PCBs in residential soil still must be calculated based on risks and site-specific exposure parameters.*

According to EPA's Directive 9355.4-12, Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities, the level of 400 mg/kg lead for residential areas is recommended as screening level only, not for use as a PRG level. The PRG for lead in residential soil should also need to be calculated based on risks and site-specific exposure parameters. A promulgated State standard may also be used if it is more stringent.

For dioxin, according to EPA's Directive 9200.4-26, Approach for Addressing Dioxin in Soil at CERCLA and RCRA Sites (April 13, 1998), the level of 1 µg/kg toxicity equivalents for dioxin is generally used as a starting point for setting cleanup levels and PRG for remedial sites in residential areas. This level is usually recommended unless extenuating site-specific circumstances warrant a different level. Thus, except for dioxins, PRGs for PCBs and lead must be calculated based on target risk levels (target excess individual lifetime cancer risk of 10⁻⁶ and target non-cancer hazard index of 1) and site-specific exposure parameters.

Response. The maximum concentration of PCBs detected at the site was Aroclor-1254 at a concentration of 0.53 mg/kg. Therefore, if the level of 1 mg/kg PCBs is used as a soil action level, no further action would be required. The text and tables will be revised to present the value of 1 mg/kg as an action level instead of as a PRG

The value of 400 mg/kg lead is in fact a risk-based value, calculated based on acceptable blood lead concentrations. Because there is no reference dose or cancer potency slope factor for lead, a "regular" risk-based number based on a cancer risk of 10⁻⁶ or an HI of 1 cannot be calculated. Also, the value of 400 mg/kg was used for the risk-based methodology, but the selected soil PRG was actually based on the RIDEM value of 150 mg/kg.

As indicated in the comment, the value of 1 µg/kg toxicity equivalents for dioxin is appropriate to use as a PRG.

**Response to EPA Comments
OFFTA Draft FS**

16. p. 2-10, §2.2.2.2 *Comment: EPA does not consider background concentrations as PRGs for inorganic contaminants. Except for dioxin, PRGs for all other compounds, including inorganics, must be calculated based on target risk levels (target excess individual lifetime cancer risk of 10⁻⁶ and target non-cancer hazard index of 1) and site-specific exposure parameters as presented in the RI report. Comparison with background data should be reserved for the risk management discussion.*

Response: The Navy disagrees with this comment. No soil will be cleaned up below the background concentration. Arsenic is the only contaminant for which a background concentration was selected as the PRG.

17. p. 2-12, §2.2.2.4 *Comment: The soil RAOs should be modified to make it clear that the soil cleanup numbers apply to all soils on the site, including vadose zone soils. It is unclear why the FS limits the cleanup to solely the vadose zone soils.*

Please add an RAO that addresses migration of contaminants in groundwater to the sediments.

Response: The FS addresses only vadose zone soils because saturated soils are typically addressed as part of groundwater contamination, which is not a medium of concern for this FS. Also, the RIDEM Remediation Regulations only apply to vadose zone soils.

An RAO that addresses migration of contaminants in groundwater will be added if appropriate based on the outcome of the groundwater risk evaluation.

18. p. 2-18, §2.2.3.2 *Comment: This section discusses the derivation of ecologically based sediment PRGs. At the end of the discussion the text states, "the calculated PRGs focus on high-risk areas and the areas immediately surrounding those areas". The near shore Station OFF-05 is the only high ecological risk station. Therefore, the figures in the FS depicting the near shore sediment remedial action areas should only indicate the area immediately surrounding Station OFF-05. This, however, is not how the remedial action area is presented. Figure 5-1 and other figures depict 64% of the near shore area as the remediation area.*

Response: The cited passage appears to be misleading in that the applicability of the PRGs is not limited to the sediments immediately surrounding these areas. The intent of the passage is to note that the contaminants for which PRGs are calculated are highest at station OFF-5, and other exceedances are at other nearshore stations. It also intends to note that OFF-5 is somewhat central to those other nearshore stations. This passage will be clarified in the revised report.

19. p. 2-19 *Comment: Please add § 2.2.4 Medium of Concern: Groundwater*

Response: Depending on the outcome of the groundwater risk evaluation (see Response to General Comment No. 10) this section will be added.

20. p. 2-19, §2.3 *Comment: Add a discussion about the area of contaminated groundwater.*

Response: This information will be added based on the outcome of the groundwater risk evaluation (see Response to General Comment No. 10).

21. p. 2-20, §2.3.1 *Comment: The volume of soil requiring remediation appears to be underestimated. The volume estimates seem to be based on an average soil excavation depth of 4½ feet. It is likely that additional contamination is present at greater depths. In fact, Figure 2-1 illustrates numerous areas where contamination deeper than 4 feet is exhibited. Please*

explain the rationale for the volume estimate and clarify in the text.

Response: The soil volumes requiring remediation were estimated as follows. The first estimate of volume was made for the three mounds on the site. These estimates were done based on the entire volumes of the mounds above the elevation of the rest of the OFFTA site (which, except for the mounds, is otherwise fairly flat). Then the remaining area (the "flat" area as well as the area under the mounds) was considered. The depths of contamination were estimated for different blocks of the site as shown on Figure 2-3. For example, the depth of contamination for a large portion of the western end of the site is estimated at 2 feet, indicated by blue on Figure 2-3. The assigned depth of each block was then multiplied by its area to estimate the volume of each block. The volumes of all blocks were then summed. Appendix C presents the calculations.

A better explanation will be added to the text.

22. p. 3-6, §3.2.2.2 *Comment: In addition to Deed Restrictions, this section should discuss putting Use Restrictions within the Base Master Plan or another base-wide land use control system.*

Response: The discussion will be revised to explain that any land use controls (LUCs) would be implemented in accordance with Department of Defense Guidance on Land Use Controls Associated with Environmental Restoration Activities for Active Installations dated January 17, 2001.

23. pp. 3-10 & 3-11, and p. 3-33, ¶1 *Comment: The containment alternatives appear to be inappropriately eliminated from further detailed comparison. Please expand the discussion to make it consistent with EPA guidance.*

Response: The discussion will be revised and expanded to be consistent with EPA guidance.

24. p. 3-29, §3.3.2.2 *Comment: This section should also discuss restrictions on lobstering, and recreational fishing (see draft Dorektor Shipyard FS). There must be CERCLA based restrictions on shellfishing imposed beyond the state ban based on fecal coliform levels.*

Response: The State will not allow further restrictions on lobstering or shellfishing.

25. p. 3-44, §3.3.2.6 *Comment: Under Cost – The second sentence should read "...treatable off-site..." since this is a discussion of Off-Base Treatment.*

Response: The text will be revised as suggested.

26. p. 3-49 *Comment: Please add a §3.4 PRELIMINARY SCREENING OF TECHNOLOGIES AND PROCESS OPTIONS FOR GROUNDWATER.*

Response: Depending on the outcome of the groundwater risk evaluation the Navy anticipates that limited alternatives for groundwater (institutional controls and/or monitoring) would be evaluated in conjunction with the soil remediation alternatives.

**Response to EPA Comments
OFFTA Draft FS**

27. p. 4-1 *Comment: Please consider renaming the chapter "Development and Screening of Alternatives for On Shore" to incorporate both soil and groundwater components or keep this chapter as just discussing soil and create a new chapter for groundwater.*
- Response: The Navy doesn't see the need for this change since limited groundwater alternatives (institutional controls and/or monitoring), if needed, will be incorporated into soil alternatives
28. p. 4-4, §4.2.2 *Comment: The bulleted list in the first paragraph should include confirmation sampling of the excavations to confirm that the remediation goals have been achieved. It is not known if the FS assumes that this task is included in one of the other listed tasks; however, it is important enough to list separately. Please add this to the list. The same comment applies to Alternative 3 in Section 4.2.3.*
- Response: The text will be revised as suggested.
29. p. 4-4, 4th bullet *Comment: Insert "and testing" after "Segregation."*
- Response: The text will be revised as suggested.
30. p. 4-4, 11th bullet *Comment: If groundwater is to be included in this chapter keep this bullet, otherwise move it to the new groundwater chapter.*
- Response: Depending on the outcome of the groundwater risk evaluation the Navy anticipates that limited alternatives for groundwater (institutional controls and/or monitoring) would be evaluated in conjunction with the soil remediation alternatives. The alternative elements related to groundwater will be revised accordingly.
31. p. 4-4, §4.2.2 and p. 4-5, §4.2.3 *Comment: Is Five-year review considered as part of these remedies because contaminants will be left in place? If so, the text should be clarified.*
- Response: Yes. Clarification will be added to the text as suggested.
32. p. 4-5, 4th bullet *Comment: Insert "and testing" after "Segregation."*
- Response: The text will be revised as suggested.
33. p. 4-5, 8th bullet *Comment: Remove since no soil treatment is proposed for this alternative.*
- Response: The text will be revised as suggested.
34. p. 4-5, 10th bullet *Comment: If groundwater is to be included in this chapter keep this bullet, otherwise move it to the new groundwater chapter.*
- Response: No changes will be made.
35. p. 4-6, 2 *Comment: Remove the second sentence (LDRs aren't ARARs for the remedy).*
- Response: The text will be revised as suggested.
36. p. 4-6, §4.2.3 *Comment: In the last sentence in the partial paragraph at the top of the page, backfilling is said to be performed in conjunction with excavation. However, prior to backfilling, confirmation samples from the dry excavations need to be collected and analyzed to confirm that the remediation goals have been achieved. Therefore, backfilling should not*

**Response to EPA Comments
OFFTA Draft FS**

be implemented until the analytical results have been reviewed and the adequacy of the excavation confirmed. This consideration should be incorporated into the FS as appropriate.

Response: The text will be revised to provide a more clear description of the process. Sampling and quick-turnaround lab analyses will be used to determine the adequacy of the excavation before backfilling. The backfilling "in conjunction with excavation" does not necessarily mean backfilling on the same day as excavation but that some areas will be backfilled as others are still being excavated.

37. p. 4-7, 6 *Comment: To be consistent with relevant regulations and policy, please change to: "The actual determination of which legal standards are ARARs is determined by EPA, in consultation with the Navy and RIDEM."*

Response: According to the Federal Facilities Agreement dated March 23, 1992 the Navy is responsible for determination of which legal standards are ARARs in consultation with the EPA and RIDEM.

38. p. 4-10, §4.3 *Comment: Under Cost - The text states that a discount rate of 7% has been used to calculate present worth costs. The current real discount rate of 3.2%, as presented in the latest revision to OMB Circular A-94, Appendix C, should be used for cost estimates for federal facilities.*

Response: The cost calculations will be revised using the current real discount rate applicable to federal facilities.

39. p. 4-11, §4.4.1 *Comment: If this chapter includes groundwater, then No Action should discuss that no monitoring of contaminated groundwater would occur and there would be no restrictions on groundwater use.*

Response: The text will be revised as suggested.

40. p. 4-13, §4.4.2 *Comment: Groundwater monitoring and groundwater use/well restrictions should be discussed.*

Response: Response: Depending on the outcome of the groundwater risk evaluation the Navy anticipates that limited alternatives for groundwater (institutional controls and/or monitoring) would be evaluated in conjunction with the soil remediation alternatives. The text related to groundwater actions will be revised accordingly.

41. p. 4-14, §4.4.2 *Comment: The last sentence of the first full paragraph states that the final staging methods would be finalized in the PDI. That is appropriate; however, the FS cannot be properly evaluated without a discussion of the preliminary space requirements for the construction activities proposed. It is not apparent that the activities proposed for Alternative 2 can be implemented as required within the confines of the site. Please include in the description of this alternative, preliminary space requirements for dewatering, screening, the various stockpiles, the on-site treatment system, trailers and equipment parking, and access roads and traffic allowances to demonstrate that this alternative is implementable. If space off site is required to implement the proposed alternatives, that needs to be discussed in the FS. This additional information is also required for Soil Alternative 3 and Sediment Alternatives 3 and 4.*

Response: The text will be revised as suggested.

**Response to EPA Comments
OFFTA Draft FS**

42. p. 4-15, 6 *Comment: Insert "federal and state waste treatment standards and" before "Clean Air Act."*
Response: The text will be revised as suggested.
43. p. 4-17,
§4.4.3 *Comment: Groundwater monitoring and groundwater use/well restrictions should be discussed.*
Response: The text will be revised as suggested.
44. p. 4-23, §4.5 *Comment: Under Short-term Effectiveness – It should be also noted that Alternative 3, which transports a significant amount of material off and onto the site, will adversely impact the community because of this additional truck traffic, noise, and vehicle emissions. Controls will not do much to mitigate this impact.*
Response: The text will be revised as suggested.
45. p. 5-1, §5.0 *Comment: The third paragraph refers to near shore marine sediment as sediment below the low-tide line. That is not consistent with the definitions presented earlier in the FS. Please correct the text throughout the FS to be consistent. It is assumed that the alternatives for marine sediment will be applicable to all three sediment zones, as defined in the FS; that is, shoreline (intertidal zone), near shore (sediment along the low-tide line), and offshore (sediment below the low-tide line). The FS should clearly specify if any alternative does not apply to a zone.*
Response: The text will be revised as suggested. Consistent definitions of sediment zones will be used throughout the text, and the FS will specify which zones are to be addressed.
46. p. 5-2, §5.2 *Comment: The FS states here that Stations 3 through 6 and part of Station 7 require remediation. However, that is not obvious from the information presented in the FS. Also, these stations do not correspond with areas designated as high risk. Consider augmenting the FS with a summary of the pertinent information from the RI (text, tables, and figures as appropriate) that demonstrates why the areas chosen for remediation should be remediated.*
Response: Clarifying text will be added as suggested.
47. p. 5-3,
§5.2.2 *Comment: Consider supplementing the discussion in the fourth paragraph by including monitoring, after the first five years, whenever a major storm occurs.*
Response: The text will be modified as suggested.
48. p. 5-4,
§5.2.3 *Comment: Please supplement the description of Alternative 3 with a discussion of how confirmation sampling will be implemented to confirm that the extent of excavation satisfies the remediation goals. Please add this confirmation sampling to the bulleted list on this page. This comment also applies to Alternative 4.*
Response Clarifying text will be added as suggested.
49. p. 5-5,
§5.2.3 *Comment: The third sentence in the first paragraph states that 15 borings will be installed for the PDI; however, the cost estimate (in Appendix D) states that 25 borings will be installed. Please correct the FS as appropriate for consistency. This comment also applies to Alternative 4, Section 5.2.4.*
Response: The text and appendix will be revised as suggested.

**Response to EPA Comments
OFFTA Draft FS**

50. p. 5-5, §5.2.3 *Comment: Please add the estimated construction time to the discussion. This comment also applies to Alternative 4, Section 5.2.4.*
Response: The text will be revised as suggested.
51. p. 5-6, 6 *Comment: In the first sentence, insert "to its original grade" after "would be backfilled."*
Response: The text will be revised as suggested.
52. p. 5-9, 6 *Comment: In the first sentence, insert "to its original grade" after "would be backfilled."*
Response: The text will be revised as suggested.
53. p. 5-10, 1 *Comment: In the last sentence at the end, add "either onsite, or if that is impracticable, offsite."*
Response: The text will be revised as suggested.
54. p. 5-11, 3 *Comment: In the first sentence, change "and location-specific" to "location-, and action-specific."*
Response: The text will be revised as suggested.
55. p 5-20, 4 *Comment: The text says that the limited dredging would not meet chemical-specific sediment PRGs. Please clarify whether the sediments left in place (particularly areas preserved to protect the eelgrass beds) exceed risk levels. If the PRGs cannot be met, this alternative can not be chosen (even if it is the least damaging practicable alternative for protecting the eelgrass beds).*
Response: The sediments left in place to preserve the eelgrass beds may exceed PRGs, although sampling during the pre-design investigation will prove or disprove this. Also, the results of the eelgrass bed survey will be available in August 2001 to clearly define the extent of the beds. However, if any sediment is left in place to protect the eelgrass, monitoring will be in place to determine any impacts to aquatic habitats over time.
56. p 5-22, 5 *Comment: Remove the fourth sentence.*
Response: Disagree. The date ranges are generally required by the state to protect the flounder fishing industry
57. p. 5-23, 3 *Comment: In the first sentence, change "and refilling the dredged area back to the original grade and restoration of damaged eelgrass beds."*
Response: The text will be revised as suggested.
58. p. 5-23, 5 *Comment: In the first sentence, remove "virtually."*
Response: The text will be revised as suggested.
59. p. 5-26, 4 *Comment: Discuss the implementability issues associated with eelgrass restoration.*
Response: The text will be revised as suggested.

**Response to EPA Comments
OFFTA Draft FS**

60. p. 5-27, 1 *Comment: Remove the fourth sentence.*

Response: Disagree. The date ranges are generally required by the state to protect the flounder fishing industry.

61. p. 5-28, §5.6 *Comment: Paragraphs three and four compare the protectiveness of Alternatives 3 and 4, stating that Alternative 4 is more protective. Please rewrite the comparison in these two paragraphs to more clearly state the advantages and disadvantages of each alternative without concluding that one is more protective than the other. It is not intuitively obvious which alternative is more protective, and the text should reflect that.*

Response: The text will be revised as suggested.

62. p. 5-28, 4 *Comment: This section does not discuss the difficulty in restoring the eelgrass beds.*

Response: The text will be revised to include discussion as suggested.

63. p. 5-29, 2 *Comment: If the Navy's position is that Alternative 3 will meet sediment PRGs through natural attenuation there needs to be a thorough discussion of this within this document (there's no discussion about it at all in Chapter 3). Please note that EPA does not currently support natural attenuation as a remedial alternative for sediments.*

Response: The reference to natural attenuation will be removed from this sentence, and no discussion of natural attenuation will be included in Chapter 3. The sentence will be changed to indicate that the areas that are excavated will meet the chemical-specific ARARs and that the sediment left in the eelgrass beds may meet ARARs over time. Note that the results of the eelgrass bed survey will be available in August 2001 to clearly define the extent of the beds.

64. p. 5-29, §5.6 *Comment: Regarding the discussion of Alternative 3 in the second paragraph, have sediment samples actually been collected from the eelgrass beds? If they have not been collected, it cannot be determined that Alternative 3 is not ARAR-compliant. If samples have been collected, please summarize the analytical results in this FS.*

Response: Because the location of eelgrass beds, if any, in the area are not defined, it is not known if any of the samples collected were actually from eelgrass beds. The results of the eelgrass bed survey will be available in August 2001 to clearly define the extent of the beds, and additional sampling will be performed during the pre-design investigation.

65. p. 5-31, §5.6 *Comment: In the second last sentence of the first paragraph, it appears that the parenthetical phrase (2 years), should be (2 months). Please review and correct as appropriate.*

Response: The text will be reviewed and corrected as appropriate.

66. p. R-1, References *Comment: Please add the following two references:
EPA, 2000 A Guide to Developing and Documenting Cost Estimates During the Feasibility Study. OSWER Directive 9355.0-75, EPA 540-R-00-002.
Office of Management and Budget, 2001. Circular A-94, Appendix C.*

Response: The references will be added as suggested.

**Response to EPA Comments
OFFTA Draft FS**

67. Table 2-1, page 2 *Comment: Remove Land Disposal Restrictions (not a chemical specific ARAR)*
Response: The table will be revised as suggested.
68. Table 2-1, page 2 *Comment: Remediation Regulations, change citation from "DEM-DSR-01-93" to "CRIR 12-180-001, Section 8." Under Status, change "Applicable" to "Relevant and Appropriate." For Synopsis, change to "These regulations set remediation standards for contaminated media at non-NPL sites in RI. These standards may also be determined to be relevant and appropriate for NPL sites when they are more stringent than federal standards." For Consideration - remove "and sediment."*
Response: The CRIR will be added to the citation instead of changing the DEM citation. Disagree with changing "Applicable" to "Relevant and Appropriate."
69. Table 2-1, page 2 *Comment: Remove RI Hazardous Waste Management Regulations and Oil Contaminated Soil Policy.*
Response: Disagree The regulation will not be removed from the table.
70. Table 2-2, page 1 *Comment: Floodplain Management - For Consideration, in the last sentence change "may" to "should."*
Response: The table will be revised as suggested.
71. Table 2-2, page 1 *Comment: Rivers and Harbors Act - Change the text in Consideration to: "Excavation, dredging, and habitat restoration will comply with the Act's substantive environmental standards."*
Response: The table will be revised as suggested.
72. Table 2-2, page 3 *Comment: Merge the first and third items under "Coastal Resources Management."*
Response: The table will be revised as suggested.
73. Table 2-3, page 1 *Comment: Clean Water Act, Section 402 - For Consideration, remove the last sentence.*
Response: The table will be revised as suggested.
74. Table 2-3, page 1 *Comment: Insert under Federal Regulatory Requirements: "Safe Drinking Water Act, Maximum Contaminant Levels (MCLs), 40 CFR Part 141/ Relevant and Appropriate/Standards for aquifers and surface water bodies that are potential drinking water supplies./To be used as standards for groundwater monitoring and for defining the boundary of groundwater use/well restrictions."*
Response. The Navy doesn't believe that the Safe Drinking Water Act is relevant and appropriate to this groundwater at this site given the salinity of the groundwater, the classification of the groundwater, and the lack of projected future use Please note that as discussed in the response to General Comment No. 10, if unacceptable risk is identified in the groundwater risk evaluation under the residential use scenario then the Navy will present the risks, a comparison to GB criteria and MCLs, and propose limited alternatives for groundwater (institutional controls and/or monitoring).

**Response to EPA Comments
OFFTA Draft FS**

75. Table 2-3, page 1 *Comment: In the fourth box remove the citations to Waters and Navigation and Health and Safety. Leave the citation to the Remediation Regulations. Change the Requirement Synopsis to: "Sets levels for monitoring of contaminated groundwater when more stringent than federal standards." Change Consideration to: "To be used as standards for groundwater monitoring and for defining the boundary of groundwater use/well restrictions."*
Add Tables on Groundwater as included for soil and sediment.
- Response: The table will be revised as suggested. However, no table on groundwater will be added since groundwater is not addressed in this FS.
76. Table 2-9 *Comment: Please reference the sources (i.e., EPA policy) for the PCB, lead, and dioxin numbers.*
- Response: The table will be revised as suggested.
77. Table 2-12 *Comment: To be consistent with Figure 2-1, please add TP1 data to this table.*
- Response: The table will be revised as suggested.
78. Table 2-15 *Comment: The maximum detected value for indeno(1,2,3-cd)pyrene in near shore sediment should not be an estimated (J) value according to Table 2-16 and Figure 2-4. Please review and correct as appropriate.*
- Response: The J qualifier is incorrect and will be removed from Table 2-15
79. Table 2-16 *Comment: The information in this table for location SSD-334 is not consistent with the information in Figure 2-4 for location SSD-334. Please review and correct as appropriate.*
- Response: The information will be reviewed and corrected as appropriate.
80. Table 3-3, p. 8 *Comment: The general response action on this page should be Treatment (Ex-Situ; On-Site/On-Base) (Cont'd) if the page numbering is correct. Otherwise, information may be missing from this table. Please review and correct as appropriate.*
- Response: The table will be revised as suggested
81. Table 4-2 *Comment: This table should include groundwater unless a separate table is to be included.*
- Response: The table will be revised to include groundwater as appropriate.
82. Table 4-3, page 1 *Comment: RI Remediation Regulations - Change citation to: "CRIR 12-180-001, Section 8." For Synopsis, change to "These regulations set remediation standards for contaminated media at non-NPL sites in RI. These standards may also be determined to be relevant and appropriate for NPL sites when they are more stringent than federal standards."*
- Response: The citation will be added instead of changed (see Response 68). The synopsis will be changed as suggested.

**Response to EPA Comments
OFFTA Draft FS**

83. Table 4-6, page 1 *Comment: RI Remediation Regulations - Change citation to: "CRIR 12-180-001, Section 8." For Synopsis, change to "These regulations set remediation standards for contaminated media at non-NPL sites in RI. These standards may also be determined to be relevant and appropriate for NPL sites when they are more stringent than federal standards."*

Response: The citation will be added instead of changed (see Response 68). The synopsis will be revised as suggested.

84. Table 4-7, page 1 *Comment: RI Hazardous Waste Management - Change the Action to be Taken to: "Areas of debris and soils will be tested to determine if they constitute hazardous waste. Any hazardous waste identified will be handled and disposed of according to these standards. Treated soil will be tested to meet all requirements before used as backfill."*

Response: The table will be revised as suggested.

85. Table 4-8, page 1 *Comment: Under Federal Requirements if Groundwater is to be included under this alternative: "Safe Drinking Water Act, Maximum Contaminant Levels (MCLs), 40 CFR Part 141/ Relevant and Appropriate/Standards for aquifers and surface water bodies that are potential drinking water supplies./To be used as standards for groundwater monitoring and for defining the boundary of groundwater use/well restrictions."*

Response: The Navy doesn't believe that the Safe Drinking Water Act is relevant and appropriate to groundwater at this site given the salinity of the groundwater, the classification of the groundwater, and the lack of projected future use. Please note that as discussed in the response to General Comment No. 10, if unacceptable risk is identified in the groundwater risk evaluation under the residential use scenario then the Navy will present the risks, a comparison to GB criteria and MCLs, and propose limited alternatives for groundwater (institutional controls and/or monitoring).

86. Table 4-8, page 1 *Comment: Under Federal Requirements add: "Resource Conservation and Recovery Act (RCRA), Subtitle C - Standards for Hazardous Waste Facilities/42 U.S.C. 6291 et seq./Applicable/RI is delegated to administer the federal RCRA statute through its state regulations. The standards of 40 CFR Part 264 are incorporated by reference./Areas of debris and soils will be tested to determine if they constitute hazardous waste. Any hazardous waste identified will be handled and disposed according to these standards." "Clean Water Act (CWA), Section 402, National Pollutant Discharge Elimination System (NPDES)/33 U.S.C. 1342; 40 C.F.R. Parts 122-125,131/Applicable/These standards govern discharge of water into surface waters. Regulated discharges must meet ambient water quality criteria./Any water from temporary storage area will be treated as required to meet this ARAR before being discharged."*

Response: The table will be revised as suggested.

87. Table 4-8, page 1 *Comment: Under State Requirements, if Groundwater is to be included under this alternative: "State of Rhode Island Rules and Regulations for the Investigation and Remediation of Hazardous Material Releases (Short Title: Remediation Regulations)/"CRIR 12-180-001, Section 8"/These regulations set remediation standards for contaminated groundwater at non-NPL sites in RI. These standards may also be determined to be relevant and appropriate for NPL sites if they are more stringent than federal standards./To be used as standards for groundwater monitoring and for defining the boundary of groundwater use/well restrictions when stricter than federal standards."*

Response: Response: The table will be revised as suggested

**Response to EPA Comments
OFFTA Draft FS**

88. Table 4-8, page 2 *Comment: Remove the cite to the Clean Air Act - Odors.*
Response: The table will be revised as suggested.
89. Table 4-9, page 1 *Comment: RI Remediation Regulations - Change citation to: "CRIR 12-180-001, Section 8." For Synopsis, change to "These regulations set remediation standards for contaminated media at non-NPL sites in RI. These standards may also be determined to be relevant and appropriate for NPL sites if they are more stringent than federal standards."*
Response: The citation will be added instead of changed (see Response 68). The synopsis will be changed as suggested.
90. Table 4-11, page 1 *Comment: Under Federal Requirements if Groundwater is to be included under this alternative: "Safe Drinking Water Act, Maximum Contaminant Levels (MCLs), 40 CFR Part 141/ Relevant and Appropriate/Standards for aquifers and surface water bodies that are potential drinking water supplies./To be used as standards for groundwater monitoring and for defining the boundary of groundwater use/well restrictions."*
Response: See Response to Specific Comment No. 85.
91. Table 4-11, page 1 *Comment: Under Federal Requirements add: "Resource Conservation and Recovery Act (RCRA), Subtitle C - Standards for Hazardous Waste Facilities/42 U.S.C. 6291 et seq./Applicable/RI is delegated to administer the federal RCRA statute through its state regulations. The standards of 40 CFR Part 264 are incorporated by reference./Areas of debris and soils will be tested to determine if they constitute hazardous waste. Any hazardous waste identified will be handled and disposed according to these standards." "Clean Water Act (CWA), Section 402, National Pollutant Discharge Elimination System (NPDES)/33 U.S.C. 1342; 40 CFR 122-125,131/Applicable/These standards govern discharge of water into surface waters. Regulated discharges must meet ambient water quality criteria./Any water from temporary storage area will be treated as required to meet this ARAR before being discharged."*
Response: The table will be revised as suggested.
92. Table 4-11, page 1 *Comment: Under State Requirements, if Groundwater is to be included under this alternative: "State of Rhode Island Rules and Regulations for the Investigation and Remediation of Hazardous Material Releases (Short Title: Remediation Regulations)"/CRIR 12-180-001, Section 8"/These regulations set remediation standards for contaminated groundwater at non-NPL sites in RI. These standards may also be determined to be relevant and appropriate for NPL sites if they are more stringent than federal standards /To be used as standards for groundwater monitoring and for defining the boundary of groundwater use/well restrictions when stricter than federal standards."*
Response: Response: The table will be revised to include the suggested information as appropriate.

**Response to EPA Comments
OFFTA Draft FS**

93. Table 4-11, page 1, *Comment: Under State Requirements add: "Hazardous Waste Management - Standards for Treatment, Storage, and Disposal Facilities/RIGL 23-19.1 et seq.; CRIR 12-030-003/Applicable/Sets standards for handling, design, operation, and monitoring of hazardous waste. The standards of 40 CFR Part 264 are incorporated by reference.//Areas of debris and soils will be tested to determine if they constitute hazardous waste. Any hazardous waste identified will be handled and disposed according to these standards."*

Response: The table will be revised as suggested.

94. Table 4-11, page 2, *Comment: Remove Clean Air Act – Odors*

Response: The table will be revised as suggested.

95. Table 4-12 *Comment: If Groundwater is included, discuss in this table.*

Response: The table will be revised to include groundwater as appropriate.

96. Table 4-12, p. 3, *Comment: Under "Time Until Remedial Action Objectives Achieved", the times for Alternatives 2 and 3 differ from the times presented in Table 4-2, the FS text on pages 4-16 and 4-20, and the cost estimate in Appendix D. Please review and correct the FS as appropriate.*

Response: The text, tables, and cost estimates will be revised to be consistent with each other.

97. Table 5-2 *Comment: Compliance with ARARs: For Alternative 2, change action-specific to "Yes." For Alternative 3, change compliance with chemical-specific ARARs to "No" unless revisions to this document thoroughly document how natural attenuation applies to this site. Estimate the time for it to be achieved. For action-specific ARARs change to "Yes." For Alternative 4, change location-specific ARARs to "Yes." For "Compliance with Other Criteria," change to "Yes" for Alternatives 3 and 4.*

Response: For Alternative 2, action-specific will be changed to "Yes." For Alternative 3, an estimate for the time to achieve chemical-specific ARARs will be made and presented. Action-specific will be changed to "Yes." For Alternative 4, location-specific will be changed to "Yes." Compliance with other criteria will be changed to "Yes" for Alternatives 3 and 4.

98. Table 5-2, p. 1, *Comment: Please revise the text for Alternative 3, which is much too vague and misleading. For example, "To some extent" should be "Yes except for the eelgrass beds" and "Only in certain areas" should be "Yes except for the eelgrass beds". This comment presumes that contaminants of concern above the remediation goals have been detected in the sediment in the eelgrass beds. This presumption will need to be verified in the pre-design investigation.*

Response: The table will be revised as suggested

Response to EPA Comments
OFFTA Draft FS

99. Table 5-2, p. 2 *Comment: Under "Environmental Impacts" for Alternative 4, add "destroys eelgrass beds." Under "Time Until Remedial Action Objectives Achieved", the times for Alternatives 3 and 4 are not consistent with the FS text nor the cost estimate in Appendix D. Please review and correct as appropriate.*

Response: The table will be revised as suggested. The times will be made consistent with the text and cost estimates.

100. Table 5-9 *Comment: Under Action to be Taken text for the second two citations, replace the last sentence with: "This standard will only be met if natural attenuation is shown to attain sediment PRGs."*

Response: No changes will be made. The table presents the ARARs and the actions required for attaining them. The table correctly states that "sediments exceeding PRGs must be adequately addressed to meet these standards." The text of the FS will present what is adequate to meet them or if they will not be met.

101. Table 5-11, page 1 *Comment: Under Federal Requirements add: "Resource Conservation and Recovery Act (RCRA), Subtitle C - Standards for Hazardous Waste Facilities/42 U.S.C. 6291 et seq./Applicable/RI is delegated to administer the federal RCRA statute through its state regulations. The standards of 40 CFR Part 264 are incorporated by reference./Areas of debris and soils will be tested to determine if they constitute hazardous waste. Any hazardous waste identified will be handled and disposed according to these standards."*

Response: The table will be revised as suggested.

102. Table 5-11, page 1 *Comment: Under State Requirements add: "Hazardous Waste Management - Standards for Treatment, Storage, and Disposal Facilities/RIGL 23-19.1 et seq.; CRIR 12-030-003/Applicable/Sets standards for handling, design, operation, and monitoring of hazardous waste. The standards of 40 CFR Part 264 are incorporated by reference./Areas of debris and soils will be tested to determine if they constitute hazardous waste. Any hazardous waste identified will be handled and disposed according to these standards."*

Response: The table will be revised as suggested.

103. Table 5-11, page 2 *Comment: Remove the cite to the Clean Air Act - Odors.*

Response: The table will be revised as suggested.

104. Table 5-13, page 1 *Comment: Under Federal Requirements add: "Resource Conservation and Recovery Act (RCRA), Subtitle C - Standards for Hazardous Waste Facilities/42 U.S.C. 6291 et seq./Applicable/RI is delegated to administer the federal RCRA statute through its state regulations. The standards of 40 CFR Part 264 are incorporated by reference./Areas of debris and soils will be tested to determine if they constitute hazardous waste. Any hazardous waste identified will be handled and disposed according to these standards."*

Response: The table will be revised as suggested.

105. Table 5-13, page 1 *Comment: Under State Requirements add: "Hazardous Waste Management - Standards for Treatment, Storage, and Disposal Facilities/RIGL 23-19.1 et seq.; CRIR 12-030-003/Applicable/Sets standards for handling, design, operation, and monitoring of hazardous waste. The standards of 40 CFR Part 264 are incorporated by reference./Areas of debris and soils will be tested to determine if they constitute*

**Response t EPA Comments
OFFTA Draft FS**

hazardous waste. Any hazardous waste identified will be handled and disposed according to these standards."

Response: The table will be revised as suggested.

106. Table 5-13 *Comment: On page 2, please remove Clean Air Act – Odors*

Response: The table will be revised as suggested.

107. Table 5-15, p. 6 *Comment: Under "Community Protection", Alternatives 3 and 4 are not the same as Alternative 1. Please review the FS discussion on pages 5-21 and 5-25 and edit this table text accordingly. Note also that Alternative 4 has additional impacts due to traffic, noise, and air pollution associated with the significant truck traffic to and from the site.*

Response: The table and text will be revised as appropriate

108. Figure 2-1 *Comment: Sample location SS-305 shows a TPH concentration of 4100J mg/Kg; however, TPH is not listed in Table 2-11. Please review and correct this apparent discrepancy. TP-04 and MW-3S are shown in this figure but not in Table 2-11. Please review and correct this apparent discrepancy. In the Legend, soil boring and monitoring well locations have had samples collected for both surface and subsurface soil contrary to the Legend text. Also, the reference to "Tables 1 and 2 for a complete list of contaminants exceeding criteria" is an incorrect reference; Tables 1 and 2 don't exist. Please review and correct these apparent discrepancies.*

Response: The tables and figures will be reviewed and revised as appropriate.

109. Figure 2-2 *Comment: Please delete the tag information in the Legend that has not been used.*

Response: The figure will be revised as suggested.

110. Figure 2-3 *Comment: Please delete the tag information in the Legend that has not been used.*

Response: The figure will be revised as suggested.

111. Figure 2-4 *Comment: The data boxes for OFF-333(HH-W), OFF-335(HH-W), and OFF-336(HH-W) should apparently be SSD-333, SSD-335, and SSD-336, respectively, to be consistent with Table 2-16. Please review and correct as appropriate. The data box for OFF-6 should also include a sample from the 0.7-0.8 foot depth to be consistent with Table 2-16. Please review and correct as appropriate. The data box for SSD-337 needs to be resized to be legible. Information in the Legend associated with the tags needs to be edited to correct or delete the table references and to delete the notes on tag shading, since no shaded tags are included. The inner tidal boundary line for Station 7 is missing (refer to Figure 2-2). Please correct as appropriate.*

Response: The tables and figures will be reviewed and revised as appropriate.

**Response t EPA Comments
OFFTA Draft FS**

112. Figure 2-4 *Comment: Based on the sampling data presented in this figure, it is not apparent why the spatial scope of the sediment remediation should be as proposed. The offshore spatial extent appears to be an arbitrary line.*

Response: The offshore extent is assumed to be halfway between the nearshore sediment samples (collected along the low tide line) and the offshore sediment samples.

113. Figure 5-1 *Comment: It is noted that the bay haul road passes through the middle of the area assumed to contain eelgrass beds. Because this road may be 35-40 feet wide at its base, placement of the road on the offshore sediment will probably not be compatible with minimizing disturbance of the eelgrass beds. Therefore, this alternative may not be implementable as presented. This uncertainty should be discussed in the FS. The evaluation of this alternative would be more complete with the addition of bathymetry to this figure.*

The inner tidal boundary line for Station 7 is missing (refer to Figure 2-2). The reference to "Tables 1 and 2 for a complete list of contaminants exceeding criteria" is an incorrect reference. Please correct as appropriate.

Response: Discussion on the uncertainty of the eelgrass beds will be added to the text. Bathymetry data are not available. The inner tidal boundary line and the references will be revised as suggested.

114. Figure 5-2 *Comment: The estimated mean high tide depth and the distance of the road above the water level should be added to this figure so the reader will be aware of the approximate scale of the haul road.*

Response: The figure will be revised as suggested.

115. Figure 5-3 *Comment: The evaluation of this alternative would be more complete with the addition of bathymetry to this figure.*

The inner tidal boundary line for Station 7 is missing (refer to Figure 2-2). The reference to "Tables 1 and 2 for a complete list of contaminants exceeding criteria" is an incorrect reference. Please correct as appropriate.

Response. Bathymetry data are not available. The inner tidal boundary line and the references will be revised as suggested.

- 116 Appendix A *Comment: This appendix includes presentation of the risk-based concentrations to be used for selecting chemicals of potential concern (COPCs) in soil which require further consideration in the remedial process. The risk-based concentration values are presented in an un-numbered table in the appendix. The carcinogenic dermal risk-based concentration results could not be verified using the equations and input parameters provided in Appendix A. Please verify these values and correct any associated tables and COPC selections, as necessary. Also, the values listed in the "combined" columns of the un-numbered table could not be verified. Please provide an explanation of how the values in the "combined" column were derived since these values are then used in Tables 2-4 and 2-5 to determine COPCs for surface soil and subsurface, respectively. The explanation and any applicable equations should be provided in Appendix A.*

Response: Information will be added to Appendix A so that all calculations can be verified

**Response to EPA Comments
OFFTA Draft FS**

117. Table B-2.1 *Comment: Appendix B presents the PRG development for sediments. Table B-2.1 presents the sediment concentration PRGs for the lifetime recreational fisherman. However, this table does not include derivation of carcinogenic PRGs for arsenic. Please determine a carcinogenic PRG for arsenic for the three target risk levels. Include these PRGs in this table and in the selection of sediment chemicals of concern.*

Response: This information will be compiled and incorporated into the PRG document. During the review, it was noted that there is an error in the EPC and PRG values for arsenic. The adjustment for the organic arsenic was employed incorrectly, lowering the EPC for the target risk and lowering the target risk, rather than using the original EPC and lowering the target risk. This change is necessary because it is the total arsenic concentration, not the organic concentration, that is measured in the sediment samples when applying the PRG.

The change and the calculation will result in PRGs for ingestion of arsenic in lobster of 548, and 54.8, and 5.48 mg/kg (corresponding to 1E-4, 1E-5, and 1E-6 cancer risks, respectively). This will change the PRG for arsenic in sediment from 82 to 5.48, which, if this PRG were to be used, would increase the action areas significantly

The value of 5.48 mg/kg is below the 6.2 mg/kg value established by RIDEM for background soils for Coasters Harbor island, which was established to account for what appears to be anthropogenic occurrence of arsenic in soils. Such an incidence may also be found in sediments.

Data review indicates that arsenic levels exceed the 5.48 mg/kg value at OFF-1 (6.3 mg/kg), OFF-2 (8.0 mg/kg), OFF-7 (6.8 mg/kg), OFF-13 (6.0 mg/kg), OFF-14 (8.5 mg/kg), and OFF-19 (5.8 mg/kg). The arsenic concentrations in surface sediment sampled at the site (those sediments to which lobsters could be exposed) range from 2.7 mg/kg to 8.5 mg/kg with an average concentration of 4.97 mg/kg. None of the locations where arsenic exceeds the 5.48 mg/kg value match the areas where other PRGs are exceeded. Two of the exceeding locations, OFF-14 and OFF-19, are the locations closest to the Newport treatment plant outfall, and two others OFF-1 and OFF-2 are down-current from that outfall. Arsenic in the action areas delineated by exceedances from the other PRGs range from 3.6 mg/kg to 4.3 mg/kg, showing no co-location.

Reviewers are reminded that there are large uncertainties in the development of PRGs from ingestion of lobster. These include the mobility of lobster and the likelihood of catching lobsters exposed to the sediment at this location for a long period of time; the actual frequency of lobster ingestion by persons; and the amount of inorganic arsenic in the lobster tissue that is available to individuals ingesting it. TtNUS and the Navy have attempted to correct for the latter two of these uncertainties in the risk assessment and PRG development, but there is no way to correct for the first one.

These observations indicate that although the PRG of 5.48 for arsenic is exceeded at several areas in Coasters Harbor, it is not recommended that this PRG be used to direct remedial action.

Response to EPA Comments
OFFTA Draft FS

118. Table B-3.4 *Comment: Table B-3.4 presents the segregation of porewater and sediment toxicity tests into toxic and non-toxic stations as part of the ecological PRG derivation. The PRG derivation uses EC50 values (the percentage of porewater at which 50% of the larvae developed abnormally) for the sea urchin development test segregation of porewater toxic stations. The ecological risk assessment presented these toxicity test results as IC10 values (percentage of porewater concentration causing a 10 % inhibition of larval development). It is not clear why this different data interpretation is being used in the PRG derivation. The use of this different interpretation lessens the clear linkage between the ecological risk assessment and the PRG derivation.*

If toxicity were defined as 10% or less porewater concentration causing 10% abnormal development, only station OFF-5 would be considered toxic. The presented segregation of toxic samples includes the stations that were identified as intermediate risk in the ecological risk assessment. The ecological risk assessment conclusion for sediment toxicity specifies that the observation of effects in one toxicity category without confirmation in the other category warrants caution and that the intermediate overall adverse effects ranking may be too conservative. There are only consistent toxicity results for both sea urchin development and amphipod survival at station OFF-5.

It does not appear, however, as if a change in the sea urchin toxicity definition and resulting revised calculation of the sea urchin NOEC would significantly alter the PRG derivation since the aquatic NOEC generally is based on the lesser of the amphipod or sea urchin NOEC.

Response: The IC10 was used in the ERA as a more conservative measure of potential impacts than an EC50 concentration. There was an error in the initial IC10 calculation for the EERA. The revised tables identify the same stations that were identified as either high or intermediate risk as the PRG document. Therefore, using the EC50 maintains the linkage between the ERA and the PRG derivation. Even though the ERA indicated that stations with intermediate risk are acceptable from an ecological standpoint, stations that were identified as having either high or intermediate risk were included in the toxic data set, while stations with identified as having no or low risk were included in the non-toxic data set. This was done to error on the conservative side for developing the PRGs

119. Table B-3.5 *Comment: This table presents the toxicity test summary statistics. Errors were made in the selection of the non-toxic amphipod porewater concentrations for undefined data distributions. For example, the maximum porewater concentrations should have been selected for acenaphthylene, benzo(a)anthracene, benzo(b,j,k)fluoranthene, benzo(g,h,i)perylene, and pyrene. This error carries forth into the no observed effect calculation, and into the toxicity effect level calculation in Tables B-3-6 and B-3-8. The error also carries forth into the selection of limiting COCs in Table B-3.9. The calculations need to be revised.*

The toxic amphipod sample OFF-5 is not presented in the table, presumably because statistics were not needed. However, the selected porewater concentration of the toxic amphipod sample should be included in the table.

Response: If a data distribution for a given parameter was undefined, the distribution was assumed to be lognormally distributed and the log-normal UCL was used to develop the no observed effect concentration (NOEC). The maximum detection was only used when the UCL was greater than the maximum concentration, or where the data set was not large enough to calculate an UCL with much confidence. This is consistent with the process typically used to select exposure point concentrations in risk assessments. Therefore, the Navy does not feel that changes to the process are necessary. Also note that if maximum detections were used to calculate the NOEC, the PRGs would increase in concentration

**Response to EPA Comments
OFFTA Draft FS**

The toxic amphipod sample from OFF-5 was not included in the table because only the results from that one station would have been presented. However, the results from this sample will be included in the table, as requested

120. Table B-3.6 *Comment: This table presents the no observed effect concentration (NOEC) calculation. The title erroneously states that the table presents the toxicity effect level calculation. The title of the table should be corrected.*

The no observed effect concentration (NOEC) calculation includes errors because of errors in the non-toxic amphipod concentrations for samples with undefined data distributions. These values need to be corrected along with the amphipod NOEC and the aquatic NOEC. For example the aquatic NOEC for acenaphthene should be 4.9 instead of 2.7. The aquatic NOEC for indeno(1,2,3-cd)pyrene should be 0.21 instead of 0.06 as presented.

There are some discrepancies in the values presented in the table, a few of these discrepancies appear to be inconsistent rounding. Example discrepancies include the following. The 2-methylnaphthalene toxic concentration is presented in Table B-3.6 as 4.1 µg/L instead of 3.48 µg/L.

Response: The title of Table B-3.6 will be changed to "Calculation of No Observed Effects Concentration."

See response to Comment # 119 regarding the undefined data distributions.

As presented in Footnote 5 in Table B-3.6, the aquatic NOEC is the lower of the amphipod NOEC and the sea urchin NOEC. Therefore, the aquatic NOECs are correct as presented in Table B.3.6. Note that using the higher of the amphipod or sea urchin NOEC would result in a higher PRG, which might not be protective of the species that had the lower NOEC.

The Navy was unable to find any errors in the table. The example correctly identifies the 2-methylnaphthalene toxic concentration of 4.1 µg/L, however, the cited value of 3.48 µg/L, which presumably came from Table B-3.5, is actually for 1-methylnaphthalene. The value for 2-methylnaphthalene in Table B-3.5 is 4.13 µg/L, which was rounded to 4.1 µg/L in Table B-3.6. The scientific notation was not used in Table B-3.6 (except for the pesticides and PCBs) to make the table easier to read. Note, that the entire values are contained within the cell and are used for calculating the PRGs.

- 121 Table B-3.8 *Comment: This table presents the toxicity effect level (TEV) calculation. The TEVs need to be revised to reflect corrected aquatic NOECs.*

Response: Please refer to the response to Specific Comment No. 120.

122. Table B-3.9 *Comment: This table presents the limiting COCs calculation. The limiting COCs need to be revised to reflect corrected aquatic NOECs and TEVs. For example, it does not appear as if acenaphthylene will be a limiting COC in the ecological PRG development when the values are revised.*

Response: Please refer to the response to Specific Comment No 120.

123. Appendix C *Comment: The calculations in this appendix do not include allowances for bulking of the soil and sediment after excavation, as is discussed in Appendix D. While Appendix C currently contains only excavation information, it would be an appropriate place to add calculations that support the numbers used in the cost estimating tables, such as bulking*

**Response to EPA Comments
OFFTA Draft FS**

volumes, backfill volumes, etc. Please add these volume calculations to the FS.

Response: The calculations will be added as suggested.

124. Appendix D *Comment: All present worth costs have been calculated using a 7% discount rate. This is the discount rate originally published in the 1993 Office of Management and Budget (OMB) Circular A-94. However, for federal facilities, the EPA guidance document A Guide to Developing and Documenting Cost Estimates During the Feasibility Study (EPA, July 2000) recommends that the discount rate published annually in the updated Appendix C to OMB Circular A-94 be used. The real discount rate as of January 2001 is 3.2%. This updated rate that should be used for cost calculations. Please revise the cost calculations using this current rate.*

Response: The present worth costs will be revised using the EPA reference in conjunction with the OMB circular

125. Appendix D *Comment: For Soil Alternative 2, page 1 of 2, under #5 Excavation Work,*
- a. *the FS should provide estimates of the sizes of the staging areas required. Based on the number of different operations that will require staging areas, the space required for staging will be significant. It is not apparent that the required space is available at the site. Capital Cost Estimate for Soil Alternative 2:*
 - b. *The time duration assumed in this estimate differs from the time durations discussed elsewhere in this FS. Please review and correct as appropriate.*
 - c. *Line items 3.11 through 5.5 apparently use incorrect formulas because the calculated costs are not consistent with the quantities and unit costs. Please review and correct as appropriate.*
 - d. *Line item 8.13 contains a similar error.*

Response: Additional information regarding the sizes of the staging areas and time duration will be provided. The incorrect formulas in the spreadsheets will be corrected.

- 126 Appendix D *Comment: Capital Cost Estimate for Soil Alternative 3*
- a. *The time duration assumed in this estimate differs from the time durations discussed elsewhere in this FS. Please review and correct as appropriate.*
 - b. *Line items 3.11 through 5.5 apparently use incorrect formulas because the calculated costs are not consistent with the quantities and unit costs. Please review and correct as appropriate.*
 - c. *Line item 8.6 assumes all non-hazardous soil will be suitable for landfill cover material. This assumption together with the total field cost contingency of only 15% likely underestimates the probable cost for this alternative. Please review these assumptions and edit as appropriate.*

Response: Additional information regarding the time durations will be provided. The incorrect formulas in the spreadsheets will be corrected. The assumptions regarding the suitability for landfill cover and the contingency amount will be reviewed and changes made as necessary. The assumption that the non-hazardous soil will be suitable for landfill cover comes from the experience of the Melville North Landfill remediation project.

- 127 Appendix D *Comment: Sediment Alternative 3, pages 1 and 2 of 3: The discussion in Assumptions 5, 6, and 7 is not consistent with the description of the alternative on pages 5-4 through 5-7, appears to contradict itself, uses inappropriate terminology, and is confusing. For example, the text on page 5-5 suggests that the bay haul road will be used as a barrier between the sea and the shore to allow excavation in the dry. However, Assumption 7 discusses the use of a cofferdam that has not been previously discussed in the FS. It is*

**Response to EPA Comments
OFFTA Draft FS**

not clear why both the bay haul road and the cofferdam would both be used. Further, Assumption 7 states that this work (Shoreline-Based Work) will be performed concurrently with the excavation work, but the scope of the excavation work (in Assumption 6) is the entire 2.75 acres of contaminated sediments. There are other errors and inconsistencies in the numbers presented in Assumption 5 and 7. The Capital Cost Assumptions for Sediment Alternative 3 need to be reviewed and rewritten to be consistent with the other information presented in the FS, to correct the errors, and to better explain the assumptions for the reader. If organized in conformance with the actual sequence of operations proposed, the presentation may be easier to follow.

Response: The assumptions will be rewritten for correctness and better clarity, organization, and consistency with the other sections of the FS.

128. Appendix D *Comment: Capital Cost Estimate for Sediment Alternative 3:*
- a. *The time duration assumed in this estimate differs from the time durations discussed elsewhere in this FS. Please review and correct as appropriate.*
 - b. *Line items 3.1 through 6.16 apparently use incorrect formulas because the calculated costs are not consistent with the quantities and unit costs. Please review and correct as appropriate.*
 - c. *Line item 6.7 assumes the use of a cofferdam that was not discussed in the FS prior to this Appendix. Please review the need for the cofferdam and revise the FS as appropriate.*
 - d. *Line item 6.12 – does this refer to confirmation sampling in the excavations to confirm that the remediation goals have been met or to characterization of the stockpiles of excavated materials?*
 - e. *The cost assumptions indicate that a bulking factor of 20% will be used but it is not clear that it has been consistently applied to the volumes in the cost table. The excavated volumes do not appear to match the volumes for disposal and reuse, indicating a possible error in the calculations. Please review and correct as necessary.*
 - f. *Line items 7.1, 7.2, 7.4, and 7.5 are related to a sand/gravel cap that has not previously been discussed in the FS. Please confirm that this simply refers to backfilled sediment material. Since the volume of material backfilled exceeds the required volume by approximately 20%, it appears that the bulking factor has been used here.*

Response:

- a. The information regarding time durations will be corrected.
- b. The incorrect formulas in the spreadsheets will be corrected.
- c. The need for the cofferdam will be reviewed, and the FS will be revised as appropriate.
- d. The samples are to confirm that the remediation goals have been met. Clarifying documentation will be added.
- e. The calculations for the bulking factor will be reviewed and corrected as necessary.
- f. These line items do refer to the backfilled sediment material. The use of the bulking factor will be checked and revised as necessary.

- 129 Appendix D *Comment: Sediment Alternative 4, pages 1 and 2 of 3: Many of the comments made for Sediment Alternative 3 regarding the Capital Cost Assumptions apply to Sediment Alternative 4. For example, Assumption 7 states that Shoreline-Based Work will be performed concurrently with the excavation work, but the scope of the excavation work (in Assumption 6) is the entire 3.0 acres of contaminated sediments. Further, two production rates are discussed, one at 300 cy/day and the other at 600 cy/day. It is not clear if one rate refers to barge mounted equipment and the other to land-based equipment or if one is for excavation in the wet and the other for excavation in the dry. Also, the volumes*

**Response to EPA Comments
OFFTA Draft FS**

discussed in Assumption 7 do not appear to account for the bulking factor, and the base width of the haul road in Assumption 5 is not correct. There are other errors and inconsistencies in the numbers presented in the Assumptions. The Capital Cost Assumptions for Sediment Alternative 4 should be reviewed and rewritten to be consistent with the other information presented in the FS, to correct the errors, and to better explain the assumptions for the reader. If organized in conformance with the actual sequence of operations proposed, the presentation may be easier to follow.

Response: The assumptions will be rewritten for correctness and better clarity, organization, and consistency with the other sections of the FS.

130. Appendix D *Comment: Capital Cost Estimate for Sediment Alternative 4:*
- a. *The time duration assumed in this estimate differs from the time durations discussed elsewhere in this FS. Please review and correct as appropriate.*
 - b. *Line items 3.1 through 6.15 apparently use incorrect formulas because the calculated costs are not consistent with the quantities and unit costs. Please review and correct as appropriate.*
 - c. *Line item 6.11 uses the same quantity as Alternative 3 although the volume of sediment managed is greater in Alternative 4. Please review and revise the FS as appropriate.*
 - d. *Line items 6.11 – does this refer to confirmation sampling in the excavations to confirm that the remediation goals have been met or to characterization of the stockpiles of excavated materials?*
 - e. *The cost assumptions indicate that a bulking factor of 20% will be used but it is not clear that it has been consistently applied to the volumes in the cost table. The excavated volumes do not appear to match the volumes for disposal and reuse, indicating a possible error in the calculations. Please review and correct as necessary.*
 - f. *Line items 7.1, 7.2, 7.4, and 7.5 are related to a sand/gravel cap that has not previously been discussed in the FS. Please confirm that this simply refers to backfilled sediment material. Since the volume of material backfilled exceeds the required volume by approximately 20%, it appears that the bulking factor has been used here.*

Response:

- a. The information regarding time durations will be corrected.
- b. The incorrect formulas in the spreadsheets will be corrected.
- c. The volume of sediment managed will be reviewed and corrected as necessary.
- d. The samples are to confirm that the remediation goals have been met. Clarifying documentation will be added.
- e. The calculations for the bulking factor will be reviewed and corrected as necessary.
- f. These line items do refer to the backfilled sediment material. The use of the bulking factor will be checked and revised as necessary.