ARF
CTO-0344
03.01-04/24/96-01798

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4

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

April 24, 1996

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 RI/FS Work Plan
Operable Unit No. 16 - Site 89 & 93

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,

Gena D. Townsend
Senior Project Manager

Enclosure

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

Comments

Work Plan

Section 2.1.6, p. 2-5. The Castle Hayne unit cannot be both confining and discontinuous. Clarify the description.

FSAP

Section 4.1.1, p. 4-1. The Navy may want to consider utilizing GPS for surveying to save time and money.

Section 4.1.3, p. 4-2. If the objective of this investigation (as stated in this subsection) is merely to determine the presence or absence of contamination in the surficial aquifer, this can be done by simply re-sampling the existing monitoring wells. If the objective is as stated in Section 3.1.2.1, p. 3-2 (determine nature and extent of contamination), the Navy proposal falls short. It is my belief that simply installing a set number of wells, and collecting a given number of soil, sediment, and surface water samples will not define the nature and extent of contamination. I would propose that the existing wells and the creek be re-sampled to confirm the earlier data. Then using that data in conjunction with the PRG's set out in Table 4-2, develop a minimum number of analytes and MQLs for a mobile laboratory. The shallow aquifer contamination could then be adequately delineated using temporary wells, and a permanentmonitoring well network designed and implemented. ESD successfully performed this type study for the Navy at N.A.S. Pensacola in a period of 10 days last October, and I am available to talk with the Navy and their consultant on this technique. This comment is applicable to both sites.

Section 6.2.1, p. 6-4. The fifteen foot screen length is excessive. Unless there are special circumstances calling for this length of screen, the screen should be kept to 51 to 101. This comment also applies to intermediate depth wells.

Section 6.4.4, p. 6-9. Sample tubing should be made of Teflon Also, the tubing intake should be as near the water table as possible. Further, the title of this sub-section indicates that sampling procedures are a part of this sub-section, but they are absent. In addition, it is recommended that a turbidity goal be set for sampling. For example, when ESD samples, purging is continued until turbidity is 10 NTU or less. If this cannot be reasonably achieved, it is noted in the field notebook and discussed in the final report.

Section 6.6, p. 6-12. The Kemmerer sampler described is not suitable for sampling low levels of contaminants. An acceptable alternative is to use a peristaltic pump\vacuum jug arrangement.

Section 6.7, p. 6-13. A clear plastic sleeve is not acceptable for sampling sediments. Acceptable construction materials for sampling equipment may be found in the USEPA, Region 4, Environmental Compliance Branch Standard Operating Procedures and Quality Assurance Manual, (ECBSOPQAM), February 1, 1991. Note: The latest version of this SOP is scheduled for release May 1, 1996.

SOPs

SOP F104, Section 5.3.1, p. 7 of 12. Suction pumps are, in fact, particularly well suited for purging and sampling shallow wells such as those proposed for this investigation. The peristaltic pump\vacuum jug method described in the ECBSOPQAM is very reliable, with none of the drawbacks described, and is highly recommended.

SOP F104, Section 5.4.1, p. 9 of 12. This section appears to describe sampling through the pump. With a very exceptions, this is not permitted by the ECBSOPQAM. I strongly recommend that alternative sampling methods be employed. In addition, sampling with a bailer is not the "preferred" method in Region IV.

SOP F501, Section 5.1, p. 3 of 4. The drill rig and associated equipment is to be cleaned as specified in Appendix E of the ECBSOPQAM. The proposal falls short of the minimum requirements of that document.

Quality Assurance

1. Section 4.4, page 4-6, Sample Analysis and Validation: The two documents referenced for data validation in this section were updated in 1994. Please reference the most recent versions of these guidance documents.

2. Quality Assurance Project Plan, Table 8-3, page 8-9: The aqueous PQLs in this table for TCLP metals appear to have the wrong units. PQLs are listed in mg/L, but units of ug/L seem to be more appropriate. Please verify the metals PQL units.

3. Quality Assurance Project Plan, Table 8-2 thru 8-4: References to Test Methods for Evaluating Solid Wastes, SW-846, 3rd edition should, be updated to include the most

recent approved versions of these methods using the appropriate alpha suffix, for example, 6010A, 7470A, etc.

4. Quality Assurance Project Plan, Section 9.3, page 9-2, Independent Third Party Data Validation: Please reference appropriate data validation guidance as was done in Section 4.4 of the project plan (see comment 1, above).

5. Quality Assurance Project Plan, Section 10.3, page 10-5, Laboratory Control Limits, 1st paragraph: The first sentence states that "control limits will be established for QC checks." The second sentence in the paragraph refers to CLP control limits, but appears to be incomplete. As part of the DQO process mentioned in Section 5.2, quantitative criteria must be established for precision and accuracy. It may be appropriate to use either CLP SOW precision and accuracy criteria, or to use a laboratory's internal control limits for precision and accuracy. However, regardless of which approach is used, these limits must be specified in this QAPP and not left to future development. Many QAPPs use a tabular format for precision and accuracy similar to that used in Tables 8-1 & 8-2. Please clarify the 1st paragraph in section 10.3 and specify quantitative DQO precision and accuracy limits in this section.

6. Quality Assurance Project Plan, Section 13.3, page 13-2, Laboratory Data Quality Assessment: The last paragraph on this page indicates that data representativeness is a function of appropriate analytical procedures and analysis of samples within holding times. Generally however, use of appropriate methodology is thought of as contributing to data comparability rather than representativeness. Representativeness is considered to be dependent upon a valid sampling design which assures that samples are collected which are representative of the media being investigated. Please revise this section to show how representativeness is assured through an adequate sampling design. This may be accomplished by reference to other portions of the project plan if desired.

1.0 General Comments

1. Section 2.2.5.3, Page 2-12, Paragraph 5, indicates that Site 89 is a potential source of surface water contamination to Edwards Creek. However, Section 2.2.2 states that stormwater drains to the southeast over Site 89 and towards Edwards Creek. The creek is located primarily to the south and west of the site, so the source of contamination at SW08 and SW07 is unlikely to originate from Site 89. The locations of SW02, SW03, and SW04, which were relatively clean, are not shown. These sampling areas could be used to rule out certain areas as sources. Groundwater from Site 89 flows to the northwest (Section 2.2.4). Since SW09 is cleaner, the groundwater from Site 89 is unlikely to be the

source of contamination for Edwards Creek. The text should add sampling locations SW02, SW03, and SW04 to Figure 2-6 as well as provide more evidence showing that Site 89 is a source of contamination to the creek. Another source of contamination to the creek should be investigated.

2. Table 2-6 presents the data for previous surface water samples. However, the table does not list the sampling dates for each of the samples. If data from different sampling dates are compared, then the comparisons of concentrations between locations are not valid. Furthermore, trends in concentrations should be based on data collected on one sampling date. Thus, Table 2-6 should be revised to list the sampling date for each sample.

3. Sections 3.1.2.2 and 3.1.2.3, Pages 3-2 and 3-3, describe the site specific data needs for each site. However, evaluation of alternatives and fate and transport often requires information on parameters other than just contaminants. For instance, soil properties or data such as particle size analysis, total organic carbon, and microbial counts are valuable in assessing fate of compounds and potential alternatives. For groundwater, COD, CO_2, DO, and nutrient level (N and P) measurements can aid in the evaluation of In situ and Ex situ biological treatment methods. The data to be collected for evaluation of alternatives should be re-examined. Table 4-1 currently contains data useful for characterization but may be lacking data for evaluation of In situ and Ex situ alternatives. It may be possible to collect some data at a later date (especially groundwater data); however, it is best to evaluate now what is likely to be needed for potential alternatives.

4. Table 3-1 presents the study objectives for Sites 89 and 93. However, specific data needs (i.e. what will be measured or analyzed) are not listed in the table for each objective. The table should be modified to show the specific parameters that will be measured, for each site, for each objective. For clarity, a fifth column should be added showing what data will be collected (i.e. VOAs, SVOCs, soil property tests, and slug tests).

5. Table 3-1 indicates that the criteria for meeting the objective of the risk assessment (1b) is a characterization of the contaminant levels in surface and subsurface soil at Site 89. However, the objective of the risk assessment is to assess human health and ecological risks. Therefore, the criteria for meeting this objective should be associated with risk levels, not contaminant levels in soils. The text should be revised accordingly.

This comment likewise applies to the objective of the risk assessment for Site 93.

6. Section 4.3.1 describes soil sampling at Site 89. However, the rationale for the location of the various soil borings is not presented. According to the EPA Region IV SOPQAM, sample locations can be random, biased, or on a grid pattern. The rationale behind soil sampling locations is essential. If soil sample locations are chosen based on previous pipe lines or connections, suspected leak areas, historical information or previous investigative data, then this rationale should be presented.

   This comment also applies to groundwater well locations and sediment/surface water sampling locations.

7. Section 4.3.1, Pages 4-1 and 4-2, describes the soil boring sampling. However, the text does not state that soil samples will be collected during well installation. The text should specify borings where shallow and subsurface sampling will be performed and at what intervals.

8. Section 4.3.2 describes proposed soil and groundwater investigations for Site 93. However, first, the rationale for the soil sampling and groundwater monitoring well locations is not presented as recommended by the Region IV EPA SOPQAM. Second, the text does not specify if soil samples are random or based on specific information. Third, the soil samples are not in a grid pattern, and the soil samples in the area between C and D streets do not appear relevant. Fourth, there is no estimated flow direction shown to justify well locations for groundwater. Fifth, well 93-MW10 is over 900 feet from the UST area. As no groundwater flow rate is presented in Section 2.2.4, the justification for this well is unclear. The text in Section 4.3.2 should be revised to include the rationale for soil sampling locations (random, biased, or grid pattern) and groundwater monitoring well locations (why five wells are needed at the distances shown in Figure 4-3). In addition, an estimated direction of groundwater flow should be added to Figure 4-4.

9. Figures 4-1 shows the location of soil boring samples. However, the figure is very congested and shows proposed monitoring wells. In addition, which borings will have surface and subsurface samples and which borings are considered upgradient or downgradient is unclear. The area that encompasses soil borings should be enlarged, and the borings considered to be upgradient of the investigation areas should be clearly identified.

10. Figure 4-2 shows the existing and proposed groundwater well locations. However, the figure does not include estimated

flow directions. The flow directions should be added to the figure.

2.0 Specific Comments

1. **Section 2.2.4, Page 2-11, Paragraph 0, Sentence 1.**
The text states that groundwater flow is to the northwest at a gradient of 0.003 ft/ft. However, the text does not state which wells were used to determine the flow direction or give an estimate of the groundwater flow velocity. An estimate of the groundwater flow velocity is important to locate proposed wells. The wells used to determine groundwater flow direction should be stated in the text, and the estimated direction of flow should be shown on Figure 2-6. If available, an estimate of the groundwater flow velocity should also be provided.

2. **Section 2.2.5.2, Page 2-11, Paragraph 3, Sentence 1.**
The text states that groundwater samples were collected from a newly installed well and two existing wells. However, the text does not name the two existing wells. The number system is confusing since MW-1 is a new well, and MW-07 and MW-03 are existing wells. The text should clarify the construction sequence of the three wells, and the well designation should be revised for consistency (i.e. MW-01 vs. MW-1).

3. **Section 2.2.5.3, Page 2-12, Paragraph 2.**
The text lists six detected VOCs and their maximum concentrations. Among them, the concentrations of 1,2-dichloroethene and trichloroethene are 150 μg/L and 66 μg/L, respectively. However, the analytical data in Table 2-6 shows that concentrations of these two contaminants are 120 μg/L and 22 μg/L, respectively. The text should clarify the difference in the maximum concentrations of these two contaminants.

4. **Section 2.3.1, Page 2-12, Paragraph 8.**
The text states that the investigated area of concern extends from F Street to the east, A Street to the north, Tenth Street to the south, and Ninth Street to the north, and is depicted on Figure 2-7. However, F and A Streets do not appear on Figure 2-7, and other figures within the text do not show these streets within Site 93 boundaries. Figure 2-7 should be revised to match the text.

5. **Table 2-3.**
One of the notes of Table 2-3 states that the shaded area indicates non-compliant concentrations. However, there are no shaded areas in Table 2-3. Thus, such a note is not applicable. The text should be revised accordingly.

6. **Table 2-5.**

Table 2-5 shows the shaded area as non-compliant concentrations (i.e. exceeding the standards). However, for 1,1,2-trichloroethene in samples MW01 and MW01 duplicate, the concentrations (29 µg/L) exceeded Federal MCL, but those concentrations are not in the shaded area. The values of 1,1,2-trichloroethene in MW01 and MW01 duplicate should be shaded.

7. **Table 2-7**.
Table 2-7 shows oil and grease in samples MW01 and MW03 in a shaded area which indicates non-compliant concentrations (i.e. exceeding the standards). However, the text does not present applied standards for oil and grease in the soil samples. Thus, whether the results exceeded the standards can not be verified. The text should include the applicable standards for oil and grease in soils.

8. **Section 3.1.2.2, Page 3-3, Bullet 3, Sentence 1**.
The text states that one specific data need is to verify surface water and sediment contamination of Edwards Creek. However, contamination has already been shown to exist by previous data, although the source of contamination for Edwards Creek has not been determined. The source could be Sites 89, 93, or some other source. Data collection for Edwards Creek surface water and sediment should be targeted toward determining whether Site 89 is a source of contamination.

9. **Section 3.1.2.2, Page 3-3, Bullet 11, Sentence 1**.
The text indicates that verification of surface soil contamination is needed. However, Table 2-7 indicates there is oil and grease and metals present in surface soils at a depth from 2 to 3 feet, so the text should explain why verification is necessary.

10. **Section 4.3.1, Page 4-1, Paragraph 6, Bullet 1**.
The text states that one surface and subsurface soil sample will be collected from 11 soil boring locations at the site. However, according to Figure 4-1 and Table 4-1, there are only 10 soil boring locations at the site. The text should explain the difference on the number of soil boring locations and be revised accordingly. Appendix A (page 4-1) should also be revised accordingly.

11. **Section 4.6, Pages 4-6 and 4-7**.
The text lists the primary documents that will be utilized in the risk assessment. However, the text does not include the EPA Supplemental Guidance to RAGS Region IV Bulletins, November 1995. The text should add this document to the list of references.

12. **Table 4-2**.
This table presents the PRGs for soil and groundwater at Sites 89 and 93. However, surface water and sediment PRGs are not presented. Surface water was found to contain

chlorinated organics. In addition, no goals are presented for oil and grease which has high concentrations in soil at Sites 89 and 93. The text should add PRGs for surface water and for oil and grease in the soil.

13. **Figure 4-2**.
Figure 4-2 depicts the existing and proposed groundwater surface water and sediment sampling locations at Site 89. However, there are no identification numbers for five surface water/sediment sample locations at Edwards Creek. In addition, well 93-MW06 appears to be an existing shallow well, but the legend shows this well as a proposed one. The five surface water/sediment sample locations should have identification numbers. A sample designated for the existing well should be given to well 93-MW06.

14. **Figure 4-2**.
These figures depict proposed groundwater monitoring well locations. However, the groundwater flow direction is not shown on any of the maps. The figure should show flow directions arrows.

This comment also applies to Figure 4.4.

15. **Figure 4-3**.
Figure 4-3 depicts proposed soil sampling locations at Site 93. However, locations of existing wells are also shown in the figure. The locations of existing wells do not appear to be relevant to the soil sampling locations. The figure should only show the proposed soil sampling locations at the site.

16. **Figure 5-1**.
The figure shows project organization; however, the EPA and N.C. DEHNR are not shown on the figure. These agencies should be depicted in the figure as well.

17. **Appendix A of the SAP (Soil Sample Acquisition), Table of Contents**.
The table of contents for soil and rock sample acquisition does not match the order of the contents of that section. The table of contents should be revised to reflect the contents of the section.

18. **SAP, Section 4.1.4.1, Page 4-3, Paragraph 4, Sentence 1**.
The text states that surface water samples will be taken at the surface and one foot above the bottom. However, for streams with widths of 20 feet or less, a grab sample at mid-depth at the center of the stream is acceptable (EPA, 1991). Edwards Creek appears to fall in this category. Thus, one grab sample at mid-depth should be adequate for this site. The text should be revised accordingly.

19. **SAP, Section 4.1.4.1, Page 4-3, Paragraph 5, Sentence 2**.

The text states that an upstream and downstream staff gauge will be installed. However, the location of these gauges is not shown on Figure 4-2 in the SAP. Figure 4-2 in the SAP should be revised to depict the location of the staff gauges.

20. **SAP, Section 4.2.1, Page 4-4, Paragraph 1, Sentence 1.**
The text describes the features that will be surveyed at the site. However, the survey does not include the location of Edwards Creek and the surface water and sediment sampling points. The text should be revised accordingly.

21. **SAP, Section 4.2.2.1, Page 4-4, Paragraph 5.**
The text states that 21 soil borings will be located as described in the Sampling Strategy Plan (Figure 4-3). However, Figure 4-3 shows only 14 soil boring locations. The text should clarify this discrepancy, and the figure should be revised accordingly.

22. **SAP, Section 6.6, Page 6-12, Paragraph 3, Sentence 2.**
The text states that a transfer bottle will be used for surface water samples. In addition, the text states that the transfer bottle will be rinsed. However, whether the transfer bottle will be decontaminated between sampling locations is unclear. The text should state how the transfer bottles will be decontaminated between sample locations (EPA, 1991).

23. **SAP, Section 6.6, Page 6-12, Paragraph 3, Sentence 5.**
The text states that after the Kemmerer sampler is raised slowly to the surface, the water will be removed through a "value". However, the word value should be replaced with the word "valve".

24. **SAP, Section 6.10.3.1, Page 6-16, Paragraph 2, Sentences 2 and 3.**
The text states that an HNu PID unit will be used to determine elevated levels of organics. However, no HNu reading value is given as the criteria for determining when cuttings need to be containerized. The text should include what HNu readings will be used to determine whether soil is returned to the borehole or placed in drums.

25. **Appendix C of the SAP, Page 11 of 12, Paragraph 4, Sentence 4.**
The text states that filtered and unfiltered groundwater samples are to be collected for metals analysis. However, Table 4-1 in Section 4 of the Work Plan does not indicate that filtered and unfiltered samples will be collected. This discrepancy should be clarified in the text.

26. **Appendices.**
The RI/FS Work Plan contains several appendices to the Sampling and Analysis Plan (SAP). However, the appendices do not have page numbers. In addition, the SAP uses the

same page numbering format as the RI/FS Work Plan which causes confusion during review. The appendices and SAP should be revised to show page numbers in a format that can be distinguished from the text.