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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4

345 COURTLAND STREET, N.E.  
ATLANTA, GEORGIA 30365

February 28, 1995

4WD-FFB

CERTIFIED MAIL  
RETURN RECEIPT REQUESTED

Ms. Katherine Landman  
Department of the Navy - Atlantic Division  
Naval Facilities Engineering Command  
Code 1823  
Norfolk, Virginia 23511-6287

SUBJ: MCB Camp Lejeune  
Draft Remedial Investigation  
Draft Interim Feasibility Study  
Operable Unit No. 10 - Site 35

Dear Ms. Landman:

The Environmental Protection Agency (EPA) has completed its review of the above subject documents. Comments are enclosed.

If you have any questions or comments, please call me at (404) 347-3016 or voice mail, (404) 347-3555, x-6459.

Sincerely,

A handwritten signature in cursive script, reading "Gena D. Townsend", is written over a horizontal line.

Gena D. Townsend  
Senior Project Manager

Enclosure

cc: Patrick Waters, NCDEHNR  
Neal Paul, MCB Camp Lejeune

**DRAFT REMEDIAL INVESTIGATION****1. General Comments**

Several of the specific comments below (part or all of #'s 1, 2, 6, 8, 11, 12) address items which have been previously commented on (at least once) by the Office of Health Assessment (OHA) for baseline risk assessments performed by Baker Environmental, Inc. for other Operable Units at Camp Lejeune MCB.

**2. Specific Comments**

1. Section 6.2.1.7 - Risk-Based Concentrations (RBCs). Noncarcinogenic toxicity-based RBCs should be based on a hazard quotient of 0.1 for the purpose of selecting constituents (Chemicals of Potential Concern [COPC]) to be carried through the baseline risk assessment (BRA).
2. Section 6.2.2.1, pgs 6-9, 6-10, Groundwater; Table 6-5. Some groundwater constituents stated in the text as having detection frequencies less than five percent are listed Table 6-5 at greater than five percent frequency (1,1-dichloroethene, 4/50; phenol, 2/24; dibenzofuran, 3/24; fluorene, 3/24; phenanthrene, 3/24; carbazole, 2/24. Address this discrepancy.
3. Section 6.3.4.10, pg 6-25- exposure to surface water during recreational activities; Tables 6-12, 6-16. Since the assumption is stated that swimming would not occur in the surface water at OU10, the values for ingestion rate (IR) of surface water and exposure time (ET) should be lower than the default values EPA recommends for swimming. For wading, a surface water IR of 0.01 L/hr and a ET of 1 hr/event is recommended unless site-specific information justifies alternative values.
4. Section 6.3.4.11, pg 6-25; Table 6-20 - fish consumption scenario. In discussion of this scenario, it should be stated that the fish chemical concentrations are based on analyzed fillets (as shown in Appendix R).
5. Section 6.5.1.1, pg 6-30, summary of risks from biota ingestion. Based on an incremental lifetime cancer risk of  $1.3E-4$  and a total HI of 3.5 for ingestion of fish, the text here appropriately states that EPA's carcinogenic and noncarcinogenic risk benchmarks are exceeded. Therefore, it is inappropriate to state that the "likelihood of adverse health effects is unlikely". This statement should be revised to acknowledge the possibility of some adverse health effects based on the assumed exposure if no action is taken to remediate the site.

6. Section 6.7, BRA conclusions. In EPA Region IV BRAs, remedial goal options (RGOs) are usually at the end of the BRA. Since the RGOs are in the FS for OU10, verbiage should be added here at the end of the BRA which states this.
7. Table 6-5, Groundwater Data Summary. The Federal MCL for trans-1,2-dichloroethene is 100 ug/L. The Federal Drinking Water child Health Advisory (HA) level for antimony is 10 ug/L. The child HA level for nickel is 500 ug/L. The adult HA level for zinc is 10,000 ug/L. (EPA Office of Water, 11/94)
8. Table 6-6, Surface Water Data Summary. AWQC are Ambient Water Quality Criteria (not "Standard" as is stated in the footnote). The Federal Health AWQC values for antimony are 14 ug/L for water and organisms consumption and 4300 for organisms only consumption. The Federal Health AWQC value for organisms only consumption for arsenic is 0.14 ug/L. The Federal Health AWQC value for water and organisms consumption for barium is 2000 ug/L (equal to the MCL). (EPA Water Management Division Criteria Chart, updated 12/92)
9. Table 6-7 - Sediment data summary. To screen for human health concerns, site sediment data should be compared with sediment background data (as is done for soil) and to the Region III risk-based concentrations for residential soil. Comparison with the NOAA sediment screening values should only be done in the ecological assessment (as is done in Section 7 of this document).
10. Table 6-2, 6-8; Section 6.2.2.1, pg 6-9. The text states that and "arsenic, barium, lead, manganese, and vanadium" were retained as COPCs" for surface soil and that "arsenic, barium, copper, and lead were retained as COPCs" for subsurface soil. Table 6-8 (COPC summary) does not indicate any inorganics being retained as COPCs for surface or subsurface soil. The risk spreadsheets (appendix W) appears to have included these inorganic compounds. Contrary to what is stated on pg 6-9, Table 6-2 indicates that the maximum site surface soil concentration exceeds two times the average background level for cadmium, cobalt, copper, nickel, selenium, and zinc. Address these discrepancies.
11. Table 6-12. This reviewer could not locate the inhalation rate listed for the child (10 m<sup>3</sup>) in EPA Risk Assessment Guidance for Superfund (1989) nor in the Standard Default Exposure Factors (EPA, 1991). Explain the derivation of this value.
12. Table 6-21 - toxicity values; Appendix W - risk spreadsheets. The reference concentration (RfC) values

are said to be in units of  $\text{mg}/\text{m}^3$ , but the values for manganese and mercury correspond to  $\text{mg}/\text{kg}\text{-d}$  units (more appropriately called "inhalation reference dose"). All inhalation values in this table should be listed in consistent units. No RfD value (and reference) is listed for methyl tertiary butyl ether (MTBE) in Table 6-21; Appendix W, however, includes a RfD to estimate the risk from MTBE in groundwater. What is the source of this RfD? For benzene, EPA/ECAO has a provisional RfD of  $3\text{E-}4$   $\text{mg}/\text{kg}\text{-d}$  and a provisional RfC of  $6\text{E-}3$   $\text{mg}/\text{m}^3$ . To estimate risks from dermal exposure, all oral toxicity values must be converted to absorbed dose values (see RAGS, part A, Appendix A).

13. Table 6-23, Appendix W. The child HI for ingestion of groundwater on Table 6-23 (6.36) does not agree with the corresponding value in App. W (63.6). The latter value appears to be correct.
14. Table 6-27. Define the values in parentheses.
15. Appendix W, risk spreadsheets for inhalation of volatiles from groundwater. The inhalation RfD (and resultant hazard quotient) for toluene appear to be ten-fold too low. This error does not significantly alter the total HI for this scenario.

## DRAFT INTERIM FEASIBILITY STUDY

### 3. General Comments

Risk-based remedial goal options (RGOs) have been calculated based on potential adult and child ingestion for individual chemicals using a single target carcinogenic risk of  $1 \times 10^{-4}$  and a single target noncarcinogenic hazard quotient (HQ) of 1.0. EPA Region IV prefers that RGOs be generated for carcinogenic risks of  $1\text{E-}6$ ,  $1\text{E-}5$ , &  $1\text{E-}4$  and for HQs of 0.1, 1.0, & 10.

The values presented as RGOs in this document have already selected the risk/HQ level for each chemical. The only thing that is "optional" about selecting remediation levels (RLs) from the risk-based RGOs is whether to use the value based on adult or child exposure.

Drinking water ARARs (MCLs or NC standards), rather than risk-based RGOs, are selected in the FS as the RLs for all the carcinogenic groundwater constituents. It should be noted that the RLs (MCLs) listed for arsenic and beryllium fall outside the EPA risk range (greater than  $1\text{E-}4$ ) under the assumption that this groundwater is used for residential drinking water. Risk-based levels are the selected RLs for three noncarcinogenic groundwater constituents (naphthalene, cobalt, and vanadium). I am recommending in a specific comment below (#4) that discussion be

added to the RGO section of the document regarding the possible additivity of the toxicity of these three constituents.

This interim FS defers any action regarding the fish contamination until after further investigation. According to the fish fillet data in Appendix R in the RI for OU10, the maximum site fillet fish concentrations of mercury, dieldrin, and DDT/DDE/DDD exceed the screening levels recommended for edible fish by EPA Office of Water (based on  $1 \times 10^{-5}$  risk and assumed ingestion rate of 5.2 lb. contaminated fish per year for a 70 year lifetime) (Guidance For Assessing Chemical Contaminant Data For Use In Fish Advisories, Vol. I, EPA 8/93). I assume that the appropriate State personnel are assessing whether any individuals are currently catching and eating the affected fish from this area. Specific comment #2 below addresses this issue also.

#### 4. Specific Comments

1. Pg ES-5; Section 2.7, pgs 2-9, 2-10. "...new sampling techniques for organics in groundwater utilizing low flow pumps. The low flow pumps minimize particle disturbance and have resulted in reduced levels of total organics in groundwater...". Shouldn't this read "inorganics" rather than "organics" ?
2. Section 2.1, pg 2-1, Media of Concern. After groundwater and fish are identified as media of concern, this Interim FS focuses only on the groundwater, saying that "sediments in Brinson Creek are subject to additional investigation and will be addressed in a comprehensive FS...". Will additional investigation of Brinson Creek address all the areas that had contaminated fish? Should any interim actions be considered for the contaminated fish (e.g., consideration (by the State?) of fish advisories)?
3. Section 2.4.2.1, derivation of risk-based RGOs. The equation should include "1000 ug/mg" in the numerator since all the RGOs and RLs listed in the tables give the concentrations as "ug/L".
4. Section 2.6, pg 2-9. The last paragraph of this section addresses the uncertainty of potential cumulative effects of multiple contaminants in the same exposure medium. This discussion should be expanded to address the three groundwater constituents (naphthalene, cobalt, and vanadium) for which the selected remediation level is a noncarcinogenic risk-based level. Since the target hazard quotient is 1.0 (for each chemical), the toxic endpoints and target organs should be briefly discussed to explain why the toxicity of these three constituents would not be expected to be additive.

5. Table 2-2. The Federal MCL for trans-1,2-dichloroethene is 100 ug/L. Superscripts (6) and (7) are not identified in the footnotes.
6. Tables 2-6, 2-7. Columns listing the reference doses and slope factors would be helpful so that the reader can reproduce the RGOs without needing to refer to another document.
7. Table 2-8. The Federal MCL for trans-1,2-dichloroethene is 100 ug/L. "ND", defined in the footnotes, is not listed anywhere in the table.