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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
100 ALABAMA STREET, S.W.
ATLANTA, GEORGIA 30303-3104

February 24, 1997

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
Supplemental Groundwater Investigation
Operable Unit 10 - Site 35

Dear Ms. Landman:

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

If you have any questions or comments, please call me at (404) 562-8538.

Sincerely,

Gena D. Townsend
Senior Project Manager

Enclosure

cc: Dave Lown, NCDEHNR
Neal Paul, MCB Camp Lejeune

1.0 GENERAL COMMENTS

Section 4.3.1.3, Page 4-6, discusses the results of the Supplemental Groundwater Investigation (SGI) within the upper and lower portions of the surficial aquifer and upper portion of the Castle Hayne Aquifer. However, in the discussion, the text does not address the sampling results (concentrations). Also, there are no references made to the tables. The text should be revised accordingly.

2.0 SPECIFIC COMMENTS

1. **Figure 2-9.**
   Figure 2-9 shows SGI groundwater sampling locations. However, the legend does not show symbols for all the monitoring wells depicted on the figure. The legend should include symbols for all monitoring wells depicted on the figure.

2. **Section 2.3.2, Page 2-10, Paragraph 0, Sentence 6.**
   The text states that the flex hose was decontaminated with a damp paper towel prior to insertion into a well. However, the text does not specify what solvent was used to dampen the towel (water or some type of chemical). The text should specify the solvent used to dampen the towel.

3. **Section 2.3.4, Page 2-10, Paragraph 4, Sentence 1.**
   The text states that during Round three groundwater samples were collected from a total of 20 existing monitoring wells (see Figure 2-8). However, there is a discrepancy in the number of wells in the text and what is depicted on Figure 2-8. The discrepancy should be resolved.

4. **Table 3-3.**
   Table 3-3 is a summary of hydraulic conductivity data. However, the units for the data have been omitted. The units for the data should be included in the table.

5. **Figure 3-10.**
   Figure 3-10 is the supply well location map. However, the symbols used in the legend to depict Site 35 and the well locations are identical. Different symbols should be used for clarity.

6. **Figure 4-7.**
   Figure 4-7 is a graph of the gasoline concentrations detected in the sediments along Brinson Creek. However, the legend shows diesel instead of gasoline detected in sediment. The legend should be corrected accordingly.

7. **Section 7.1.2, Page 7-2, Paragraph 1, Sentence 2.**
   The text states: "These results that the spilled solvent and fuels have probably migrated 'inot' the saturated zone...". However, the statement is unclear and should be re-phrased for clarity. Also, the word "inot" in the text should be corrected.

RISK ASSESSMENT

1.0 GENERAL COMMENTS

1. Section 1.4.5, Page 1-9, Paragraph 0, Sentence 2 states that pesticides were detected in surface soil, but were not deemed to be site-related. Rationale should be provided to support this statement in the document.

2. Section 1.4.6, Page 1-9, Paragraph 2, Sentence 4 states that the extent of the solvent-related contamination was not adequately defined. However, this statement implies that insufficient information was used to calculate potential risk from solvents. Thus, the text should be revised to address this issue and its possible impact on the conclusions.

3. Section 1.4.6, Page 1-9, Paragraph 1, Sentence 6 states that the southern boundaries of the large plume were not delineated and appear to be beyond the scope of this investigation. However, it is unclear whether the maximum concentrations of solvent-related contamination are measured. Until the extent of contamination has been determined, a major uncertainty exists. Since the extent of contamination related to a site is essential to the risk assessment document, this discrepancy should be resolved

4. Section 6.0, Page 6-1, Paragraph 1 indicates that the assessment was in accordance with the USEPA Region 4 Supplemental Guidance of 1992. However, the latest Region 4 Supplemental Guidance was published in November 1995. Since some groundwater samples were collected in April 1996 and this report was prepared in November 1996, the latest Region 4 Supplemental Guidance (1995) should be used for this investigation. The report should be revised accordingly.

5. Section 6.0, Page 6-1 indicates that the additional VOC data were collected to define the limits of the plume but not for the human risk assessment. However, Section 6.1, indicates that the Round 4 VOC contaminants are discussed qualitatively and combined with the organic risk results from the data collected for the initial Remedial Investigation (page 6-1, paragraph 3). Therefore, the rationale for the application of the VOC data in the risk assessment is unclear. The text should be revised to present a clear rationale regarding the application of the VOC data.

6. Section 6.2.1, Page 6-3, bullet 6; Section 6.2.1.6, pg. 6-4. The EPA Region 4 conventional terminology for chemicals selected for evaluation in the BRA is "Chemicals of Potential Concern (COPC)". Please make changes wherever appropriate. Also, the RBC values should not be referred to as "COC screening values".

7. Section 6.2.1.7, Page 6-5, Paragraph 5 indicates that Federal MCLs and Health Advisories are used as the criteria for selection of COPCs. However, according to EPA guidance, the Region 3 RBCs should be used as the criteria for the selection of COPCs. Moreover, in Tables 6-1 and 6-2, Region 3 RBCs are presented as criteria with the Federal MCLs and Health Advisories. Based on EPA guidance, the Federal MCLs and Health Advisories should not be used as the criteria for the selection of COPCs. Thus, the text and Tables 6-1 and 6-2 should be revised to follow EPA guidance.

8. Section 6.3.2, Page 6-7, Paragraph 5 states that analyzing groundwater data was difficult, and that a representative exposure concentration was used. However, the text does not specify the representative exposure concentration (i.e., maximum concentration or 95% UCL). According to the Region 4 guidance, the groundwater exposure point concentration should be the arithmetic average of the wells in the highly concentrated area of the plume (EPA, 1995). The text should be revised to specify the exposure concentration.

9. Section 6.5.1, Page 6-15, Paragraph 2 presents the ICR and HI values from the initial Remedial Investigation (RI) and this investigation showing that values from the initial RI are much higher than those from this investigation. The text indicates that elevated values are driven by organics. However, no explanation is given for the significant differences, except for mentioning the low-flow purge designed for inorganics. If the elevated values are driven by the organics, the issue of using low-flow purge based on the concern of inorganics appears to be irrelevant. The text should be revised to address the difference in results from the initial RI and this investigation.

2.0 SPECIFIC COMMENTS

1. **Section 6.2.1, Page 6-3, Paragraph 3, Sentence 2.**
The text, after a list of criteria for the COPC selection, indicates that a comparison to contaminant-specific criteria was also considered in the selection of COPCs. However, the text does not present a discussion about the contaminant-specific criteria and their application. The text should be revised to present the discussion accordingly.

2. **Section 6.2.2, Page 6-7, Paragraph 1, Sentence 5.**
The text indicates that a number of contaminants were not defined as COPCs due to their detected levels below their tap water COC screening values. However, according to EPA guidance, there are no tap water COC screening values but water RBC values. The text should be revised to use the corrected terminology.

3. **Section 6.2.2, Page 6-7, Paragraph 1, Sentence 6.**
The text indicates that antimony was not retained as a groundwater COPC due to infrequency of detection (5%). However, Region 4 policy does not use the frequency rule as COPC criteria. Therefore, antimony should be included as a groundwater COPC, unless it meets criteria defined by Region 4. The text should be revised accordingly.

4. **Section 6.3.3.1, Page 6-9, Paragraph 0, Sentences 2 and 3.**
The text indicates that deep groundwater from Site 35 is currently used for potable purposes, but contaminated supply wells have been permanently abandoned. However, it is unclear if the deep groundwater is contaminated or if isolated supply wells are contaminated. The text should be clarified accordingly.

5. **Section 6.6.1, Pages 6-15 and 6-16.**
In a discussion on the source of uncertainty, the text indicates that a low-flow well

purging and sampling technique is used in the investigation so that the results more closely represent the true groundwater contamination, because the results (without using the low-flow technique) may overestimate the risks. However, if the results by low-flow purging technique represent the true contamination, it is unclear why such a technique is discussed in the source of uncertainty because only the non-low-flow purging technique may contribute to the uncertainty. The text should explain why the low-flow purging technique should be discussed in the uncertainty section.

6. **Section 6.7, Pages 6-18, Paragraph 3**.
The text indicates that the detected concentrations of VOCs were generally lower than those detected in the first round and that fewer VOCs were detected in the second round of data. However, the text does not discuss why the concentrations of VOCs are generally lower than those in the first round. Also, it is unclear whether the first round is a part of the sampling events of the investigation or a part of the previous RI. The phrase stating that "fewer VOCs detected in this second round" is also confusing because it is unclear which round is used to compare to the second round. The text should be revised accordingly.

7. **Tables 6-1 and 6-2**.
Tables 6-1 and 6-2 are the summaries of groundwater data and selection of COPCs. However, after summarizing the numbers of detects above the criteria, the COPCs are not identified in the tables. In addition, the tables reference USEPA Region 3 COC Screening Criteria Table. However, the reference should be the Region 3 RBC Table. In addition, the term COC used in the tables is inappropriate. The tables should be revised to identify the COPCs, and the text should be corrected accordingly.