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Sent: Monday, December 22, 2008 10:46 AM
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Subject: Final Knox Park
Attachments: Response to Comments Draft Phase II ESI Report_Amended_12-10-08.pdf

Hi Dave,

The responses to comments on the Knox Park Expanded SI Report are attached and a complete pdf is saved on the Camp Lejeune Enterprise web site under document review. The text is redlined and Section 5 tables, Table 6-4, Appendix H-2, and Appendix I have been updated to reflect comments. Please provide feedback and concurrence to finalize the report at your earliest convenience.

Happy holidays!

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**Response to Comments
Draft ESI Report
MMRP Site UXO-04, Knox Park
MCB Camp Lejeune, North Carolina**

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PREPARED BY: CH2M HILL

DATE: October 17, 2008 (Amended December 10, 2008 to incorporate Mr. Lilley's comments on the Eco Risk Section of the report)

Introduction

The purpose of this document is to address comments on the Draft Expanded Site Inspection Report for MMRP Site UXO-04, Knox Park. The North Carolina Department of Environment and Natural Resources (NCDENR) and Environmental Protection Agency (EPA) provided the comments below. The responses to comments are provided in bold.

NCDENR (Mr. Randy McElveen) Comments (dated September 12, 2008)

1. The last bullet on page 1-1 discusses the Phase II ESI sampling of surface soil. This surface soil sampling would be more clearly identified and better understood as multi-increment (MI) surface soil sampling and sub-surface soil sampling, etc. - **Was addressed throughout report.**
2. Heptachlor epoxide is the only contaminant at site UXO-04 that exceeded the HI of 1.0. However, heptachlor epoxide was only detected at 3 out of 15 monitoring wells in step 3 of the HHRA. No heptachlor epoxide was detected in the second round of groundwater samples. Therefore, there doesn't appear to be a consistent groundwater plume of heptachlor epoxide that could cause unacceptable risk. See Sections 4 and 5. - **Agreed, and noted.**
3. Thallium initially appears to be a risk driver to the child resident due to cumulative effects that could result from ingestion of heptachlor epoxide (HQ =1.3), Chromium (HQ = 1.9) and Thallium (HQ = 3.6). The CTE HI also exceeds 1 for these contaminants (Thallium being the main risk driver), however, as stated above, Thallium was only detected in one intermediate groundwater monitoring well during

the first monitoring event and was not detected in the second monitoring event. Therefore, no plume exists as a result thallium in groundwater at the site. This issue alone along with the low concentration of the one Thallium groundwater detection makes it clear that Thallium does not pose a risk to future adult or child residents at Site UXO-04. See Section 5 of the report. – **Agreed, and noted.**

4. The Future Child Resident noncarcinogenic hazard section on page 5-11 and the discussion of the third paragraph on page 5-14 references **heptachlor**. Based on Tale 5-14 these sections of the report should references heptachlor epoxide not heptachlor, a different contaminant. – **Agreed, edited throughout report.**
5. Section 6.5 concludes that There are no unacceptable risks to aquatic receptors or food web exposures. Thus, no further action is recommended fro ecological receptors at Site UXO-04. – **Agreed.**
6. The Division Industrial Hygienist (IH) has an electronic copy of the document and is in the process of reviewing the risk sections of the report. If the risk screening conclusions, calculations and assumptions are consistent with State and EPA guidance the State reviewer as noted above agrees with the conclusions and recommendations of this Draft Expanded Site Investigation (ESI) Report for the Knox Trailer Park Site UXO-04, dated July 2008. The State also concurs with the Draft Redlined Version changes for Section 7.0 of the Draft ESI as proposed by the EPA, dated September 2008. – **Noted.**

NCDENR (Mr. David Lilley) Comments (dated September 25, 2008)

1. Appendix I, Tables 2.x: The State of North Carolina recently changed screening values from the Region 9 PRGs to the Regional Screening Levels for Chemical Contaminants at Superfund Sites. These screening levels can be found at http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm. Since this risk assessment was started prior to NC's adoption of the new screening levels, the Region 9 PRGs are acceptable for this risk assessment. However, the Region 9 values will not be accepted in future risk assessments. - **Comment noted. Future risk assessment will use the Regional Screening Levels for Chemical Contaminants at Superfund Sites in place of the EPA Region 9 PRGs.**
2. Table 5-1: The analyses run for each media should match those provided in the text of Section 3.4. – **Table 5-1 and the text in Section 3.4 was reviewed to confirm the list of analytes in Table 5-1 match those listed in Section 3.4 and any necessary updates were made.**
3. Table 5-1: According to this table, the results from 27 subsurface soil samples were used in risk assessment. Table 5-2 lists the frequency of detection as x/34 samples. Where did the other 7 samples come from? - **Ten subsurface soil samples that**

- should have been listed on Table 5-1 were not included. These samples were added to Table 5-1. Of the 27 samples that were included on Table 5-1, two are duplicates, and therefore, the total number of samples included in the subsurface soil data set is 34. The duplicate samples are now identified on Table 5-1.
4. Table 5-2 lists sample locations that do not exist in Table 5-1. Please revise so this can be reviewed. - See response to previous comment.
 5. Page 3-8, Section 3.4.2: The sample ID numbers listed in the second paragraph of this section are identified as subsurface soil samples. In Appendix J, the same samples are identified as surface soil samples. Please correct. - **During Phase I, soil samples taken during well installation were not classified as surface or subsurface samples. "SS" simply denoted soil sample. Any depth below 0-2 ft is considered subsurface for discussion purposes in the text, but the typical protocol of listing surface soil samples as SS and subsurface soil samples as SB or IS was not used during Phase I.**
 6. Appendix H-2, Table 1: Please provide a complete conceptual site model for this assessment. The selection of exposure pathways takes place prior to the analysis and is independent of whether a "significant" risk exists. Also, the scenario definition is required in order to select the proper screening values (see next comment). - **The RAGS Part D Table 1 (Appendix H-2, Table 1) were revised to include all media evaluated in the screening risk assessment. Additionally, a conceptual site model section is presented as the first section of risk assessment, Section 5.1. Please note, the most conservative screening levels were selected for the Phase 1 screening (i.e. residential levels), and former Section 5.2.2 presented a summary and discussion of potential receptors and exposure assessment for the 2nd phase of assessment. This discussion was moved to the new Section 5.1 (the CSM) and includes a discussion of all media, not just those selected for Phase 2 screening.**
 7. Table 5-2: The scenario that was evaluated for exposure to subsurface soil is unclear. Subsurface soil is normally evaluated under two scenarios, a construction worker scenario, where industrial screening levels are compared to the maximum concentration for each chemical, and a "mixed soil" scenario, in which surface and subsurface soil is considered as one media and compared to residential screening levels. Please clarify. - **The most conservative screening levels, residential screening levels, were used to screen the subsurface soil. As this is more conservative than an industrial or construction worker scenario, this is protective of the industrial worker and construction worker. There were no COPCs retained for subsurface soil using the residential screening levels, and there would be none for the industrial/construction scenario which is less conservative. This explanation was added to the report. Additionally, the surface soil was the only media that was screened against the basewide background concentration in the draft report. Background concentrations have been added to the Table 2 series tables for subsurface soil and groundwater, and this comparison has now be used to identify COPCs for both the screening level evaluation (Phase 1) and complete**

- human health risk assessment (Phase 2). Although this screening did not change the Phase 1 evaluation for subsurface soil, it resulted in thallium being the only COPC in the Phase 1 evaluation for groundwater.
8. General comment: Please locate all risk calculations and tables in one portion of the report. For added clarity and transparency, it is recommended that a baseline risk assessment be conducted instead of using the confusing, disjointed methodology employed in this report. - **The risk assessment section was re-formatted to include the CSM discussion as Section 5.1, the Phase 1 screening as Section 5.2, and the Phase 2 assessment as Section 5.3. All tables are combined in one appendix, with summary tables referenced in the text. The tables are presented in RAGS D format, with the risk ratio tables (which are not standard RAGS D screening tables) inserted as Tables 2.1a, 2.1b, etc., as necessary. Due to the number of decision units evaluated for surface soil, RAGS D Tables 2s were not completed. The exceedance table for the surface soil already presented in the report (Table 4-2) is referenced as where the first phase of screening for the surface soil is performed.**
 9. Page 5-15: It is not true that there are “no risks” from human exposure to the contaminated media at the site. The assessment does suggest that these risks are within acceptable limits. Please reword. - **Text was re-worded as suggested.**
 10. Groundwater evaluation: It appears as though the 95% UCL of the mean of the data set was used as the exposure point concentration for the groundwater. This is inconsistent with EPA Region 4’s policy of using the average of the wells in the center of the plume. The guidance outlined in the memo dated August 29, 2002 (attached) should be followed. - **The groundwater exposure point concentrations were updated to follow EPA Region 4’s policy. As there is no plume or “more contaminated” area at the site, all of the wells were used to calculate the average concentration. The use of the arithmetic averages as the exposure point concentrations result in all calculated carcinogenic risks and noncarcinogenic hazards falling within EPA’s acceptable risk levels.**
 11. Groundwater: Regardless of the results of the risk assessment, if the groundwater exceeds the MCL, it should not be consumed. MCL exceedances (and if no MCL exists, 2L exceedances) should be listed on a separate table. - **Groundwater exceedances of MCL and NC2L levels are discussed in the report and references to tables were added as necessary.**
 12. Due to the comments above, I cannot agree or disagree with the conclusions presented. - **Comment noted.**

NCDENR (Mr. David Lilley) Comments specific to the Eco Risk Section of the Report (dated November 13, 2008)

1. Appendix I, page I-1-12: If there are no non-flowing water bodies on or adjacent to the site, please answer “no”. **Response: The checklist has been amended to reflect that there are no non-flowing waterbodies on or adjacent to the site by checking the box labeled ‘no’ below the question referenced in the comment.**
2. Appendix I, page I-1-16: The answer to questions 4 (On the east side of the facility are two intermittent unnamed streams...) seems to contradict the answer to question 6. Please clarify. **Response: Question 6 should have been checked “Yes” not “No”. This has been corrected and the answers to questions 4 and 6 are consistent.**
3. Appendix I, page I-1-17, question 13: Why was the ecologist not permitted to leave his vehicle? **Response: At the time of the site visit by the ecologist, the site had yet to be cleared by an unexploded ordinance (UXO) expert. Location of UXO at the time was unknown and a UXO expert was not available to accompany the ecologist. Thus, the ecologist was not permitted to walk around the site alone. However, a windshield tour was permitted and photographic evidence of potential habitats present at the site was obtained from the vehicle.**
4. Table 6-4: 1,1,2,2-tetrachloroethane is not listed in the cited reference as a bioaccumulative chemical. Please correct. **Response: The cited reference lists “tetrachloroethane” as a bioaccumulative chemical. The Navy interprets this as including both 1,1,1,2-tetrachloroethane and 1,1,2,2-tetrachloroethane. A footnote was added to Table 6-4 stating that the inclusion of this chemical is based upon the listing of tetrachloroethane in the cited reference.**
5. Page 6-20: While it is not unreasonable to eliminate COPCs based on a low detection frequency, the “five percent rule” as presented in the cited document has not been used in human health risk assessments (the original intended use) in Region 4 for many years. A more qualitative approach, possibly part of the weight-of-evidence discussion, would be appropriate. **Response: Frequency of detection was used as one factor in a qualitative weight-of-evidence evaluation in the Step 3A refined screening of COPCs. A frequency of detection of five percent was the general “criterion” assigned to this parameter for the purposes of the refined screening. As such, no changes are proposed to the document since what was done appears to meet the substantive intent of the comment.**

EPA Region 4 (Ms. Gena Townsend) Comments (dated October 2, 2008)

1. There are no additional comments and the corrections that were submitted in the redlined “Section 7 – Conclusions and Recommendations” via email on September 5 are acceptable. Once the State’s comments have been addressed, as per the conference call held on Oct. 2, 2008, this document can be finalized. **– The State’s comments were addressed as reflected in the responses above.**