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State of North Carolina
Department of Environment,
Health and Natural Resources
Division of Solid Waste Management



James B. Hunt, Jr., Governor
Jonathan B. Howes, Secretary
William L. Meyer, Director

April 27, 1995

Commander, Atlantic Division
Naval Facilities Engineering Command
Code 1823-1

Attention: MCB Camp Lejeune, RPM
Ms. Linda Saksvig P. E.
Norfolk, Virginia 23511-6287

Commanding General
Attention: AC/S, EMD/IRD
Marine Corps Base
PSC Box 20004
Camp Lejeune, NC 28542-0004

RE: Draft Final Remedial Investigation Report for
Operable Unit No. 4 (Sites 41 and 74), MCB Camp
Lejeune.

Dear Ms. Saksvig:

The referenced document has been received and reviewed by the North Carolina Superfund Section. Our comments are attached. Comments on the Risk Assessment portion of this report are attached as memos from David Lilley, our Industrial Hygienist to myself. Please call me at (919) 733-2801 if you have any questions about this.

Sincerely,

Patrick Watters

Patrick Watters
Environmental Engineer
Superfund Section

Attachment

cc: Gena Townsend, US EPA Region IV
Neal Paul, MCB Camp Lejeune
Bruce Reed, DEHNR - Wilmington Regional Office

North Carolina Superfund Comments
Draft Final Remedial Investigation Report
Camp Lejeune Operable Unit 4 (Sites 41 and 74)

1. Page 4-5, Section 4.1.1.3
The last sentence of the third paragraph states for site 41 that "Little or no information is available as to specific wastes and quantities disposed of at the dump site." Section 1.3.2 (page 1-3) seems to contradict this by naming specific wastes and in some cases how much was disposed. Conclusions drawn from the history of Site 41 are used to support the exclusion of contaminants from the COPC list. The history of Site 41 (i.e. the presence of CWM and ordnance) will also be a deciding factor in whether or not this site is to be actively remediated. Please clarify.
2. Pages 6-1 to 6-32, Baseline Risk Assessment
Several places throughout the risk assessment indicate that various chemicals are "attributed to" QA/QC blanks. The QA/QC blanks provides data to show if contamination is "attributed to" laboratory contamination or decontamination procedures but are not the cause or source of the contamination.
3. Table 6-28
The response to our risk assessment comment # 7 indicates that Table 6-28 presents a list of COPCs for biota. Table 6-28 in our copy is a summary of the Incremental Lifetime Cancer Risks (ICRs) and Hazard Indices (HIs) for OU 4 Groundwater.

April 17, 1995

TO: Patrick Watters

FROM: David Lilley

OBL

RE: Comments prepared on the Draft Final Remedial Investigation Report, OU 4 (Sites 41 and 74), MCB Camp Lejeune

After reviewing the above mentioned document, I offer the following comments:

1. Page 6-10, end of the second paragraph: It is recommended the adjustment for detection limits used when assessing the concentrations in the soil using aqueous blanks be quantified in the text of the report the way it was quantified in the "Response to Comments".

2. Page 6-10, subsurface soil, first paragraph: The first sentence should read: "The VOCs, methylene chloride and acetone, were detected in 1 of 47 and 32 of 47 subsurface soil samples, respectively".

3. Comment 24 of my November 17, 1994 memo listed eight tables with missing data. In the "Response to Comments", it is claimed the contaminants identified in comment 24 were presented on the appropriate tables. The comments below address this:

*Bis(2-ethylhexyl)phthalate was not added to Table 6-8 (formerly Table 6-14) as claimed.

*Cyanide was not added to Table 6-9 (formerly Table 6-15) as claimed.

*Cyanide was not added to Table 6-2 (formerly Table 6-22) as claimed.

*Methylene Chloride was not added to Table 6-3 (formerly Table 6-23) as claimed.

April 25, 1995

TO: Patrick Watters
FROM: David Lilley *DBL*
RE: Comments prepared on the Draft Final Remedial
Investigation Report, OU 4 (Sites 41 and 74), MCB
Camp Lejeune

After reviewing the above mentioned document, I offer the following comments:

1. Page 6-8, second paragraph: It is claimed endrin is retained as a COPC, but it is missing from Table 6-15. Please explain.
2. Page 6-8, third paragraph: It is claimed mercury is retained as a COPC, but it is missing from Table 6-15. Please explain.
3. Page 6-8, last line: It is claimed antimony is retained as a COPC, but it is missing from Table 6-15. Please explain.
4. Page 6-9, groundwater, first paragraph: There appears to be a typo. What is 1,1-trichloroethene supposed to be?
5. Page 6-9, groundwater, third paragraph: It is claimed that no pesticides or PCBs were retained as COPCs. However, 4,4-DDD and beta-BHC appear in Table 6-15 as chemicals selected as risk-based COPCs. Please explain this discrepancy.
6. Page 6-9, groundwater, fourth paragraph: It is claimed cobalt is retained as a COPC, but it is missing from Table 6-15. Please explain.
7. Page 6-9, surface water: It is unclear to the reader why the chemicals chosen for qualitative review in Table 6-6 do not match the chemicals chosen for qualitative review in Table 6-15. Please explain.
8. Page 6-9, sediment: It is unclear to the reader why the chemicals chosen for qualitative review in Table 6-7 do not match the chemicals chosen for qualitative review in Table 6-15. Please explain.
9. Page 6-10, surface soil: It is claimed toluene was not retained as a COPC, however, it appears on Table 6-15 as a COPC. Please explain.

10. Page 6-11, fourth paragraph: It is claimed manganese is retained as a COPC, but it is missing from Table 6-15. Please explain.
11. Page 6-11, groundwater, third paragraph: It is claimed heptachlor, endosulfan II, and alpha-chlordane were not retained as COPCs, however, they appear on Table 6-15 as selected as both a risk-based and criteria-based COPC. Please explain this apparent discrepancy.
12. Page 6-11, groundwater, fourth paragraph: Although nickel is not claimed to be a COPC, it is listed on Table 6-15 as both a risk-based and criteria-based COPC. Please explain this apparent discrepancy.
13. Table 6-14: It is unclear to the reader why 3,3-dichlorobenzidine appears in Table 6-14 but not Table 6-15. Please explain.
14. Figure 6-1: It is the reader's understanding Site 69 will be handled separately. Site 69 should be removed from the title of this figure.
15. Figure 6-1: It is unclear to the reader why (according to this figure) the construction workers will not be exposed to contaminants via the inhalation route. This route of exposure should be added to this figure and accounted for throughout this document.
16. Figure 6-1 includes the current residents (should this be future residents of current military personnel?) exposure to biota, which is unaccounted for in the text of Section 6.3.2 and in Table 6-16. Please explain.
17. Page 6-14, Section 6.3.2.4, Surface Water/Sediments: It is claimed that "current and future potential exposure to surface water and sediment via ingestion and dermal contact are not retained for evaluation". However, both Tables 6-16 and 6-17 indicate surface water and sediment were considered for the future residential population. Please explain.
18. Tables 6-16 and 6-17: It is not currently possible by looking at these tables to differentiate between surface and subsurface soil. Since different receptors are considered for each of these media, it is recommended that the two media be listed separately in these tables.
19. Page 6-19, next to last paragraph: It is unclear to the reader how the inhalation rate (IR) of $10 \text{ m}^3/\text{day}$ was calculated. If it is assumed the child conducted light ($0.8 \text{ m}^3/\text{day}$) activity for 8 hours, $0.8 \text{ m}^3/\text{day} \times 8 \text{ hours}$ equals 6.4 m^3 . Subtracting 6.4 m^3 from 10 m^3 leaves 3.6 m^3 for the remaining 16 hours of the day, or $0.21 \text{ m}^3/\text{hr}$. This is about one-half the lowest IR (resting = $0.4 \text{ m}^3/\text{hr}$) given in the

cited reference. Please provide a more detailed justification or use the adult IR.

20. Table 6-24: It is unclear to the reader why all the COPCs listed on Table 6-15 are not listed on Table 6-24. The following COPCs appear on Table 6-15 but not Table 6-24: anthracene, benzo(g,h,i)perylene, bis(2-chloroethyl)ether, fluorene, naphthalene, 2-methylnaphthalene, endosulfan II, endrin aldehyde, aldrin, endrin, endosulfan I, PCBs, alpha BHC, beta BHC, methoxychlor, endrin ketone, copper, lead, antimony, cobalt. Please explain.
21. The following chemicals are listed in Table 6-15 as risk based COPCs for Site 41 surface soil, listed in Table 6-24 as having applicable toxicity factors, but not included in the CDI calculations in Appendix Q for future residential child, future residential adult, and current military personnel for ingestion and dermal contact: heptachlor epoxide, selenium, and cyanide. Please explain.
22. The following chemicals are listed in Table 6-15 as risk based COPCs for Site 41 subsurface soil, listed in Table 6-24 as having applicable toxicity factors, but not included in the CDI calculations in Appendix Q for future construction workers (both oral and dermal routes): beryllium and mercury. Please explain. Also, fluorene is listed on Table 6-15 as a COPC for subsurface soil but not included in Table 6-24. The RfD for fluorene is 4×10^{-2} mg/kg-day and should be added to Table 6-24. Fluorene should also be included in the CDI calculations for future construction workers in Appendix Q.
23. Appendix Q, dermal CDI calculation for soil, Sites 41 and 74: It appears as though oral CSFs and RfDs were used instead of dermal CSFs and RfDs. To convert an oral RfD to a dermal RfD:

$$\begin{aligned} \text{Dermal RfD} = \text{Oral RfD} \times & 0.8 \text{ (for VOCs)} \\ & 0.5 \text{ (for SVOCs)} \\ & 0.2 \text{ (for Inorganics)} \end{aligned}$$

To convert an oral CSF to a dermal CSF:

$$\begin{aligned} \text{Dermal CSF} = \text{Oral SF} / & 0.8 \text{ (for VOCs)} \\ & 0.5 \text{ (for SVOCs)} \\ & 0.2 \text{ (for Inorganics)} \end{aligned}$$

Please recalculate the dermal risks using the above methodology.

24. Appendix Q, CDI calculation for particulate inhalation, site 41, future residential child, future residential adult, and current military personnel: The CSF for dieldrin is listed as $1.6E+01$ (mg/kg-day)⁻¹ on Table 6-24, but is listed in

Appendix Q $1.6E+00$ (mg/kg-day)⁻¹. The RfC for manganese is listed as $5.0E-05$ mg/kg-day on Table 6-24, but is listed throughout Appendix Q as $4.0E-04$ mg/kg-day. Please correct these inconsistencies.

25. Selenium is listed in Table 6-15 as risk based COPC for Site 41 groundwater, listed in Table 6-24 as having applicable toxicity factors, but not included in the CDI calculations in Appendix Q for future residential child and adult (both oral and dermal routes). Please explain.
26. The following chemicals are listed in Table 6-15 as risk based COPCs for Site 74 groundwater, listed in Table 6-24 as having applicable toxicity factors, but not included in the CDI calculations in Appendix Q for future residential child and adult (both oral and dermal routes): heptachlor, alpha-chlordane, nickel. Please explain.
27. Appendix Q, dermal CDI calculation for groundwater, Sites 41 and 74: See comment 23.
28. Page 6-22, Section 6.3.4.6: It is claimed that the inhalation of contaminants volatilized from shower water will be quantified and that these calculations are contained in Appendix Q. These calculations were not provided in Appendix Q, and Tables 6-26 and 6-28 list NA in the boxes where this information was to be provided. Please explain this inconsistency.