EMAIL OF TRANSMITTAL AND U S EPA REGION IV COMMENTS ON U S NAVY RESPONSE TO COMMENTS ON PROPOSED PLAN FOR SITE 12 JERICHO ISLAND DISPOSAL AREA
MCRD PARRIS ISLAND SC
6/15/2005
U S EPA REGION IV

Sladic, Mark

From: Koroma-Llamas.Lila@epamail.epa.gov
Sent: Wednesday, June 15, 2005 7:11 PM
To: Sanford, Art F CIV EFDSOUTH; Stacey French; leon fulmer; Don Hargrove; mac mcrae; Sladic, Mark; Harrington GS12 Timothy J
Subject: Comments on RTC for PP 12

Importance: High

RTC_EPA_SUGGESTED_CHANGES_pp12..

Thanks to all for being patient with me, or at least for not verbalizing it! : -) I missed getting this to you as I said I would since I was out with my sick mother. She has had three surgeries in the last two and half months, and I think is now just plain worn out. She said to me, as I checked her 101.7 degree fever and blood pressure of 85/57, I'm too sick to go to the doctor. So to say the least, I arranged it and took her. Mega doses of antibiotics and hypertension meds cut in half and she is feeling more like herself. I will try to get back on track now and follow the team priorities. I knew this was number 1, but had trouble catching up with the RI/FS as relates to the PP as adjusted to now Mod. Alt. #4.

I have completed my thoughts on your RTC. It became very onerous to figure out how to state my desired changes, since things needed to move back and forth, at the same time as be changed somewhat. So I did a redline/track changes version that I hope makes it easier than what was in my head. However, what you will see in the track changes is not only what needs to change in the RTC itself, but also suggested text changes to the PP, based on my suggested changes to your RTC. SO.... Use the document to make changes to both the RTC and PP, but limit the RTC changes just to Patsy's original comments. YOU DO NOT HAVE TO ADDRESS MY OTHER SUGGESTED CHANGES TO THE PP FORMALLY IN THE RTC. I would prefer we handle them informally, although I do want them addressed. I also prefer that you call me if you have questions (WHICH I AM SURE YOU WILL...), and then lets see the revised RTC with a draft redline of the PP. Does that work for you? And I am sure Tim would love for that to happen yesterday, right?

Please feel free to have whoever is actually doing the rewrites to call me to discuss. (See attached file: RTC_EPA_SUGGESTED_CHANGES_pp12.doc)

Thanks so much,
Lila
404-562-9969

P.S. Given my experience with this one, I will be requesting discussion prior to my review of documents for future projects which may not be straight forward. I'd like to hear from the Navy as to historical team decisions as they pertain to the current state of affairs. For instance, I believe you are currently reviewing internally a PP for a Final ROD for SWMU 3. There was an issue pertaining to sediment, I believe. It would be great if we could put that on a team agenda (e.g. RI results .vs. EPA sampling event results, etc. to understand why no sediment monitoring is required) before you send us the draft PP for review. I think this would also benefit Stacey, since she is new, again, to the team.

April 27, 2005

RESPONSES TO U.S. EPA COMMENTS ON
DRAFT PROPOSED PLAN FOR SITE 12/SWMU 10 – JERICHO ISLAND DISPOSAL AREA
MARINE CORPS RECRUIT DEPOT
PARRIS ISLAND, SOUTH CAROLINA

General Comments:

1. **General Groundwater Comment:** In the Scope and Role of the Proposed Action section, p. 2, the texts states, '...groundwater at Site 12 currently pose(s) a risk to human health and the environment.' Under this same section there is discussion of excavation of the causeway which states, 'These excavation activities would eliminate transport of contaminants to groundwater thereby reducing risks from direct contact and ingestion with groundwater.' Additionally, the risk table (2) indicates arsenic as a COC in groundwater. In the following section, A Closer Look at the Proposed Remedy, there is no mention of how the groundwater risk is to be addressed. Subsequent sections, Summary of Site Risks, p 5, mention site groundwater is not potable and that current and future use will exclude such use; or in What are the Clean-Up Objectives and Levels? p. 12, bullet #2, the text explains the objectives will be to eliminate migration of the COCs to groundwater. The above references are not clear regarding how the proposed alternative (4) will address the limited groundwater contamination at the site. If high salt content, current and future site use and removal of source contamination will address the ground water risk, this rationale should be stated clearly and together in the appropriate sections. We suggest referencing the RI Report of October 2001, 6.0 Baseline Human Health Risk Assessment, Section 6.2.3.3 Direct Contact with Groundwater. Using this Health Assessment language where appropriate here and in the Record of Decision (ROD) will allow a clear understanding of how the limited groundwater contamination is being addressed at Site 12/SWMU 10.

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NOTE: Not having been on the team when these decisions were made it was very difficult for me to understand how you could say there are risks to humans from ingestion of ground water, and then not specify any remedial action goal for groundwater, nor any land use controls, either of which would have been a viable solution. Based on my skimming of the RI and FS, you were able to validly explain everything except Arsenic and Cadmium (FS page 2-7....really even Cadmium at the time based on RBCs (?)) and it appears you are very close to Soil to GW numbers in your goals already: S2GW for Arsenic was 1 and your RGO for soil is set at 1.83; S2GW for Cadmium would be .4 and your eco number is set at 1.6 . If these numbers (1 and .4) were too difficult/expensive to reach, then you could just put a LUC to say no drinking water wells (which you actually implied somewhere in these docs, but I now can't find.) Alternatively to pursuing this with you, I had some very helpful discussions with the state and at least understand the background and intention of what the team decided. However, please be prepared to explain this at the public meeting, should in case someone specifically ask, especially the RGOs. I have not suggested changed language for that section.

LUC is not no Action

because I could not find in creative solution. Maybe you can. However, this document does need additional explanation, at least by reference in other sections – see below.

2 INCONSISTENT

Response: The first paragraph of the referenced section, Scope and Role of the Proposed Action, will be rewritten as follows:

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"Fifty-five sites are being investigated under the Installation Restoration (IR) Program. This Proposed Plan addresses Site 12; the remaining 54 sites are in the process of being addressed and will be addressed separately.

Based on the risk assessment undertaken during the study of Site 12, wastes, soils, sediments, and groundwater at Site 12 currently pose a risk to human health and the environment. As a result, a remedial action is planned at Site 12 to reduce these risks.

As part of remedial activities, source materials (three surface debris piles and their underlying soil and sediment) would be excavated and transported to an approved off-site disposal facility. Similarly, soils containing concentrations of PAHs and sediments containing concentrations of inorganics greater than their respective clean-up goals would be excavated and transported to an off-site disposal facility. Likewise, the causeway connecting the northern portion of Jericho Island to the mainland would be removed and disposed. These activities would eliminate human and ecological exposure to waste and contaminated soil and sediment currently present at Site 12.

Potential human risks from exposure to groundwater would be indirectly addressed through excavation actions taken to address waste and contaminated soil and sediment. Excavation activities would remove source materials thereby effectively eliminating the transport of contaminants to groundwater. Moreover, risk from potential human exposure to groundwater is anticipated to be negligible because it is unlikely that humans will drink Site 12 groundwater. Under a hypothetical residential scenario, ingestion of groundwater by future residents results in unacceptable cancer and noncancer risks. However, groundwater at Site 12 is not suitable for drinking due to its high salt content and turbidity (see FS/CMS page 3-10, 5th par.). In addition, groundwater is not anticipated to be used by residents at Site 12 because the site is currently used for industrial purposes and is planned for such use into the foreseeable future. Groundwater does not pose unacceptable risks to ecological receptors.

Although human and ecological risks from exposure to surface water are within acceptable limits, the proposed remedy will also effectively eliminate the possibility of future transport of contaminants from soil or sediment to surface water."

Additionally, the Summary of Site Risks section will be rewritten as follows starting in the second paragraph:

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> During the RI/RFI, potential environmental risks associated with this site were evaluated for human health and ecological receptors in accordance with U.S. EPA guidelines. ....due to the groundwater's high salt content and turbidity (see FS/CMS page 3-10, par 5) and the site's current and expected future use as a buffer zone....."

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WH

Finally, the Human Health Risk Assessment section will be rewritten as follows, starting with a new paragraph being inserted before the last paragraph:

> "For groundwater, calculated risks were very conservative based on the limited occurrences of some COCs, background levels of other COCs, etc. (see FS/CMS page 2-7) as well as the unlikely use of the groundwater as drinking water."

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Specific Comments:

1. **Comment: Introduction.** This section should state that Proposed Plan is a document that the lead agency is required to issue to fulfill the requirements of CERCLA § 117(a) and NCP § 300.430(f)(2).

   Response: This information will be incorporated as suggested.

2. **Comment: Introduction.** The Proposed Plan states that the Partnering team will select a final remedy for Site 12. Note that, when it is issued, the Record of Decision should state that the Navy and EPA, in consultation with the State, will select the remedy. Accordingly, the Proposed Plan should also include that statement.

   Since the time of the Post-ROD authority dispute, RPMs have been told to be consistent in ROD language. By statute, EPA and the Navy select the remedy. Therefore, the language proposed in these comments would be approvable, and would be what our attorneys are looking for before recommending approval by EPA management. To avoid delays at that time, I request you revise your response to agree to the changed language.

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   Does why agree

   Response: Because the Navy serves as lead agency, the referenced sentence will be replaced with the following.

   "The Navy, pending concurrence from the U.S. EPA and State, will select the remedy."

   A similar statement will be included in the ROD.

3. **Comment: Scope and Role of the Proposed Action.** If the excavation activities will remove source materials that are considered principal threat wastes, this section or the one following should include a description of the how the proposed action addresses source materials that are considered principal threat wastes.

(CAUSE BURNS TO WHAT)

Response: The referenced section will be modified to indicate how source materials (three four? Do we assume the causeway debris could also be contributing???? surface debris piles and their underlying soil and sediment) will be addressed by the proposed action. However, waste materials at Site 12 are not believed to be principal threat wastes but rather low toxicity source materials per Highlight 6-26 of the U.S. EPA guidance for Proposed Plans and RODs (U.S. EPA, 1999). This determination is made because soil and sediment concentrations result in cancer risks within or near the acceptable risk range (see Proposed Plan, Table 2). Agree As presented in the response to general comment #1, the first paragraph of the referenced section has been rewritten to address this comment. (see my suggestions in General Comment #1 above and make sure this still applies. I think it will be fine as is, but check once all is said and done.)

4. **Comment: A Closer Look at the Proposed Remedy.** The last paragraph states that "contingencies for the salt marsh restoration may be considered . . ." Since "contingent remedy" is a term of art on which EPA has issued guidance. Please change "contingencies" to "alternatives" or "alternative methods" since the meaning of this paragraph does not appear to be creating a contingent remedy.

Response: The change will be made.

5. **Comment: Site Risk Summary.** Please add "and the EPA's" after "it is the Navy's."

Response: The referenced sentence will be revised as follows.

"Consequently, it is the Navy's, U.S. EPA's and State's, belief that the preferred alternative....."

6. **Comment: Clean-Up Alternatives.** Containment. It might be a good idea to remove "5-year reviews of the site" from the last bullet, since the 5YR is not technically a part of the alternatives, but arises from a statutory mandate distinct from the requirement to select a remedial action. Certainly, when we select the remedy, the ROD should not include the 5YR in the "Selected Remedy" section or be described in the Declaration as part of the remedy.

Response: Reference to 5-year reviews will be removed from the section. The same changes will be made to the ROD as appropriate.

7. **Comment: Next Steps.** Again, it is really the Navy and EPA who will select the remedy, with concurrence by the state. It may not be necessary to change it here.

   Response: The referenced sentence will be changed as follows:

   The MCRD will also announce the chosen alternative ~~Navy's decision~~ through the local news media and the community mailing list.

8. **Comment: Overall Protection of Human Health and the Environment.** The first bullet could point out the Alternative 4 allows for unrestricted use of the site.

   Response: The referenced bullet will be rewritten as follows. Please note that this bullet has also been modified in response to U.S. EPA comment #10.

   See suggested changes in Attachment 1 below, then change this according to your final version. no approval

   "Modified Alternative 4 would provide the most overall protection compared to the other alternatives because all waste and contaminated soil and sediment would be removed and disposed at an appropriate off-site facility. Modified Alternative 4 also allows for unrestricted use of the site. Modified Alternative 4 would be more protective than Alternative 4 because an additional 800 cubic yards of waste, soil, and sediment would be removed. "

9. **Comment:** Long-Term Effectiveness/Source Control. The second bullet should note that require the long-term monitoring of land of use controls protection of human health and the environment in the long term and that there is some associated uncertainty in predicting and maintaining consistent, protective use, though not so much here at this active military facility as at private sites.

   Response: The following text will be added to the end of the referenced bullet:

   "Under Alternatives 2a, 2b, and 3, there may be some uncertainty in ensuring consistent implementation of long-term monitoring and maintenance of land use controls over the long term."

10. **Comment:** Cost. It is good that the cost was revised to reflect that Alternative 4 was revised to include excavation of the causeway. It does not appear, however, that "Revised Alternative 4" has

been adequately described in this Proposed Plan. It should be described fully in the earlier sections of the Proposed Plan. For instance, the highlight on page 15 directs the reader to consult the FS/CMS for more detailed information on the alternatives. Since Revised Alternative 4 is an invention of the Proposed Plan, there is nothing (presumably) further about it in the FS/CMS and must be fully described here.

Response:

"Revised Alternative 4" builds on Alternative 4 with inclusion of the causeway excavation. In view of this fact, the following text will be inserted after the last bullet of the Removal/Disposal section Not the best place for this - - how about in *A Closer Look at the Proposed Remedy*? - - see following comments (page 15 of the Draft Proposed Plan). The revised alternative will be referred to as Modified Alternative 4.

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This following text would be more appropriately included in the Section entitled *A Closer Look at the Proposed Remedy, inserted at the very beginning.*

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"Modified Alternative 4 was developed by the MCRD Parris Island Partnering Team after the completion of the Site 12 FS/CMS. Building on the components of Alternative 4, Modified Alternative 4 also includes excavation of the causeway (as shown on Figure 3). [REVISE FIGURE 3 TO SHOW THIS]

ok

The causeway (a raised way across wet ground or water) connects the northern end of Jericho Island to the mainland and was constructed with soil commingled with waste material. The causeway is approximately 350 feet long, 15 feet wide, and 3 feet high. The date of construction of the causeway is unknown.

As part of the causeway excavation, soil and waste that comprise the causeway and 1 foot of the causeway's underlying sediment would be excavated and disposed at an approved waste disposal facility. Approximately 800 cubic yards of soil, sediment, and waste would be removed. All other activities described as part of Alternative 4 would be performed as part of Modified Alternative 4." Then continue here with…."The following text explains in further detail the proposed remedy (**Modified** Alternative 4)…….

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These are more suggestions for changes in that section:

1. Excavate Surface Debris, Soil, and Sediment - .....At the end of the first paragraph add "An additional XXX cubic yards of debris, sediment and soil would be excavated from the causeway and properly disposed."

2. Transport Excavated Material to an Approved Disposal Facility – change to "650" truckloads, right?

3. Restoration – Add to the end of the first paragraph, "The causeway area will be reestablished as salt marsh."

WHAT ARE THESE BASED ON?

The proposed plan will be revised to indicate that Modified Alternative 4 is the preferred alternative. (There are many sections where it is appropriate to update regarding the description of **Modified Alternative** 4. Please be more specific such as..... "All pertinent text, calculations, figures and tables will be updated appropriately, including at a minimum Page 1 *Remedial Action Proposal*, Page 3 *A Closer Look at the Proposed Remedy*, Page 6 *Clean-Up Alternatives for Site 12 (highlight box)*, Page *6 Removal/Disposal*, as well as all appropriate text within the section on Page 7 entitled *Comparison of Clean-up Alternatives* (This revised discussion is provided in Attachment 1). THEN YOU DO NOT NEED THE NEXT 2 SENTENCES Furthermore, the section titled "Comparative Analysis of Alternatives" will be revised to discuss both Alternative 4 and Modified Alternative 4. This revised discussion is provided in Attachment 1. See my notes there.

SPECIFIC ABOUT WHAT

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SUGGESTED REWRITES:

Page 1 *Remedial Action Proposal* (highlight box) – 1st par. text add "Modified", and add additional bullet after number three = "Excavation of debris, soils, and sediment in the causeway." Also, third from last bullet RGO…."options" ???? or rather "objective"? What is the difference between RGO and PRG? Is RGO a RCRA term? Is the Acronym list page for this PP correct? If so, at least you are consistent! Please check.

Page 3 *A Closer Look at the Proposed Remedy* - see notes above, at the beginning of your response to this comment, on language you had proposed to include in *Removal/Disposal*.

Page 6 *Clean-Up Alternatives for Site 12* (highlight box) = First sentence ...The FS/CMS Report "and this Proposed Plan.....". Add to end of first paragraph text which explains to the public that due to...*insert explanation*....."Alternative 4 from the FS/CMS has been modified to include additional excavation as described previously in the Proposed Plan Section titled *A Closer Look at the Proposed Remedy*." This Modified Alternative 4 has been selected as the proposed remedy."

OK

Page 6 *Removal/Disposal* – After the last existing bullet, insert a new paragraph that says:

"Modified Alternative 4 would include all the actions taken under Alternative 4, plus:

* Excavation and proper disposal of debris, soils and sediments from the causeway leading to the island, after which the area would be restored."

Page 7 *Comparison of Clean-up Alternatives* [see that section for suggested changes.]

11. **Comment: Why Does the U.S. Navy . . .?** Please change the text to reflect that the Navy and the U.S. EPA, with SCDHEC's concurrence, prefer Modified Alternative 4. This revision will be consistent with the fact that the Navy and EPA will select the remedy, as documented in the ROD to follow.

CEAD Army

See specific comment # 2. For the same reason, it would be appropriate to say the Navy and EPA prefer **Modified** Alternative 4.

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Response: The referenced sentence will be revised as follows.

"Consequently, the Navy, pending concurrence with the U.S. EPA and State, believes that the preferred alternative....."

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REFERENCES

U.S. EPA, 1999. A Guide to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Decision Documents. Office of Solid Waste and Emergency Response. EPA 540-R-98-031, OSWER 9200.1-23P, July.

U.S. EPA Response to Comments

Attachment 1

Comparison of Clean-Up Alternatives

Overall Protection of Human Health and the Environment

- Modified Alternative 4 would provide the most overall protection compared to the other alternatives. Under Alternative 4 and Modified Alternative 4 waste and contaminated soil and sediment would be removed from all identified areas of concern and disposed at an appropriate off-site facility. Modified Alternative 4 and Alternative 4 also allow for unrestricted use of the site. Modified Alternative 4 would be more protective than Alternative 4 because an additional 800 cubic yards of waste, soil, and sediment would be removed.

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- Alternative 3 would be more protective than Alternatives 2a and 2b because all waste and contaminated soil and sediment would be contained under a cap system.

- Alternative 2a is less protective in the short term than Alternative 2b because PAHs in soil would undergo monitored natural recovery (10 to 30 years to achieve clean-up goals), which is a less aggressive approach than enhanced biodegradation (up to 5 years to achieve clean-up goals).

- Alternative 1 is not protective of human health and the environment. In addition, site risks may increase as waste materials continue to erode.

Compliance with ARARs/Waste Management Standards

- Alternative 1 would not comply with chemical-specific ARARs.

- Alternatives 2a and 2b would comply with chemical-specific ARARs in the long term; however, it may take up to 30 years to achieve PAH clean-up goals under Alternative 2a and up to 5 years to achieve PAH cleanup goals under Alternative 2b.

- Alternative 3 is expected to comply with chemical-specific ARARs upon completion of remedial activities. The consolidation of all contaminated materials under a low-permeability cap system is expected to control the source of the contamination and to eliminate the transport of contaminated surface debris, soil, and sediment to groundwater and surface water.

- The excavation and off-site disposal of contaminated materials under Alternative 4 and Modified Alternative 4 are also expected to comply with chemical-specific ARARs upon completion of remedial activities. Under these alternatives, the transport of contaminants from soil, sediment, and waste to groundwater and surface water would be eliminated.

- Alternatives 2a, 2b, and 3 would attain all action-specific ARARs and waste management standards including federal and South Carolina regulations concerning final covers for landfills; however, Alternative 1 would not meet these landfill requirements.

- Alternative 4 and Modified Alternative 4 would also attain all action-specific ARARs and comply with waste management standards.

- Alternatives 1, 2a, 2b, 3, 4, and Modified Alternative 4 would attain all location-specific ARARs.

Long-Term Effectiveness/Source Control

- Alternative 1 would not be effective in the long term. Residual risks would remain attributable to potential exposure to waste and contaminated soil and sediment. Impacts to groundwater from contaminant source areas would continue. Alternative 1 would not include source control measures.

- Alternatives 2a, 2b, and 3 would be equally effective in the long term. Under all of these containment alternatives, source control would be provided by excavating and consolidating the more highly contaminated material under a low-permeability cap system. The containment of the waste material would limit the infiltration of precipitation and would minimize the impact of contaminants on groundwater quality. Containment would also prevent the transport of contaminants to surface water via erosion. Although degradation of PAH concentrations in soil would be left to natural processes under Alternative 2a and promoted through active measures under Alternative 2b, attainment of the PAH RGOs would be expected in the long term. Under Alternatives 2a, 2b, and 3, there may be some uncertainty in ensuring consistent implementation of long-term monitoring and maintenance of land use controls over the long term.

- Modified Alternative 4 provides the most effective long-term remediation option and is the most effective remedy for source control. Impacted soil, sediment, and waste would be removed from all identified areas of concern at the site. Unrestricted use of the site would be allowed, and the need for long-term monitoring and land use controls would be eliminated. Alternative 4 would be less effective than Modified Alternative 4 because waste commingled with the soil and sediment of the causeway would remain. Issues related to cap system integrity (such as cap erosion during a severe storm) would not be applicable to Alternative 4 and Modified Alternative 4.

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Reduction in the Toxicity, Mobility, or Volume through Treatment

- Alternatives 1 and 3 would not include treatment technologies.

- For the reduction of PAHs in soils, Alternative 2a would rely on monitored natural recovery and Alternative 2b would use enhanced biodegradation.

- Approximately 2,700 cubic yards of waste material and sediment would be contained within the cap systems in Alternatives 2a and 2b. Approximately 4,300 cubic yards of soil, sediment, and waste materials would be contained within the cap system in Alternative 3. These alternatives would not reduce the toxicity or volume of the surface debris or reduce soil and sediment contaminant concentrations other than that which would result from natural dispersion, dilution, or other attenuating factors.

- Alternative 4 and Modified Alternative 4 do not involve treatment except for what would be required to comply with land disposal restrictions. Under Alternative 4, approximately 4,300 cubic yards of surface debris, soil, and sediment would be excavated and disposed at an appropriate off-site disposal facility. Similarly, 5,100 cubic yards of contaminated media would be excavated, transported, and disposed under Modified Alternative 4.

Short-Term Effectiveness

- Alternative 1 would not pose environmentally significant short-term effects to the neighboring off-base community.

- Under Alternatives 2a, 2b, and 3, there would be short-term effects to traffic conditions because approximately 400 truckloads of cap material would be transported to the site.

- Under Alternative 4, there would be short-term impacts to traffic conditions because of the 600 truckloads of waste material that would be transported from the site to an appropriate disposal facility. Similarly, 650 truckloads of material would be transported under Modified Alternative 4.

- Under Alternatives 2a, 2b, 3, and 4, vegetation within the excavation areas would be removed. Also as part of these alternatives, 1.5 acres of wetlands would be affected but then restored to natural conditions. Under Modified Alternative 4, 1.6 acres of wetlands would be affected and then restored. Measures would be conducted to minimize the impact of excavation on the salt marsh. No endangered species are known to live within the boundaries of Site 12.

- The RAOs may take approximately 10 to 30 years to be achieved under Alternative 2a and up to 5 years under Alternative 2b. The RAOs would be achieved in approximately 1 year under Alternatives 3 and 4 and Modified Alternative 4.
- Health and safety training and proper personal protection equipment usage would minimize any effects to site workers during implementation of Alternatives 1, 2a, 2b, 3, 4, and Modified Alternative 4.

Implementability

The implementation of Alternatives 2a, 2b, 3, and 4 and Modified Alternative 4 is technically and administratively feasible. MCRD Parris Island is an active military installation; therefore, land use controls at Site 12 are easily implementable and enforceable. This evaluation criterion is not applicable to Alternative 1.

Cost

The costs of the alternatives evaluated in the FS (Alternatives 1, 2a, 2b, 3, and 4) are shown in the following table. For Alternatives 2a, 2b, and 3, costs are shown for both RCRA Subtitle C and D cover systems. The RCRA Subtitle D cover system would consist of a bottom 6-inch layer of crushed gravel, an 18-inch layer of native soil, and an upper 6-inch topsoil layer. In addition to these elements, a RCRA Subtitle C Cover system would also include a gas collection layer, a geosynthetic clay layer, and a drainage layer. A comparison of these costs indicates that Alternative 4 is the most cost-effective alternative.

Alternative	Capital Costs ($)	O&M Costs		30-Year Present Worth($)
		Min ($)	Max ($)	
Alternative 1	0	0	0	0
Alternative 2a				
RCRA C Cap	1,261,000	45,500	92,900	1,913,000
RCRA D Cap	1,075,000	45,500	92,900	1,728,000
Alternative 2b				
RCRA C Cap	1,434,000	45,500	192,900	2,180,000
RCRA D Cap	1,248,000	45,500	192,900	1,994,000
Alternative 3				
RCRA C Cap	1,580,000	45,500	91,500	2,227,000
RCRA D Cap	1,313,000	45,500	91,500	1,960,000
Alternative 4	1,450,000	0	0	1,450,000

These alternatives do not address waste material commingled within the soil and sediment of the causeway. Therefore, after completion of the Site 12 FS/CMS, Modified Alternative 4 was developed to include activities associated with the excavation of the causeway. The resulting cost for Modified Alternative 4 is as follows:

Alternative	Capital Costs ($)	O&M Costs	30-Year Present Worth($)
Modified Alternative 4	1,776,000	-	1,776,000

If Alternatives 2a, 2b, and 3 were modified to include excavation of the causeway and incorporation of the causeway material within a cap system, their costs would be expected to increase proportionately to the increase observed by modifying Alternative 4. As a result, Modified Alternative 4 is expected to be the most cost-effective alternative.

What impacts would the remedial action have on the local community?

- Alternative 1 would not pose environmentally significant short-term effects to the neighboring off-base community.
- Under Alternatives 2a, 2b, and 3, there would be short-term effects to traffic conditions because approximately 400 truckloads of capping material would be transported to the site.
- Similarly, under Alternative 4, there would be short-term impacts to traffic conditions because 600 truckloads of waste material would be transported from the site to an appropriate disposal facility. Under Modified Alternative 4, 650 truckloads of waste material would be transported.
- The RAOs may take approximately 10 to 30 years to be achieved under Alternative 2a and up to 5 years under Alternative 2b. The RAOs would be achieved in approximately 1 year under Alternatives 3 and 4 and Modified Alternative 4.

ALSO:

Table 4 – The column for Selected HH is labeled as "Sediment" instead of "Soil". Please correct and make sure the numbers are soil numbers. Please add RGO to the acronym list bottom of page here and for Table 5. Again, "Option" or "Objective"?

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Make sure Figure 3 is expanded to show causeway work area.

And double check RGO as defined in Acronym list.

Be sure to fill in the blanks !