

6/12/06-02595



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
CARIBBEAN ENVIRONMENTAL PROTECTION DIVISION  
CENTRO EUROPA BUILDING, SUITE 417  
1492 PONCE DE LEON AVENUE, STOP 22  
SAN JUAN, PR 00907-4127

June 12, 2006

Mr. Christopher Penny  
Eastern Vieques Remedial Project Manager  
Commander Atlantic Division  
Naval Facilities Engineering Command  
6506 Hampton Boulevard  
Norfolk, VA 23508-1278

Re: Review of the Draft Engineering Evaluation/Cost Analysis for MEC Removal, Beaches and Roadways in the Munitions Response Area – Eastern Maneuver Area, Surface Impact Area, Live Impact Area, and Eastern Conservation, Former Vieques Naval Training Range (VNTR), Vieques, Puerto Rico

Dear Mr. Penny:

The U.S. Environmental Protection Agency (EPA) and the Puerto Rico Environmental Quality Board (EQB) have completed the review of the Draft Engineering Evaluation/Cost Analysis for MEC Removal, Beaches and Roadways in the Munitions Response Area – Eastern Maneuver Area, Surface Impact Area, Live Impact Area, and Eastern Conservation, dated May 2006. Enclosed you will find our comments.

If you have any questions, please contact me at (787) 741-5201.

Sincerely yours,

Daniel Rodríguez  
Remedial Project Manager  
Enforcement and Superfund Branch

Enclosures (2)

- cc: Yarissa Martinez, EQB, w/ encl.
- Felix López, FWS, w/ encl.
- Oscar Díaz, FWS, w/encl.
- Doug Maddox, FFRRO, w/ encl.
- Tom Hall, Tech Law, w/ encl.
- Jim Pastorik, UXO Pro, w/encl.
- John Tomik, CH2M Hill, w/ encl.

**EPA Comments on  
Draft Engineering Evaluation/Cost Analysis for  
Munitions and Explosives of Concern (MEC) Removal  
from Beaches and Roadways in the Munitions Response Areas:  
Eastern Maneuver Area, Surface Impact Area, Live Impact Area, and Eastern  
Conservation Area, Former Vieques Naval Training Range (VNTR)  
Vieques, Puerto Rico  
May 2006**

**GENERAL COMMENTS**

1. In the Executive Summary, Lines 25 through 28, as well as in Section 4, Identification and Detailed Analysis of Removal Alternatives of the main body of the Draft Beaches & Roadways EE/CA, it is stated that Alternative 2 was selected as the recommended removal action alternative. Alternative 2 includes a complete removal of MEC from the surface of the roads and beaches and a subsurface removal of MEC to the depths of two feet for the roads and four feet for the beaches. EPA disagrees with this selection and believes that Alternative 3 is a better selection based on the more complete removal of MEC from both the roads and beaches. (Alternative 3 differs from Alternative 2 by providing the removal of MEC to the detection depth thereof, instead of stopping removal at a predetermined depth of two or four feet, respectively, as is the case with Alternative 2.)

Experience has shown that over 90 percent of the MEC found on most military ranges (excluding burial pits) is located on the surface or in the first two feet below the ground surface (bgs). However, it is also true that a certain percentage of the MEC is discovered at depths exceeding two feet bgs. It is thought that the hazard reduction resulting from the additional effort required to remove this remaining detected MEC (below two feet deep) is well worth the time and expense. This is particularly thought to be true where the locations concerned are/will be subjected to human activity and potential intrusive use, as is the case with many of the roads and beaches on Vieques.

While it is understood that many of the roads in the area of interest have bedrock underneath at depths of approximately two feet or less, this does not provide sufficient justification to stop investigation at that depth in areas where the bedrock is found at a greater depth. If the potential for discovering MEC is as limited as is suggested in Section 2.5.2, Roadways, the additional effort required to prosecute the selected anomalies to depth (resolution) should not be excessive.

As the beaches are subject to erosion/beach building events caused by the elements, it would also appear to be prudent to remove all selected anomalies to detection depth instead of stopping at a predetermined depth of four feet. In particular, beach erosion and the resulting shifting of MEC can make today's five-

foot deep anomaly tomorrow's surface MEC. It would be unfortunate if an incident involving this MEC occurred after an erosion event, particularly if it happened between the erosion event and the subsequent inspection of the beach.

DoD 6055.9-STD (DoD Ammunition and Explosives Safety Standards, October 5, 2004) states in Section C1.2 that, "Consistent with operational requirements, it is DoD policy to:...Provide the maximum possible protection to both personnel and property from the damaging effects of potential accidents involving AE." It does not appear that knowingly abandoning unresolved anomalies that may represent MEC, particularly on roads and beaches that will be subject to human activity, is in strict compliance with the noted reference.

Please review the criteria employed to select the Removal Alternative in light of the above noted concerns. Change the selected alternative to Removal Alternative 3 or provide the EPA with a detailed explanation as to why this should not be done as requested.

2. There is a concern as to the intent of some of the language found in Section 2.3, Current and Future Land Use. Lines 2 through 7 on page 2-7 read, "Any land use controls such as access restrictions that are planned for the former LIA are expected to be consistent with those established for state and federal wildlife refuges with the exception of restricting any intrusive work at the site and providing periodic visual surface clearance reviews of beaches and roadways for MEC. All intrusive activities will require qualified UXO technicians and follow DDESB guidelines relating to Formerly Used Defense Sites (FUDS)."

While it is understood that all intrusive activities performed prior to a clearance to depth of a particular area would require "qualified UXO technicians," it is unclear as to why the land owner would be required to have persons with these qualifications conduct any intrusive activities (unless the area is cleared to a shallow specific depth and the intrusive activities planned exceed this depth). Common practice has been to allow intrusive activities down to the clearance depth (or the vicinity thereof) with a cessation of activities and contact with the appropriate authorities if unidentifiable metallic items are discovered.

Please review the language cited and expand/revise the listed section to explain/correct the requirements placed upon the landowner after clearance. Also, if the "qualified UXO technicians" requirement is deemed necessary, please provide a detailed discussion of the regulatory basis for this requirement.

## **SPECIFIC COMMENTS**

1. **Acronyms and Abbreviations, pages vii and viii:** It is unclear as to how acronyms were selected for inclusion in this section of the Draft Beaches & Roadways EE/CA. It is also unclear as to how acronyms used in the document

were rejected for inclusion in the listing. For example, the acronyms “IAS,” “CTO,” “O&M,” and “NRHP” are used in the Draft Beaches & Roadways EE/CA 0, 1, 3, and 4 times each, respectively. These acronyms are included in the Acronyms and Abbreviations Section. However, the acronyms “MD,” “MPPEH,” and “EPA” are used 4, 8, and 14 times each, respectively, and they are not listed in the Acronyms and Abbreviations Section.

Also, the definition of the acronym “NRHP” provided in the Acronyms and Abbreviations Section differs from the definition provided on line 39 of page 2-4 (Section 2.1.8, Cultural resources). In addition, the correct abbreviation for the Department of Defense is “DoD,” not “DOD” as is listed on line 9 of the Acronyms and Abbreviations Section. The correct definition of the acronym EE/CA is “Engineering Evaluation/Cost Analysis,” not “Engineers Estimate/Cost Analysis” as is shown on line 16 of page vii.

Please review the Acronyms and Abbreviations Section and provide an expanded listing to include the acronyms and abbreviations most often used in the Draft Beaches & Roadways EE/CA. Also, please correct the discrepancies noted above.

2. **Section 2.4.1, Preliminary Range Assessment, page 2-7:** This section states in lines 39-40 that, “The information from the field reconnaissance, archive search and the aerial photo analysis was evaluated to develop a MEC Conceptual Model (CSM) for the former VNTR facility.” As CSM is usually defined as “Conceptual Site Model,” please revise the listed sentence to reflect this definition.
3. **Figure 2-2, Former VNTR Site Map:** The map has a red box in the legend that contains the number “1” and is defined as “MRA-LIA-SIA.” Please provide an explanation as to what the term “MRA-LIA-SIA” means.
4. **Section 4.1.2, Alternative 2 – Removal of Surface and Subsurface MEC from Select Roadways – 2 ft Depth and Beaches – 4ft Depth, page 4-1:** Lines 31 and 32 state that, “Surface MEC will be cleared from the rocky beach areas from the low tide water line to the vegetation line.” As the term “rocky beach areas” has not been defined, please do so, to include a description of the type of rocks (i.e. small, medium, large, mixed individual rocks or bedrock). If no geophysical investigation of the cited area is intended, please so state and provide an explanation as to why this is not appropriate.

Lines 33 through 35 read, “Minimal intrusive activities will be necessary as the site will remain a US FWS Refuge with only minimal human impact occurring at the site.” As current planning for the refuge does not indicate that public access will be entirely prohibited, the basis for this statement is unclear. Please expand this section to explain the basis for the cited statement.

5. **Section 4.1.3, Alternative 3 – Removal of Surface and Subsurface MEC from Select Roadways and Beaches to Detection Depth, page 4-3:** Section 4.1.3 consists of only two sentences, which do not appear to constitute a complete description of this alternative. Please expand Section 4.1.3 to provide a more detailed description of Alternative 3.
6. **Section 4.2.1, Effectiveness, page 4-7:** On lines 32 through 34 of the subsection entitled “Protection of Workers During Implementation,” it is stated that, “The quantity of MEC removal would also be significantly increased, placing UXO technicians at a greater risk than Alternative 2.” While it is very likely that some additional MEC will be removed by a clearance to depth, the basis for stating that the quantity of MEC would be “significantly increased” is unclear. Experience has shown that the majority of MEC contaminated sites have a distribution of MEC with over ninety percent being located on the surface and in the first two feet below ground surface (bgs). This leaves less than ten percent of the remaining MEC in the depths of over two feet bgs, with most of that usually being located in the second to third foot of depth bgs. If the areas under consideration do not vary significantly from the norm, the MEC increase for the roadways would be less than ten percent and probably much less than five percent for the beaches if cleared to depth. Please provide the site-specific basis for the use of the term “significantly increased” as noted above, or revise the section to present a more realistic description of the additional MEC exposure that will result from a clearance to depth.
7. **Section 4.3, Implementability, pages 4-9 and 4-10:** Beginning on line 40 of page 4-9, the subsection entitled “Removal of Surface and Subsurface MEC from Select Roadways and Beaches to Detection Depth” notes that, “The same LUCs/ICs will need to be implemented for this alternative, so implantation [sp-should read “implementation”] of this alternative will likely result in a much higher cost and only a small number of additional MEC would likely be recovered.” Using the cost figures provided in section 4.4, Cost, the estimated increase is approximately fifteen percent, which does not necessarily qualify as a “much higher cost.” In addition, the statement that, “...only a small number of additional MEC would likely be recovered.” appears to conflict with the statement in Section 4.2.1, Effectiveness, page 4-7, which states that, “The quantity of MEC removal would also be significantly increased, placing UXO technicians at a greater risk than Alternative 2.” Please revise the noted subsection to correct the “much higher cost” statement. Also, please make the amount of MEC that will result from Alternative 3 consistent in Sections 4.3 and 4.2.2 as noted above.
8. **Section 5.1 Effectiveness, page 5-1:** In lines 34 and 35, this section notes that, “However, based on the proposed future land use, Alternative 2 will also provide an adequate level of protection.” This statement is questionable for both the two-foot clearance of the roadways and the four-foot clearance of the beaches. No information has been presented that explains why the presence of MEC at a depth below the two-foot level is considered to be acceptable for a well-traveled dirt

road. No information has been provided or referenced that suggests that a four foot clearance of beaches which may be subjected to significant erosion is acceptable, particularly if known anomalies which may represent MEC are abandoned without resolution at the four foot bgs depth. Please provide the basis for these determinations in detail at an appropriate location in the Draft Beaches & Roadways EE/CA or reference where the data may be found elsewhere.

9. **Table 5-1, Relative remedial Alternative Comparison, page 5-3:** The table lists the effectiveness of both Alternatives 2 and 3 as “Effective,” while it lists the cost of the two as “Moderate” and “Most Expensive,” respectively. It would seem, based on the fifteen percent additional cost for Alternative 3 when compared with Alternative 2 that this method of expressing the cost differential exaggerates the advantage of Alternative 2, as does the designation of both as “Effective,” when an effectiveness difference does exist. Please review the terminology in the table and correct it as necessary.
10. **Section 6, Recommended Removal Action Alternative, page 6-1:** This section contains a sentence concerning Alternative 2 that states, “All the MEC within the depth where there would likely be an explosive safety hazard would be removed.” It is unclear as to the basis for this statement. Does this mean that a fuzed aircraft bomb located at a three-foot depth under a roadway and unexcavated during the two-foot removal is not an explosives hazard? Does this mean that large MEC at a five foot depth on a beach and unexcavated does not represent an explosives threat to anyone traversing the beach? Please provide the EPA with the detailed basis upon which the cited assertion is based.
11. **Appendix A, ERA/Phase I SI Explosive Hazard Assessment:** As this appendix is under revision by the Navy based on the comments provided during the Munitions Response Program Subcommittee Meeting on May 31, 2006, EPA will not comment further on this appendix at this time. However, when the revision of the Hazard Severity Categories is complete, the EPA will provide comments as appropriate.

**EQB's Technical Comments on the  
Draft Engineering Evaluation/Cost Analysis  
for MEC Removal from Beaches and Roadways  
In the Munitions Response Areas:  
Eastern Maneuver Area, Surface Impact Area,  
Live Impact Area, and Eastern Conservation Areas  
Former Vieques Naval Training Range  
Vieques, Puerto Rico  
May 2006**

Cmt. No.	Pg. & Line	Sec.	Comment/Recommendation
1	2-9, 15 – 21	2.4.2	<p>1. This section seems to be discussing only MRS 1. Is this correct? Shouldn't it discuss the entire MRA-SIA?</p> <p>2. There appear to be some contradictions in this text. Line 15 says there is a "high screening level for exposure to explosive hazard ...". Then Line 18 says "... access to the areas is limited due to very dense vegetation and rough terrain ...". Then line 21 says there is low density of MEC. How can exposure to the explosive hazard be high when access is limited and MEC density is low?</p> <p>3. This is the first mention of "dense vegetation" and "rough terrain (e.g., steep slopes)". It is necessary to define these terms especially "steep slope" if they are going to be used to qualify the accessibility of areas for determining explosive risk. How steep is steep enough to cause access to be restricted?</p>
2	2-9, 23 2-10, 14 Appendix A	2.4.2 2.5.1	<p>This line refers to the hazard evaluation of MRA-EMA 1 – 12 in the Phase I ERA/SI Report. However, this report is not finalized and there are significant comments pending on the hazard assessment done for these MRS. It is recommended that these comments for the Phase I ERA/SI be resolved prior to referencing the results of the hazard assessment in this EE/CA.</p> <p>This line references the risk evaluation from the Draft Phase I ERA/SI presented in Appendix A. However, there are significant comments on the risk evaluation as noted in the previous portion of this</p>

Cmt. No.	Pg. & Line	Sec.	Comment/Recommendation
			<p>comment. Also, review of Appendix A results in the following comments:</p> <ol style="list-style-type: none"> <li>1. It references Section 4.2.4. However this section doesn't exist.</li> <li>2. Table 4-3 appears before Table 4-2.</li> <li>3. The only portion of the area covered by this EE/CA that is evaluated is the beaches. There is no evaluation of the roads. Table 4-3 evaluates the beaches and also evaluates the overall LIA and SIA. The evaluation should be restricted to only the beaches and roads in the LIA, SIA and EMA because that is the area covered by the EE/CA. It is not likely that the "accessibility" of the roads in the SIA can be considered to be "low" as shown in this appendix.</li> <li>4. Table 4-2 is not referenced in the text so the reviewer is left to attempt to determine what to do with it. Why are these hazard rankings for MRA-EMA MRS 1 through 12 provided? This evaluation should only be concerned with roads and beaches in the LIA, SIA and EMA.</li> </ol> <p>It is recommended that Appendix A be revised following resolution of the pending comments on the hazard assessment in the Draft Phase I ERA/SI Report.</p>
3	2-10, Lines 34 – 39 and 2-11, Lines 5 – 6	2.5.2	<p>These two statements contradict each other. The text on page 2-10 says that in the future many of the roads will be open to the public and will be used by USFWS and that the roads will be needed for enforcement of wildlife refuge regulations. Then, the text on page 2-11 says that access to the roads in the LIA will be restricted and vehicle traffic will be minimal. Please revise the identified text to eliminate this contradiction.</p>
4	2-10, Lines 2 and 7	2.5.2	<p>These lines appear to contradict each other. Line 2 says that erosion of the roads was noted to be severe during the brief period between the end of Navy maintenance and the beginning of the TCRA. Then, Line 7 says that, "Erosion due to rainfall is minimal and only occurs in small areas." Please revise this text to eliminate this contradiction.</p>
5	4-3	4.1.3	<p>This section should reference Table 4-2.</p>
6	4-8, 7	4.2.1	<p>Something is missing from the sentence, "All areas of removal would be to prevent non-site workers from entering."</p>
7	4-8, 11 and 14	4.2.1	<p>This text is on the subject of "short term effectiveness". The statement that, "UXO technicians will be exposed to increased risks ....." belongs in the section on "protection of workers during implementation".</p>

Cmt. No.	Pg. & Line	Sec.	Comment/Recommendation
			Also, the statement that "... site restoration efforts would be made more difficult" doesn't have anything to do with "short term effectiveness" and should be removed from this section.
8	4-9, 14 – 24 and 27 – end of section	4.3	<p>This section is on "implementability", however, many more subjects are discussed here. Examples are line 31 which discusses risk to site workers and 34 which discuss risk to endangered species. Another is line 15 which discusses the selection of this remedy (clearance to a depth of 4-ft. and clearance of a 25-ft. buffer on each side of the roads). It is recommended that this section be edited to remove discussion of all topics not associated with "implementability".</p> <p>Also, it is noted that, based on experience digging on Red and Blue beaches, it is highly likely that excavation below 4-ft. would be very difficult and costly and would require coffer dams and pumps to remove water from such deep excavations. This is something that should be considered for addition to the implementability and cost sections to appropriately evaluate the added difficulty of digging deeper than 4-ft. on the beaches.</p>
9	4-10, 27 and 37	4.4	Both of these lines say that the project is planned to be done with one mobilization for UXO technicians. It is highly likely that this 1-year project will require multiple mobilizations for UXO technicians. It is recommended that this assumption be reevaluated for reasonableness.
10	Figure 4-1		This figure doesn't work because the blue roads and the yellow buffer area combine to make a green line. Revision of this figure is recommended.
11	5.2	5-2	The issue of the increased difficulty for implementability of Alternative 3 due to the need for coffer dams and pumping of deep excavations on the beaches should be added to this section.
12	6.0	6.1	It is recommended that the statement that the beach clearance also includes surface clearance of rocky beach areas should be added to this section. This scope of work element is excluded from some descriptions of Alternative 2 and 3.
13	6.0, 20	6-1	The cost of \$16,200,000 presented in this text doesn't agree with either the cost for Alternative 2 in Section 4.4 or Table C-1 and is significantly more than the cost shown for the more labor intensive Alternative 3 in Table C-2. Please correct the cost presented in this text.
14	Table C-2		The cost presented here for Alternative 3 for subsurface MEC clearance from the beaches is only \$150,000 more than that proposed for Alternative 2. However, based on experience gained at Red and

Cmt. No.	Pg. & Line	Sec.	Comment/Recommendation
			Blue Beaches it is likely that water intrusion into deep excavations will require coffer dams and pumping and that numerous deep objects beyond 4-ft. will require excavation. It may be more realistic to increase the estimate for this task for Alternative 3 and this should be considered.