M00263.AR.000775
MCRD PARRIS ISLAND
5090.3a

LETTER REGARDING U S EPA REGION IV COMMENTS ON DRAFT SAMPLING AND ANALYSIS PLAN FOR MUNITIONS RESPONSE PROGRAM SITE INSPECTIONS AT EIGHT MUNITIONS RESPONSE SITES VOLUMES 1 AND 2 OF 2 MCRD PARRIS ISLAND SC
11/13/2009
U S EPA REGION IV

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
Atlanta Federal Center
61 Forsyth Street, SW
Atlanta, Georgia 30303-8960

November 13, 2009

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

4SD-FFB

Naval Air Station, JAX
Navy Facilities Engineering SE
Installation Restoration, SC IPT
Attn: Charles Cook
PO Box 30
North Ajax Street, Bldg 135
Jacksonville, FL 32212-0030

And

Commanding General
Marine Corps Recruit Depot
Natural Resources & Environmental Affairs
Attn: Tim Harrington
PO Box 5028
Parris Island, SC 29905-9001

SUBJ: EPA Review of the Draft Sampling and Analysis Plan for Mun itions Response Program Site Inspections at Eight Munitions Response Sites Volumes I and II (MC SAP and MEC SAP) for the Marine Corps Recruit Depot (MCRD), Parris Island, South Carolina (September 2009).

Dear Sirs:

The U.S. Environmental Protection Agency (EPA) has completed its review of the above referenced document. Since the Volumes are actually two separate SAPs, one contained inside the other, comments have been submitted for each Volume. Additionally, since the MEC investigation occurs first in the process, comments on this portion, Volume II of II, is offered first, followed by comments on the remaining portion, Volume I of II.

However, since the investigations are being conducted on the same UXO sites, many of the general comments are very similar. Please read carefully. What appears to be an exact same comment has been worded slightly differently to address MEC in Volume II of II comments, and MC in Volume I of II comments.

EPA offers the following comments:

MUNITIONS AND EXPLOSIVES OF CONCERN (MEC) UFP SAP
VOLUME II OF II

GENERAL COMMENTS:

1. **Listing MMRP Sites in the FFA**

In accordance with agreements between the U. S. Environmental Protection Agency (EPA) and the Department of Defense (DOD) and in accordance with EPA Headquarters policy, please submit the necessary paperwork to add these eight Military Munitions Response Program (MMRP) sites to the Federal Facilities Agreement (FFA). This can be accomplished through a change page submittal and request for approval.

2. **MEC investigations in Sediment**

EPA understands a study has been conducted by the University of South Carolina (USC) for MCRD wherein expended rounds were searched for in sediments within the impact areas of ranges. Summarize the results/findings/recommendations of this study. Discuss how the results could apply to MEC investigations in sediment areas of these ranges. Compare results of current ranges with the potential for fate and transport of much more historical rounds in sediment at the UXO sites. Modify this SAP to account for the application of these results as appropriate. Address this within the MEC CSMs for estimated penetration depths, vertical boundaries, and actual sample depth/location in the sampling rationale (WS 10, 11, and 17) for those UXO sites which have sediment impact areas.

3. **Land Use Controls**

It appears that in several cases the limits of the survey equipment are not sufficient to investigate to the estimated penetration depth. In other cases, certain aspects/areas of the site investigation have been deferred. For each UXO site where either of these is the cased, please explain how this is consistent with the decision rules which result in No Further Action (NFA). Please keep in mind that Land Use Controls (LUCs), including Base Master Plan and/or deed notices, pavements left as a cover, etc. are considered actions under CERCLA and would trigger the need for a Record of Decision (ROD), etc. Otherwise, revise the Decision Rules as appropriate.

Also, there are several places in the text which mention LUCs and begin to describe them. Under CERCLA, requirements for LUCs are made in the ROD, and the specific design/details of the necessary LUCs are defined in a LUC RD.

4. **Worksheet #3 – Distribution List and Other Applicable Worksheets**

Please correct the heading to match the Worksheet number (change "6" to "3").

A review of the Sampling and Analysis (SAP) Worksheet #3 – Distribution List on Page 15 of 135 indicate that some of the project roles (i.e., geophysical contractor, senior Unexploded Ordnance (UXO) supervisor, UXO quality control specialist, UXO safety officer, etc.) have yet to be determined (TBD). To ensure completeness and accuracy, revise the Draft Sampling and Analysis Plan for Munitions Response Program Site Inspections at Eight Munitions Response Sites dated September 2009, Volume II of II, Appendix A, herein referred to as the Uniform Federal Policy Sampling and Analysis Plan (UFP SAP) for Munitions and Explosives of Concern (MEC) by updating the TBD designation in the relevant worksheets of the final revision by identifying the appropriate staff personnel/contractors as needed.

MEC UFP SAP SPECIFIC COMMENTS:

5. **MEC Executive Summary, Pages 7 - 10 of 135**

Please make any necessary changes based on the remainder of comments on this document.

6. **Executive Summary, Aerial Bombing Target at Southern Tidal Flats (UXO 08), Pages 9 of 135 and 10 of 135**

The third sentence in the Aerial Bombing Target at Southern Tidal Flats (UXO 08) subsection in the Executive Summary discusses that rusty sheet metal debris apparently from 100-pound bombs has been found in this area. The practice bombs are displayed in Volume I, Appendix B4: Technical Site Information, Appendix A, Ordnance Technical Data Sheet, Page A-8. It should be noted that the rusty sheet metal debris is Munitions Debris (MD), and not MEC. The text should clarify the rusty sheet metal debris is MD.

7. **Worksheet #6 – Communication Pathways, Pages 20-22 of 135**

Please add EPA to the Responsible Affiliation, Name, number, and Procedure text columns in the four rows where the Navy and SCDHEC RPMs are listed.

8. **Worksheet #9 – Project Scoping Session Participants Sheet, Page 31 of 135**

There is no material on the included CD for Appendices B-2, B-3, or B-5. Please include the referenced information.

9. **Worksheet #10 – CSM Summary and Problem Definition for UXO 3, Section 10.2.1.1 and 10.2.2, Pages 36-37 of 135**

In the scoping session an action item was taken to obtain construction documents for the parade deck. The expectation was the documents might show what work had been done in the area during construction with respect to excavation, regrading, and/or fill which would have reasonably resulted in the removal of any remaining bombs, as well as provide information on construction material which might interfere with the investigation. It was also suggested to take cores to determine what modifications have been made to the subsurface, as another approach. Obtain what information you can and include a brief discussion of it in section 10.2.1.1. Be sure to speak to work done in the top 2 feet of the **original** grade at the time this was an active range, as well as what fill has been added to obtain the current grade. Acceptance of the decision rule in Section 11.1.4 is reserved until this information is presented.

In section 10.2.2, add another paragraph which states the paved portion of the site is being deferred until investigation of the unpaved areas is complete.

10. **Worksheet #10 – CSM Summary and Problem Definition for UXO 4, Figure 10-2, Figure 17-2, and Sections 10.3.1.1, 10.3.1.2, 10.3.1.3, and 10.3.2, Pages 38-40 of 135**

Section 10.3.1.1 describes 9 firing points, of which three are concrete (B, H, and R). Figure 10-2 indicates firing points B, H, and R, as well as A, C, D, E, F, and L. However, in Figure 17-2, points D, F, H, and L are not being surveyed. In section 10.3.1.1, please further clarify which firing points specifically are considered part of this UXO site, and of those which are to be investigated and which are not. For those included in this range but not being investigated, explain why. For those not being investigated, please explain when and where they will be investigated.

In Section 10.3.1.2 explain how deep excess complete rounds might have been buried at the firing points.

And in Section 10.3.2 add a paragraph which identifies which firing points are not being investigated and are therefore being deferred.

Don't forget to address General Comment #2 here, and in WS 11 and 17.

11. **Worksheet #10 – CSM Summary and Problem Definition for UXO 5 and 6, Section 10.4.1.3, Pages 41-42 of 135**

Don't forget to address General Comment #2 here and in WS 11 and 17.

12. **Worksheet #10 – CSM Summary and Problem Definition for UXO 8, Section 10.6.1.3, Page 47 of 135**

Don't forget to address General Comment #2 here and in WS 11 and 17.

13. **Worksheet #11 - Section 11.2.1, Identify the Goal of the Study at UXO 04, 05 and 06, Page 51 of 135**

In bullet #3, the statement is made, "If sufficient data have been collected for this purpose, then stop collecting data." "Sufficient data" has not been defined nor approved. EPA will expect the amount of investigation as described in Worksheet 17 will be completed.

14. **Worksheet #11 - Section 11.2.3, Define the Boundaries of the Study, Vertical Boundaries for Surveys at UXO 04, 05 and 06, Page 53 of 135**

Reconcile the vertical boundary of land based MEC investigation at 3' bgs with the CSM expected penetration depths of 5-10' bgs. It appears the limits of the survey equipment are insufficient to address the expected penetration depths to their fullest. Please explain why. Modify the rationale in Worksheet 17 as well if need be.

The last sentence in the Vertical Boundaries for Surveys at UXO 04, 05, and 06 subsection in Section 11.2.3 indicates the vertical boundary for the aquatic surveys is expected to be to the bottom (sediment/surface water interface) of the waterways. However, most heavy ordnance expected on these sites will most certainly sink below the sediment/surface water interface and be resting in more cohesive soils below as will the seeded surrogate items noted in the ITS Survey Procedure, Aquatic Based on Page 82 of 135 in Section 17.6, Instrument Test Strips. It is recommended the marine magnetometer chosen for aquatic surveys is effective to 3 feet below the sediment/surface water interface of the waterways, or even lower if the USC range study results indicate so.

15. **Worksheet #11 - Section 11.2.4, Develop the Analytical Approach for UXO 04, 05 and 06, Page 53 of 135**

After reconciling the vertical boundary of land based MEC investigation (see comment above) if the limits of the survey equipment remain insufficient to address the expected penetration depths to their fullest, justify the decision rule which indicates if no MEC are found, then no further investigation of the site for MEC is required.

Also justify the same decision rule if not all firing ranges are investigated.

16. **Worksheet #11 - Section 11.3.3, Define the Boundaries of the Study, Vertical Boundaries for Surveys at UXO 7 and 8, Pages 56 - 57 of 135**

During the scoping session, MCRD recommended extending the site boundary to be more elliptical. Please explain why the recommendation was made and how the current investigation boundary addresses that.

Reconcile the UXO 7 vertical boundary of land based MEC investigation at 2' bgs with the CSM expected penetration depths of 2' bgs plus fill in the developed golf course area. It appears the limits of the survey equipment are insufficient to address the expected penetration depths to their fullest. Please explain why. Modify the rationale in

Worksheet 17 as well if need be.

Reconcile the UXO 8 vertical boundary of land based MEC investigation at 2' bgs with the CSM expected penetration depths of 3 – 10' bgs for 100 lb. bombs. It appears the limits of the survey equipment are insufficient to address the expected penetration depths to their fullest. Please explain why. Modify the rationale in Worksheet 17 as well if need be.

17. **Worksheet #11 - Section 11.3.4, Develop the Analytical Approach for UXO 7 and 8, Page 57 of 135**

EPA understands that prior to the golf course construction, some MEC were found during an archeological dig in the nearby area, so the presence of MEC below the golf course would seem to be a real potential (or could be documented as removed). And since evidence of bomb debris is still present today at UXO 8, the potential seems real there as well. After reconciling the vertical boundary of land based MEC investigation (see comments above) if the limits of the survey equipment remain insufficient to address the expected penetration depths to their fullest, justify the decision rule which indicates if no MEC are found, then no further investigation of the site for MEC is required.

18. **Section 17.4, UXO Detector-Aided Surface Survey, Suspect MEC/MPPEH, Page 74 of 135**

The text in the second paragraph in the subsection Suspect MEC/MPPEH subsection of Section 17.4 indicates every effort will be made to identify each suspect MEC item encountered. However, a similar discussion was not presented or described for suspect MEC recorded during the aquatic survey. Tetra Tech NUS, Inc. should offer a plan to confirm or deny anomalies in the water as a means to evaluate the MEC quantities in the firing ranges of UXO 04 and UXO 06.

19. **Section 17.4, UXO Detector-Aided Surface Survey, Planned MEC Field Program for Field Artillery East Shrapnel Range (UXO 05 and UXO 06), Page 77 of 135 and Figure 17-3.**

Site UXO 6 has a very small-designated area for the Limited Meandering Path UXO Detector-Aided Surface Survey with the caveat "in dry accessible areas". In the spring of 2009, this area was proposed for geophysical survey with possible aircraft support. The outlined sweep areas detailed in Figure 17-3, Field Artillery East Shrapnel Range – UXO 5 / UXO 6 MEC Investigation Area, of dry accessible areas only covers roughly 10 percent (%) of the UXO 06 footprint along with an unspecified area of aquatic survey which does not guarantee a good representation of the impact area. The text in the second paragraph on Page 77, Planned MEC Field Program for Field Artillery East Shrapnel Range (UXO 05 and UXO 06), Survey Rationale, states "...actual accessibility to survey these areas will need to be determined in the field. Additional areas may be added (where possible) if the UXO team observes indications of potential impact area target locations or suspect MEC areas...". Ensuring coverage of 50% of UXO 06 by either land or aquatic surveys would give a much better representation of this impact area. Please modify the text to specify a combined coverage of 50% will be targeted.

MUNITIONS CONSITUENTS (MC) UFP SAP
VOLUME I OF II

GENERAL COMMENTS:

20. **Listing MMRP Sites in the FFA**

In accordance with agreements between the U. S. Environmental Protection Agency (EPA) and the Department of Defense (DOD) and in accordance with EPA Headquarters policy, please submit the necessary paperwork to add these eight Military Munitions Response Program (MMRP) sites to the Federal Facilities Agreement (FFA). This can be accomplished through a change page submittal and request for approval.

21. **MC investigations in Sediment**

EPA understands a study has been conducted by the University of South Carolina (USC) for the Marine Corps Recruit Depot (MCRD) wherein expended rounds were searched for in sediments within the impact areas of ranges and samples were taken to identify contaminant levels associated with the rounds located. Summarize the results/findings/recommendations of this study with respect to MC. Discuss how the results could apply to MC investigations in sediment areas of these ranges. Compare results of current ranges with the potential for fate and transport of much more historical releases to sediment at the UXO sites. Modify this SAP to account for the application of these results as appropriate. Address this within the MC CSMs for estimated depths, the boundaries of the study and actual sample depth/location in the sampling rationale (WS 10, 11, and 17) for those UXO sites which have sediment impact areas.

22. **Land Use Controls**

It appears that in several cases the depth of the sampling is not sufficient to be representative of potential MC presence at the estimated penetration depth. In other cases, certain aspects/areas of the site investigation have been deferred. For each UXO site where either of these is the case, please explain how this is consistent with the decision rules which result in No Further Action (NFA). Please keep in mind that Land Use Controls (LUCs), including Base Master Plan and/or deed notices, pavements left as a cover, GW or residential use restrictions, etc. are considered actions under CERCLA and would trigger the need for a Record of Decision (ROD), etc. Otherwise, revise the Decision Rules as appropriate.

Also, there are several places in the text which mention LUCs and begin to describe them. Under CERCLA, requirements for LUCs are made in the ROD, and the specific design/details of the necessary LUCs are defined in a LUC RD.

23. **Investigation for MC in concentrations high enough to pose an explosive hazard .vs. at levels of concern for the environment**

The text in the second paragraph of the Executive Summary states "...and MC in high enough concentrations to pose an explosive hazard." The text does not indicate that the munitions constituents (MC) should be addressed further to determine possible soil & water contamination from the same (repeated in Volume II of II). The current definition is: ***Munitions constituents (MC)*** – Any material originating from Unexploded Ordnance (UXO), Discarded Military Munitions (DMM), or other military munitions, including explosive and non-explosive materials, and emission, degradation, or breakdown elements of such ordnance or munitions (10 U.S.C 2710(e)(3)). The Draft Sampling and Analysis Plan for Munitions Response Program Site Inspections at Eight Munitions Response Sites dated September 2009, Volume I of II, Text and Appendices B through D for MC should be revised to address this issue.

24. **Investigation of Groundwater**

During the scoping meeting it was agreed that the UFP SAP would make an argument for or against the need for GW sampling at each UXO. Please do so. If the decision is to be made after the UFP SAP is implemented, justify sufficiency of currently planned data to make GW investigation decisions in soils investigation areas (e.g. describe depth to GW at each soils investigation area, describe fate and transport potential of MC since time of discharge at each soils investigation area, compare to soils data depth/location design, provide other pertinent arguments, as well as the toxicity and persistence information already provided in the SAP.)

25. **Background data set**

Worksheet #9 shows action items from the scoping meetings which required Tetratech to review the background data set for Site 3 and propose if it is appropriate for use at the UXO sites. The presentation has not been made outside of this document. Therefore, please justify the use of the background data set for each UXO herein.

26. **Worksheet #3 – Distribution List and Other Applicable Worksheets**

A review of the Sampling and Analysis (SAP) Worksheet #3 – Distribution List, on Page 19 of 142 indicate that the project roles (i.e., field operations leader (FOL) MC) have yet to be determined (TBD). To ensure completeness and accuracy, revise the UFP SAP for MC by updating the TBD designation in all of the relevant worksheets of the final revision by identifying the appropriate staff personnel as needed.

SPECIFIC COMMENTS:

27. **MEC Executive Summary, Pages 8 - 12 of 135**

Please make any necessary changes based on the remainder of comments on this

document.

28. **Worksheet #6 – Communication Pathways, Pages 22-24 of 142**

Please add EPA to the Responsible Affiliation, Name, number, and Procedure text columns in the three rows where the Navy and SCDHEC RPMs are listed.

29. **Worksheet #10 – Problem Definition, Site History, and Background - UXO 1, Section 10.2**

Worksheet #9 shows action items from the scoping meetings which required Tetratech to add additional information concerning the existence/non-existence of UXO 1. However, the SAP indicates additional information will not be provided until the SI Report. Therefore, EPA reserves the right to require an investigation of UXO 1 if the additional data indicates the need. Additionally, when presenting the information, be sure to address the accuracy of the interviewee's other recollections in comparison to UXO 1. Also, be sure to include aerial photographs of the Weapons Battalion HQ and/or the old indoor pool if possible.

30. **Worksheet #10 – CSM and Problem Definition for UXO 2, Section 10.3.1.1 and 10.3.1.2**

Worksheet #9 shows consensus decisions that state the UXO 2 site boundary will need to be adjusted to account for no stop/no berm for bullets and may need to be revised based on the orientation of the range/firing line and results of the SI. Please explain what adjustments have been made for these factors and how the sampling design has been modified to generate data to support these adjustments.

Furthermore, explain why there is no expectation that rounds may have fallen short of the targets, on dry land, given spent rounds were sited near the targets. Otherwise, add soil samples to investigate the upland area just above the targets and well above high tide lines. Consider whether or not an upland surface survey would be beneficial to determine if this need exists, even though the rounds would not be considered MEC. If so, please add this to the plan.

And finally, don't forget to address the USC Range study here and in worksheets 11 and 17 to justify the depth of the investigation.

31. **Worksheet #10 – CSM and Problem Definition for UXO 3, Section 10.4.1.1**

Worksheet #9 shows action items from the scoping meetings which required MCRD to obtain construction documents for the parade deck. See comments on the MEC SAP which may also apply here.

32. **Worksheet #10 – CSM and Problem Definition for UXO 4, Section 10.5**

Don't forget to address the USC Range Study results here and in worksheets 11 and 17 to justify the depth/location of the investigation. Also, reconcile the investigation depth with the expected penetration depth from the CSM.

33. **Worksheet #10 - Section 10.6.1.2, Potential or Known Sources of MEC and MC Contamination, MC Presence, Page 55 of 142**

The text in the subsection MEC Presence of Section 10.6.1.2 indicates that antimony and arsenic, if present, would be spatially correlated with lead because they are associated with the lead in the bullets. However, this statement refers to small arms bullets versus possible Mk 1 shrapnel rounds which contain a charge of melted resin which holds 270 lead balls suspended within it. These balls average 42 to the pound, 270 totaling 6 pounds, 7 ounces per round. As such, it is recommended that the text in this section be revised to describe the 75mm rounds.

Additionally, reconcile the CSM in Volume I of II stating an expected penetration depth of 5-10 feet, while Volume II does not mention this depth. After reconciliation, modify remainder of SAP as appropriate.

Don't forget to address the USC Range Study results here and in worksheets 11 and 17 to justify the depth/location of the investigation.

34. **SAP Worksheet #15 – Reference Limits and Evaluation Table, Page 83 of 142**

In cases where PAL references other than the R-RSL and a Region 4 Screening value was used, explain why.

35. **SAP Worksheet #17 – Sampling Design and Rationale, Field Artillery East Shrapnel Range (UXO 06), Page 91 of 142**

The text in the Field Artillery East Shrapnel Range (UXO 06) section on Page 91 of 142 states that the exact number of samples to be collected will be determined in the field and will be based on accessibility and the results of the Munitions and Explosives of Concern (MEC) investigation. The UFP SAP for MEC, Volume II of II, Section 17.4, UXO Detector-Aided Surface Survey, Suspect MEC/MPPEH, on Page 74 of 135 indicates that every effort will be made to identify each suspect MEC item encountered. However, a similar discussion was not presented or described for suspect MEC recorded during the aquatic surveys. Tetra Tech NUS, Inc. should offer a plan to confirm or deny anomalies in the water as a means to evaluate the MEC quantities in the firing ranges of UXO 04 and UXO 06. This evaluation should include a discussion on how the number of MC samples to be collected is impacted based on the aquatic survey of MEC.

36. **SAP Worksheet #18.4 – UXO 6 Sampling Locations and Methods/SOP Requirements, Page 103 of 142**

In the MEC SAP, EPA has requested that 50% of the area be investigated. Please increase the number of samples planned here to be similar, proportionately speaking, to UXO 4.

This concludes EPA's comments. If there is any way EPA can assist in helping you to address these comments or to meet milestones, please do not hesitate to call me at (404) 562-9969.

Sincerely,

Lila Llamas

Lila Llamas
Senior RPM
Federal Facilities Branch
Superfund Division

cc: Meredith Amick, SCDHEC
Annie Gerry, SCDHEC
Mark Sladic, TtNus