



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 1
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NAVSTA NEWPORT RI
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June 15, 2001

James Shafer, Remedial Project Manager
U.S. Department of the Navy
Naval Facilities Engineering Command
Northern Division
10 Industrial Highway
Code 1823, Mail Stop 82
Lester, PA 19113-2090

Re: Feasibility Study for the Old Fire Fighting Training Area

Dear Mr. Shafer:

EPA reviewed the *Feasibility Study for Soil and Marine Sediment for Old Fire Fighting Training Area, Naval Station Newport, Newport, Rhode Island* dated April 2001 for completeness, technical accuracy, and consistency. EPA found numerous errors and inconsistencies throughout the text. Detailed comments are provided in Attachment A.

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.

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.

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.

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.

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

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.

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.

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.

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.

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.

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.

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).

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.

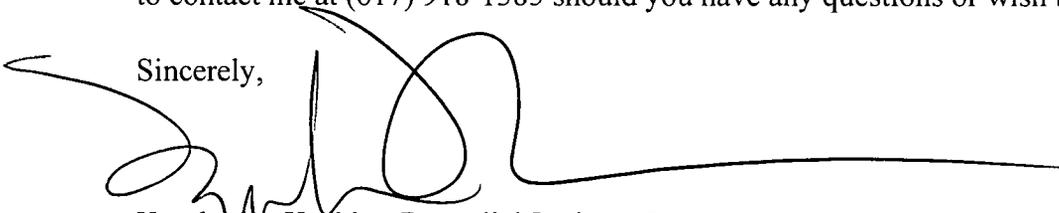
Use of the Final RI report (dated 2001) as reference Although the RI has been cited many times, at the time of reviewing the FS report, EPA has not received the final RI report yet. It is therefore inappropriate to cite the final RI report as justification for some of the FS findings.

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.

I look forward to working with you and the Rhode Island Department of Environmental Management toward the cleanup of the Old Fire Fighting Training Area. Please do not hesitate to contact me at (617) 918-1385 should you have any questions or wish to arrange a meeting.

Sincerely,



Kymberlee Keckler, Remedial Project Manager
Federal Facilities Superfund Section

Attachment

cc: Paul Kulpa, RIDEM, Providence, RI
Melissa Griffin, NETC, Newport, RI
David Peterson, USEPA, Boston, MA
Ken Finkelstein, NOAA, Boston, MA
Jennifer Stump, Gannet Fleming, Harrisburg, PA
Mary Philcox, URI, Portsmouth, RI
David Egan, TAG recipient, East Greenwich, RI

ATTACHMENT A

<u>Page</u>	<u>Comment</u>
p. ES-1, ¶4	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.
p. ES-2, ¶2	Please discuss and quantify the area where groundwater is contaminated (<i>i.e.</i> , above federal/state standards).
p. ES-2, ¶23	In the section on “Feasibility Study Process,” discuss groundwater issues, including PRGs and remedial alternatives.
p. ES-2	Add a Summary Section for groundwater alternatives.
p. 1-1, §1.2, ¶1	Please include the town of Jamestown in the second sentence and ensure that the acreage estimate includes Gould Island.
p. 1-10, §1.7	Please insert a more detailed discussion of groundwater contamination in this section.
p. 1-11, §1.7, ¶4	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.
p. 1-13, §1.9, ¶3	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.
p. 1-13, ¶5	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.
p. 1-13, §1.10	Please include a qualitative discussion of onshore terrestrial ecological risks.

- p. 2-5 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).
- pp. 2-6 to 2-7 Please clarify what is meant by “...then making any adjustments for background concentrations...”
- p. 2-7, ¶3 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.
- p. 2-9, §2.2.2.2 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.
- p. 2-9, §2.2.2.2, ¶5 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.

- p. 2-10, §2.2.2.2 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.
- p. 2-12, §2.2.2.4 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.
- p. 2-18, §2.2.3.2 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.
- p. 2-19 Please add § 2.2.4 Medium of Concern: Groundwater
- p. 2-19, §2.3 Add a discussion about the area of contaminated groundwater.
- p. 2-20, §2.3.1 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.
- p. 3-6, §3.2.2.2 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.

- pp. 3-10 & 3-11, and p. 3-33, ¶1 The containment alternatives appear to be inappropriately eliminated from further detailed comparison. Please expand the discussion to make it consistent with EPA guidance.
- p. 3-29, §3.3.2.2 This section should also discuss restrictions on lobstering, and recreational fishing (*see* draft Derecktor Shipyard FS). There must be CERCLA based restrictions on shellfishing imposed beyond the state ban based on fecal coliform levels.
- p. 3-44, §3.3.2.6 Under Cost – The second sentence should read “... treatable off-site....” since this is a discussion of Off-Base Treatment.
- p. 3-49 Please add a §3.4 PRELIMINARY SCREENING OF TECHNOLOGIES AND PROCESS OPTIONS FOR GROUNDWATER.
- p. 4-1 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.
- p. 4-4, §4.2.2 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.
- p. 4-4, 4th bullet Insert “and testing” after “Segregation.”
- p. 4-4, 11th bullet If groundwater is to be included in this chapter keep this bullet, otherwise move it to the new groundwater chapter.
- p. 4-4, §4.2.2 and p. 4-5, §4.2.3 Is Five-year review considered as part of these remedies because contaminants will be left in place? If so, the text should be clarified.
- p. 4-5, 4th bullet Insert “and testing” after “Segregation.”
- p. 4-5, 8th bullet Remove since no soil treatment is proposed for this alternative.
- p. 4-5, 10th bullet If groundwater is to be included in this chapter keep this bullet, otherwise move it to the new groundwater chapter.

- p. 4-6, ¶2 Remove the second sentence (LDRs aren't ARARs for the remedy).
- p. 4-6, §4.2.3 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 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.
- p. 4-7, ¶6 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."
- p. 4-10, §4.3 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.
- p. 4-11, §4.4.1 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.
- p. 4-13, §4.4.2 Groundwater monitoring and groundwater use/well restrictions should be discussed.
- p. 4-14, §4.4.2 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.
- p. 4-15, ¶6 Insert "federal and state waste treatment standards and" before "Clean Air Act."

- p. 4-17, §4.4.3 Groundwater monitoring and groundwater use/well restrictions should be discussed.
- p. 4-23, §4.5 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.
- p. 5-1, §5.0 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.
- p. 5-2, §5.2 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.
- p. 5-3, §5.2.2 Consider supplementing the discussion in the fourth paragraph by including monitoring, after the first five years, whenever a major storm occurs.
- p. 5-4, §5.2.3 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.
- p. 5-5, §5.2.3 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.
- p. 5-5, §5.2.3 Please add the estimated construction time to the discussion. This comment also applies to Alternative 4, Section 5.2.4.

- p. 5-6, ¶6 In the first sentence, insert “to its original grade” after “would be backfilled.”
- p. 5-9, ¶6 In the first sentence, insert “to its original grade” after “would be backfilled.”
- p. 5-10, ¶1 In the last sentence at the end, add “either onsite, or if that is impracticable, offsite.”
- p. 5-11, ¶3 In the first sentence, change “and location-specific” to “location-, and action-specific.”
- p. 5-20, ¶4 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).
- p. 5-22, ¶5 Remove the fourth sentence.
- p. 5-23, ¶3 In the first sentence, change “~~and~~ refilling the dredged area back to the original grade and restoration of damaged eelgrass beds.”
- p. 5-23, ¶5 In the first sentence, remove “virtually.”
- p. 5-26, ¶4 Discuss the implementability issues associated with eelgrass restoration.
- p. 5-27, ¶1 Remove the fourth sentence.
- p. 5-28, §5.6 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.
- p. 5-28, ¶4 This section does not discuss the difficulty in restoring the eelgrass beds.
- p. 5-29, ¶2 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.

- p. 5-29, §5.6 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.
- p. 5-31, §5.6 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.
- p. R-1, References 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*.
- Table 2-1, page 2 Remove Land Disposal Restrictions (not a chemical specific ARAR)
- Table 2-1, page 2 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.”
- Table 2-1, page 2 Remove RI Hazardous Waste Management Regulations and Oil Contaminated Soil Policy.
- Table 2-2, page 1 Floodplain Management - For Consideration, in the last sentence change “may” to “should.”
- Table 2-2, page 1 Rivers and Harbors Act - Change the text in Consideration to: “Excavation, dredging, and habitat restoration will comply with the Act’s substantive environmental standards.”
- Table 2-2, page 3 Merge the first and third items under “Coastal Resources Management.”
- Table 2-3, page 1 Clean Water Act, Section 402 - For Consideration, remove the last sentence.
- Table 2-3, page 1 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.”

- Table 2-3, page 1 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.
- Table 2-9 Please reference the sources (*i e* , EPA policy) for the PCB, lead, and dioxin numbers.
- Table 2-12 To be consistent with Figure 2-1, please add TP1 data to this table.
- Table 2-15 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.
- Table 2-16 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.
- Table 3-3, p. 8 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.
- Table 4-2 This table should include groundwater unless a separate table is to be included.
- Table 4-3, page 1 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.”
- Table 4-6, page 1 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.”

- Table 4-7, page 1 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 tested to meet all requirements before used as backfill.”
- Table 4-8, page 1 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.”
- Table 4-8, page 1 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.”
- Table 4-8, page 1 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.”
- Table 4-8, page 2 Remove the cite to the Clean Air Act - Odors.

Table 4-9, page 1	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.”
Table 4-11, page 1	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.”
Table 4-11, page 1	Under Federal Requirements add: “Resource Conservation and Recovery Act (RCRA), Subtitle C - Standards for Hazardous Waste Facilities/42 U.S.C. 6291 <i>et seq.</i> /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.”
Table 4-11, page 1	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.”
Table 4-11, page 1	Under State Requirements add: “Hazardous Waste Management - Standards for Treatment, Storage, and Disposal Facilities/RIGL 23-19.1 <i>et seq.</i> ; 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.”

- Table 4-11, page 2 Remove Clean Air Act - Odors
- Table 4-12 If Groundwater is included, discuss in this table.
- Table 4-12, p. 3 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.
- Table 5-2 *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.
- Table 5-2, p. 1 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.
- Table 5-2, p. 2 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.
- Table 5-9 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.”
- Table 5-11, page 1 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.”

- Table 5-11, page 1 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.”
- Table 5-11, page 2 Remove the cite to the Clean Air Act - Odors.
- Table 5-13, page 1 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.”
- Table 5-13, page 1 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.”
- Table 5-13 On page 2, please remove Clean Air Act - Odors
- Table 5-15, p. 6 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.
- Figure 2-1 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.

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

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

Figure 2-4 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.

Figure 2-4 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.

Figure 5-1 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.

Figure 5-2 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.

Figure 5-3 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.

Appendix A 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.

Table B-2 1 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.

Table B-3.4

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.

Table B-3.5

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.

- Table B-3.6 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.
- Table B-3.8 This table presents the toxicity effect level (TEV) calculation. The TEVs need to be revised to reflect corrected aquatic NOECs.
- Table B-3.9 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.
- Appendix C 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 volumes, backfill volumes, etc. Please add these volume calculations to the FS.
- Appendix D 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.
- Appendix D For Soil Alternative 2, page 1 of 2, under #5 Excavation Work, 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:

- The time duration assumed in this estimate differs from the time durations discussed elsewhere in this FS. Please review and correct as appropriate.
- 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.
- Line item 8.13 contains a similar error.

Appendix D

Capital Cost Estimate for Soil Alternative 3:

- The time duration assumed in this estimate differs from the time durations discussed elsewhere in this FS. Please review and correct as appropriate.
- 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.
- 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.

Appendix D

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 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.

Appendix D

Capital Cost Estimate for Sediment Alternative 3:

- The time duration assumed in this estimate differs from the time durations discussed elsewhere in this FS. Please review and correct as appropriate.
- 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.
- 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.
- 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?
- 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.
- 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.

Appendix D

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 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.

Appendix D

Capital Cost Estimate for Sediment Alternative 4: The time duration assumed in this estimate differs from the time durations discussed elsewhere in this FS. Please review and correct as appropriate.

- 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.
- 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.
- 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?
- 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.
- 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.